THE CORPORATION OF THE TOWNSHIP OF PUSLINCH
MARCH 25, 2026 COUNCIL MEETING
VIRTUAL MEETING BY ELECTRONIC PARTICIPATION &
IN-PERSON AT THE MUNICIPAL OFFICE –
7404 WELLINGTON RD 34, PUSLINCH

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A G E N D A ADDENDUM

DATE: March 25, 2026
REGULAR MEETING: 10:00 A.M.
CLOSED MEETING: 10:30 A.M.

Addendum

9.4.2 Report COR-2026-009 Proposed Stop Up, Close and Declare Surplus a Portion of Lake Ave Road Allowance

10.3 Township of Puslinch Objection Letter – CBM Aggregates – ARA Application Aberfoyle South Lake Pit

12.1.2 BL2026-010 Stop up, close and declare surplus a portion of Road Allowance Between Lots 5 & 6, Concession 1 Township of Puslinch, North of Puslinch Lake & South of Little Lake, Township of Puslinch

12.1.3 BL2026-011 Authorize the Mayor and Clerk to enter into a Purchase and Sale Agreement for a Portion of Lake Ave Road Allowance and enter into an Encroachment Agreement for 6 Lake Avenue

14.2 Confidential report regarding a proposed or pending acquisition or disposition of land by the municipality or local board – Potential Acquisition or Disposition

14.3 Confidential report regarding a proposed or pending acquisition or disposition of land by the municipality or local board – Township Road allowance

14.4 Confidential report regarding advice that is subject to solicitor-client privilege, including communications necessary for that purpose – Regulatory By-law

≠ Denotes resolution prepared

1. **Call the Meeting to Order**

2. **Roll Call**

3. **Moment of Reflection**

4. **Confirmation of the Agenda ≠**

5. **Disclosure of Pecuniary Interest & the General Nature Thereof**

6. **Consent Agenda ≠**

Consent Agenda items are considered routine in nature and are voted on collectively. Any member of Council may request one or more items be removed from the Consent Agenda for separate action.

6.1 Adoption and Receipt of the Minutes of the Previous Council and Committee Meetings
- 6.1.1 March 13, 2026 Special Council Meeting Minutes
- 6.1.2 March 4, 2026 Council Meeting Minutes
- 6.1.3 February 10, 2026 Planning and Development Advisory Committee Minutes
- 6.1.4 January 13, 2026 Committee of Adjustment Minutes
- 6.1.5 January 12, 2026 Heritage Advisory Committee Minutes

6.2 Ministry of Natural Resources Request for Feedback regarding Black Bear Management Proposal

6.3 Ministry of Environment, Conservation and Parks Decision Notice on the Proposed Boundaries for the Regional Consolidation of Ontario's Conservation Authorities

6.4 Ministry of Transportation Request for Comment – Harmonization of Municipal Road Construction Standards

6.5 Ministry of Environment, Conservation and Parks presentation regarding Improving Ontario Conservation Authority's Stakeholder Information

6.6 AMO Policy Update - Conservation Authority Consolidation, New Buy Ontario Municipal Procurement Requirements, Drug Enforcement

6.7 Grand River Conservation Authority - 2026 Budget & 2025 Audited Financial Statements
6.8 City of Ottawa Letter to Solicitor General regarding Restricting Public Consumption of Illegal Substances Act
6.9 Rideau Lakes Township Letter to Senator regarding Concerns Alto High Speed Rail Project (Bill C-15 Budget)
6.10 Township of McNab Braeside Council Resolution regarding Ontario Heritage Organization Development Grant Advocacy
6.11 Municipality of York Council Resolution regarding Ontario Recycling System
6.12 Township of Papineau-Cameron Council Resolution regarding Ontario Veterinary College
6.13 City of Hamilton Notice of Public Meeting to adopt the Mellville-Park West Heritage Conservation District Plan in Dundas
6.14 Municipality of St. Charles Council Resolution regarding Small Northern New Residential Property Tax Class
6.15 Stan Denhoed Letter regarding Lifewater Kenya Trip 2026

Recommendation:
That the Consent Agenda items listed for the March 25, 2026, Council meeting be received for information.

7. **Delegations ≠**
7.1 Specific Interest (Items Listed on the Meeting Agenda)
7.1.1 **None**
7.2 General Interest (Items Not Listed on the Meeting Agenda)
7.2.1 None

8. **Public Meeting**
8.1 April 15, 2026 at 7:00 P.M. Public Information Meeting held in-person at the Municipal Office (7404 Wellington Road 34) and by electronic participation through Zoom regarding Zoning By-law Amendment Application D14-BAR (Bardwell) 6759 Laird Road West
8.2 April 15, 2026 at 7:00 P.M. Public Information Meeting held in-person at the Municipal Office (7404 Wellington Road 34) and by electronic participation through Zoom regarding Community Improvement Plan

9. **Reports ≠**
9.1 **Puslinch Fire and Rescue Services**
9.1.1 **None**

9.2 **Finance Department**

9.2.1 **Report FIN-2026-009 2025 Lease Financing Agreement Summary Report ≠**

Recommendation:
That Report FIN-2026-009 entitled 2025 Lease Financing Agreement Summary Report be received; and,

That Council accepts the Treasurer's statement that all lease financing agreements are non-material and have been made in accordance with the Township's Lease Financing Agreement Policy as outlined in schedule B to report FIN-2026-009.

9.2.2 **Report FIN-2026-010 Temporary Borrowing By-law ≠**

Recommendation:
That Report FIN-2026-010 entitled Temporary Borrowing By-law be received; and,

That Council give 3 readings to by-law No. 2026-012 being a by-law authorizing external temporary borrowings of $1,500,000 in 2026.

9.2.3 **Report FIN-2026-012 Remuneration and Expenses Paid to Members of Council and Others - 2025 ≠**

Recommendation:
That Report FIN-2026-012 entitled Remuneration and Expenses Paid to Members of Council and Others – 2025 be received.

9.3 **Office of the CAO**

9.3.1 **Report CAO-2026-004 Establishing and Regulating By-law**

Recommendation:
That Report CAO-2026-004 entitled Establishing and Regulating By-law be received for information.

9.3.2 **Report CAO-2026-005 Final 2026-2030 Township Strategic Plan**

Recommendation:
That Report CAO-2026-005 entitled Final 2026-2030 Township Strategic Plan be received for information; and,

That Council approve the 2026-2030 Township Strategic Plan as [presented/amended].

9.4 **Corporate Services Department**

9.4.1 **Report COR-2026-013 2024 & 2025 Annual Aggregate Monitoring Reports ≠**

Recommendation:
That Report COR-2026-013 entitled 2024 & 2025 Annual Aggregate Monitoring Reports be received for information; and,

That Council direct staff to provide the Township's peer reviewers comments to the Pit Operator and the Ministry of Natural Resources for response.

9.4.2 **Report COR-2026-009 Proposed Stop Up, Close and Declare Surplus a Portion of Lake Ave Road Allowance ≠**

Recommendation:
That Report COR-2026-009 entitled Proposed Stop Up, Close and Declare Surplus a Portion of Lake Ave Road Allowance be received for information; and

That Council authorize staff to proceed to stop up, close and declare surplus Part 1 of the Lake Ave Road allowance as described in R-Plan 61R-23192; and

That Council give three readings to By-law 2026-010 being a by-law to stop up and close and declare surplus part of the Lake Ave Road allowance; and

That Council deem the portion of the road allowance surplus to the needs of the Township with the intention of the disposal of part of the road allowance; and,

That Council give three readings to By-law 2026-011 being a by-law to authorize the entering into Purchase and Sale Agreement for the sale of a portion of an unopened road allowance and to enter into an Encroachment Agreement for 6 Lake Avenue.

9.5 **Public Works Department**

9.5.1 **None**

9.6 **Community Services and Human Resources Department**

9.6.1 **None**

10. **Correspondence ≠**

10.1 **10:05 A.M. Presentation by County of Wellington and Dillon Consulting regarding Wellington Road 46 Road Study ≠**

Recommendation:
That Correspondence Item 10.1 Presentation by County of Wellington and Dillon Consulting regarding Wellington Road 46 Road Study be received for information.

10.2 **Puslinch Lake Golf Course Permit to Take Water Application ≠**

Recommendation:
That Correspondence Item 10.2 Puslinch Lake Golf Course Permit to Take Water Application be received for information; and,

That Council direct staff to submit the comments from the Township's Hydrogeologist and County of Wellington Source Water to the Ministry of Environment, Conservation and Parks for consideration.

10.3 **Township of Puslinch Objection Letter – CBM Aggregates – ARA Application Aberfoyle South Lake Pit ≠**

Recommendation:
That Correspondence 10.3 Township of Puslinch Objection Letter – CBM Aggregates – ARA Application Aberfoyle South Lake Pit be received for information.

11. **Council reports**

11.1 Mayor's Updates

11.2 Council Member Reports (verbal or written updates from members who sit on boards/committees)

12. **By-laws ≠**

12.1 First, Second and Third Reading

12.1.1 BL2026-012 Temporary Borrowing By-law 2026

12.1.2 BL2026-010 Stop up, close and declare surplus a portion of Road Allowance Between Lots 5 & 6, Concession 1 Township of Puslinch, North of Puslinch Lake & South of Little Lake, Township of Puslinch

12.1.3 BL2026-011 Authorize the Mayor and Clerk to enter into a Purchase and Sale Agreement for a Portion of Lake Ave Road Allowance and enter into an Encroachment Agreement for 6 Lake Avenue

Recommendation:
That the following by-laws by taken as read three times and finally passed in open Council:

By-law 2026-012 being a by-law to authorize the temporary borrowing of funds to meet current expenditures of the Township of Puslinch fiscal year ending December 31, 2026.

By-law 2026-010 being a by-law to Stop Up, Close and Declare Surplus Part 1 R-Plan 61R-23192 of Road Allowance Between Lots 5 & 6, Concession 1 Township of Puslinch, North of Puslinch Lake & South of Little Lake, Township of Puslinch.

By-law 2026-011 being a by-law to authorize the entering into Purchase and Sale Agreement for the sale of a portion of an unopened road allowance and to enter into an encroachment agreement for 6 Lake Avenue.

13. **Announcements**

14. **Closed Session - Pursuant to Section 239 Subsection (2) of the Municipal Act, 2001 for the purpose of:**

14.1 **Confidential report regarding personal matters about an identifiable individual, including municipal or local board employees – Human Resources Matter**

14.2 **14.2 Confidential report regarding a proposed or pending acquisition or disposition of land by the municipality or local board – Potential Acquisition or Disposition**

14.3 **14.3 Confidential report regarding a proposed or pending acquisition or disposition of land by the municipality or local board – Township Road allowance**

14.4 **14.4 Confidential report regarding advice that is subject to solicitor-client privilege, including communications necessary for that purpose – Regulatory By-law**

14.5 **Confidential minutes from previous closed meetings:**

14.5.1 **March 4, 2026, Closed Council Meeting Minutes**

14.5.2 **March 13, 2026 Closed Council Meeting Minutes**

15. **Business Arising from Closed Session**

16. **Notice of Motion**

17. **New Business**

18. **Confirmatory By-law ≠**
18.1 BL2026-018 Confirm By-law – March 25, 2026

Recommendation:
That the following by-law be taken as read three times and finally passed in open Council:
By-law 2026-018 being a by-law to confirm the proceeding of Council for the Corporation of the Township of Puslinch at its meeting held on the 25th day of March 2026.

19. **Adjournment ≠**

M I N U T E S

DATE: March 13, 2026
CLOSED MEETING: Directly following Section 5
COUNCIL MEETING: 11:00 A.M.

The March 13, 2026 Special Council Meeting was held on the above date and called to order at 9:01 a.m. via electronic participation.

1. **CALL THE MEETING TO ORDER**

2. **ROLL CALL**

ATTENDANCE:

Councillor Sara Bailey
Councillor Russel Hurst - absent
Councillor Jessica Goyda
Councillor John Sepulis
Mayor James Seeley

STAFF IN ATTENDANCE:

1. Courtenay Hoytfox, CAO
2. Justine Brotherston, Director of Corporate Services/Municipal Clerk

3. **MOMENT OF REFLECTION**

4. **CONFIRMATION OF THE AGENDA**

Resolution No. 2026-082: Moved by Councillor Sepulis and Seconded by Councillor Goyda

That Council approves the March 13, 2026 Special Meeting Agenda as circulated.

CARRIED

5. **DISCLOSURE OF PECUNIARY INTEREST & THE GENERAL NATURE THEREOF:**
None

6. **CLOSED SESSION:**
Council was in closed session from 9:05 a.m. to 10:33 a.m.

The Clerk stopped the recording and removed all public attendees from the webinar. The webinar was then 'locked' so no new participants are able to join.

Resolution No. 2026-083: Moved by Councillor Bailey and Seconded by Councillor Goyda

That Council shall go into closed session under Section 239 of the Municipal Act for the purpose of:

6.1 Confidential report regarding advice that is subject to solicitor-client privilege, including communications necessary for that purpose – Potential OLT Matter

CARRIED

Resolution No. 2026-084: Moved by Councillor Sepulis and Seconded by Councillor Goyda

THAT Council moves into open session at 10:33 a.m.

CARRIED

Council resumed into open session at 10:33 a.m.

Resolution No. 2026-085: Moved by Councillor Sepulis and Seconded by Councillor Bailey

That Council receives the:

6.1 Confidential report regarding advice that is subject to solicitor-client privilege, including communications necessary for that purpose – Potential OLT Matter; and

That staff proceed as directed.

CARRIED

7. **BUSINESS ARISING FROM CLOSED SESSION:**
None

8. **BY-LAWS**

8.1 BL2026-016 Being a By-law to appoint an Interim Deputy Fire Chief

Resolution No. 2026-086: Moved by Councillor Goyda and Seconded by Councillor Sepulis

That the following By-law be taken as read three times and finally passed in open Council:

By-law 2026-016 being a by-law to appoint an interim deputy fire chief.

CARRIED

9. **CONFIRMATORY BY-LAW:**

9.1 BL 2026-017 being a by-law to confirm the proceedings of Council for the Corporation of the Township of Puslinch

Resolution No. 2026-087: Moved by Councillor Bailey and Seconded by Councillor Goyda

That the following By-law be taken as read three times and finally passed in open Council:

By-law 2026-017 being a by-law to confirm the proceedings of Council for the Corporation of the Township of Puslinch at its meeting held on the 13th day of March, 2026.

CARRIED

10. **ADJOURNMENT:**

Resolution No. 2026-088: Moved by Councillor Sepulis and Seconded by Councillor Goyda

That Council hereby adjourns at 10:35 a.m.

CARRIED

_____
James Seeley, Mayor

_____
Justine Brotherston, Municipal Clerk

M I N U T E S

DATE: March 4, 2026
CLOSED MEETING: Directly following Section 13. Announcements
COUNCIL MEETING: 10:00 A.M.

The March 4, 2026 Council Meeting was held on the above date and called to order at 10:00 a.m. via electronic participation and in-person at 7404 Wellington Rd, Puslinch.

1. CALL THE MEETING TO ORDER

2. ROLL CALL

ATTENDANCE:

Councillor Sara Bailey
Councillor Russel Hurst
Councillor Jessica Goyda
Councillor John Sepulis
Mayor James Seeley

STAFF IN ATTENDANCE:

1. Courtenay Hoytfox, CAO
2. Justine Brotherston, Director of Corporate Services / Municipal Clerk
3. Laura Emery, Manager of Corporate Services / Deputy Clerk
4. Mike Fowler, Director of Public Works, Parks and Facilities
5. Mary Hasan, Director of Finance/Treasurer
6. Jamie MacNeil, Fire Chief
7. Michael Chant, Deputy Fire Chief
8. Andrew Hartholt, CBO
9. Sarah Huether, Director of Community Services & Human Resources

3. MOMENT OF REFLECTION

4. CONFIRMATION OF THE AGENDA

Resolution No. 2026-055: Moved by Councillor Sepulis and Seconded by Councillor Goyda

That Council approves the March 4, 2026 Agenda and Addendum as circulated; and

That Council approves the additions to the agenda as follows:

Consent Item 6.1.6 Questions received from Council seeking additional information and the corresponding responses provided by staff regarding the March 4, 2026 Council agenda.

CARRIED

5. DISCLOSURE OF PECUNIARY INTEREST & THE GENERAL NATURE THEREOF:

Mayor Seeley declared a potential pecuniary interest related to item 10.3 County of Wellington Notice of Decision regarding Application for Approval of Draft Plan of Subdivision under Subsection 51(37) of Planning Act regarding 2081788 Ontario Corporation c/o Walter Broos, President (11 Main Street) as I own property adjacent to the development. As such, I would have an indirect interest, I cannot participate in any discussions concerning this property.

Councillor Goyda declared a potential pecuniary interest related to item 7.1.1 Delegation by Rob Stovel, Agent on behalf of Timberworx Custom Homes Inc., Sloot Construction Ltd., and John Sloot Investments

Ltd., regarding item 6.1.1 as the presentation is partially owned by my employer. As such, I may be considered to have a pecuniary interest and therefore will not participate in discussion or decision on this item.

Councillor Goyda declared a potential pecuniary interest related to item 9.4.5 Amended Report COR-2026-012 2025 Aggregate Compliance Assessment Reports Schedules L and Q are licences that are operated by a family member. As such, I may have a pecuniary conflict of interest in any discussion or decisions on the matter.

6. **CONSENT AGENDA**

6.1 Adoption and Receipt of the Minutes of the Previous Council and Committee Meetings:

- 6.1.1 February 11, 2026 Council Meeting Minutes
- 6.1.2 January 13, 2026 Planning and Development Advisory Committee Minutes
- 6.1.3 January 12, 2026 Youth Advisory Committee Minutes
- 6.1.4 November 19, 2025 Public Information Meeting Minutes
- 6.1.5 November 18, 2025 Recreation and Community Wellness Advisory Committee Minutes

6.2 AMO Policy Update - Submission on Municipal Environmental Assessments, Advocacy on Municipal Case Law, New Funding for Postsecondary Education
6.3 December 3, 2025 County of Wellington Joint Accessibility Advisory Committee Minutes
6.4 Municipality of Magnetawan Support Resolution regarding Federal broadband Funding
6.5 Prince Township Support Resolution regarding Support for Steel and Lumber Sectors
6.6 Township of Brudenell, Lyndoch and Ragland Support Resolution regarding Support for Steel and Lumber Sectors
6.7 Township of Perry Support Resolution Regarding Reduced Rate Distribution of Library Resources
6.8 Township of Cochrane OPP Detachment Board Support for Victim Crisis Assistance Program
6.9 City of Cambridge Notice of Adoption – Companion Official Plan Amendment No. 91
6.10 City of Cambridge Notice of Passing Phase 1 Comprehensive Zoning By-law
6.11 City of Guelph Notice of Public Open House #2 Gordon St from Clair Rd to Maltby Rd
6.12 City of Guelph Notice of Complete Application and Public Meeting 328 Victoria Rd and 588 Stone Rd E
6.13 City of Guelph Official Plan Amendment 113
6.14 City of Guelph Zoning By-law Amendment 2023-20790
6.15 City of Guelph Notice of Passing – Hanlon Creek Business Park Phase 3 Housekeeping Amendments
6.16 City of Guelph Notice of Adoption – Hanlon Creek Business Park Phase 3 Housekeeping Amendments
6.17 Puslinch Profile March 2026
6.18 Wellington County Ontario Provincial Police Detachment Board Report February 11, 2026

Resolution No. 2026-056: Moved by Councillor Goyda and
Seconded by Councillor Sepulis

That the Consent Agenda items listed for March 4, 2026 Council meeting be received for information with the exception of items 6.1.1, 6.2, 6.7 and 6.11.

CARRIED

Resolution No. 2026-057: Moved by Councillor Sepulis and
Seconded by Councillor Bailey

That the Consent Agenda item 6.1.1 listed for March 4, 2026 Council meeting be received for information; and

That Council direct staff to prepare a report for a future meeting outlining the changes to the provincial legislation and the implications to the by-law.

CARRIED

Resolution No. 2026-058: Moved by Councillor Sepulis and
Seconded by Councillor Hurst

That the Consent Agenda item 6.2 listed for March 4, 2026 Council meeting be received for information.

CARRIED

Resolution No. 2026-059: Moved by Councillor Bailey and
Seconded by Councillor Sepulis

That the Consent Agenda item 6.7 listed for March 4, 2026 Council meeting be received for information; and

That Council direct staff to send a support resolution accordingly.

CARRIED

Resolution No. 2026-060: Moved by Councillor Sepulis and
Seconded by Councillor Hurst

That Council received consent agenda item 6.11 City of Guelph Notice of Public Open House #2 Gordon St from Clair Rd to Maltby Rd for information; and,

That Council direct staff to request a presentation from the City of Guelph regarding Gordon Street and Clair Road Environmental Assessment & Infrastructure Preliminary Design Study specifically with respect to traffic coming into Puslinch.

CARRIED

7. **DELEGATIONS:**

7.1 Specific Interest (Items Listed on the Meeting Agenda)

7.1.1 Delegation by Rob Stovel, Agent on behalf of Timberworx Custom Homes Inc., Sloot Construction Ltd., and John Sloot Investments Ltd., regarding item 6.1.1

Councillor Goyda declared a potential pecuniary interest related to item 7.1.1 Delegation by Rob Stovel, Agent on behalf of Timberworx Custom Homes Inc., Sloot Construction Ltd., and John Sloot Investments Ltd., regarding item 6.1.1 as the presentation is partially owned by my employer and refrained from discussion and decision on this matter.

Resolution No. 2026-061: Moved by Councillor Sepulis and
Seconded by Councillor Hurst

That the Delegation by Rob Stovel, Agent on behalf of Timberworx Custom Homes Inc., Sloot Construction Ltd., and John Sloot Investments Ltd., regarding item 6.1.1 be received for information; and

Whereas the Township supports residential growth that is directed to designated settlement areas; and

Whereas Township Council supports, in principle, the Arkell residential development, subject to the requirements and processes of the *Planning Act*;

That Puslinch Council supports the inclusion of the Arkell settlement boundary expansion within Official Plan Amendment No. 131 to accommodate the proposed development, recognizing that the 50 residential units proposed for Arkell were incorporated into the residential land needs analysis forming part of the OPA 131 background work, provided that such inclusion does not result in a delay in the submission to the province of OPA 131; and

That Council request that should the County not include this in OPA 131, that the Arkell boundary expansion be included in the next Official Plan Amendment;

That Council requests confirmation from the County regarding this matter, including advice on whether the inclusion of the Arkell settlement boundary expansion would require a delay in the processing or approval of OPA 131.

CARRIED

7.2 General Interest (Items Not Previously Listed on the Meeting Agenda)

7.2.1 10:05 A.M. Delegation by Scott McNair, Hydro One Senior Advisor, Community Relations

Resolution No. 2026-062: Moved by Councillor Sepulis and Seconded by Councillor Hurst

That Council receives the delegation by Scott McNair, Hydro One Senior Advisor, Community Relations for information; and,

That Council direct staff to request that Hydro One establish a Technical Advisory Committee model for the Puslinch Transmission Line Project; and,

That Council direct staff to request that Hydro One agree pay for the Township's costs of any peer reviews for this project; and,

That Council direct staff to advise Hydro One of the potential impacts of this project on the lands identified as future employment lands through OPA 131, and specifically the power needs for the lands identified should OPA 131 be approved.

CARRIED

Council recessed from 12:35 p.m. to 1:09 p.m.

Roll Call
Councillor Goyda
Councillor Sepulis
Councillor Bailey
Councillor Hurst
Mayor Seeley

8. **PUBLIC MEETINGS:**
March 4, 2026 at 6:30 P.M. Open House held in-person at the Puslinch Community Centre (23 Brock Rd S) Community Improvement Plan (CIP) & Urban Design Guidelines Open House #2

9. **REPORTS:**

9.1 Puslinch Fire and Rescue Services

9.1.1 None

9.2 Finance Department

9.2.1 Report FIN-2026-0011 Rural Ontario Development Program – Community Development – Execution of Agreement

Resolution No. 2026-063: Moved by Councillor Hurst and Seconded by Councillor Goyda

That Report FIN-2026-011 entitled Rural Ontario Development Program-Community Development – Execution of Agreement be received; and,

That Council gives 3 readings to By-law No. 2026-008 being a By-law authorizing the entering into an Agreement with the Minister of Rural Affairs for the Rural Ontario Development Program-Community Development for Beautification and Streetscaping in Aberfoyle and Morriston.

CARRIED

9.3 Office of the CAO

9.3.1 Report CAO-2026-002 ROMA 2026 Conference Debrief

Resolution No. 2026-064: Moved by Councillor Goyda and
Seconded by Councillor Sepulis

That Report CAO-2026-002 entitled ROMA 2026 Conference Debrief be received for information; and

That Council direct the CAO and the Mayor to request a meeting with MPP Racinsky to discuss the delegation requests that were unsuccessful.

CARRIED

9.4 Corporate Services Department

9.4.1 Report COR-2026-008 2026 Municipal and School Board Election Key Dates and Restricted Acts

Resolution No. 2026-065: Moved by Councillor Hurst and
Seconded by Councillor Sepulis

That Report COR-2026-008 entitled 2026 Municipal and School Board Election Key Dates and Restricted Acts be received for information; and

That Council give three readings to By-law 2026-009 being a By-law to delegate authority to the CAO during the 2026 municipal election period in accordance with Section 275 of the Municipal Act, 2001.

CARRIED

9.4.2 Deferred to Future Council Meeting - Report COR-2026-009 Proposed Stop Up, Close and Declare Surplus a Portion of Lake Ave Road Allowance

9.4.3 Report COR-2026-010 Council and Committee Year in Review

Resolution No. 2026-066: Moved by Councillor Goyda and
Seconded by Councillor Sepulis

That Report COR-2026-010 entitled 2025 Council and Committee Year in Review be received for information; and,

That Council direct staff to distribute the 2025 Council and Committee Year in Review as outlined in the report.

CARRIED

9.4.4 Report COR-2026-011 Administrative Monetary Penalty System (AMPS) By-law Amendments – Ontario Regulation 260/25

Resolution No. 2026-067: Moved by Councillor Sepulis and
Seconded by Councillor Goyda

That Report COR-2026-011 entitled Administrative Monetary Penalty System (AMPS) By-law Amendments – Ontario Regulation 260/25 be received for information; and,

That Council defers the report and directs staff to report back on potential amendments to the by-law at a future meeting to incorporate the feedback from Council.

CARRIED

9.4.5 Amended Report COR-2026-012 2025 Aggregate Compliance Assessment Reports

Resolution No. 2026-068: Moved by Councillor Sepulis and Seconded by Councillor Hurst

That Report COR-2026-012 entitled Aggregate Compliance Assessment Reports be received for information; and,

That Council directed staff incorporate the following comments, as amended, within the Township's Compliance Assessment Report Tracker and that Council direct staff to contact the pit operator and MNR in accordance with the comments:

1) **Schedule A – Licence 5465**
    - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
        i. **That a new silt pond or wash out pit has been created in southwest portion of the site, where the site plan indicates there should be a coniferous plantation.**
        ii. **that the southwest portion of the property is being used as storage area for equipment and containers, which is not identified on the Site Plan. It is noted this is likely ancillary to the construction business located in the front zoned portion of the property.**
2) **Schedule AA – Licence 625710**
    - **Council directs staff to request the address for the pit location, rather than the latitude and longitude.**
    - **The Site Plan indicates that the site plan includes schematic of operations. Section D6 of the CAR Report does not indicate where the operator is currently operating within the sequence. Council directs staff to request this information from the pit operator.**
3) **Schedule B – Licence 5482**
    - **Council directs staff to notify the County of Wellington regarding the removal of the overburden identified in the 2025 CAR Report for this area to move into the Industrial Tax Classification.**
    - **Section D6 of the Car Report states that the operator is in compliance with phasing/sequencing of the site and does not indicate the current phasing/sequencing. Council Directs staff to request this information from the operator.**
    - **Section D7 does not previous disclosure which would add to the disturbed hectarage. Council directs staff to seek clarity regarding the areas where overburden have been removed.**
    - **Section C22 indicates that the operator is in compliance with importation of material. Operator did not indicate what material was imported. Council directs staff to seek additional information from the operator regarding what and how much material was imported in 2025.**
4) **Schedule C – Licence 5483**
    - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns that all ponds identified on the site plan in close proximity to the processing plan other the source pond and the settling pond are full. The settling pond appears to be 95% full.**
5) **Schedule D – Licence 5497**
    - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
        i. **That the silt pond identified on site plan indicates its location is the southeast corner and it appears the operator is currently filling in the northeast corner.**
        ii. **That the operator appears to be in violations of Site Note #9 which states there shall be no offsite discharge of processing water and currently there is water being discharged onto another site. Further, Site Note #9 also states the wash water will be contained in the siltation ponds located in the southeast corner and currently the operator is utilizing the created ponds as a waters source which is in violation of their site plans.**

iii. **That under section C14 which indicates the use of Rock Trucks for importing material from Lanci.**

6) **Schedule E – Licence 5514**
   - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns that there is no indication on the site plan of silt immediately adjacent to the processing plant, however creation of a silt pond is noted on satellite imagery.**
   - **C22 indicated that clear inert fill was imported to the site. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**
7) **Schedule F – Licence 5520**
   - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
     i. **That silt is being deposited into the McNally (5497) ponds from the southern portion (south of the 401) of the site. Silt fencing was installed due to previous site plan violation concern. Silt fence does not ensure the gradual placement of silt into McNally (5497).**
     ii. **That satellite imagery suggests that the site area immediately north of the water intake location could be utilized for silt deposition.**
   - **C22 operator did not indicate what material was imported to the site. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**
8) **Schedule G – Licence 5563**
   - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns with silt deposition on the site.**
   - **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**
9) **Schedule H – Licence 5609**
   - **Council directs staff to send the Township's concerns regarding material being exported from this site to the Mill Creek Pit (5738) in contravention of its site plan which states that material is to be processed at Aberfoyle Pit 1 (5483).**
10) **Schedule I – Licence 5610**
   - **Council directs staff to contact the operator regarding the fencing which requires repair along Wellington Road 32 and Concession Road 4 and request a timeline for when these repairs will be completed.**
   - **Council directs staff to request that the MNR remove Licence 5610 given the CAR report states that the site is fully rehabilitated.**
11) **Schedule J – Licence 5631**
   - **This site was previously not in compliance with the location of the stockpiles not meeting the setback requirements from the property line, however can MNR confirm if this was a violation and if MNR ordered the operator to address this.**
12) **Schedule K – Licence 5654**
   - **Council directs staff to request that the MNR remove Licence 5654 given the CAR report states that the site is fully rehabilitated.**
13) **Schedule M – Licence 5710**
   - **Council directs staff to advise the MNR and pit operator regarding the Township's concerns that the location of the asphalt plant, washing plant and washing ponds are not identified on the current site plan that the Township has on record.**
14) **Schedule N – Licence 5737**
   - **Council directs staff to request that the MNR remove Licence 5737 given this is a historic aggregate site with no aggregate activity, making it a property that is sheltered from Municipal By-laws.**
   - **Council directs staff to confirm the status of licensed area of the site, determine the ownership of the unlicensed area and report back to Council regarding the current taxation classification of the licensed and unlicensed areas of the site.**
15) **Schedule O – Licence 5738**

- **Importation of Material from Aberfoyle Pit 2 (5609) which explicitly states material to be processed at Aberfoyle Pit 1 (5483)**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
    i. **Regarding a potential silt pond in violation of site plan. The site plan that the Township has on file identifies the silt pond for "start-up" purposes.**
    ii. **That Dufferin utilizing the large pond as a passive silt deposition should require a major site plan amendment.**

16) **Schedule P – Licence 10671**
- **Council direst staff to request that Lafarge delegate at a future Council Meeting regarding why pit licence 10671 has not been surrendered given extraction has been completed at the site.**
- **Council direct staff to request that the MNR remove Licence 10671 given extraction is completed at the site.**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

17) **Schedule R – Licence 17600**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
    i. **That the site plans indication of the requirement for an 80 m setback for the extractive area at the southwest concern of the site, and the Township's understanding that the area has been stripped and operations are occurring within 5-10 metres of the property line.**
    ii. **Whether the berm on the site meets the requirements of the site plan.**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

18) **Schedule S – Licence 20012**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns that the site plan indicated that the processing plan is to be located on the north westerly corner of the site, however it is currently located on the southwest corner. Further, there are multiple processing plants/screening plants on site, whereas the site plan indicated one processing plan, asphalt plant and concrete plant are permitted.**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

19) **Schedule T – Licence 20085**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
    i. **With the scales being removed vehicles entering highways may be overloaded. Noncompliance of site plan by not having scales where the site plan indicates**
- **Council directs staff to notify the County of Wellington that the entire site is stripped with only 4.2 HA being progressively rehab as indicated in D2. ARB ruling indicates lands stripped but not yet rehab are in the industrial tax class, to ensure majority of the site is in the industrial tax class**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

20) **Schedule V – Licence 624864**

- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns regarding:**
    i. **Noncompliance as the satellite imagery suggests this site has been utilized as a silt pond commencing the end of 2018, which would require a major site plan amendment required. The Township request that the MNR order cessation of activity in the pond.**
    ii. **No extraction was identified on CAR report to explain water colour variation and it is an offence to submit CAR report not indicating the use of the pond as a silt pond or extraction activity on the license.**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**
- **Council direct staff to request the MNR release the site plan amendment that was submitted in February 2023 through the appropriate record process.**

21) **Schedule X – Licence 624952**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns regarding:**
    i. **The westerly berm has been removed which is not in compliance of the site plan.**
    ii. **How was the fish farming structure indicated on the site plan included? Was this done through an amendments or was it included on the original site plan at the time of zoning?**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

22) **Schedule Y – Licence 625189**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns regarding:**
    i. **The Township's Hydrogeologist raised concerns that the berms were breached, not constructed to the appropriate level.**
    ii. **The Silt barrier not functioning properly ongoing impacts to neighbours ponds and adjacent wet land**
    iii. **In the general comments section of the CAR report the operator states that the pit was active during the 2025 compliance assessment. CAR Reports indicate Section B is to be completed for inactive sites and it is an offense to submit a false CAR report.**
- **Council direct staff to request that the MNR remove Licence 625189 given the site is inactive.**

23) **Schedule Z – Licence 625284**
- **Council direct staff to confirm that the upgrades to the pit have been completed to prevent tracking of material onto the road.**
- **Council direct staff to have the appropriate consultant review the rear slope and setback on the site plan to determine if extraction is occurring on the southern setback.**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

24) **Schedule BB – Licence 626648**
- **Council direct staff to advise the MNR and pit operator regarding the Township's concerns:**
    i. **That structure 25 identified on the site plan as a woof frame stable is currently being used for commercial non-ancillary uses to the aggregate use of the property**

- **Council directs staff to notify the County of Wellington that the entire site is stripped with only 4.2 HA being progressively rehab as indicated in D2. ARB ruling indicates lands stripped but not yet rehab are in the industrial tax class, to ensure majority of the site is in the industrial tax class**
- **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

CARRIED

Councillor Goyda declared a potential pecuniary interest related to item 9.4.5 Amended Report COR-2026-012 2025 Aggregate Compliance Assessment Reports Schedules L and Q are licences that are operated by a family member. As such, I may have a pecuniary conflict of interest in any discussion or decisions on the matter and refrained from discussion and voting on the matter.

Resolution No. 2026-069: Moved by Councillor Sepulis and Seconded by Councillor Bailey

That Council directed staff incorporate the following comments within the Township's Compliance Assessment Report Tracker and that Council direct staff to contact the pit operator and MNR in accordance with the comments:

1) **Schedule L – Licence 5709**
   - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns that shipping containers are located on the westerly boundary of the property that are not included on the Site Plan.**
   - **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**
2) **Schedule Q – Licence 15338**
   - **Council direct staff to advise the MNR and pit operator regarding the Township's concerns regarding the additional building and storage containers located within the vicinity of the scale are not identified on the site plan.**
   - **C22 operator did not indicate what material was imported to the site for rehabilitation. Council directs staff to request either from the operator directly or through a Freedom of Information request to the Ministry, how much fill was imported, as well as the laboratory testing to demonstrate it met applicable excess soil standards.**

9.5 Building Department

9.5.1 Building Department Fourth Quarter Update – October to December 2025

Resolution No. 2026-070: Moved by Councillor Sepulis and Seconded by Councillor Goyda

That Report BLD-2026-001 entitled Building Department Fourth Quarter Update – October to December 2025 be received for information.

CARRIED

9.6 Public Works Department

9.6.1 None

9.7 Community Services and Human Resources Department

9.7.1 None

10. **CORRESPONDENCE:**

10.1 Presentation by Harden Environmental Services Limited regarding Multi-aquifer Wells and Transport Pathways Study

Resolution No. 2026-071: Moved by Councillor Hurst and
Seconded by Councillor Bailey

That Correspondence Item 10.1 Presentation by Harden Environmental Services Limited regarding Multi aquifer Wells and Transport Pathways Study be received for information; and

That Council endorse the recommendations made under section 10 of the report; and

That Council endorse the preparation of scope of work, by Source Water and Harden Environmental for a future study in order to be prepared for when funding is available; and

Whereas Council remains concerned with the current legislation framework which does not require encasing of multi aquifer wells for new development or retrofitting existing wells;

That Council direct staff to work with Source Water Protection, the member municipalities, the City of Guelph, and the Region of Waterloo regarding an action plan to advocate to the Province on this matter.

CARRIED

10.2 CBM Aberfoyle South Lake Pit Aggregate Resources Act Application 626630 - Objection Form

Resolution No. 2026-072: Moved by Councillor Bailey and
Seconded by Councillor Sepulis

That Correspondence Item 10.2 CBM Aberfoyle South Lake Pit Aggregate Resources Act Application 626630 - Objection Form be received for information; and,

That Council direct staff to prepare a draft response to the Aggregate Resources Act Application Objection Form to be reviewed at a special meeting of Council on Friday March 13 in advance of the final submission on by March 16, 2026.

CARRIED

10.3 County of Wellington Notice of Decision regarding Application for Approval of Draft Plan of Subdivision under Subsection 51(37) of Planning Act regarding 2081788 Ontario Corporation c/o Walter Broos, President (11 Main Street)

Mayor Seeley declared a potential pecuniary interest related to item 10.3 County of Wellington Notice of Decision regarding Application for Approval of Draft Plan of Subdivision under Subsection 51(37) of Planning Act regarding 2081788 Ontario Corporation c/o Walter Broos, President (11 Main Street) as I own property adjacent to the development and refrained from discussion and decision on this matter.

Resolution No. 2026-073: Moved by Councillor Goyda and
Seconded by Councillor Sepulis

That Correspondence Item 10.3 County of Wellington Notice of Decision regarding Application for Approval of Draft Plan of Subdivision under Subsection 51(37) of Planning Act regarding 2081788 Ontario Corporation c/o Walter Broos, President (11 Main Street) be received for information.

CARRIED

11. **COUNCIL REPORTS:**

11.1 Mayor' Updates

11.1.1 Mayor Seeley remarked on OPA 131 public meeting at the county of Wellington
11.1.2 Mayor Seeley provided information related to TAPMO initiates that Puslinch staff are supporting.

Resolution No. 2026-074: Moved by Councillor Hurst and
Seconded by Councillor Sepulis

That Council receive the Mayor's updates for information.

CARRIED

11.2 Council Member Reports

11.2.1 Councillor Hurst remarked on the past Heritage Committee meeting and the designation process to date.
11.2.2 Councillor Bailey remarked on the Whistle Stop Easter Breakfast on March 28, 2026.

Resolution No. 2026-075: Moved by Councillor Goyda and
Seconded by Councillor Sepulis

That Council receive the Councillor member updates for information.

CARRIED

12. **BY-LAWS:**

12.1.1 BL2026-008 Authorize Entering into Agreement with the Minister of Rural Affairs for the Rural Ontario Development Program-Community Development for the Beautification and Streetscaping in Aberfoyle and Morriston
12.1.2 BL2026-009 Delegate Authority to CAO during the 2026 Municipal Election Period
12.1.3 Deferred to Future Council Meeting BL2026-010 Stop up, Close and Declare Surplus Lake Ave Road Allowance
12.1.4 Deferred to Future Council Meeting BL2026-011 Authorize Entering into Purchase and Sale Agreement and enter into an Encroachment Agreement
12.1.5 BL2026-012 Amend Open Air Burning By-law 45/14
12.1.6 BL2026-013 Amend AMPS By-law 043-2025
12.1.7 BL2026-015 Appointment of an Interim Fire Chief

Resolution No. 2026-076: Moved by Councillor Hurst and
Seconded by Councillor Bailey

That the following By-laws be taken as read three times and finally passed in open Council:

12.1.1 BL2026-008 – Being a by-law to Authorize Entering into Agreement with the Minister of Rural Affairs for the Rural Ontario Development Program-Community Development for the Beautification and Streetscaping in Aberfoyle and Morriston

12.1.2 BL2026-009 – Being a By-law to Delegate Authority to CAO during the 2026 Municipal Election Period

12.1.7 BL2026-0015 – Being a by-law to Appointment of an Interim Fire Chief

CARRIED

13. **ANNOUNCEMENTS:**

None

14. **CLOSED SESSION:**

Council was in closed session from 2:45 p.m. to 3:15 p.m.

The Clerk stopped the recording and removed all public attendees from the webinar. The webinar was then 'locked' so no new participants are able to join.

Resolution No. 2026-077: Moved by Councillor Bailey and
Seconded by Councillor Sepulis

That Council shall go into closed session under Section 239 of the Municipal Act for the purpose of:

14.1 Confidential report regarding personal matters about an identifiable individual, including municipal or local board employees – Volunteer of the Year Nominations

14.2 Confidential report regarding a position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board – Procurement Request

14.3 Confidential minutes from previous closed meetings:
14.3.1 February 11, 2026, Closed Council Meeting Minutes

CARRIED

Resolution No. 2026-078: Moved by Councillor Bailey and
Seconded by Councillor Sepulis

That Council moves into open session at 3:15 p.m.

CARRIED

Council resumed into open session at 3:15 p.m.

Resolution No. 2026-079: Moved by Councillor Sepulis and
Seconded by Councillor Goyda

That Council receives the:

14.1 Confidential report regarding personal matters about an identifiable individual, including municipal or local board employees – Volunteer of the Year Nominations

14.2 Confidential report regarding a position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board – Procurement Request

14.3 Confidential minutes from previous closed meetings:
14.3.1 February 11, 2026, Closed Council Meeting Minutes

That staff proceed as directed.

CARRIED

15. **BUSINESS ARISING FROM CLOSED SESSION:**
None

16. **NOTICE OF MOTION:**
None

17. **NEW BUSINESS:**
None

18. **CONFIRMATORY BY-LAW:**

18.1 By-Law to confirm the proceedings of Council for the Corporation of the Township of Puslinch

Resolution No. 2026-080: Moved by Councillor Hurst and

Seconded by Councillor Sepulis

That the following By-law be taken as read three times and finally passed in open Council:

By-law 2026-014 being a by-law to confirm the proceedings of Council for the Corporation of the Township of Puslinch at its meeting held on the 4 day of March 2026.

CARRIED

19. **ADJOURNMENT:**

Resolution No. 2026-081: Moved by Councillor Goyda and
Seconded by Councillor Bailey

That Council hereby adjourns at 3:16 p.m.

CARRIED

_____
James Seeley, Mayor

_____
Justine Brotherston, Clerk

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH
FEBRUARY 10, 2026
PLANNING AND DEVELOPMENT ADVISORY COMMITTEE MEETING
IN-PERSON AND VIRTUAL MEETING BY ELECTRONIC PARTICIPATION
7404 WELLINGTON RD. 34

M I N U T E S

DATE: February 10, 2026
MEETING: 7:00 PM

The February 10, 2026 Planning and Development Advisory Committee Meeting was held on the above date and called to order at 7:00 p.m. via electronic participation and in-person at 7404 Wellington Road 34, Puslinch.

1. CALL THE MEETING TO ORDER

2. ROLL CALL

ATTENDANCE:

PRESENT:
Councilor John Sepulis, Chair
Chris Pickard
Kirolous Attia
Paul Sadhra

ABSENT:
Kim McCarthy

STAFF IN ATTENDANCE:
Monika Farncombe, Planning & Corporate Services Coordinator

3. MOMENT OF REFLECTION

4. CONFIRMATION OF THE AGENDA

Resolution No. 2026-005: Moved by Committee Member Kiro Attia and Seconded by Committee Member Chris Pickard

That the Committee approves the February 10, 2026, PDAC Agenda as circulated;

CARRIED

5. DISCLOSURE OF CONFLICT OF INTEREST:

6. CONSENT AGENDA

6.1 Approval of the Minutes January 13, 2026
6.2 Acknowledgment of Council Resolution No. 2025-421 regarding Report COR-2025-421 Procedural By-law Amendment

Resolution No. 2026-006: Moved by Committee Member Paul Sadhra and Seconded by Committee Member Kiro Attia

That the Planning and Development Advisory Committee approves the Minutes from the meeting held January 13, 2026, and acknowledges Council Resolution No. 2025-421 regarding COR-2025-421 Procedural By-law Amendment.

CARRIED

7. DELEGATIONS

8. NOTICE OF PUBLIC MEETINGS/HEARINGS

None

9. REPORTS

9.1. LAND DIVISION (Consents)

9.1.1 B87-25 -Sched, Margarete– Sideroad 10 S, Part Lot 11, Concession Gore, Township of Puslinch

Proposed severance is 60m fr x 205m = 1.2 hectares, vacant land for proposed rural residential use.

Retained parcel is 60m fr x 209m = 1.3 hectares, vacant land for proposed rural residential use.

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH
FEBRUARY 10, 2026
PLANNING AND DEVELOPMENT ADVISORY COMMITTEE MEETING
IN-PERSON AND VIRTUAL MEETING BY ELECTRONIC PARTICIPATION
7404 WELLINGTON RD. 34

Resolution No. 2026-007: Moved by Committee Member Chris Pickard and Seconded by Committee Member Paul Sadhra

That the Committee supports Severance Application B87-25 subject to the following condition(s):

1. That the Owner satisfy all the requirements of the Township of Puslinch, financial and otherwise (including but not limited to taxes paid in full and Consent Review and Safe Access Clearance Fees), which the Township may deem necessary at the time of issuance of the Certificate of Consent for the proper and orderly development of the subject lands; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.

2. That the Owner obtain zoning compliance for both the severed and retained parcels to the satisfaction of the Township of Puslinch; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.

3. That any fees incurred by the Township of Puslinch for the review of this application, including costs associated with the retention of subconsultants, will be the responsibility of the applicant/Owner. This condition will not be cleared until any and all fees have been paid to the Township of Puslinch, upon receipt of any and all fees being paid; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.

4. That the Owner enters into a Development Agreement with the Township of Puslinch for the purpose of peer review and implementation of the Environmental Impact Study to ensure compliance with the EIS including cost recovery, ensuring all requirements and recommendations within the EIS are addressed to the satisfaction of the Township; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.

5. That the Owner submit a pre-development site plan to the satisfaction of the Township of Puslinch identifying the proposed dwelling location, driveway, well and septic system on each parcel, including building envelopes with sufficient MDS separations, setbacks from property lines, environmental features and topographic constraints; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.

CARRIED

9.1.2 B89-25 -Wall, Sheryl– 4078 Highway 6, Part Lot 36 & Pt Road Allowance B/w Lot 36, Concessions 7 & 8, Township of Puslinch

Proposed lot line adjustment is 22m ft x 117m = 0.26 hectares vacant land to be added to abutting rural residential lot – Gaudet/Kemp

Retained parcel is 3.2 hectares with 189m frontage, existing and proposed rural residential use with existing dwelling.

Resolution No. 2026-008: Moved by Committee Member Kiro Attia and Seconded by Committee Member Chris Pickard

That the Committee supports Severance Application B89-25 subject to the following condition(s):

1. **That the Owner satisfy all the requirements of the Township of Puslinch, financial and otherwise (including but not limited to taxes paid in full and Consent Review and Condition Clearance Fees), which the Township may deem necessary at the time of issuance of the Certificate of Consent; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.**
2. **That the Owner obtain zoning compliance for both the merged and retained parcels including but not limited to item 2.1 to the satisfaction of the Township of Puslinch; and further that the Township file a letter of clearance with the Secretary-Treasurer of the Planning and Land Division Committee.**

    2.1. That the Owner submit a Zoning By-law Amendment Application to remove the (A-sp99) zone from the severed parcel to resolve the split zoning and bring the parcel into zoning compliance

3. **That any fees incurred by the Township of Puslinch for the review of this application,**

including costs associated with the retention of subconsultants, will be the responsibility of the applicant. This condition will not be cleared until any and all fees have been paid to the Township of Puslinch and a letter of clearance of this condition is received by the Secretary Treasurer of the Land Division Committee from the Township of Puslinch.

CARRIED

9.2 ZONING BY-LAW AMENDMENT APPLICATIONS

None

9.3. STAFF REPORTS

None

10. CORRESPONDENCE

None

11. NEW BUSINESS

None

12. ADJOURNMENT

Resolution No. 2026-009: Moved by Committee Member Paul Sadhra
Seconded by Committee Member Chris Pickard

That the Planning and Development Advisory Committee hereby adjourned at 7:06 p.m.

CARRIED.

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH
JANUARY 13 ,2026 COMMITTEE OF ADJUSTMENT MEETING
VIRTUAL MEETING BY ELECTRONIC PARTICIPATION & IN PERSON
AT 7404 WELLINGTON RD. 34

M I N U T E S

DATE: January 13, 2026
MEETING: 7:00 p.m.

The October 14, 2025 Committee of Adjustment Meeting was held on the above date and called to order at 7:00 p.m. via electronic participation and in-person at 7404 Wellington Road 34, Puslinch.

1. CALL THE MEETING TO ORDER

2. ROLL CALL

ATTENDANCE:

PRESENT:
Councilor John Sepulis, Chair
Kim McCarthy
Chris Pickard
Kiro Attia

ABSENT:
Paul Sadhra

STAFF IN ATTENDANCE:
Monika Farncombe, Planning & Corporate Services Coordinator
Justine Brotherston, Director of Corporate Services & Municipal Clerk

3. MOMENT OF REFLECTION

4. CONFIRMATION OF THE AGENDA

Resolution No. 2026-001: Moved by Committee Member Chris Pickard and Seconded by Committee Member Kim McCarthy

That the Committee approves the January 13, 2026 Agenda and addendum as circulated; and

That the Committee approves the addition to the agenda as follows:

- **Consent Item 6.2 Question received from the Committee seeking additional information and the corresponding responses provided by Staff regarding the January 13, 2026 Committee of Adjustment agenda.**

CARRIED.

5. DISCLOSURE OF CONFLICT OF INTEREST:

None

6. CONSENT AGENDA

6.1 Approval of the Minutes

6.1. October 14, 2025 Committee of Adjustment Meeting Minutes.

6.2 Committee Questions and Corresponding responses from staff

Resolution No. 2026-002: Moved by Committee Member Kiro Attia and Seconded by Committee Member Kim McCarthy

That the Consent Agenda Items listed for the January 13, 2026 Committee meeting be received for information.

CARRIED.

7. APPLICATIONS FOR MINOR VARIANCE OR PERMISSION under section 45 of the Planning Act to be heard by the Committee this date:

7.1 Minor Variance Application D13-MAS – Mast, Deborah & Richard – 4225 Sideroad 25 S, Township of Puslinch

Requesting relief of New Comprehensive Zoning By-law # 23-2018, as amended, from Section 11.4, Table 11.3 to allow a reduced lot frontage of 20 meters for a Reduced Agricultural Lot, instead of 25 meters as required.

Resolution No. 2026-003: Moved by Committee Member Kiro Attia and Seconded by Committee Member Kim McCarthy

That Report D13-2026-002 entitled Minor Variance Application D13-MAS be received for information; and

Whereas the Applicant is proposing to permit a reduced lot frontage for the retained parcel as a result of an approved severance (B30-25); and

Whereas this application is required as a condition of consent application B30-25 that was approved in October 2025 at the County of Wellington (Land Division Committee) Meeting; the consent application would sever 0.78 hectares of land with an existing dwelling; resulting in a frontage of the retained vacant parcel being 20 metres and a lot area of 2.45 hectares; and

Whereas the variance requested would provide relief from Section 11.4 (Reduced Agricultural lot requirements) of the Township of Puslinch Zoning By-law 2018-023 (Zoning By-law), to permit a minimum lot frontage of 20.0 metres whereas 25.0 metres is required under table 11.3 of Zoning By-law; and

Whereas, the minor variance application would maintain the general intent and purpose of the County of Wellington Official Plan (Official Plan) and Zoning By-law, and is desirable and appropriate for the development of the subject property; and

Therefore, that planning staff consider the request to be minor and have no concerns with the application.

CARRIED.

7.2 Minor Variance Application D13-SYE- Syed, Nasar- 6551 Ellis Rd, Township of Puslinch

Requesting relief of New Comprehensive Zoning By-law # 23-2018, as amended, from Section 4.10(a) to permit a building height of 14.4 metres for a single family dwelling whereas a maximum height of 10 metres is required.

Requesting relief of New Comprehensive Zoning By-law # 23-2018, as amended, from Section 4.10 To permit a non-habitable rooftop structure with a total height of 16.34 metres, whereas 16.0 metres is permitted.

. **Resolution No. 2026-004:** Moved by Committee Member Chris Pickard and Seconded by Committee Member Kiro Attia

That Report D13-2026-001 entitled Minor Variance Application D13-SYE be received for information; and

Whereas the Owner is proposing a development which includes a building exceeding the maximum permitted height for a building and a non-habitable rooftop structure; and

Whereas variances requested would provide relief from Section 4.10 (Height Restrictions) of the Township of Puslinch Comprehensive Zoning By-law 2018-023 (Zoning By-law), to permit a building height of 14.1 metres where a maximum of 10.0 metres is permitted and to permit a non-habitable rooftop structure (mechanical penthouse) resulting in total height of 16.34 metres where a maximum of 16 metres is permitted.

Whereas, the minor variance application would maintain the general intent and purpose of the County of Wellington Official Plan (Official Plan) and Zoning By-law, and is desirable and appropriate for the development of the subject property;

Therefore, that planning staff consider the request to be minor and have no concerns with the application.

CARRIED.

7.3 Minor Variance Application D13-HEJ – He, Jing Wen – 7123 Smith Rd, Township of Puslinch

Requesting relief of New Comprehensive Zoning By-law # 23- 2018, as amended, from Section 4.4.2, Table 4.1 to permit a maximum lot coverage for accessory buildings and structures of 287.5m^2 instead of 200 m^2 as required.

Resolution No. 2026-005: Moved by Committee Member Chris Pickard and Seconded by Committee Member Kim McCarthy

That Report D13-2026-003 entitled Minor Variance Application D13-HEJ be received for information; and

Whereas, the Applicant is proposing to increase accessory building coverage to accommodate a proposed storage shed and covered area accessory to the existing dwelling; and

Whereas the variance requested would provide relief from Section 4.4 (Accessory Uses, Building and Structures) Table 4.1 of the Township of Puslinch Comprehensive Zoning By-law 2018-023, as amended, to permit a total accessory building lot coverage of approximately 288 square metres, whereas a maximum of 200 square metres is permitted; and

Whereas the minor variance application would maintain the general intent and purpose of the Zoning By-law and is desirable and appropriate for the development of the subject property;

Therefore, that planning staff recommends approval of the application with the following conditions:

1. **That the owner demonstrate zoning compliance for the property to the satisfaction of the Township.**

CARRIED.

7.4 Minor Variance Application D13-PHI– Philp, David – 6 Pavillion PVT, Township of Puslinch

Requesting relief of New Comprehensive Zoning By-law # 23-2018, as amended, Section 14.0 Site-Specific Special Provisions, Table 14.1 Site Specific Special Provisions, No. 86 to permit a total lot coverage of 43% instead of the maximum 35% as required.

Requesting relief of New Comprehensive Zoning By-law # 23-2018, as amended, Section 14.0 Site-Specific Special Provisions, Table 14.1 Site Specific Special Provisions, No. 86 to allow for a front yard setback of 2.1 metres instead of the 3 metres as required.

Resolution No. 2026-006: Moved by Committee Member Chirs Pickard and Seconded by Committee Member Kiro Attia

That Report D13-2026-004 entitled Minor Variance Application D13-PHI be received for information; and

Whereas the Applicant is proposing to construct new awnings which would be connected to the existing roof structure on the principal dwelling; and

Whereas, the variance requested would provide relief from Section 14, Table 14.1, Site-Specific Special Provisions No. 86 of Township Comprehensive Zoning By-law 2018-023, as amended (Zoning By-law), requesting permission to allow a reduced

front yard setback of 2.1 metres for a single detached dwelling instead of 3.0 metres and a lot coverage of 43% instead of 35%; and

Whereas, the minor variance application would maintain the general intent and purpose of the County of Wellington Official Plan (Official Plan) and Zoning By-law, and is desirable and appropriate for the development of the subject property;

Therefore, that planning staff consider the request to be minor and have no concerns with the application.

CARRIED.

8. NEW BUSINESS
None

9. Staff Reports
None

9. ADJOURNMENT

Resolution No. 2026-007: Moved by Committee Member Kiro Attia and Seconded by Committee Member Chris Pickard

That the Committee of Adjustment hereby adjourns at 8:20 p.m.

CARRIED.

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH
JANUARY 12, 2026 HERITAGE ADVISORY COMMITTEE MEETING
VIRTUAL MEETING BY ELECTRONIC PARTICIPATION
& IN-PERSON AT 7404 WELLINGTON RD 34

MINUTES

DATE: January 12, 2026
CLOSED MEETING: 1:05 P.M.
MEETING: 1:00 P.M.

The January 12, 2026, Heritage Advisory Committee meeting was held on the above date and called to order at 1:02 p.m. via in person participation at the Municipal Office at 7404 Wellington Road 34 and via electronic participation.

1. CALL THE MEETING TO ORDER

2. ROLL CALL

Attendance:
Russel Hurst - Chair
Lily Klammer-Tsuji
Cheryl Mclean
Andy Day
Kristine O'Brien
Ray Smith

Absent:

Staff in Attendance:
Laura Emery, Manager of Corporate Services/Deputy Clerk

3. MOMENT OF REFLECTION

4. CONFIRMATION OF THE AGENDA

Resolution No. 2026-001: Moved by Lily Klammer-Tsuji and Seconded by Andy Day

That the Heritage Advisory Committee approves the January 12, 2026 Agenda as circulated.

CARRIED

5. DISCLOSURE OF CONFLICT OF INTEREST:

None

6. DELEGATIONS

None

7. CONSENT AGENDA

7.1. December 1, 2025 Heritage Advisory Committee Meeting Minutes
7.2. Township of Puslinch Council Resolution 2025-380 Insurance Challenges for Buildings Designated under the Ontario Heritage Act

Resolution No. 2026-002: Moved by Kristine O'Brien and Seconded by Cheryl Mclean

That the Consent Agenda item listed for the January 12, 2026 Heritage Advisory Committee meeting be received for information.

CARRIED

8. COMMITTEE AND STAFF REPORTS

8.1 Report – HER-2026-001 – 2022-2026 Goals and Objectives Update

Resolution No. 2025-003: Moved by Kristine O'Brien and Seconded by Andy Day

That Report HER-2026-001 entitled 2022-2026 Goals and Objectives Update be received for information.

CARRIED

8.2 Report – HER-2026-001 - Heritage Designation Objection

Resolution No. 2026-004: Moved by Lily Klammer-Tsuji and Seconded by Andy Day

That Report HER-2026-002 entitled Heritage Designation Objection be received; and,

That the Committee defer the recommendation for designation of 4402 Concession 11.

CARRIED

9. CLOSED SESSION:

The Committee was in closed session from 1:06 p.m. to 1:54 p.m.

The Deputy Clerk stopped the recording and removed all public attendees from the webinar. The webinar was then 'locked" so no new participates are able to join.

Resolution No. 2026-005: Moved by Kristine O'Brien and Seconded by Andy Day

That the Heritage Advisory Committee shall go into closed session under section 239 of the Municipal Act for the purpose of:

9.1 Confidential report regarding litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local boards – Potential matters heard by Ontario Land Tribunal

9.2 Confidential minutes from previous closed meetings:

9.2.1 December 1, 2025, Closed Meeting Minutes

CARRIED

Resolution No. 2026-006: Moved by Kristine O'Brien and Seconded by Lily Klammer-Tsuji

That the Heritage Advisory Committee moves into open session at 1:54 p.m.

CARRIED

Heritage Advisory Committee resumed open session at 1:54 p.m.

Resolution No. 2026-007: Moved by Ray Smith and Seconded by Cheryl McLean

That the Heritage Advisory Committee receives the:

9.1 Confidential report regarding litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local boards – Potential matters heard by Ontario Land Tribunal.

9.2 Confidential minutes from previous closed meetings:

9.2.1 December 1, 2025, Closed Meeting Minutes; and,

That staff proceed as directed.

CARRIED

10. CORRESPONDENCE

None

11. ANNOUNCEMENTS

Committee member Cheryl McLean informed the Committee that the Puslinch Historical Society met on Saturday January 10. They are currently focusing their work on ancestry and reviewing an inventory of historical books.

Committee chair Councillor Hurst reminded the Committee of the Ontario Heritage Conference June 18th to 20th, 2026 in Hamilton, ON. Committee members were reminded to look at their schedules and to inform the Committee Secretary if they have interest in going prior to the March Committee meeting.

12. NOTICE OF MOTION

None

13. NEW BUSINESS

None

14. ADJOURNMENT

Resolution No. 2026-008: Moved by Krstine O'Brien
Seconded by Andy Day

That the Heritage Advisory Committee hereby adjourns at 2:13 p.m.

CARRIED

Tamara Russell Barr

From: Fera, Shannon (MNR) <Shannon.Fera@ontario.ca>
Sent: March 2, 2026 1:42 PM
To: Fera, Shannon (MNR)
Cc: Adey, Lizzie (MNR)
Subject: Black bear proposal - additional feedback request
Attachments: For municipalities - Black bear proposal - additional feedback request - 27 FEB 2026.pdf

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Greetings,

The ministry recently posted the proposal to update the province's black bear management approach on the Environmental Registry of Ontario (ERO), which closed January 5, 2026. During that feedback period we received valuable feedback from individuals and groups related to municipal perspectives on black bear management.

I am reaching out again to ensure we have captured the full range of considerations across different areas of the province. I recognize that the timing of the posting may not have allowed all interested groups sufficient opportunity to provide meaningful or local-specific feedback. To ensure the proposal accurately reflects the views and experiences of municipalities, the ministry welcomes any additional comments you may wish to share.

I have attached a PDF that provides a high-level detail on the components of the proposal with a focus on the *preliminary black bear Population Objectives* for areas across the province. If possible, we are looking for additional, local information to help us inform those population objectives.

If it would be helpful, I am happy to set up a meeting to walk through the materials and/or to clarify this request. If you'd like to share any additional comments, please respond to this email with feedback by **March 16th**.

Thanks for your time,
Shannon

Shannon Fera
Senior Wildlife Policy Advisor | Fish and Wildlife Policy Branch
Ministry of Natural Resources | Ontario Public Service
705-772-8508 | shannon.fera @ontario.ca

Ontario

Taking pride in strengthening Ontario, its places and its people

Proposal to Update the Province's Black Bear Management Approach

Additional feedback request to municipalities for local information to support the development of population objectives

ERO # 025-0761

Ministry of Natural Resources

February 27, 2026

Ontario

Proposal consultation period

Proposal to update the province's black bear management approach

ERO number	025-0761
Notice type	Policy
Act	Fish and Wildlife Conservation Act, 1997
Posted by	Ministry of Natural Resources
Notice stage	Proposal
Proposal posted	November 21, 2025
Comment period	November 21, 2025 - January 5, 2026 (45 days) Closed
Last updated	November 21, 2025

This consultation was open from:

November 21, 2025 to January 5, 2026

Follow this notice

Proposal summary

We are seeking feedback on draft *Black Bear Population Objective Setting and Harvest Management Guidelines* and preliminary population objective ranges. We are also proposing regulatory amendments to extend protections for cubs and females accompanied by cubs to the fall hunting season and to clarify the prohibition on the possession of bear bile.





Population Objective Setting and Harvest Management Guidelines

Regulatory amendments

*Please see appendix for more information about the full proposal

This proposal is in the feedback-gathering and review stage and will be adjusted based on comments.

Ontario

Overview: Black Bear Management in Ontario

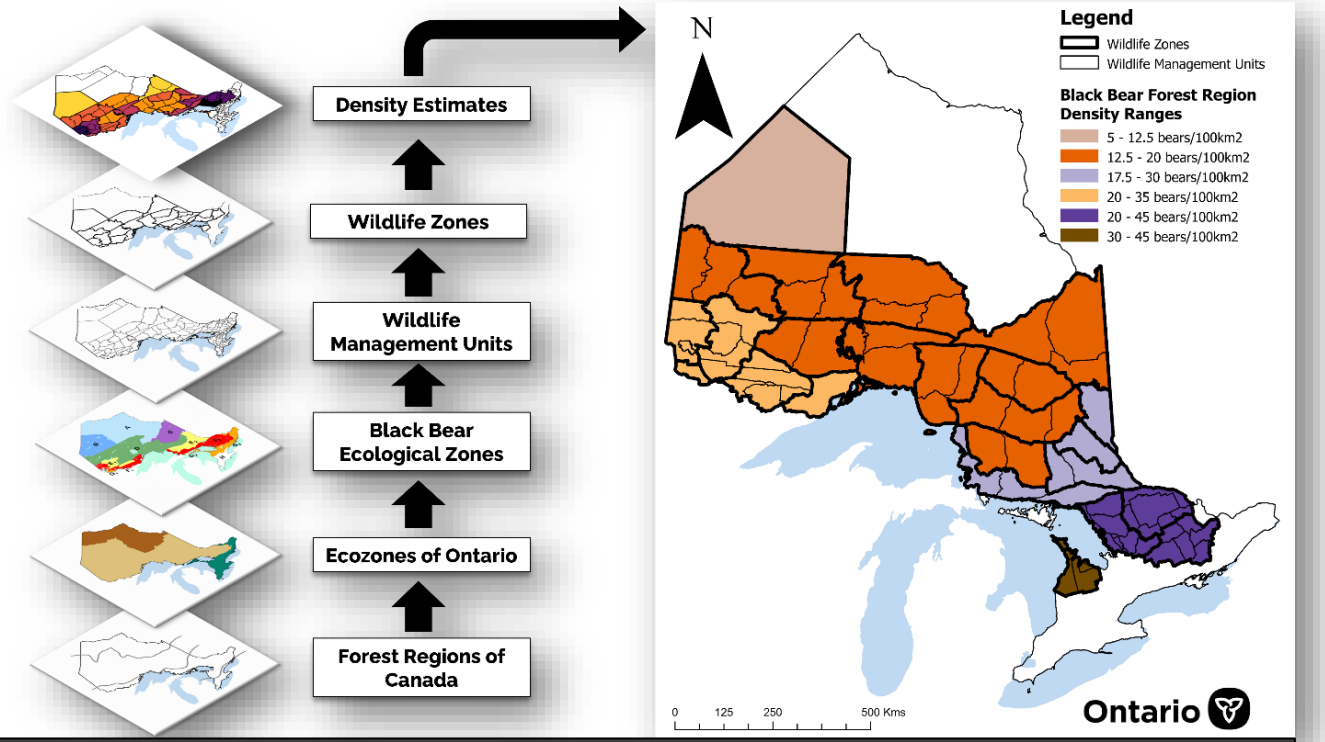
Current Approach

- No Population Objectives for black bear
- Open allocation for residents
- Limited management tools to adjust harvest pressure
- Inconsistent distribution of hunting opportunities within the tourism industry

Proposed Approach

- Population Objectives are established for black bears
- Population Objectives inform resident allocation
- Additional management tools available to respond to new information
- Area-based allocation for operators (quota matches proportional land area)

How the Preliminary Population Objectives were Developed



More details can be found in the *Black Bear Preliminary Population Objective Ranges* document (click image to take you to the document)

The preliminary objectives were **developed in wildlife zones where bears are mostly found**, aligning closely to the forested Ontario Shield Ecozone.

To estimate how many bears each zone could support, we used two main pieces of information:

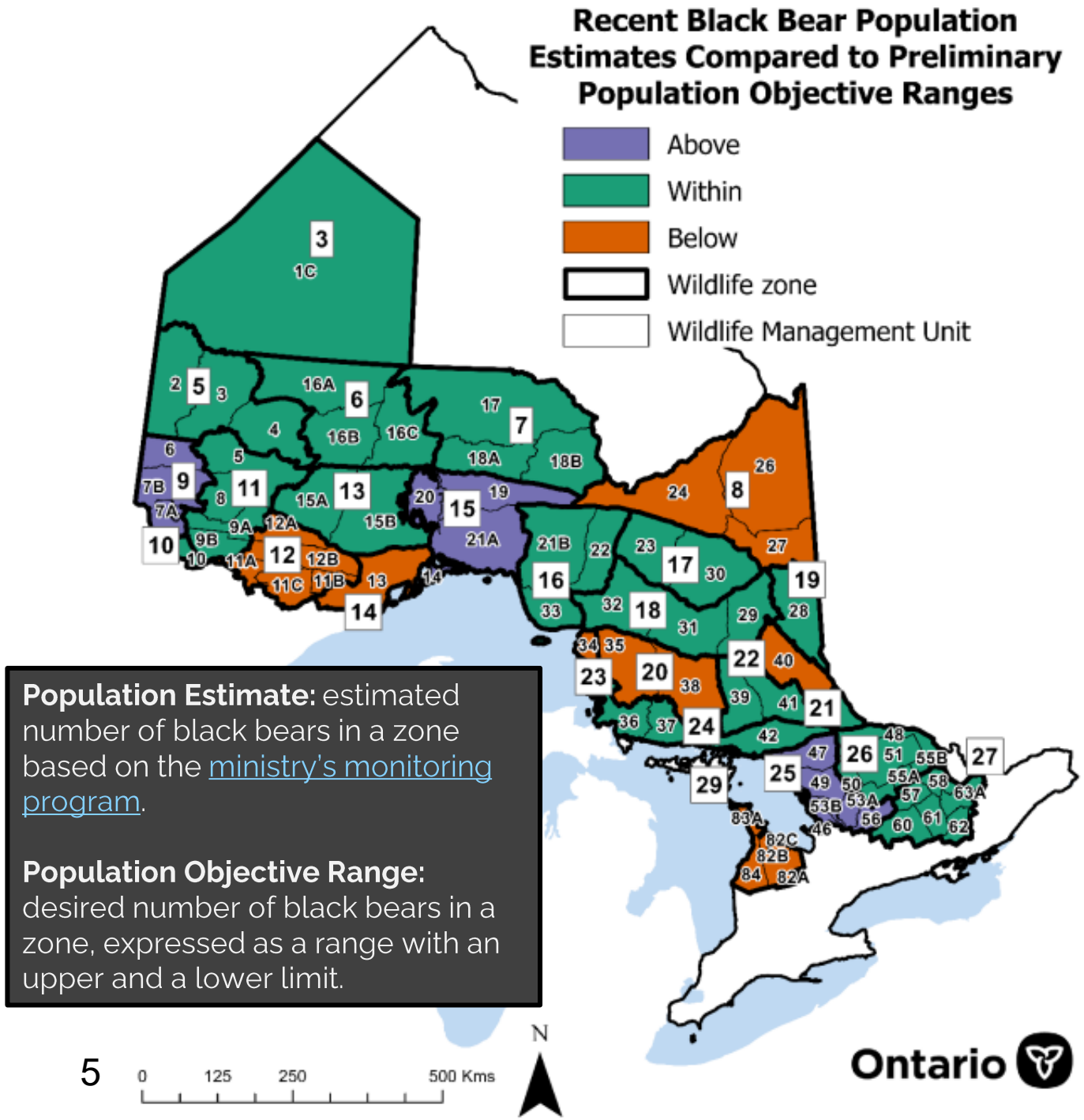
1. **How many bears** typically live in a zone, and
2. **How much suitable bear habitat** exists in each zone

Suitable bear habitat is tied to habitat productivity, which varies across Ontario. Some zones have very productive forests, while others have less productive or more mixed habitats in relation to the needs of bears. Using information from forest and ecological maps, zones with similar habitat quality were given the same range of **bear forest region density ranges**.

These forest region density ranges are then multiplied by the area of suitable habitat in each zone, to get a preliminary Population Objective Range.

Ontario

Preliminary Population Objectives



Population Estimate: estimated number of black bears in a zone based on the ministry's monitoring program.

Population Objective Range: desired number of black bears in a zone, expressed as a range with an upper and a lower limit.

At the provincial level, our monitoring program is indicating that Ontario's black bear population is stable. However, there are some regional differences.

This map displays how each zone's recent population estimate compares to its preliminary population objective range:

Zones Within the objective are areas where the number of bears may be what is desired.

Zones Above the objective are areas where the number of bears may be higher than desired.

Zones Below the objective are areas where there may be fewer bears than desired.

Ontario

Why your feedback matters

A key component of the proposal is establishing black bear **Population Objectives** across the province**,** because the final objectives would guide harvest management decisions. The ministry developed **preliminary objectives** based on ecological information – how many bears the habitat and landscape in each zone can support – which gives us **an initial, science-informed range** for each zone.

To finalize the objectives, we are asking:

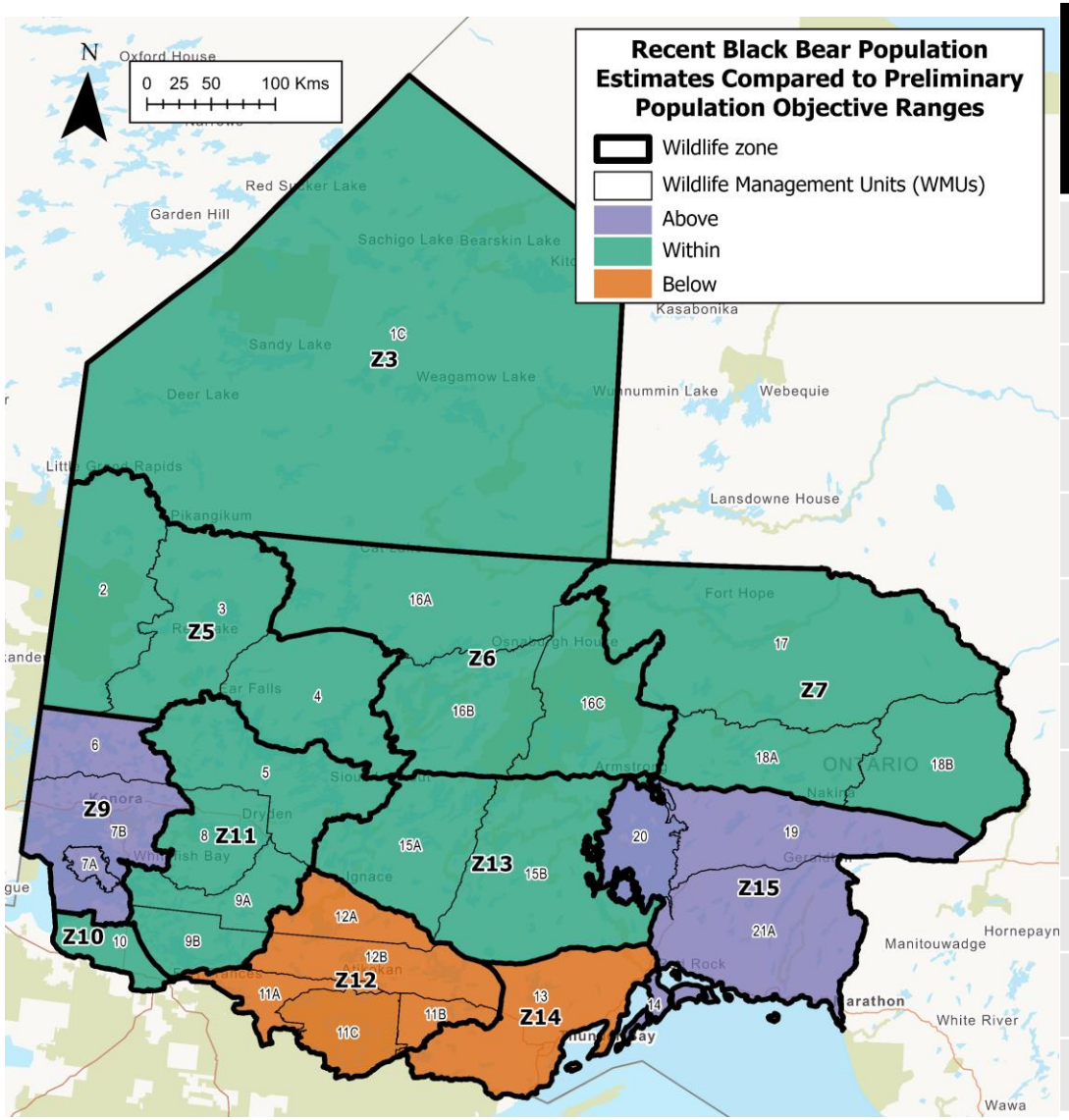
What **social, cultural, or economic considerations** – such as community priorities, tourism, land use, or local safety concerns – should the ministry be aware of in your area?

As you review the preliminary objectives in your area, consider the recent black bear population estimate and whether the lower and upper range of the objective reflect your experience and knowledge with bears in your area.

Your input – especially when it includes **local, measurable, and/or experience-based insight** – can help refine these objectives to reflect the values and realities of each zone.

Ontario

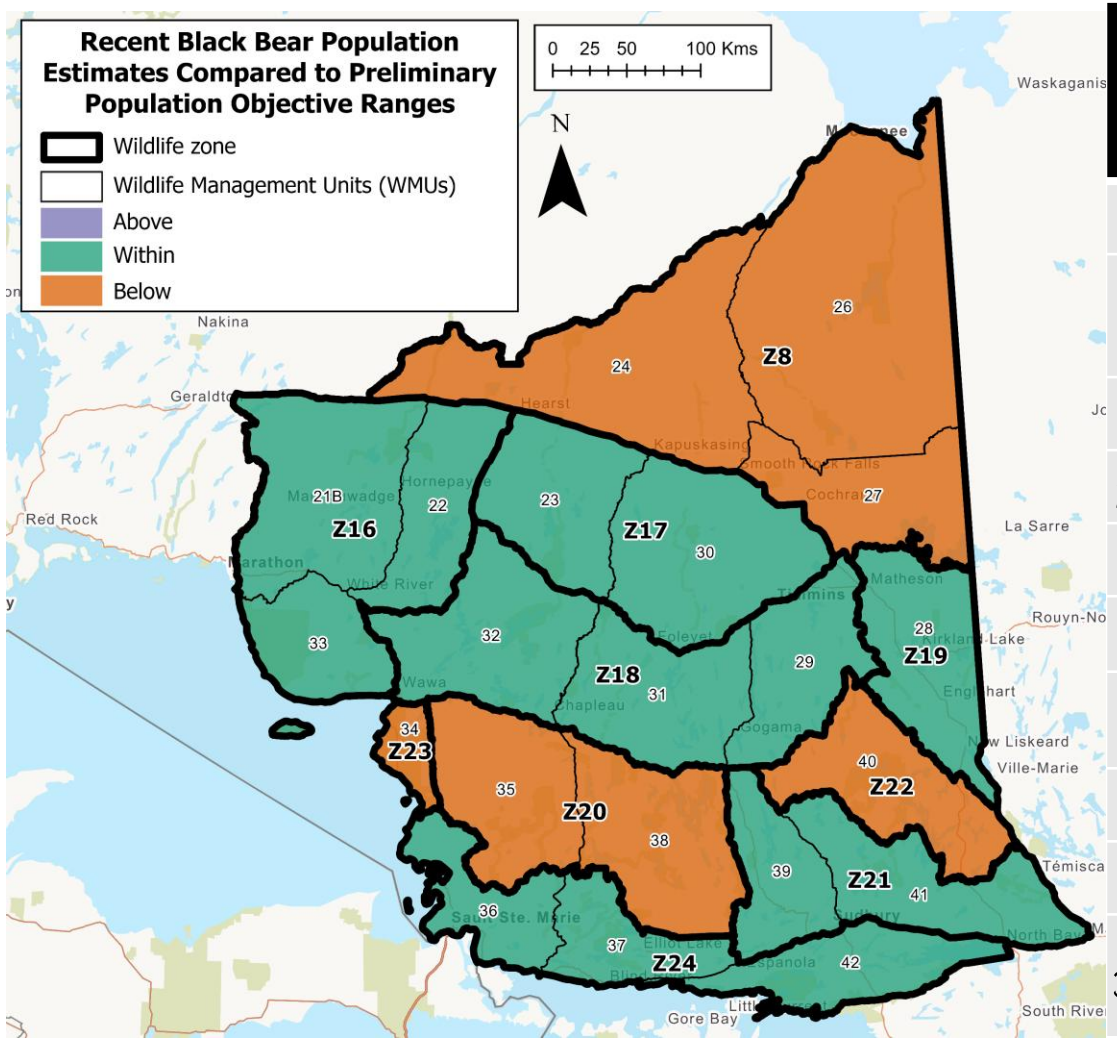
Preliminary Population Objective Ranges: Northwestern Ontario



Wildlife Management Unit (Zone)	Lower Limit (preliminary objective)	Upper Limit (preliminary objective)	Most Recent Population Estimate
1C (**Z3**)	2150	5400	**2759**
2, 3, 4 (**Z5**)	3600	5750	**4735**
16A, 16B, 16C (**Z6**)	3900	6250	**5607**
17, 18A, 18B (**Z7**)	3500	5600	**3814**
6, 7A, 7B (**Z9**)	1900	3300	**3424**
10 (**Z10**)	450	750	**535**
5, 8, 9A, 9B (**Z11**)	3650	6400	**5061**
11A, 11B, 11C, 12A, 12B (**Z12**)	3150	5500	**2619**
15A, 15B (**Z13**)	2850	4600	**3059**
13 (**Z14**)	2100	3650	**1659**
14, 19, 20, 21A (**Z15**)	2900	4650	**5364**

Ontario

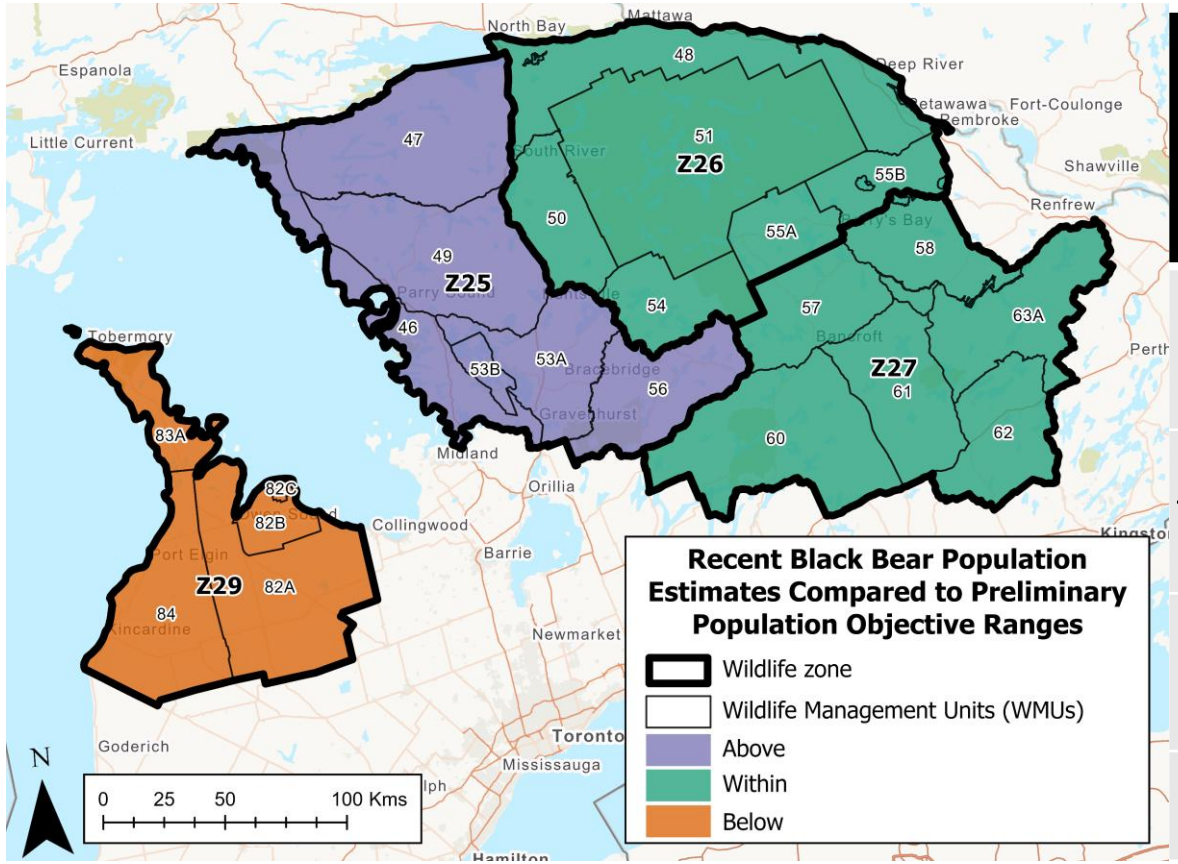
Preliminary Population Objective Ranges: Northeastern Ontario



Wildlife Management Unit (Zone)	Lower Limit (preliminary objective)	Upper Limit (preliminary objective)	Most Recent Population Estimate
24, 26, 27 (**Z8**)	3600	5750	**2622**
21B, 22, 33 (**Z16**)	3100	4950	**3170**
23, 30 (**Z17**)	2700	4350	**4082**
29, 31, 32 (**Z18**)	3300	5300	**3580**
28 (**Z19**)	1550	2650	**1992**
35, 38 (**Z20**)	2350	3800	**2179**
39, 41 (**Z21**)	2350	4050	**3912**
40 (**Z22**)	1500	2600	**1380**
34 (**Z23**)	300	550	**211**
36, 37, 42 (**Z24**)	2650	4500	**3215**

Ontario

Preliminary Population Objective Ranges: Southern Region



Wildlife Management Unit (Zone)	Lower Limit (preliminary objective)	Upper Limit (preliminary objective)	Most Recent Population Estimate
46, 47, 49, 53A, 53B, 56 (**Z25**)	2450	5550	**6071**
48, 50, 51, 54, 55A, 55B (**Z26**)	2900	6550	**4437**
57, 58, 60, 61, 62, 63A (**Z27**)	2600	5850	**4105**
82A, 82B, 82C, 83A, 84 (**Z29**)	400	600	**270**

Special Note: Wildlife zone 29

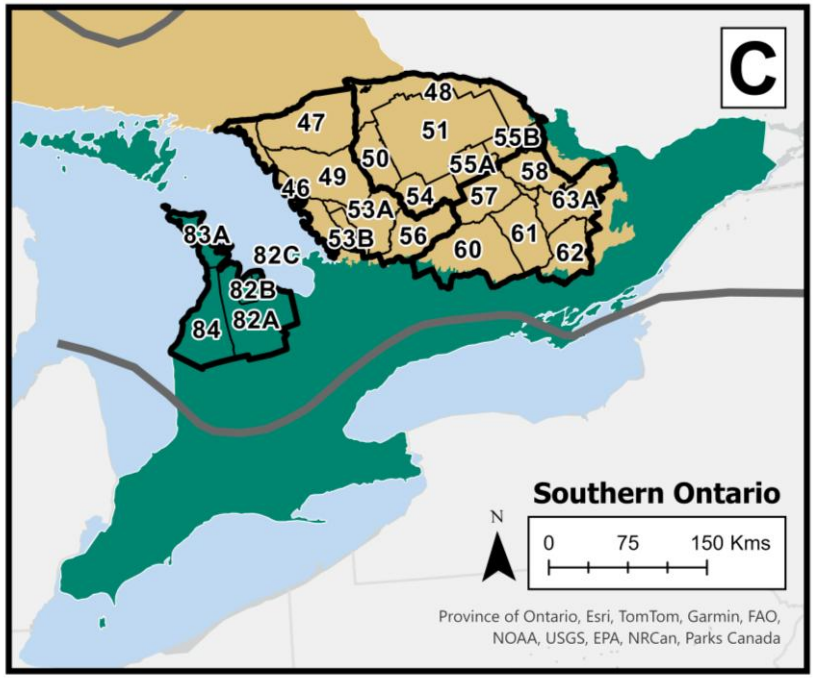
- This zone has good habitat but is becoming more fragmented, especially in the south.
- Black bears here are isolated from other populations in Ontario and are genetically distinct.

Ontario

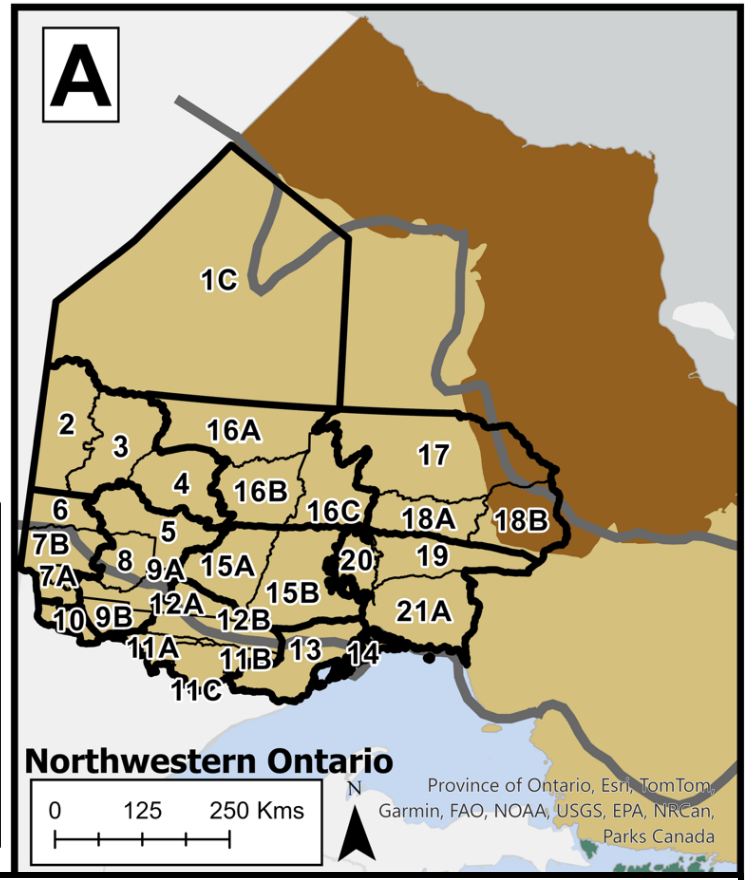
Areas where we haven't developed Population Objectives

Mixedwood Plains in Southern Ontario

- Black bears live in areas where suitable forest habitat remains, but are largely absent from areas with large cities and intensive agriculture.
- Black bears regularly move from the primary range into these areas.



The objective for these areas is to maintain bears on the landscape, measured and managed through harvest sustainability indicators from hunter reporting data.



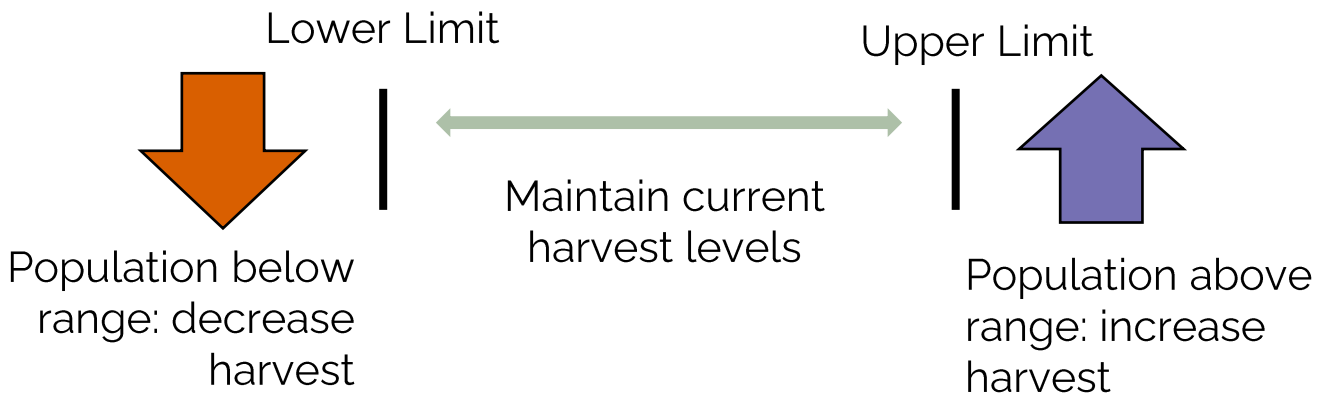
Hudson Bay Lowlands in Northern Ontario

- Has sparse forests, wetlands, and tundra.
- Black bears occur at low densities and are lightly harvested in this area.

Ontario

Using final Population Objectives to inform harvest management decisions:

Decision based on population status



Lower limit of the objective range should describe the abundance of black bears needed to maintain ecosystem function, support sustainable population management and resilience over the long term, and allow for harvest opportunities.

Upper limit of the range should represent the abundance of black bears that supports high or increased harvest, while remaining within the objective range over the long term while reflecting socio-economic carrying capacity.

Request

The ministry is requesting any additional information or comments to support the development of black bear population objectives across the province by **March 16th.**

Appendices

Proposal Overview

Establish Population Objectives

We are looking for feedback on this part!

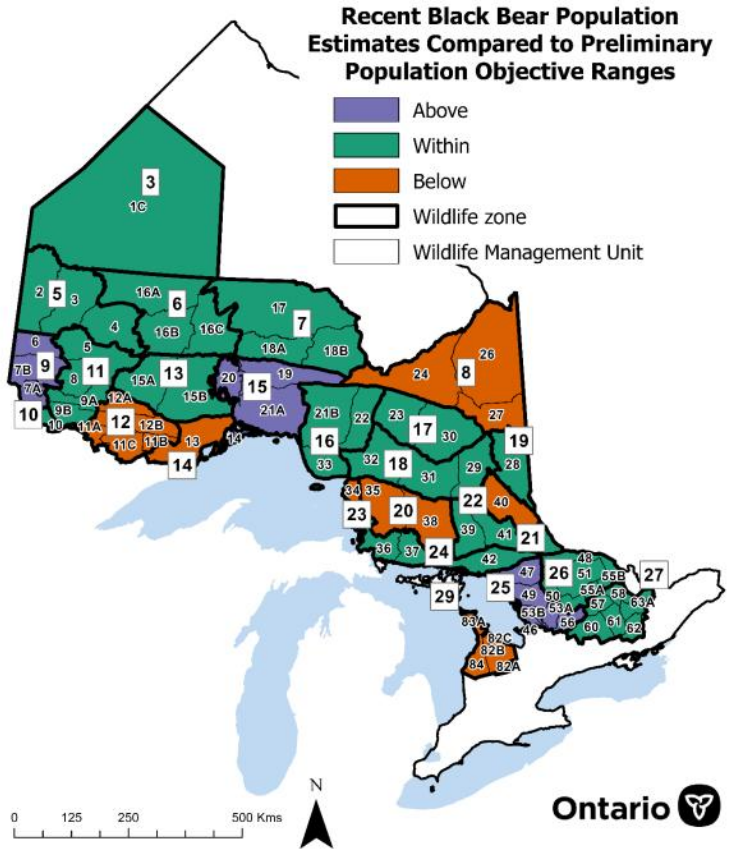
- Population objectives are the number of bears desired in an area –the objective becomes the basis for future management decisions.
- Preliminary population objective ranges (PORs) based on ecological considerations (e.g. bear abundance, habitat productivity) and feedback from the public will help to incorporate social, cultural, and economic considerations to develop final PORs.

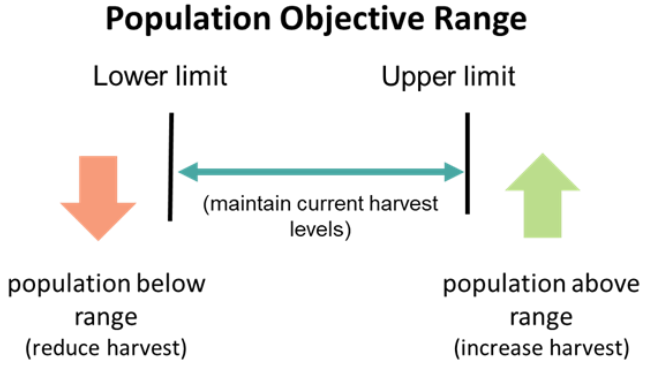
Draft Guidelines to Support Management

- Would use new information such as population objectives, monitoring surveys, hunter reporting information, etc. to be more responsive.
- Would establish new management tools to support management needs and guide the allocation of harvest opportunities.
- Would enhance transparency and better respond to population changes that may warrant targeted management actions.

Black Bear Regulations Updates

- New regulatory amendments would be required to implement the proposed guidelines.
- Proposal to extend the existing spring prohibitions on the hunting of black bear cubs or females accompanied by cubs to the fall hunting season.
- Proposal to strengthen enforcement of the prohibition on the possession of bear gall bladders to explicitly prohibit the possession of bear bile outside of the gall bladder.





Ontario

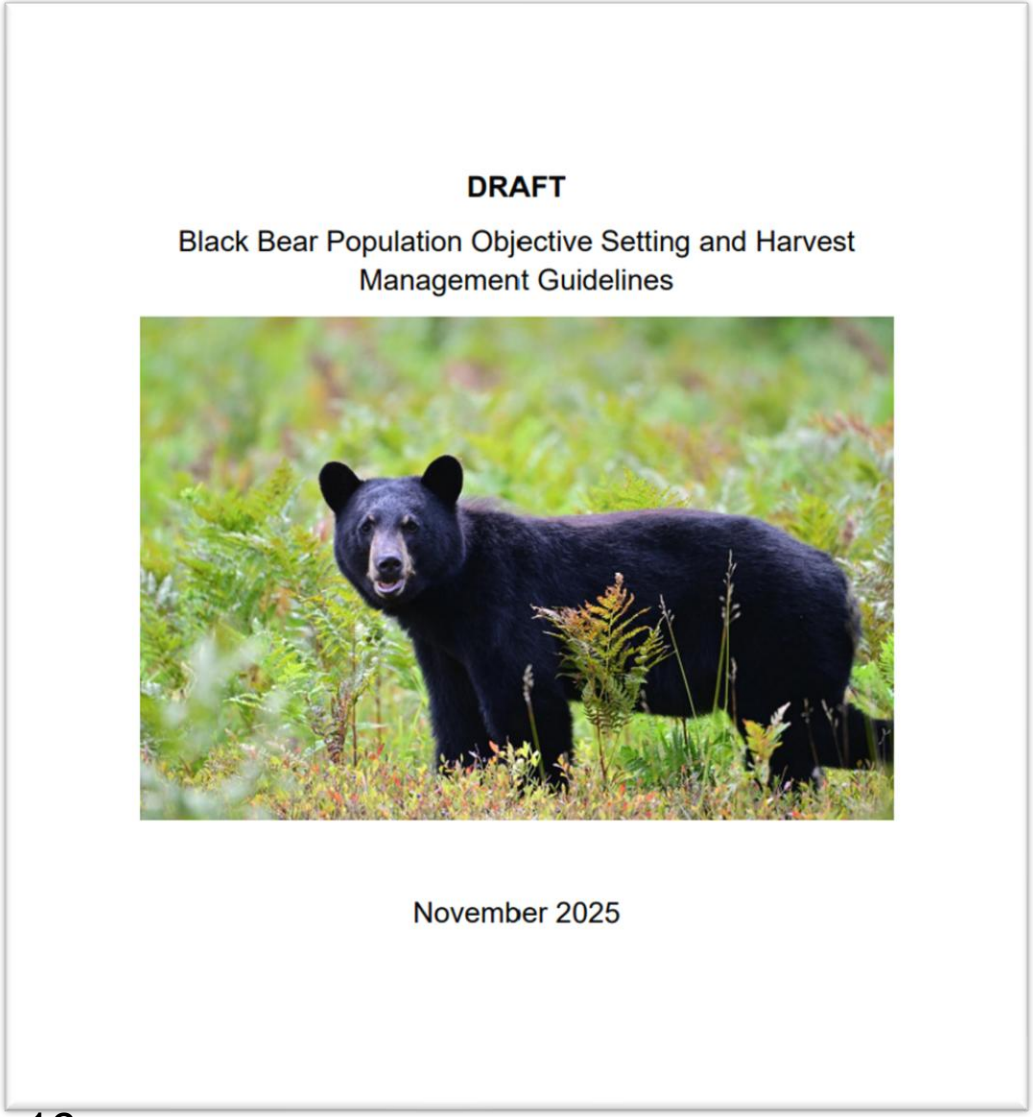
5- Year Implementation Plan

- If approved, the ministry has proposed a phased, 5-year transition plan for the province. Management decisions would not be applied for 5 years.
- With the exception of earlier implementation on the Saugeen Peninsula (potentially as early as 2027).



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Proposal Summary



This proposal focuses on **long-term sustainability** of black bear populations, with decisions guided by principles to ensure black bears can fulfill their ecological role and their cultural importance for present and future generations:

- **Recognize the inherent and treaty rights** of Indigenous communities to harvest black bears and the cultural significance of bears.
- Ensure **regulated harvest opportunities are managed sustainability.**
- Aim to **improve transparency and consistency** in how black bear population objectives and regulated harvest decisions are made.

Ontario

Tamara Russell Barr

From: ca.office (MECP) <ca.office@ontario.ca>
Sent: March 10, 2026 3:14 PM
Cc: ca.office (MECP)
Subject: Decision Notice on the Proposed Boundaries for the Regional Consolidation of Ontario's Conservation Authorities

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Dear Municipal Partners and the Association of Municipalities of Ontario (AMO),

We are writing to inform you that a decision notice has been posted to the Environmental Registry of Ontario (ERO) regarding the proposal notice posting #025-1257 on the "Proposed boundaries for the regional consolidation of Ontario's conservation authorities."

The proposal initially consulted on by the government proposed boundaries that would have resulted in seven regional conservation authorities. As a result of the feedback received during consultation, the province adjusted the boundaries to accommodate areas with distinct geographies and development contexts, to better balance differing priorities across rural, urban and northern areas and improve alignment with watersheds and with source protection regions. The government is now planning to move forward with consolidation to create nine optimized regional CAs. A map showing the planned boundaries and the nine new CAs is available at Ontario Provincial Conservation Agency | ontario.ca.

In the coming weeks, the government plans to introduce amendments to the Conservation Authorities Act (CAA) that would implement the consolidation and set out a smooth path to consolidation to ensure service continuity for communities. Consolidation is targeted to take effect in early 2027 to allow transition planning to occur over the next year. The government's plan would ensure a clear, coordinated and successful transition led by the Ontario Provincial Conservation Agency (OPCA), that would minimize disruptions to CA staffing, services, permitting processes and with all existing partnerships and obligations carried forward to maintain service stability. A summary of the consolidation plan, and details on transition, are included in the decision notice Proposed boundaries for the regional consolidation of Ontario's conservation authorities | Environmental Registry of Ontario.

The government's plans to consolidate CAs build on recent progress Ontario has made to improve the CA system, including establishing OPCA to provide centralized leadership and oversight for Ontario's CAs. Under these plans, the important work that conservation authorities do to protect people and property from the risks of flooding and other natural hazards would not change. The nine new regional CAs would continue to operate as independent, municipally governed organizations and to fulfill their provincially mandated programs such as managing flooding and other natural hazards, drinking water source protection under the Clean Water Act, watershed management programs, and the management of their lands and recreational trails, ensuring public access to local natural areas and outdoor activities.

We recognize the important role that municipalities have in the governance of conservation authorities. We are committed to keeping you informed throughout the transition and ensuring that the relationships, programs and services that CAs provide to municipalities continue.

The province is committed to working closely with municipal partners and AMO throughout this process and ensuring local knowledge informs next steps.
In the coming weeks you will be invited to technical briefings to provide further information on the next steps in the planned transition process.

For questions regarding the plans for consolidation, please contact CCEO@ontario.ca. If you have questions about the planned legislative amendments and day-to-day CA business, please reach out to MECP staff via ca.office@ontario.ca.

We thank you for taking the time to share with us your perspectives during the consultations that helped to shape this plan and look forward to working closely with you and your municipal/association colleagues over the next year.

Sincerely,

Chloe Stuart
ADM, Land and Water Division
Ministry of the Environment, Conservation and Parks

Hassaan Basit
Chief Conservation Executive
Office of the Chief Conservation Executive

Tamara Russell Barr

From: Municipal Standards Harmonization Office (MTO) <MSHO@ontario.ca>
Sent: March 3, 2026 3:22 PM
To: Municipal Standards Harmonization Office (MTO)
Subject: Harmonization of Municipal Road Construction Standards - Regulatory Registry Posting Open for Comment

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Dear Municipal Stakeholder,

In November 2025, as part of the *Fighting Delays, Building Faster Act, 2025*, the *Public Transportation and Highway Improvement Act* was amended to support the harmonization of municipal road construction standards.

In order to implement the harmonization of municipal road construction standards a Minister's regulation is being proposed that would:

- Make Ontario Provincial Standards for Municipal Road Construction (OPSS.MUNI) mandatory with respect to hot mix asphalt, aggregates, and drainage for municipalities throughout the province,
- Mandate the use of standard contractual terms and conditions,
- Establish a transition provision,
- Establish an exemption request process, and
- Establish reporting requirements.

The proposal is open for comment until March 30, 2026, on the Ontario Regulatory Registry. We appreciate your input and invite you to submit comments for consideration. https://www.regulatoryregistry.gov.on.ca/proposal/53294

Thank you for your consideration of this request.

Sincerely,

Bruce W. Cane, P.Eng.
Director, Standards and Contracts Branch

Katie De Palma
Director, Transportation Policy Branch

Ministry of Transportation | Ontario Public Service
| MHSO@ontario.ca

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Taking pride in strengthening Ontario, its places and its people

TECHNICAL BRIEFING

Improving Ontario's Conservation Authority System

PROTECT ONTARIO

Ministry of the Environment, Conservation and Parks

March 10, 2026

Ontario

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4 Guiding principles

5 Our plan

6 Regional CA boundaries

7 Regional CA governance

8 Transition process

9 Next steps

10 Summary

Ontario

1. Overview: Ontario's conservation authority system

The Ministry of the Environment, Conservation and Parks (MECP) administers the *Conservation Authorities Act* (CAA) and is responsible for overseeing Ontario's 36 existing conservation authorities (CAs).

CAs play a vital role in **watershed management** and protecting communities from **natural hazards** like floods. They also deliver programs and services that further the conservation, restoration, and management of natural resources.

CAs issue **permits** to builders, municipalities, and property owners for development activities such as housing developments and installation of sewage systems in areas affected by risks of natural hazards such as floodplains, shorelines, river and stream valleys, and wetlands. Permitting helps to ensure that development does not happen in unsafe areas and that it does not worsen the impacts of flooding or erosion in surrounding areas.

What is a watershed?

A watershed is an area of land that drains all the streams and rainfall into a common outlet, such as a lake, bay or river.

2. The need for action

The Ontario government is taking action to protect Ontario's economy, workers, and communities by making the province the best place in the G7 to invest, create jobs, and do business. To achieve this, the government is making investments to build local infrastructure and taking action to bring more consistency and transparency to the cost and timelines of building homes.

CAs are independent, local public sector organizations with significant variation in capacity, governance, transparency, and reliance on municipal funding. Over time, this has created a fragmented system with inconsistent standards and timelines.

Key challenges under the current framework that this proposal seeks to address include:

- **A patchwork of standards, service delivery:** Each CA has different policies, customer service standards, fees, processes and staffing, and technical capacity leading to unpredictable and inconsistent turnaround times for approvals across all CAs. This can result in uncertainty and delays for builders, landowners, and farmers seeking permits.

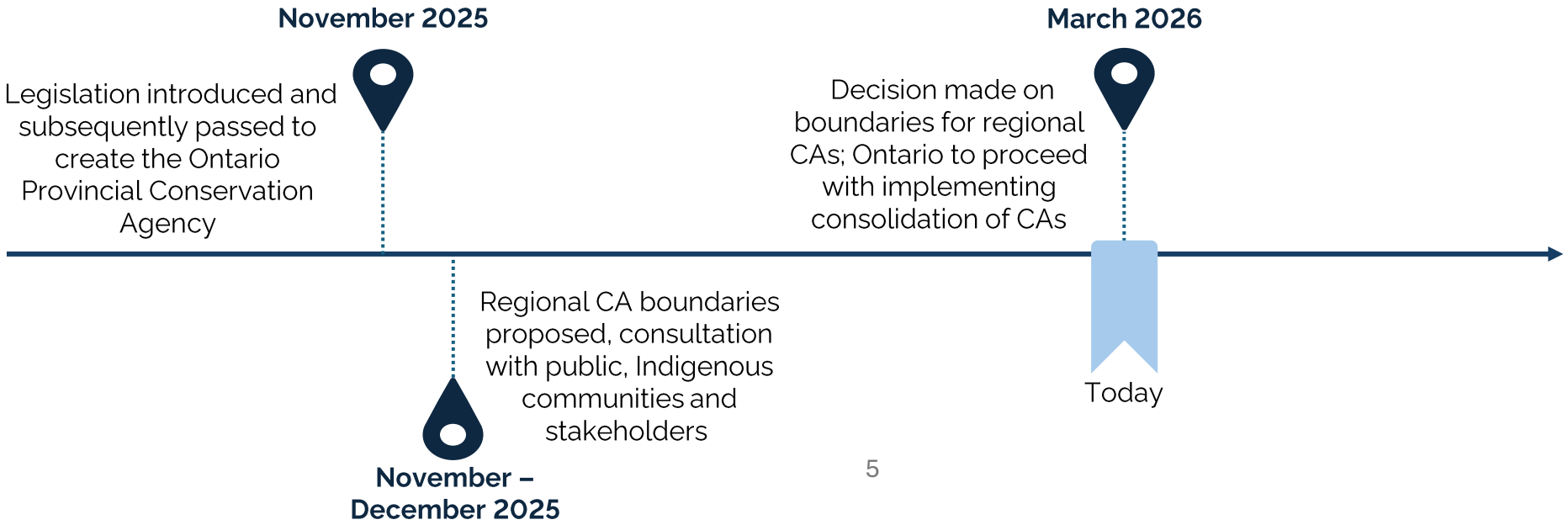
- **Outdated and fragmented data systems:** Lack of resources has led to discrepancies in the tools and technology that CAs use, leading to varying types and quality of technology and data management. This can compromise effective provincewide flood risk management and evidence-based decision making.

- **Administrative duplication:** Under the current framework, municipalities are forced to fund duplicate corporate functions (e.g., procurement, communications), diverting costs away from front-line conservation and service delivery.

- **Need for more accountability and transparency:** Lack of transparent asset management and inconsistent performance monitoring and reporting.

2. Actions to date

- Ontario is making progress on its commitment to enhance the effectiveness of conservation authorities, creating more consistency and modern standards and ensuring CAs remain strong, effective and ready to meet today's challenges. Since announcing our plan in fall 2025, we have passed legislation to create the Ontario Provincial Conservation Agency (OPCA) to provide centralized leadership and oversight of regional CAs, including coordinating a smooth and organized consolidation and key initiatives to improve the CA system, and we consulted extensively on the proposed regional CA boundaries.
- Consultations included virtual sessions with CAs, municipalities, stakeholders, and Indigenous communities, and regional workshops with CA and municipal leadership led by the Chief Conservation Executive and the Minister. More than 500 people participated, and 14,000+ comments were submitted on the proposed boundaries. We listened and used this feedback to strengthen the plan.
- The government is now moving forward with a framework for the regional consolidation of Ontario's 36 CAs into 9 optimized regional CAs that would deliver more consistent, more efficient, and more cost-effective outcomes for the communities that they serve. In the coming weeks, the government plans to introduce amendments to the CAA that would set out and enable the framework for consolidation of Ontario's CAs.



Ontario

3. Why consolidation

Under the current system, more than half of all municipalities in areas served by CAs fall within the jurisdiction of two or more CAs, resulting in unnecessary duplication that diverts resources from front line conservation work and service delivery. Individual CAs have significant disparities in size and resources, with some lacking access to the latest tools and technology that support flood risk management and evidence-based decision making.

Consolidation would enable more consistent service delivery and more efficient resource and information sharing, making CAs more responsive to the needs of the communities they serve.

What these changes would mean:

- More resources for front-line services
- Improved flood management and erosion prevention
- Strong environmental protections maintained
- Faster permit approvals
- Modern service delivery
- Consistent standards and use of modern technology

What's not changing:

- Where CAs operate (areas currently served by CAs will continue to be served by CAs)
- The programs and services CAs provide, including the responsibility for source water protection, natural hazard and watershed management
- CA management of their lands and trails, providing access to green spaces, recreation and education programs
- Where and how CAs receive funding
- CA relationships with municipalities, developers, landowners
- Each CA being an independent, municipally-governed organization

4. Guiding principles

- The following principles informed the actions the province is taking to improve CAs, in addition to feedback heard during consultation:
  - **Retain local influence** – ensure local knowledge, expertise and interests inform the watershed management and conservation work of CAs
  - **Maintain CA watershed-based jurisdictions** – align with natural hydrological boundaries to support flood/water management. Align with drinking water source protection regions
  - **Reduce administrative overlap and duplication** – streamline requirements and processes for municipalities and conservation authorities
  - **Strengthen CA capacity** – improve and standardize the level of expertise and resources across CAs. Seek to balance the needs and interests of urban, rural, northern and southern watersheds
  - **Continuity of services** – minimize disruptions to CA operations and staffing, ensuring uninterrupted delivery of key programs such as permits, watershed management and trails and recreation for public use
  - **Improve customer service** – enhance consistency and clarity in process and timelines

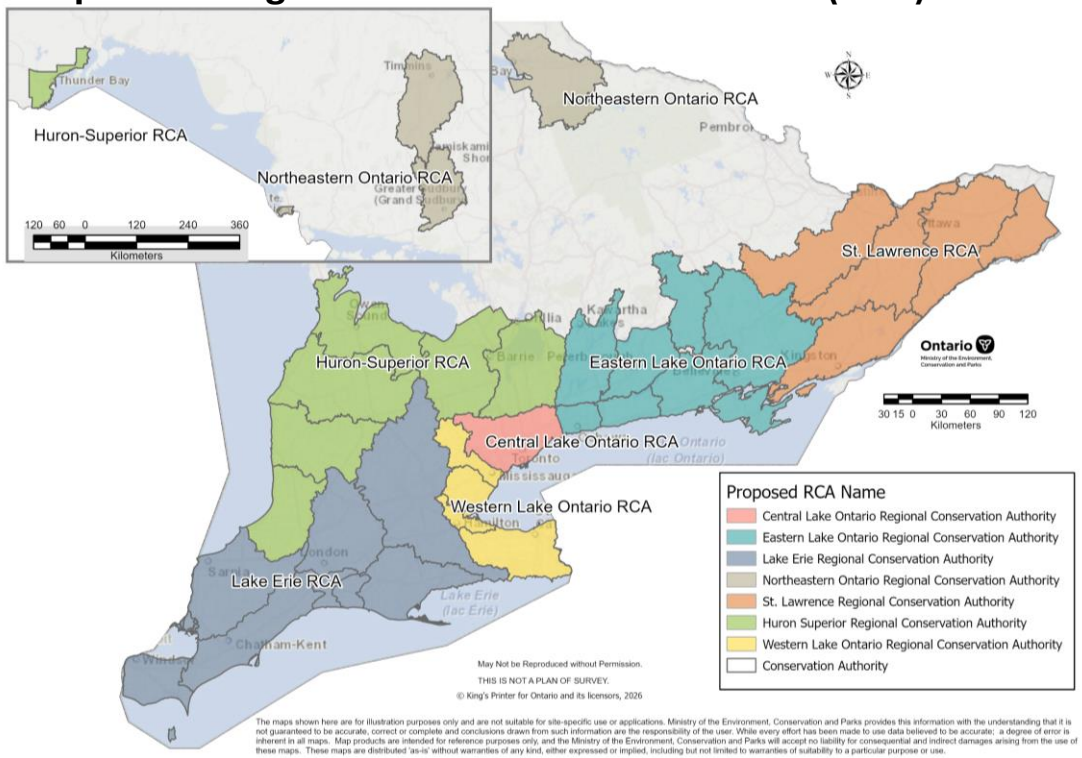
5. Our plan: Improving Ontario's CA system

- The government plans to introduce amendments to the *Conservation Authorities Act* (CAA) that would set out the consolidation of Ontario's CAs in accordance with the framework described in this presentation.
- The plan is for CA consolidation to take effect early 2027, allowing for transition planning to occur throughout 2026. Over time, OPCA will further transform Ontario's CA system, including by developing a single digital permitting platform to provide a faster, more predictable approvals process and improved customer service
- To support regional CAs throughout the transition, the province is providing annual funding to OPCA in the amount of $3 million, beginning in 2026. This funding will be used by OPCA to support regional CAs as needed during transition. Post-transition, this annual funding will support OPCA to help regional CAs achieve improvements and program standards set by OPCA.

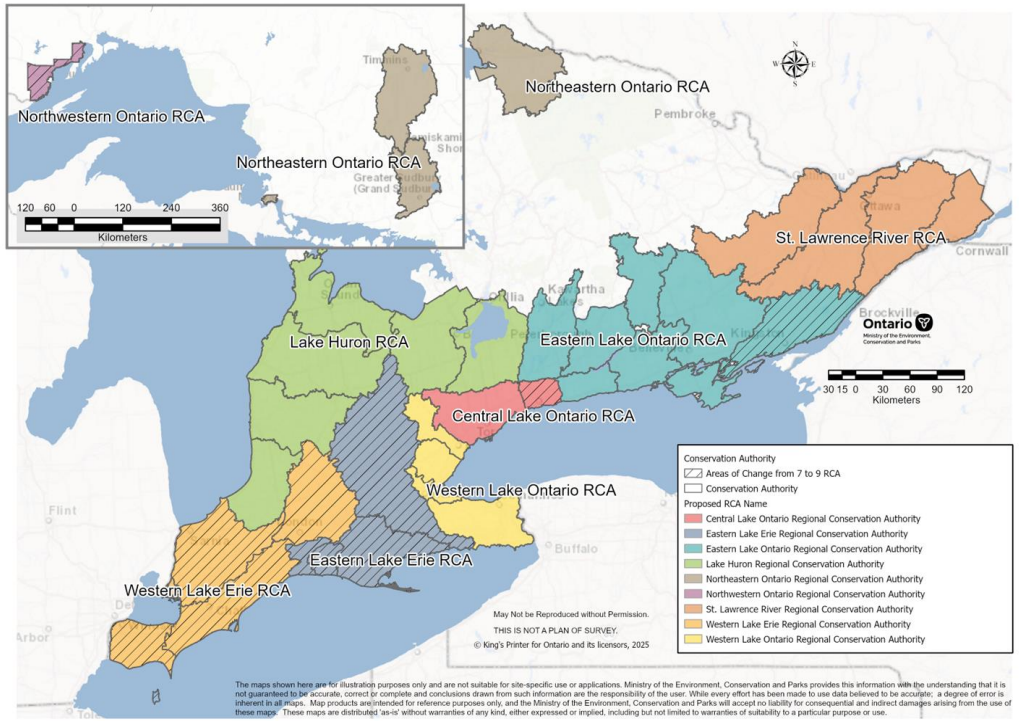
6. Regional CA boundaries

- The regional CA boundaries have been adjusted and refined (from 7 to 9). The feedback received during consultation directly informed the adjustments made to the final regional CA boundaries, which have been optimized to:
  - Accommodate areas with distinct geographies and development contexts
  - Balance differing priorities across rural, urban and northern areas
  - Better align with watersheds and with source protection regions

Proposed 7 Regional Conservation Authorities (RCA)



Final Optimized 9 Regional Conservation Authorities (RCA)



Maps for illustrative purposes

6. Regional CA boundaries: current corresponding CAs

Proposed Regional CAs	List of predecessor (i.e., existing) CAs being consolidated	
Central Lake Ontario Regional Conservation Authority	• Central Lake Ontario CA	• Toronto and Region CA
Eastern Lake Erie Regional Conservation Authority	• Catfish Creek CA • Grand River CA	• Kettle Creek CA • Long Point Region CA
Eastern Lake Ontario Regional Conservation Authority	• Cataraqui Region CA • Crowe Valley CA • Ganaraska Region CA • Kawartha Region CA	• Lower Trent RegionCA • Otonabee Region CA • Quinte Region CA
Lake Huron Regional Conservation Authority	• Ausable Bayfield CA • Grey Sauble CA • Lake Simcoe Region CA	• Maitland Valley CA • Nottawasaga Valley CA • Saugeen Valley CA
Northeastern Ontario Regional Conservation Authority	• Mattagami Region CA • Nickel District CA	• North Bay Mattawa CA • Sault Ste. Marie Region CA
Northwestern Ontario Regional Conservation Authority	• Lakehead Region CA	
St. Lawrence River Regional Conservation Authority	• Mississippi Valley CA • Raisin Region CA	• Rideau Valley CA • South Nation River CA
Western Lake Erie Regional Conservation Authority	• Essex Region CA • Lower Thames Valley CA	• St. Clair Region CA • Upper Thames River CA
Western Lake Ontario Regional Conservation Authority	• Credit Valley CA • Halton Region CA	• Hamilton Region CA • Niagara Peninsula CA

7. Regional CA Governance

- Consistent with previous commitments and feedback heard, regional CAs will continue to be municipally governed organizations.
- Under our plan, participating municipalities that are responsible for appointing members (i.e. “the board”) and for paying CA levies would be at the upper-tier (i.e., regional municipalities and counties) and single-tier levels (e.g. cities, towns etc.) This change would mean that lower-tier municipalities (e.g. towns and townships, etc.) within a county would no longer be participating municipalities, as is currently the case where there is a county as the upper-tier municipality.
- Rules for how members are to be selected would be set out in regulation based on each participating municipality’s percentage of the population in the regional CA’s jurisdiction . Small municipalities are ensured representation by requiring that each participating municipality appoint at least one member. Rules for the number of members may also include:
  - Capping the total number of members on a CA board.
  - Limiting any one municipality’s number of members (e.g., to 5) to ensure balanced representation.
- Following the municipal elections on October 26, 2026, newly-elected upper tier municipal councils would select the first members (i.e., “board”) for the new regional CAs prior to the targeted amalgamation date.

7. Regional CA Governance: CAs and municipalities

Regional consolidation of CAs would result in a reduction in the number of municipalities that belong to multiple CAs. This would empower Ontario's CAs in delivering more consistent, more efficient, and more cost-effective outcomes for the communities they serve.

	Current State Regions, single-tier, lower-tier	**Consolidated** Regions, counties, single-tier	**% Change**
Number of CAs	36	9	75.0%
Municipalities part of 1 CA	126	57	54.8%
Municipalities part of ≥ 2 CAs	60	16	73.3%
Municipalities part of ≥3 CAs	19	4	78.9%
Municipalities part of ≥4 CAs	3	1	66.7%
Municipalities part of ≥5 CAs	2	0	100%

- Note: Municipalities and associated numbers represent 'participating municipalities' for CAs both in the current state and once consolidated. There is no change in the total number of municipalities that are within a CA's jurisdiction.

7. Regional CA Governance: Watershed Councils

Watershed Councils

- In response to feedback that emphasized the need for regional CAs to continue to rely on the deep local expertise, knowledge, and relationships built, the province plans to mandate that regional CAs create one or more local Watershed Councils to ensure watershed management continues to be informed by local knowledge and input.
- Watershed Councils would assist the CA in identifying local priorities for programs and services to ensure that local interests are considered as part the board's decision-making process.
- Specific requirements for membership composition of Watershed Councils may be set out in regulation (e.g., Indigenous representatives to enable considering Indigenous knowledge, as well as agriculture and development representation to consider other local watershed perspectives),

8. Transition process

Statutory Amalgamation

- With the proposed statutory amalgamation that would create the regional CAs, on the transition date, the former CAs would be amalgamated creating the regional CA ,and legal continuation is provided for:
  - All assets and liabilities of the predecessor CAs
  - All rights and obligations of the predecessor CAs
  - All partnerships, agreements and funding obligations of the predecessor CAs
  - Employees of the predecessor CAs (all rights, duties and liabilities)
  - Permit applications made before the transition date
  - Any hearings underway or hearing requests
- In other words, after the consolidation date, the new Regional CAs would replace the former CAs as legal entities. This approach is intended to avoid disruptions to existing partnerships and agreements with municipalities, Indigenous communities, or others.
- The amalgamation of the predecessor CAs in the new regional CAs would be governed by the *Public Sector Labour Relations Transition Act*, which sets out a clear, structured and neutral framework for dealing with labour relations issues following restructuring of public sector organizations (e.g. the need to rationalize bargaining units).



Ontario

8. Transition process

To ensure service continuity and limit disruptions, and as informed by consultation feedback, under our plan OPCA will coordinate consolidation by establishing a transition committee and providing resources, tools and guidance to support transition efforts for each regional CA being consolidated.

Transition committees

- Transition committees for each regional CA would prepare for the amalgamation of the predecessor CAs into the new regional CA. Each predecessor CA will appoint one municipally elected member and its CAO or GM (or an alternate if they are not available) to the Transition Committee.
- OPCA will appoint a Project Executive to chair each Transition Committee and who would become the inaugural Chief Administrative Officer of the regional CA for up to 24 months.
- Committees would be dissolved following regional consolidation.

Transition plans

- With guidance from OPCA—including a transition playbook with templates and best practices—Transition Committees would develop and implement transition plans to guide each new regional CA through an orderly, step-by-step integration of its predecessor CAs across key functions such as HR, finance, assets, and IT.

8. Transition process

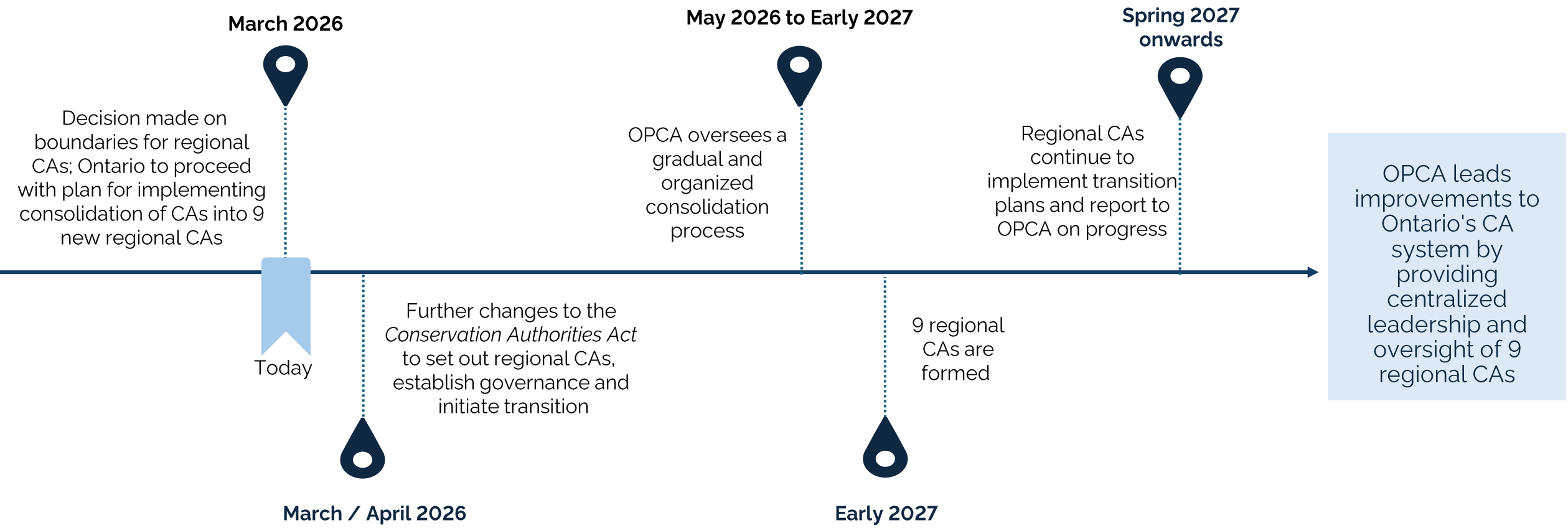
Temporary guardrails

- Our plan includes that temporary guardrails would be applied to extraordinary financial, asset, or employment decisions to mitigate risk and ensure a stable transition to the new regional structure and mitigate risk
- The Minister would be enabled to issue temporary directions to support an orderly CA consolidation. This is not intended to disrupt regular CA business and operations.
- For example, this power could be used to temporarily halt activities such as major land dispositions, significant procurements or material changes to management or organizational structures without review and authorization by the Agency or the Transition Committee.

2027 CA Budgets

- The minister would also be able to issue directions to manage the 2027 budget process for the 36 predecessor CAs, which could be used to provide clarity around timelines (e.g., direct that CA budgeting be completed by December 31, 2026 and levies be issued to the current participating municipalities).

8. Transition process: Timeline



Ontario

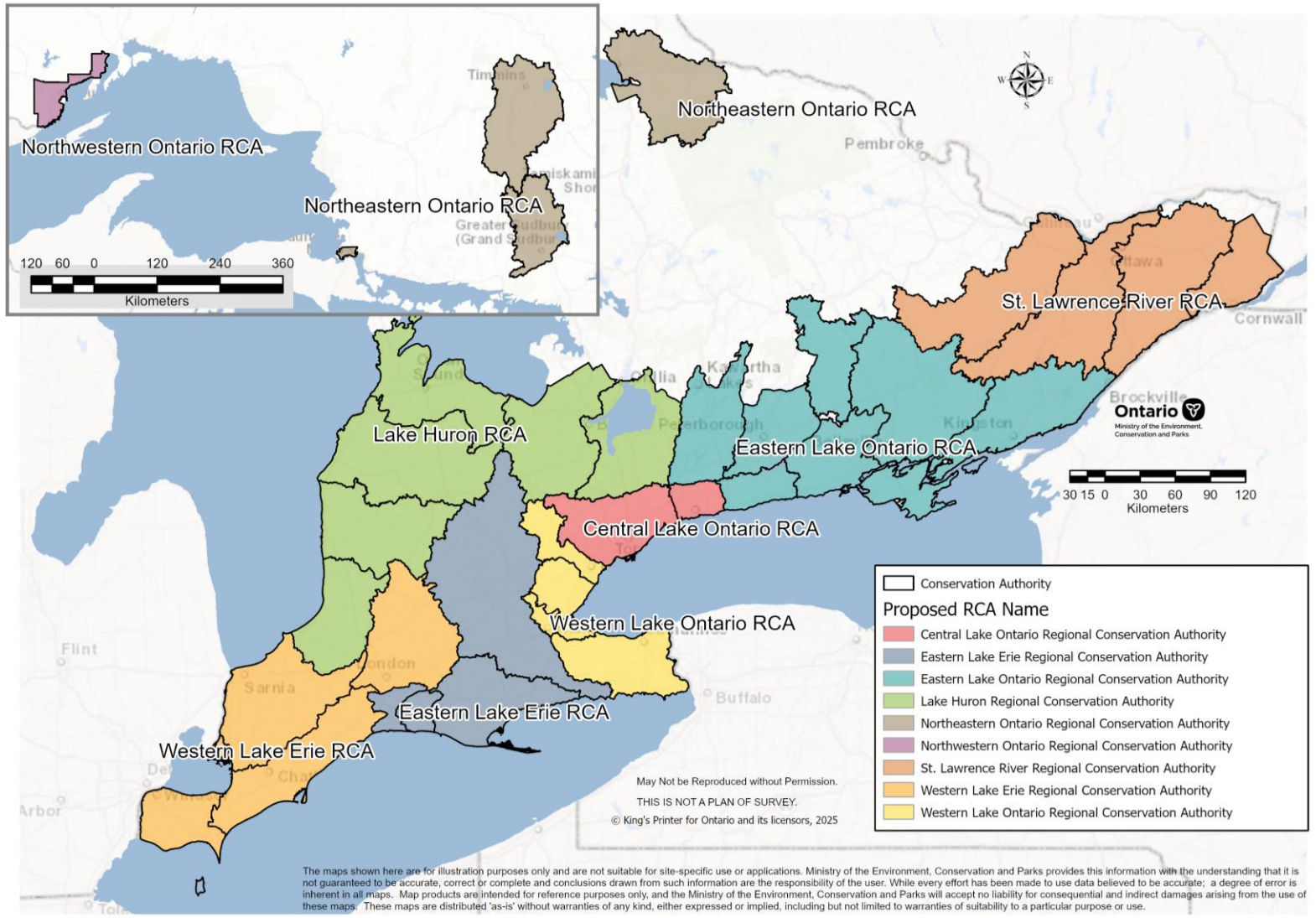
9. Next Steps

- In the coming weeks and months, the provincial government plans to:
    - Propose further amendments to the *Conservation Authorities Act* (CAA) that, if passed, sets out the provincially led amalgamation of the 36 existing conservation authorities to create 9 regional CAs, including transitional governance and activities to be coordinated by the OPCA .
    - Invite you to technical briefings to provide further information on the next steps in the planned transition process.
    - Engage with CAs, municipalities, Indigenous communities and other interested partners to provide updates about the government's plans and consolidation.
    - Support the OPCA to coordinate transition planning for consolidation to take effect early 2027, with minimal disruptions/interruptions to CAs' services and staffing.
- The Office of the Chief Conservation Executive would lead CA transition activities as OPCA becomes fully operational. For questions regarding the plans for consolidation, please contact CCEO@ontario.ca.
- If you have questions about the planned legislative amendments and day-to-day CA business, please reach out to MECP staff via ca.office@ontario.ca.

10. Summary

- Ontario's current CA system is fragmented, with inconsistent standards and timelines across 36 individual CAs that can slow down development approvals and risks hampering CAs' abilities to protect their communities from floods and other natural hazards.
- Since announcing our plan in fall 2025, we have consulted extensively. We listened and used this feedback to strengthen our plan, and we are now ready to move forward with plans to introduce amendments to the CAA that would set out and enable the consolidation of Ontario's 36 CAs to create 9 consolidation of Ontario's 36 CAs to create 9 new regional CAs, targeted to take effect in early 2027.
- With centralized leadership and independent oversight of CAs by the new Ontario Provincial Conservation Agency, Ontario's CA system will provide streamlined, consistent, and improved service delivery without any reduction in environmental standards. These changes will better position CAs to support needed housing and infrastructure projects more efficiently while continuing to protect communities from flooding and other natural hazards, fulfilling provincially mandated programs such as drinking water source protection under the *Clean Water Act,* and managing CA-owned lands and recreational trails so that Ontarians have access to local natural areas and outdoor activities.

Appendix: Boundaries for Ontario's 9 new regional CAs*

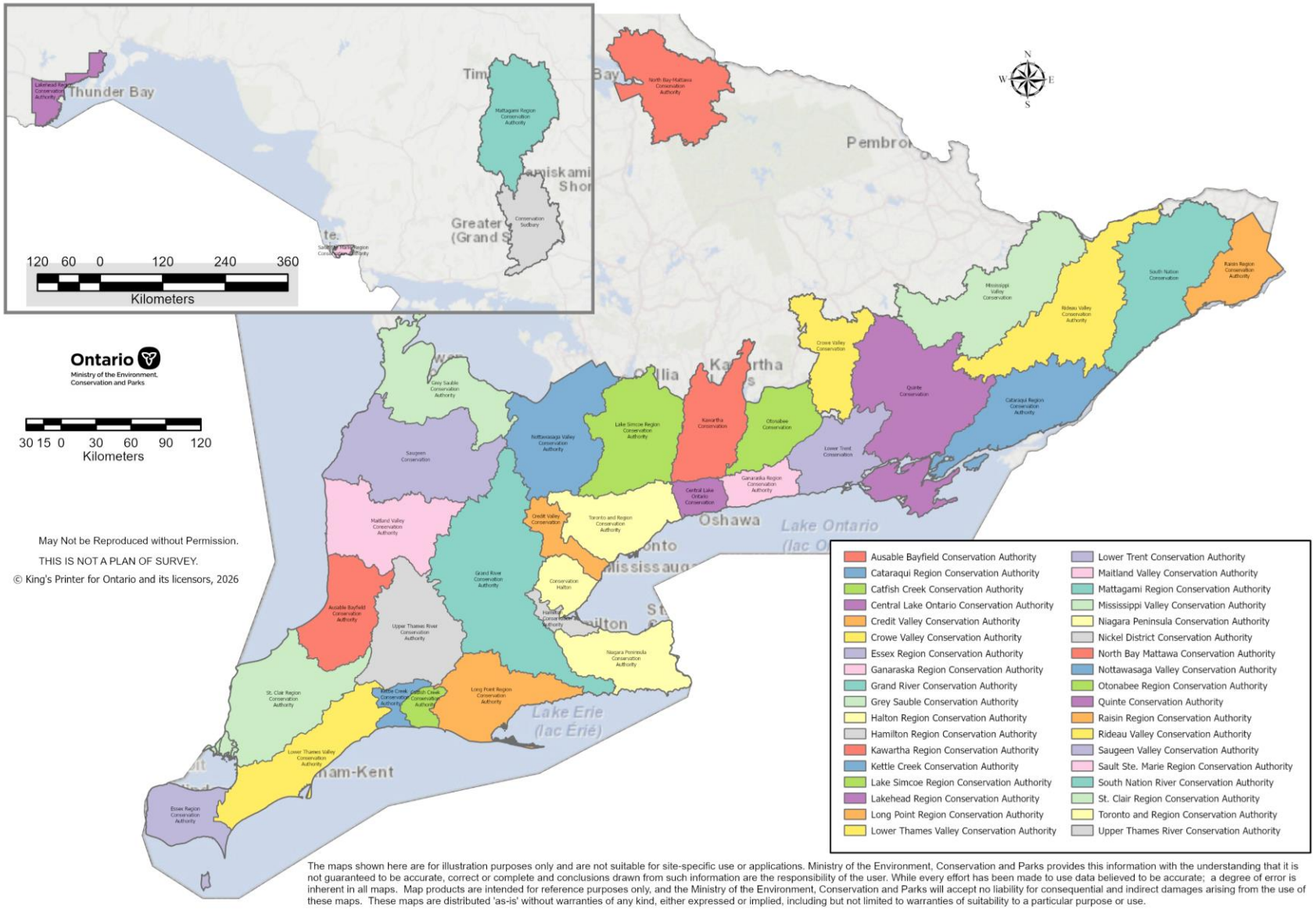


*Plan is for this to take effect in early 2027, subject to amendments being proposed to the *Conservation Authorities Act*

Map for illustrative purposes

Ontario

Appendix: Ontario's Current 36 CAs



The maps shown here are for illustration purposes only and are not suitable for site-specific use or applications. Ministry of the Environment, Conservation and Parks provides this information with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort has been made to use data believed to be accurate; a degree of error is inherent in all maps. Map products are intended for reference purposes only, and the Ministry of the Environment, Conservation and Parks will accept no liability for consequential and indirect damages arising from the use of these maps. These maps are distributed 'as-is' without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use.

Ontario

Tamara Russell Barr

From: AMO Policy <policy@amo.on.ca>
Sent: March 11, 2026 12:18 PM
To: Admin
Subject: AMO Policy Update - Conservation Authority Consolidation, New Buy Ontario Municipal Procurement Requirements, Proposals on Drug Enforcement

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AMO Policy Update – Conservation Authority Consolidation, New *Buy Ontario M*unicipal Procurement Requirements, Proposals on Drug Enforcement

Top Insights

• The province finalizes plans to consolidate conservation authorities and provides details on governance, funding, and transition period timelines.

• The province has proposed new municipal procurement requirements that prioritize 'Ontario Made' and 'Canada Made' goods and services for light fleet vehicles and construction procurement.

• Following AMO's recommendations, the province is proposing to exempt municipal and other select housing operators from a new law that makes landlords liable for knowingly allowing illegal drug production or trafficking in their buildings.

• The province is considering new enforcement powers for transit special constables for drug offences.

Finalized Plans on Conservation Authority Consolidation Respond to AMO Recommendations

Following AMO advocacy, the Ministry of Environment Conservation and Parks has revised its approach to consolidating conservation authorities (CAs). The province's revised position takes steps against some of AMO's recommendations, which we'd shared in our 2025 comments, by:

- **Increasing the number of regional CAs from seven to nine**, better reflecting distinct geographies and regional development contexts across the province.
- **Introducing Watershed Councils and Transition Committees** to help maintain local expertise and relationships, and support business continuity.
- **Providing $3 million of annual provincial funding** which is vital for transition support and delivering long-term service improvements desired by the province.

These legislative changes would come into effect once amendments to the *Conservation Authorities Act* are passed by the provincial legislature. The new Ontario Provincial Conservation Agency is overseeing the transition and full regional integration is targeted for early 2027.

Implementation of these reforms entails significant risks for municipalities around the transition, budgeting, governance, funding, and public communications. AMO calls on the province to work collaboratively and transparently with municipalities, conservation authorities, developers, and Indigenous representatives to address these risks.

AMO will comment on the proposed legislative changes once they are tabled in the spring session.

Buy Ontario regulations for municipal procurement of light duty fleet vehicles, capital infrastructure and construction projects

AMO has submitted feedback to the province's regulatory proposal under the *Buy Ontario Act* which would require municipalities to give preference to Ontario and Canadian goods and services for light fleet vehicle and construction procurements. AMO supports these measures.

Last year, AMO consulted with the Ministry of Public and Business Service Delivery and Procurement (MPBSDP) and the municipal sector on light fleet vehicle procurement. We applaud the province's decision to incorporate feedback provided by AMO and the municipal sector into their proposed fleet procurement rules. We are now advancing similar

recommendations to help ensure an effective implementation of proposed construction procurement rules.

Advocacy on Construction Procurement Policy

Since December 2025, AMO has held three consultation sessions in partnership with MPBSDP to gather feedback from senior municipal professionals working across 140 municipalities in procurement, finance, public works, and legal departments on the impact of the proposed procurement approach. Building on this feedback, AMO's submission puts forward recommendations to avoid undue time and cost increases:

1. **Keep Local Flexibility:** Provide municipalities with the flexibility to establish local policies that ensure value-for-money procurement while addressing the distinct needs and priorities of their communities.
2. **Clarify New Procurement Rules:** Provide clear definitions of "Ontario Made" and "Canada Made," guidance on compliance, and flexibility in scoring bids. Move implementation to 2027 to avoid disrupting 2026 budgets and construction seasons.
3. **Coordinate with Existing Funding Programs:** Ensure procurement rules do not conflict with provincial or federal grants, risking funding losses or project cancellations — especially for housing infrastructure.
4. **Match Supply and Demand:** Work with industry to ensure domestic capacity can be ramped up to meet the anticipated increase in policy driven demand.

Regulations under Measures Respecting Premises with *Illegal Drug Activity Act, 2025* (MRPIDAA)

AMO provided a submission to the regulatory proposal for the MRPIDAA. It recognizes the provincial government's positive change to remove long-term care homes and municipal, non-profit and co-operative providers of community, transitional, and supportive housing from the definition of 'landlord' in the regulations under the Act. This change reflects AMO's advice to the province about the implementation of Bill 10, the *Protect Ontario Through Safer Streets and Stronger Communities Act, 2025*.

Without this exemption in place, these landlords would be subject to legal risk and vulnerable clients could experience new housing barriers. Through these proposed changes, the government is helping to maintain a strong housing continuum for vulnerable people while still addressing illegal drug activity.

Proposal to Extend Authorities to Transit Special Constables under the *Restricting Public Consumption of Illegal Substances Act, 2025*

The government is considering extending certain police officers powers to authorized special constable transit employers and their special constables to charge and arrest for more drug offences.

In the legislative submission about Bill 6, the *Safer Municipalities Act*, AMO outlined its view is that while new powers may be useful in very specific situations, that enforcement should be not the primary response to homelessness and intersecting mental health and addictions crisis. We need significant and sustained provincial investments in deeply affordable housing plus improvements to income security and a comprehensive approach to mental health and addictions.

An online version of this Policy Update is also available on the AMO Website.

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Association of Municipalities of Ontario

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Tamara Russell Barr

From: Eowyn Spencer <espencer@grandriver.ca>
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Cc: Karen Armstrong; Kayleigh Keighan
Subject: RE: Grand River CA - 2026 Budget, 2025 Audited Financial Statements

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Greetings,

In accordance with the *Conservation Authorities Act section 38.4*, please be advised that the Grand River Conservation Authority's 2025 Audited Financial Statements and Independent Auditor's Report, and our complete 2026 Budget Package are now posted under our Governance webpage.

Hard copies of these documents or alternate formats are available by request.

Should you have any questions or concerns, please contact Karen Armstrong, Deputy CAO/Secretary-Treasurer, or Kayleigh Keighan, Director of Finance.

Kind regards,

Eowyn Spencer
Supervisor of Administrative Services
Grand River Conservation Authority

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Budget 2026

Grand River Conservation Authority



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Message from the Chair

The Grand River Conservation Authority is governed through a partnership of 38 watershed municipalities, working together to reduce flood risk, maintain and support a healthy watershed, and connect people to nature.

With a population of more than one million people, the Grand River watershed continues to grow and evolve. Faced with rapid population growth, the escalating impacts of climate change and increasing pressure on natural systems, sustaining the human, ecological and economic health of the watershed requires us to work collaboratively in the stewardship of the Grand River watershed and its natural resources.

As we look ahead to 2026, we are confident that this budget reflects the GRCA's steadfast commitment to providing excellent, fiscally responsible watershed programs and services to our participating municipalities and the residents we serve.



John Challinor II, Chair

1) Summary Information

GRCA 2026 Budget Highlights

Conservation Authority (CA) Act – Programs and Services Inventory

As required under O.Reg.687/21 Transition Plans and Agreements for Programs and Services under Section 21.2.2 of the CA Act, the GRCA has developed an Inventory of Programs and Services based on the categories identified in the Regulation. These categories include: (1) Mandatory, (2) Municipally requested, (3) Other (Authority determines are advisable), and General Operating Expenses. In accordance with regulatory reporting requirements, the budget package includes a "Programs and Services Inventory" chart which outlines the expenditures and funding sources applicable to each category, along with the reallocation of program surplus between programs and services. These reporting requirements became effective January 1, 2024.

The 2026 budget framework corresponds with the GRCA's Program and Services Inventory which was prepared in accordance with provincial regulations. The GRCA business areas are divided into the following categories and programs and services (P&S) groups:

Category 1 – Mandatory Programs & Services

- P&S #1 - Watershed Management
- P&S #2 - Flood Forecasting and Warning
- P&S #3 - Water Control Structures
- P&S #4 - Resource Planning
- P&S #5 - Conservation Lands Management
- P&S #6 - Source Protection Program

General Operating Expenses

- P&S #7 - General Operating Expenses

Category 2 – Programs & Services delivered in accordance with funding agreements with Participating Municipalities

- P&S #8 - Watershed Services

Category 3 – Other Programs & Services the Authority deems Advisable (non-mandatory)

- P&S #9 - Burford Tree Nursery and Planting Services
- P&S #10 - Conservation Services
- P&S #11 - Environmental Education Program
- P&S #12 - Property Rentals
- P&S #13 - Hydro Production
- P&S #14 - Conservation Areas
- P&S #15 - Administrative Support

To carry out these programs and services, the GRCA draws revenues from a variety of sources:

- User fees, such as conservation area admissions, environmental education programs, tree planting, planning and permitting fees and others
- Revenues from property rentals and hydro generation at some GRCA dams
- Municipal apportionment (previously referred to as levy), which are applied to category 1 mandatory programs and the general operating expense category
- Municipal funding granted via agreements with participating municipalities, which are applied to category 2 watershed services such as private land stewardship and outreach, subwatershed planning, and water quality programs
- Provincial transfer payments for flood forecasting and water control structure expenses
- Provincial grants for specific purposes, such as the provincial drinking water Source Protection Program and capital projects related to water management
- Donations from the Grand River Conservation Foundation for programs such as environmental education, tree planting activities, and various special projects
- Federal grants and other miscellaneous sources of revenue

Overall, the 2026 budget reflects the continued delivery of prior year programs and services with the use of self-generated revenue (46%), government funding (45%) and the use of reserves (9%).

Category 1 – Mandatory Programs

Mandatory programs and services include watershed management, flood forecasting and warning to help protect residents from flooding, the operation of water control structures such as dams and dikes, resource planning, conservation lands management, and the drinking water source protection program.

Watershed management and monitoring programs help protect watershed residents from flooding and provide the information required to develop appropriate resource management strategies and to identify priority actions to maintain a healthy watershed.

Resource planning includes managing: (a) Natural Hazard Regulation (Permitting and Compliance) - the administration of conservation authority regulations related to development, alteration and other activities in regulated areas (i.e., floodplains, wetlands, slopes, shorelines and watercourses), and (b) Plan Input and Review – planning and technical review of municipal planning documents and recommending policies related to natural hazards; providing advice and information to municipal councils or committees on development proposals and applications; review of environmental assessments and proposals under other legislation (i.e., Aggregate Act and Drainage Act).

Conservation Lands management includes expenses associated with managing GRCA-owned lands. Land management examples include managing trails, infrastructure (i.e., fences, roads, bridges, other structures), passive land holdings and natural areas including wetlands, grasslands and forests.

Drinking water source protection includes programs and services to carry out the GRCA's duties as a Source Protection Authority under the *Clean Water Act, 2006*. The program includes updating and amending technical work and policies in Source Protection Plans for each of the four watersheds in the

Lake Erie Source Protection Region, maintaining a multi-stakeholder Source Protection Committee, and reporting annually on implementation of the Source Protection Plans.

Expenditures:

• P&S #1 - Watershed Management	$	975,700
• P&S #2 - Flood Forecasting and Warning	$	2,856,600
• P&S #3 - Water Control Structures	$	5,413,700
• P&S #4 - Resource Planning	$	2,877,500
• P&S #5 - Conservation Lands Management	$	3,100,200
• P&S #6 - Source Protection Program	$	800,000
Total Expenditures:	***$***	***16,023,700***

Revenue sources:

Municipal Apportionment, permit fees, enquiry fees, plan review fees, provincial and federal grants, and reserves.

General Operating Expenses

Administrative expenses related to the Office of the CAO, Communications, Finance, Payroll, Human Resources (HR), health and safety, head office facility, insurance, Digital Information and Innovation (DI&I) and other administrative expenses that support the provision of programs and services.

Expenditures:

• P&S #7 - General Operating Expenses	$	4,765,065
• DI&I and Vehicle & Equipment	$	498,100
Total Expenditures	***$***	***5,263,165***

Revenue sources:

Municipal Apportionment, interest income, and reserves.

Category 2 – Watershed Services (non-mandatory)

The programs included under watershed services are: subwatershed planning, conservation services, water quality, and watershed sciences and collaborative planning.

Subwatershed planning includes recommending where subwatershed or watershed studies are needed, reviewing and providing input to subwatershed studies, monitoring support, and collaborative work.

Conservation services includes delivering municipal and partnership cost-share programs to support private land stewardship, facilitating private and public land tree planting, and coordinating education and outreach activities for watershed health.

Water quality programs include the operation of continuous water quality stations, analysis and reporting on surface water and groundwater quality, and delivery of the Watershed-Wide Wastewater Optimization Program.

Watershed sciences and collaborative planning includes watershed and landscape-scale science and reporting, cross-disciplinary integration, and collaborative water planning with municipalities and provincial and federal agencies.

Total Expenditures:

- P&S #8 – Watershed Services **$ 2,519,200**

Revenue sources:

Municipal funding agreements, provincial and federal grants.

Category 3 – Other Programs & Services (non-mandatory)

The programs and services included in Category 3 are: Burford tree nursery and planting services, special conservation projects, environmental education program, property rentals, hydro production, conservation areas, and administrative support.

Burford Tree Nursery and planting services includes the operation of the Burford Tree Nursery and facilitating tree planting contracts.

Special projects under the conservation services program include special studies and evaluations, and events such as children's water festivals and the Mill Creek Rangers program.

The Environmental Education Program provides curriculum-based programs to about 30,000 students annually, as well as some community groups throughout the watershed at five GRCA environmental education centres, as well as at schools, Conservation Areas and virtually.

Property Rental activities include residential leases, cottage lot leases, agricultural leases, and other miscellaneous leases.

Hydro production includes hydro generation at Belwood (Shand), Conestogo, Guelph, and Elora dam locations.

Conservation areas include the operation of 11 active conservation areas and one Wildlife Management Area. The GRCA offers camping, hiking, fishing, swimming, skiing, tubing, and other activities at its conservation areas. It provides over 2,000 campsites, making it the second-largest provider of camping accommodation in Ontario. Over 1.7 million people visit Grand River Conservation Areas each year.

Administrative Support includes administrative expenses related to finance, communications, capital support, and other administrative expenses that support category 3 programs and services.

Expenditures:

• P&S #9 - Burford Tree Nursery & Planting Services	$	963,900
• P&S #10 - Conservation Services	$	132,400
• P&S #11 - Environmental Education Program	$	1,099,000
• P&S #12 - Property Rentals	$	1,178,500
• P&S #13 - Hydro Production	$	168,500
• P&S #14 - Conservation Areas	$	13,198,600
• P&S #15 - Administrative Support	$	1,239,523
Total Expenditures:	***$***	***17,980,423***

Revenue sources:

Burford Nursery/Planting Services: Trees sales, landowner contributions and donations.

Conservation Services (Special Projects): Special local and government grants and Grand River Conservation Foundation funding**.**

Environmental Education Program: School boards, other user fees (i.e., individual schools, community program fees, donations from the Grand River Conservation Foundation and reserves).

Property Rentals: Lease agreement income.

Hydro Production: Sale of hydroelectricity.

Conservation Areas: Conservation Area user fees, government grants, donations, and reserves.



Budget 2026 Summary

	Budget 2025	Budget 2026	Incr/(decr)
Operating Budget*	31,557,965	33,007,388	1,449,423
			4.6%
Major Maintenance & Equipment Budget	6,053,000	6,696,100	643,100
			10.6%
Special Projects Budget	2,419,000	2,083,000	(336,000)
			-13.9%
TOTAL*	40,029,965	41,786,488	1,756,523
			4.4%

** Operating Budget includes $50,000 funding to reserve compared to Statement of Operations which shows reserve transfers separately.*

Operating Budget Summary

	Budget 2025	Budget 2026	Incr/(Decr)	% change
EXPENDITURES				
OPERATING EXPENSES	31,491,465	32,957,388	1,465,923	4.7%
FUNDING TO RESERVES-Hydro Revenue (2025), Property Rentals (2026)	66,500	50,000	(16,500)	-24.8%
Total Expenses & Reserve Movements	**31,557,965**	**33,007,388**	**1,449,423**	**4.59%**
SOURCES OF FUNDING				
MUNICIPAL APPORTIONMENT - CATEGORY 1 & General Operating	11,755,000	12,199,000	444,000	3.8%
MUNICIPAL APPORTIONMENT - CATEGORY 2	1,052,000	1,089,000	37,000	3.5%
OTHER GOVT FUNDING	1,347,188	1,365,388	18,200	1.4%
SELF-GENERATED	16,117,000	16,948,000	831,000	5.2%
FUNDING FROM RESERVES	788,000	906,000	118,000	15.0%
SURPLUS CARRYFORWARD	498,777	500,000	1,223	0.2%
Total Funding	**31,557,965**	**33,007,388**	**1,449,423**	**4.59%**

Major Maintenance & Equipment Budget Summary

Budget 2026	Watershed Management	Flood Forecasting & Warning	Water Control Structures	Conservation Areas	General Operating	BUDGET TOTAL
Expenses:						
WQ Monitoring Equipment & Instruments	60,000					**60,000**
Flood Forecasting Warning Hardware and Gauges		1,138,000				**1,138,000**
Flood Control Structures - Major Maintenance			3,000,000			**3,000,000**
Conservation Areas Capital Projects				2,000,000		**2,000,000**
Net IT/MP Capital Spending not allocated to Departments					498,100	**498,100**
TOTAL EXPENSE	**60,000**	**1,138,000**	**3,000,000**	**2,000,000**	**498,100**	**6,696,100**
Funding						
Municipal Apportionment	35,000	165,000	750,000			**950,000**
Provincial & Federal Government			1,450,000			**1,450,000**
Self Generated				1,500,000		**1,500,000**
Funding from Reserves	25,000	973,000	800,000	500,000	498,100	**2,796,100**
TOTAL FUNDING	**60,000**	**1,138,000**	**3,000,000**	**2,000,000**	**498,100**	**6,696,100**

Budget 2025	Watershed Management	Flood Forecasting & Warning	Water Control Structures	Conservation Areas	General Operating	BUDGET TOTAL
Expenses:						
WQ Monitoring Equipment & Instruments	110,000					**110,000**
Flood Forecasting Warning Hardware and Gauges		190,000				**190,000**
Flood Control Structures - Major Maintenance			3,000,000			**3,000,000**
Conservation Areas Capital Projects				2,000,000		**2,000,000**
Net IT/MP Capital Spending not allocated to Departments					753,000	**753,000**
TOTAL EXPENSE	**110,000**	**190,000**	**3,000,000**	**2,000,000**	**753,000**	**6,053,000**
Funding						
Municipal Apportionment	35,000	165,000	750,000			**950,000**
Provincial & Federal Government			1,450,000			**1,450,000**
Self Generated				1,500,000		**1,500,000**
Funding from Reserves	75,000	25,000	800,000	500,000	753,000	**2,153,000**
TOTAL FUNDING	**110,000**	**190,000**	**3,000,000**	**2,000,000**	**753,000**	**6,053,000**

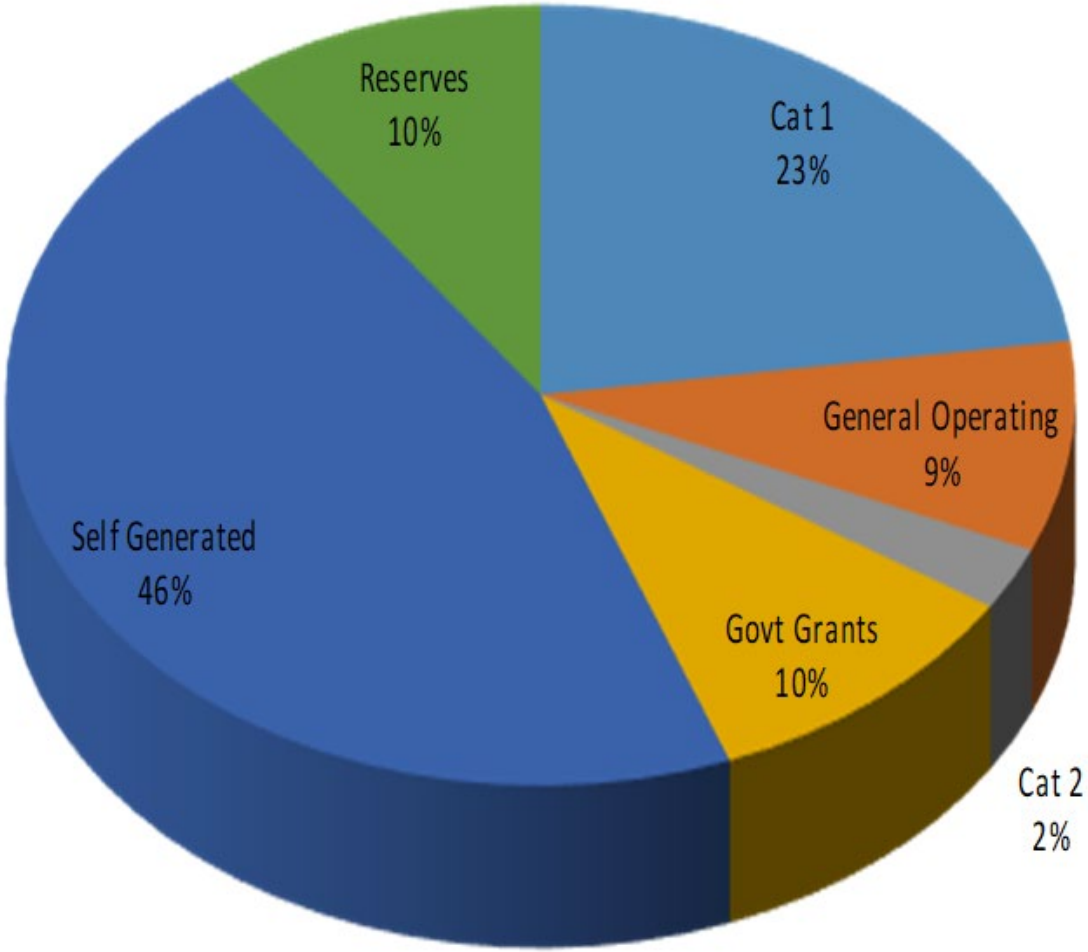
Special Projects Budget Summary

Schedule	EXPENDITURES	Budget 2025	Budget 2026
P&S #2	Floodplain Mapping	250,000	475,000
P&S #5	Ecological Restoration	100,000	100,000
P&S #8	Subwatershed Plans - City of Kitchener	96,000	85,000
P&S #8	Waste Water Optimization Program	130,000	20,000
P&S #8	Upper Grand Restoration	-	10,000
P&S #8	Conservation Services Grants (RWQP)	800,000	800,000
P&S #8	Species at Risk	70,000	70,000
P&S #8	Fresh Water Ecosystem Project	138,000	-
P&S #8	Water Management Plan (WQ)	100,000	80,000
P&S #8	Great Lakes Renewal Project	-	35,000
P&S #8	Resilient Agriculture Landscape Program	-	167,000
P&S #8	Grand River Simulation Model	-	50,000
P&S #10	Brant/Brantford Children's Water Festival	45,000	45,000
P&S #10	Wateloo Wellington Children's Water Festival	-	6,000
P&S #10	Mill Creek Rangers	40,000	40,000
P&S #11	Guelph Lake Nature Centre	650,000	100,000
	Total SPECIAL Project Expenditures	**2,419,000**	**2,083,000**
	SOURCES OF FUNDING		
	OTHER GOVERNMENT FUNDING	1,334,000	1,417,000
	SELF-GENERATED	185,000	185,000
	FUNDING FROM/(TO) RESERVES	900,000	481,000
	Total Funding	**2,419,000**	**2,083,000**

Overview – 2026 Revenue by Source

2026 Budget: $41.7 million

(2025: $40.0 million)



Programs and Services (P&S) Inventory

	Programs & Services Inventory	TOTAL EXPENDITURES (includes transfers to reserves)	MUNICIPAL APPORTIONMENT/ Cat 2-MOU FUNDING	MUNICIPAL-0THER	SELF-GENERATED REVENUE	PROVINCIAL & FEDERAL GRANTS	Funding from RESERVES	Programs& Services SURPLUS allocation	TOTAL REVENUE (after P&S surplus allocation)	NET RESULT
CATEGORY 1	Watershed Management	**975,700**	913,200			37,500	25,000		**975,700**	-
	Flood Forecasting & Warning	**2,856,600**	1,244,262			364,338	1,248,000		**2,856,600**	-
	Water Control Structures	**5,413,700**	2,828,350			1,735,350	850,000		**5,413,700**	-
	Resource Planning	**2,877,500**	1,828,500		1,049,000				**2,877,500**	-
	Conservation Lands Management	**3,100,200**	2,695,200		205,000		200,000		**3,100,200**	-
	Source Protection Program	**800,000**	-			800,000			**800,000**	-
	Total Category 1	**16,023,700**	**9,509,512**		**1,254,000**	**2,937,188**	**2,323,000**	**-**	**16,023,700**	**-**
			59%	*0%*	*8%*	*18%*	*14%*	*0%*	*100%*	
General Operating	**General Operating Expenses (note 5)**	**5,263,165**	**3,639,488**		**650,000**		**713,100**	**260,577**	**5,263,165**	**-**
			69%	*0%*	*12%*	*0%*	*14%*	*5%*	*100%*	
CATEGORY 2	**Category 2 Watershed Services**	**2,519,200**	**1,089,000**	**945,000**	**-**	**335,200**	**150,000**		**2,519,200**	**-**
			43%	*38%*	*0%*	*13%*	*6%*	*0%*	*100%*	
CATEGORY 3	Burford Tree Nursery & Planting Services	**963,900**			725,000			238,900	**963,900**	-
	Conservation Services	**132,400**		15,000	70,000	-	8,000	39,400	**132,400**	-
	Outdoor Environmental Education	**1,099,000**			610,000		489,000	-	**1,099,000**	-
	Property Rentals	**1,178,500**			3,208,000		-	(2,029,500)	**1,178,500**	-
	Hydro Production	**168,500**			545,000			(376,500)	**168,500**	-
	Conservation Areas	**13,198,600**			12,071,000		500,000	627,600	**13,198,600**	-
	Administrative Support (note 6)	**1,239,523**						1,239,523	**1,239,523**	-
	Total Category 3	**17,980,423**	**-**	**15,000**	**17,229,000**	**-**	**997,000**	**(260,577)**	**17,980,423**	**-**
			0%	*0%*	*96%*	*0%*	*6%*	*-1%*	*100%*	
	TOTAL Programs & Services	**41,786,488**	**14,238,000**	**960,000**	**19,133,000**	**3,272,388**	**4,183,100**	**-**	**41,786,488**	**-**
			34%	*2%*	*46%*	*8%*	*10%*	*0%*	*100%*	
			NOTE 1, NOTE 4		**NOTE 2**			**NOTE 3**		

COMMENTARY:

NOTE 1 Total Programs & Services expenditures (includes transfers to reserves) is funded 34% by the combined total of mandatory municipal apportionment and Category 2 MOA municipal funding.

NOTE 2 46% of total expenses is funded with self-generated revenue.

NOTE 3 Category 3 'Property Rentals' and 'Hydro Production' generate a surplus which is allocated to Category 3 programs and General Operating expenses to achieve breakeven results for each P&S.

NOTE 4 In 2025 Municipal funding totalled $13,757,000. Therefore Municipal funding is increasing by $465,000 (or 3.5%) to $14,238,000 in 2026 as compared to 2025.

NOTE 5 **General Operating Expenses** include administrative expenses related to Office of the CAO, communications, capital support, finance, payroll, human resources, health and safety, head office facility, and other administrative expenses that suport the provision of programs and services.

NOTE 6 **Administrative Support** includes administrative expenses related to finance, communications, capital support and other administrative expenses that support category 3 programs and services.

Summary of Municipal Apportionment

	% CVA In Watershed	2025 CVA (Modified)	2025 CVA In Watershed	CVA-Based Apportionment	2026 Budget General Operating Expenses*	2026 Budget Category 1 Operating Expenses*	2026 Budget Category 2 Operating Expenses*	2026 Budget Total Apportionment	2025 Actual Total Apportionment	% Change
Brant County	82.9%	8,261,080,919	6,848,436,082	3.08%	112,247	293,286	33,586	439,119	417,037	5.3%
Brantford C	100.0%	16,496,208,031	16,496,208,031	7.43%	270,375	706,455	80,901	1,057,730	1,018,547	3.8%
Amaranth Twp	82.0%	891,570,825	731,088,077	0.33%	11,983	31,309	3,585	46,876	44,515	5.3%
East Garafraxa Twp	80.0%	693,656,670	554,925,336	0.25%	9,095	23,765	2,721	35,581	35,355	0.6%
Town of Grand Valley	100.0%	658,134,422	658,134,422	0.30%	10,787	28,185	3,228	42,200	40,333	4.6%
Melancthon Twp	56.0%	646,397,562	361,982,634	0.16%	5,933	15,502	1,775	23,210	22,543	3.0%
Southgate Twp	6.0%	1,317,227,449	79,033,647	0.04%	1,295	3,385	388	5,068	4,652	8.9%
Haldimand County	41.0%	7,920,129,193	3,247,252,969	1.46%	53,223	139,064	15,925	208,212	200,742	3.7%
Norfolk County	5.0%	10,103,660,718	505,183,036	0.23%	8,280	21,635	2,478	32,393	31,589	2.5%
Halton Region	10.7%	51,406,109,099	5,479,852,401	2.47%	89,815	234,676	26,874	351,366	339,779	3.4%
Hamilton City	26.8%	101,728,598,671	27,212,400,145	12.25%	446,015	1,165,378	133,456	1,744,849	1,689,795	3.3%
Oxford County	35.7%	4,804,815,775	1,716,115,455	0.77%	28,127	73,493	8,416	110,036	107,510	2.3%
North Perth T	2.0%	2,597,387,936	51,947,759	0.02%	851	2,225	255	3,331	3,231	3.1%
Perth East Twp	40.0%	2,177,655,169	871,062,068	0.39%	14,277	37,303	4,272	55,852	54,089	3.3%
Region of Waterloo	100.0%	112,135,908,861	112,135,908,861	50.50%	1,837,921	4,802,248	549,940	7,190,113	6,960,138	3.3%
Centre Wellington Twp	100.0%	6,061,622,649	6,061,622,649	2.73%	99,351	259,591	29,728	388,669	358,987	8.3%
Erin T	49.0%	2,764,894,614	1,354,798,361	0.61%	22,205	58,020	6,644	86,869	82,570	5.2%
Guelph C	100.0%	29,458,533,371	29,458,533,371	13.27%	482,829	1,261,570	144,471	1,888,870	1,837,395	2.8%
Guelph Eramosa Twp	100.0%	3,048,245,188	3,048,245,188	1.37%	49,961	130,542	14,949	195,452	191,176	2.2%
Mapleton Twp	95.0%	2,032,932,118	1,931,285,512	0.87%	31,654	82,708	9,471	123,833	117,152	5.7%
Wellington North Twp	51.0%	2,025,261,218	1,032,883,221	0.47%	16,929	44,234	5,065	66,227	60,669	9.2%
Puslinch Twp	75.0%	2,955,815,044	2,216,861,283	1.00%	36,335	94,938	10,872	142,144	139,196	2.1%
Total		**370,185,845,501**	**222,053,760,508**	**100.00%**	**3,639,488**	**9,509,512**	**1,089,000**	**14,238,000**	**13,757,000**	**3.5%**

**Operating Expenses include maintenance of capital infrastructure, studies, and/or equipment.*

Category Two – Watershed Services Program Breakdown

Programs & Services	Cost	Offsetting Funding	Apportionment	Description of Offsetting Funding
Sub-watershed Services	$ 368,000	$ (135,000)	$ 233,000	Municipal Funding
Conservation Services	$ 1,678,200	$ (1,130,200)	$ 548,000	Municipal, Provincial, Federal Funding
Water Quality	$ 473,000	$ (165,000)	$ 308,000	Provincial Funding, Reserves
Watershed Sciences & Collaborative Planning *				
TOTAL	**$2,519,200**	**$ (1,430,200)**	**$1,089,000**	

** Costs related to this activity integrated in the above listed programs and services.*



2) Programs and Services (P&S) Reports



Statement of Operations - Revenue

	New Regulations Category	P&S Ref #	Actual 2025	Budget 2025	Budget 2026
REVENUE					
Municipal					
Municipal Apportionment	Category 1	various	12,705,000	12,705,000	13,149,000
Memorandums of Understanding Apportionment	Category 2	various	1,052,000	1,052,000	1,089,000
Other	Category 1	various	-	-	-
Other	Category 2 & 3	various	593,185	946,000	960,000
Total Municipal			**14,350,185**	**14,703,000**	**15,198,000**
Government Grants					
MNRF Transfer Payments	Category 1	various	449,688	449,688	449,688
Source Protection Program-Provincial	Category 1	various	605,097	780,000	800,000
Other Provincial	Category 1	various	1,768,458	1,487,500	1,687,500
Other Provincial	Category 2	8	201,563	220,000	217,000
Other Provincial	Category 3	10	21,572	40,000	-
Federal	Category 1 & 2	various	219,205	208,000	118,200
Total Government Grants			**3,265,583**	**3,185,188**	**3,272,388**
Self Generated					
User Fees and Sales					
Resource Planning	Category 1	4	1,019,605	924,000	1,049,000
Burford Operations & Planting Services	Category 3	9	666,895	705,000	725,000
Conservation Lands Income	Category 3	14	58,959	71,000	71,000
Timber Revenue	Category 1	5	286,528	15,000	95,000
Conservation Areas User Fees	Category 3	14	13,927,902	11,400,000	12,000,000
Environmental Education	Category 3	11	644,774	600,000	610,000
Property Rentals	Category 3	12	3,176,303	3,150,000	3,208,000
Hydro Generation	Category 3	13	383,370	475,000	545,000
Land Sales	Category 1	5	826,107	-	-
Grand River Conservation Foundation	Category 1,2,3	various	521,020	197,000	180,000
Donations	Category 1,2,3	various	39,730	15,000	-
Investment Income	General Operating	7	2,187,918	2,300,000	2,050,000
Miscellaneous Income	various	various	1,289,889	-	-
Total Self-Generated Revenue			**25,029,000**	**19,852,000**	**20,533,000**
TOTAL REVENUE			**42,644,768**	**37,740,188**	**39,003,388**

Statement of Operations - Expenses

	New Regulations Category	P&S Ref #	Actual 2025	Budget 2025	Budget 2026
EXPENSES					
OPERATING					
Watershed Management	Category 1	1	691,096	864,100	915,700
Flood Forecasting and Warning	Category 1	2	1,174,922	1,116,000	1,243,600
Water Control Structures	Category 1	3	2,369,583	2,490,700	2,413,700
Resource Planning	Category 1	4	2,681,155	2,747,600	2,877,500
Conservation Lands Management	Category 1	5	3,117,003	3,020,900	3,000,200
Source Protection Program	Category 1	6	605,097	780,000	800,000
General Operating Expenses	General Operating	7	3,921,665	4,314,465	4,765,065
Watershed Services	Category 2	8	1,119,037	1,102,000	1,202,200
Burford Operations & Planting Services	Category 3	9	831,263	977,400	963,900
Conservation Services	Category 3	10	16,577	86,200	41,400
Environmental Education Program	Category 3	11	892,121	953,000	999,000
Property Rentals	Category 3	12	1,371,847	1,109,700	1,128,500
Hydro Production	Category 3	13	109,638	95,500	168,500
Conservation Areas	Category 3	14	11,174,536	10,540,000	11,198,600
Administrative Support	Category 3	15	1,172,765	1,293,900	1,239,523
Total Operating Expenses			**31,248,305**	**31,491,465**	**32,957,388**
MAJOR MAINTEANCE & EQUIPMENT					
Watershed Management	Category 1	1	12,734	110,000	60,000
Flood Forecasting and Warning	Category 1	2	182,157	190,000	1,138,000
Water Control Structures	Category 1	3	3,842,333	3,000,000	3,000,000
Environmental Education	Category 3	11	35,932	-	-
Conservation Areas	Category 3	13	701,834	2,000,000	2,000,000
Information Systems	General Operating	16	209,414	429,000	355,000
Motor Pool	General Operating	16	31,092	324,000	143,100
Total Major Maintenance & Equipment Expenses			**5,015,496**	**6,053,000**	**6,696,100**
SPECIAL PROJECTS					
Flood Forecasting and Warning	Category 1	2	148,829	250,000	475,000
Conservation Lands	Category 1	5	110,438	100,000	100,000
Watershed Services	Category 2	8	993,413	1,324,000	1,317,000
Conservation Services	Category 3	10	108,280	95,000	91,000
Environmental Education Program	Category 3	11	477,733	650,000	100,000
Total Special Projects Expenses			**1,838,693**	**2,419,000**	**2,083,000**
Total EXPENSES			**38,102,494**	**39,963,465**	**41,736,488**
Gross Surplus/(Defecit)			**4,542,274**	**(2,223,277)**	**(2,733,100)**
Prior Year Surplus Carryforward			**498,777**	**498,777**	**500,000**
Net Funding FROM/(TO) Reserves			**(4,541,051)**	**1,724,500**	**2,233,100**
NET SURPLUS			**500,000**	**-**	**-**

P&S #1 - Watershed Management

This category includes the collection and analysis of environmental data and the development of management plans for protection and management of water resources.

Specific Activities:

- Implementation of a Watershed-based Resource Management Strategy per Ontario Regulation 686/21 (Mandatory Programs and Services).
- Monitoring at 16 stream flow monitoring stations.
- Monitoring at 27 groundwater wells under the Provincial Groundwater Monitoring Network and other wells that inform groundwater-surface water interactions.
- Monitoring at 37 water quality monitoring stations under the Provincial Water Quality Monitoring Network.
- Maintain a water budget to support sustainable water use in the watershed and maintain a drought response program.
- Provide advice to Provincial Ministries regarding water taking permits to ensure that drinking water source protection concerns are identified so that potential impacts can be addressed.

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	547,129	714,000	750,000
Administration Expenses	120,220	111,000	126,600
Other Operating Expenses	23,747	39,100	39,100
Total OPERATING Expenditures	**691,096**	**864,100**	**915,700**
Instrumentation	9	60,000	60,000
Water Quality Monitoring Equipment	12,725	50,000	-
Total CAPITAL Expenditures	**12,734**	**110,000**	**60,000**
Gauge Reserve	35,000	-	-
Total FUNDING to RESERVES	**35,000**	**-**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**738,830**	**974,100**	**975,700**
Funding			
Municipal			
Municipal Apportionment	861,600	861,600	913,200
Government Grants			
Other Provincial	13,502	37,500	37,500
Funding From Reserves			
Gauges	-	75,000	25,000
TOTAL FUNDING	**875,102**	**974,100**	**975,700**
Net Surplus/(Deficit)	**136,272**	**-**	**-**

P&S #2 - Flood Forecasting and Warning

The flood warning system includes the direct costs associated with monitoring the streams and rivers to effectively provide warnings and guidance to municipalities and watershed residents during flood emergencies.

Overall, flood protection services provide watershed residents with an effective and efficient system that will reduce their exposure to the threat of flood damage and loss of life.

Specific Activities:

- Maintain a 'state of the art' computerized flood forecasting and warning system.
- Operate a 24-hour, year-round, on-call duty officer system to respond to flooding matters.
- Collect and manage data on precipitation, water quantity, reservoir conditions, water levels from 56 stream flow gauges, 24 rainfall gauges, and 12 snow courses and conduct analysis on hydrometric data in support of water quantity programs such as the low water response program for the watershed.
- Use Ignition system to continuously, monitor reservoir levels, river conditions and detect warning levels, assist municipalities with emergency planning, and respond to thousands of inquiries each year.
- Assist municipalities with municipal emergency planning and participate in municipal emergency planning exercises when requested.
- Hold annual municipal flood coordinator meetings to confirm responsibilities of agencies involved in the flood warning system. Test the system. Update and publish a flood warning system guide containing up-to-date emergency contact information. Maintain up-to-date emergency contact information throughout the year.
- Complete floodplain mapping projects as funding is made available.

P&S #2 Flood Forecasting and Warning

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	785,077	737,000	834,000
Administration Expenses	254,586	256,000	286,600
Other Operating Expenses	135,259	123,000	123,000
Total OPERATING Expenditures	**1,174,922**	**1,116,000**	**1,243,600**
Hardware	164,192	88,000	88,000
Stream Gauges	17,965	102,000	1,050,000
Total CAPITAL Expenditures	**182,157**	**190,000**	**1,138,000**
Floodplain Mapping Projects	148,829	250,000	475,000
Total SPECIAL PROJECT Expenditures	**148,829**	**250,000**	**475,000**
Total FUNDING to RESERVES	**-**	**-**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**1,505,908**	**1,556,000**	**2,856,600**
Funding			
Municipal			
Municipal Apportionment	1,116,662	1,116,662	1,244,262
Municipal Other	-	-	-
Government Grants			
MNRF Transfer Payments	164,338	164,338	164,338
Other Provincial	-	-	200,000
Funding From Reserves			
Floodplain Mapping Projects & Gauges	17,000	275,000	75,000
Land Sale Proceeds Reserve	149,000	-	1,173,000
TOTAL REVENUE	**1,447,000**	**1,556,000**	**2,856,600**
Net Surplus/(Deficit)	**(58,908)**	**-**	**-**

P&S #3 - Water Control Structures

This category includes costs associated with the capital and maintenance of structures, the primary purpose of which is to provide protection to life and property. These structures include dams, dikes, berms and channels, etc. Also included in this category are non-flood control dams and weirs, which maintain upstream water levels.

Overall, flood protection services provide watershed residents with an effective and efficient system that reduces exposure to the threat of flood damage and loss of life.

Multi-purpose reservoirs provide flow augmentation benefits to watercourses downstream of the reservoirs, improving water quality.

Specific Activities:

- Operate and maintain seven major multi-purpose reservoirs, which provide flood protection and flow augmentation, and 25 kilometers of dikes in five major dike systems (Kitchener-Bridgeport, Cambridge-Galt, Brantford, Drayton and New Hamburg).
- Ensure structural integrity of flood protection infrastructure through dam safety reviews, inspections and monitoring, reconstruction of deteriorating sections of floodwalls and refurbishing of major components of dams and dikes.
- Carry out capital upgrades to the flood control structures to meet Provincial standards, including , gate repairs at Guelph Dam, gate control improvements at Woolwich Dam, concrete repairs to Cambridge floodwalls and dam safety assessments at Shand Dam and Laurel Dam. Carry out studies for improvements to flood control dike systems in Bridgeport and Brantford.
- Implement the Water Control Structures Asset Management Plan for GRCA flood control and flow augmentation dams.
- Operate and maintain 20 non-flood control dams, which are primarily for aesthetic, recreational, municipal fire suppression water supply, or municipal drinking water supply intake purposes.
- Develop and implement plans to decommission failing or obsolete dams.
- Ice management activities to help mitigate the impacts or respond to flooding resulting from ice jams.
- Develop and implement public safety plans for structures.

P&S #3 - Water Control Structures

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	1,515,732	1,770,000	1,699,000
Administration Expenses	40,658	49,200	49,200
Insurance	139,433	151,000	145,000
Other Operating Expenses	673,760	520,500	520,500
Total OPERATING Expenditures	**2,369,583**	**2,490,700**	**2,413,700**
Total CAPITAL Expenditures	**3,842,333**	**3,000,000**	**3,000,000**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**6,211,916**	**5,490,700**	**5,413,700**
Funding			
Municipal			
Municipal Apportionment	2,785,350	2,785,350	2,828,350
Government Grants			
MNRF Transfer Payments	285,350	285,350	285,350
Provincial	1,750,725	1,450,000	1,450,000
Federal	7,423	-	-
Funding From Reserves			
Water Control Structures/Water Mgmt Operating/Land Sale	1,321,000	970,000	850,000
TOTAL REVENUE AND FUNDING FROM RESERVES	**6,149,848**	**5,490,700**	**5,413,700**
Net Surplus/(Deficit)	**(62,068)**	**-**	**-**



P&S #4 - Resource Planning

(a) PLANNING - Regulation

This category includes costs and revenues associated with administering the Prohibited Activities, Exemptions and Permits Regulation made under the CA Act. This includes permit review, permit issuance, inspections, enforcement and follow-up, which may include defending appeals.

Specific Activities:

- Process about 800 permits each year related to development, alteration or activities that may interfere with the following types of regulated features:
    - hazardous lands;
    - valley lands, steep slopes;
    - wetlands including swamps, marshes, bogs, and fens;
    - any watercourse, river, creek;
    - floodplain;
    - the Lake Erie shoreline.
- The regulation applies to the development activities listed below in the areas listed above:
    - the construction, reconstruction, erection or placing of a building or structure of any kind;
    - any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure, or increasing the number of dwelling units in the building or structure;
    - site grading;
    - the temporary or permanent placing, dumping or removal of any material originating on the site or elsewhere.
- Maintain policies and guidelines to assist in the protection of people and property (i.e., Policies for the Administration of the Prohibited Activities, Exemptions and Permits Regulation).
- Enforcement of the Prohibited Activities, Exemptions and Permits Regulation and maintain compliance policies and procedures.
- Maintain natural hazards mapping in digital format to be integrated into municipal planning documents and Geographic Information Systems.

(b) PLANNING - Municipal Plan Input and Review

This program includes costs and revenues associated with reviewing Official Plans, Secondary and Community Plans, Zoning By-laws, Environmental Assessments, development applications and other proposals.

Specific Activities:

- Review municipal planning and master plan documents and recommend policies and designations for natural hazard lands including watercourses, floodplains, wetlands, slopes, shorelines, and hazard sites.
- Provide advice to municipalities regarding environmental assessments, and other proposals such as aggregate and municipal drain applications to ensure that all natural hazard concerns are adequately identified and that any adverse impacts are minimized or mitigated.
- Provide information and technical advice to Municipal Councils and Committees regarding development applications to assist in making wise land use decisions regarding protection of people and property from natural hazards.

P&S #4 – Resource Planning

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	2,175,661	2,435,000	2,417,000
Administration Expenses	343,623	257,900	305,800
Other Operating Expenses	161,871	54,700	154,700
Total OPERATING Expenditures	**2,681,155**	**2,747,600**	**2,877,500**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**2,681,155**	**2,747,600**	**2,877,500**
Funding			
Municipal			
Municipal Apportionment	1,823,600	1,823,600	1,828,500
Self Generated			
Solicitor Enquiry Fees	59,943	70,000	70,000
Permit Fees	396,857	410,000	415,000
Plan Review Fees	562,805	444,000	564,000
Funding from Reserves			
Planning Enforcement Reserve	27,500	-	-
TOTAL REVENUE	**2,870,705**	**2,747,600**	**2,877,500**
Net Surplus/(Deficit)	**189,550**	**-**	**-**

P&S #5 - Conservation Lands Management

Conservation Lands Management includes expenses associated with managing GRCA-owned lands.

Specific Activities:

- Acquire and manage significant wetlands and floodplain lands, e.g., the Luther Marsh Wildlife Management Area, the Keldon Source Area, the Bannister-Wrigley Complex, and the Dunnville Marsh.
- Manage “passive” conservation lands in order to conserve forests and wildlife habitat (e.g., Arkell Springs Smith in Puslinch, Snyder’s Flats in Bloomingdale, etc.). Some are managed through maintenance agreements with municipalities or private organizations (Chicopee Ski Club in Kitchener, Scott Park in New Hamburg, etc.)
- Develop and maintain extensive trail network on former rail lines owned by GRCA and municipalities (much of this is part of the Trans-Canada Trail network). The Grand River Conservation Foundation is one source of funding for the trails.
- Carry out forestry disease control, woodlot thinning and selective harvesting on GRCA lands in accordance with the Forest Management Plan while generating income from sale of timber. Income generated helps pay for future forest management activities.
- Carry out tree planting and other forest management programs on over 7,000 hectares of managed forests on GRCA-owned lands.
- Hazard tree management on GRCA-owned lands to protect people and property.
- Natural heritage management: carry out restoration and rehabilitation projects for aquatic and terrestrial ecosystems, e.g., species at risk and ecological monitoring on GRCA lands, and prescribed burn activities.
- Where appropriate, dispose of lands that have been declared surplus and continue to identify and plan for disposition of other surplus lands. Proceeds from future dispositions will be used for acquisition of “Environmentally Significant Conservation Lands” and for other core programs.



P&S #5 Conservation Lands Management

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	1,797,100	1,921,000	1,907,000
Administration Expenses	155,536	168,100	177,400
Insurance	63,543	65,000	66,000
Other Operating Expenses	1,100,824	866,800	849,800
Total OPERATING Expenditures	**3,117,003**	**3,020,900**	**3,000,200**
Land Purchases/Land Sale Expenses	39,255	-	-
Ecological Restoration	71,183	100,000	100,000
Total SPECIAL PROJECT Expenditures	**110,438**	**100,000**	**100,000**
Forestry	271,000	-	-
Land Sale Proceeds	787,000	-	-
Total FUNDING to RESERVES	**1,058,000**	**-**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**4,285,441**	**3,120,900**	**3,100,200**
Funding			
Municipal			
Municipal Apportionment	2,778,900	2,778,900	2,695,200
Government Grants			
Provincial	4,231	-	-
Self Generated			
Forest Management	286,528	15,000	95,000
Land Sale Proceeds	826,107	-	-
Donations - Foundation	43,683	127,000	110,000
Donations - Other	39,730	-	-
Miscellaneous Other	9,238	-	-
Funding From Reserves			
Land Reserve (Demolitions/Land Sale Expenses)	136,000	100,000	100,000
Property (Demolitions)	64,000	-	-
Transition Reserve (Staffing)	100,000	100,000	100,000
TOTAL REVENUE	**4,288,417**	**3,120,900**	**3,100,200**
Net Surplus/(Deficit)	**2,976**	**-**	**-**

P&S #6 - Source Protection Program

Drinking water Source Protection includes programs and services to carry out the GRCA's duties as a Source Protection Authority under the Clean Water Act, 2006. The program includes updating and amending technical work and policies in Source Protection Plans for each of the four watersheds in the Lake Erie Source Protection Region, maintaining a multi-stakeholder Source Protection Committee, and reporting annually on implementation of the Source Protection Plans. The focus continues to be completing updates to the Grand River Source Protection Plan, including development of water quantity policies, updating water quality vulnerability assessments, and the development of the annual progress report for the Grand River Source Protection Plan.

	Actual 2025	Budget 2025	Budget 2026
Expenditures			
Compensation and Benefits	548,375	625,000	615,000
Administration Expenses	48,959	45,000	45,000
Other Operating Expenses	7,763	50,000	50,000
Water Budget - Technical Studies	-	60,000	90,000
TOTAL EXPENDITURES	**605,097**	**780,000**	**800,000**
Funding			
Government Grants			
Provincial	605,097	780,000	800,000
TOTAL FUNDING	**605,097**	**780,000**	**800,000**
Net Surplus/(Deficit)	**-**	**-**	**-**

P&S #7 - General Operating Expenses



General operating expenses related to Office of the Chief Administrative Officer (CAO), communications, capital support, finance, payroll, human resources, health and safety, head office facility, insurance, and other administrative expenses that support the provision of programs and services and included in this group.

Specific Activities:

This category includes the following departments:

- Office of the CAO
- Capital Support
- Finance
- Human Resources
- Payroll
- Health & Safety
- Strategic Communications
- Information Management and Innovation
- Office Services

In addition, this category includes expenses relating to:

- The General Membership
- Head Office Building
- Office Supplies, Postage, Bank fees
- Head Office Communication systems
- Insurance
- Audit fees
- Consulting, Legal, Labour Relations fees
- Health and Safety Equipment, Inspections, Training
- Conservation Ontario fees
- Corporate Professional Development
- General expenses

P&S #7 General Operating Expenses

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	2,377,116	2,490,000	2,725,000
Administration Expenses	499,369	478,000	543,300
Insurance	258,232	298,000	268,300
Other Operating Expenses	830,209	1,118,465	1,298,465
LESS: Recovery of Corporate Services Expenses	(43,261)	(70,000)	(70,000)
Total OPERATING Expenditures	**3,921,665**	**4,314,465**	**4,765,065**
Interest Income	2,045,317	2,050,000	1,900,000
Stabilization Reserve-Category 1	10,805	-	-
Building Reserve	216,000	-	-
Personnel Reserve	833,000	-	-
Total FUNDING to RESERVES	**3,105,122**	**2,050,000**	**1,900,000**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**7,026,787**	**6,364,465**	**6,665,065**
Funding			
Municipal			
Municipal Apportionment (levy)	3,338,888	3,338,888	3,639,488
Self Generated			
Investment Income	2,187,918	2,300,000	2,050,000
Miscellaneous	833,326	-	-
Funding From Reserves			
Personnel	-	65,000	65,000
Building	-	-	150,000
TOTAL REVENUE	**6,360,132**	**5,703,888**	**5,904,488**
Net Surplus/(Deficit)	**(666,655)**	**(660,577)**	**(760,577)**

P&S #8 - Watershed Services

The programs included under watershed services are subwatershed planning, conservation services, water quality, and watershed sciences and collaborative planning.

Specific Activities:

Subwatershed planning services

- Identify and recommend where subwatershed or watershed studies are needed.
- Review and provide input to subwatershed studies.
- Undertake subwatershed monitoring to support municipal studies under agreement.
- Networking with conservation and environmental management agencies and organizations, and advocating on a watershed basis.
- In 2026, subwatershed studies/monitoring are ongoing or planned in the Region of Waterloo (City of Kitchener, City of Cambridge, Township of Woolwich), and City of Guelph.

Conservation Services

- Deliver municipal and partnership cost-share programs to support private land stewardship action.
- Facilitate private land, municipal and community partner tree planting.
- Coordinate education and outreach activities to promote actions to improve water quality and watershed health.

Water Quality Programs

- Support optimization of wastewater treatment plant operations through:
    - Knowledge sharing workshops;
    - Hands-on training;
    - Technical advice;
    - Delivering a recognition program.
- Provide technical support for municipal assimilative capacity studies, master plans for water and wastewater services.
- Engage the provincial and federal governments to develop programs to reduce nutrient loads in rivers and streams, and ultimately Lake Erie.
- Surface water quality monitoring, modelling, analysis, and reporting.
- Operate and maintain continuous water quality stations.
- Maintain a water quality database.
- Develop and maintain a water quality model.
- Analyze and report on groundwater and surface water quality and river health.

Watershed Sciences & Collaborative Planning

- Watershed and landscape scale science and reporting.
- Support cross-disciplinary integration and inform municipal watershed planning and water, wastewater, and stormwater master planning.
- Foster cross-municipal resource management:
    - Grand River Water Management Plan;
    - Water Managers Working Group.
- Liaise with provincial, federal agencies, non-governmental organizations.

P&S #8 Watershed Services

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	919,447	850,000	887,000
Administration Expenses	119,754	118,000	131,200
Other Operating Expenses	79,836	134,000	184,000
Total OPERATING Expenditures	**1,119,037**	**1,102,000**	**1,202,200**
Total CAPITAL Expenditures			
RWQP Grants	506,906	800,000	800,000
Upper Grand Restoration	-	-	10,000
Waste Water Optimization Project	126,880	130,000	20,000
Species at Risk	52,459	70,000	70,000
Nature Smart Climate Solutions	133,522	138,000	-
Water Management Plan (WQ)	59,696	90,000	80,000
Great Lakes Renewal	-	-	35,000
Resilient Agriculture Landscape Program	15,987	-	167,000
Municipal Drain Studies	7,793	-	-
Conservation Ontario/Tree Canada planting	35,490	-	-
Grand River Simulation Model	-	-	50,000
Upper Blair Subwatershed Study	54,680	96,000	85,000
Total SPECIAL PROJECT Expenditures	**993,413**	**1,324,000**	**1,317,000**
Stabilization Reserve-Category 2	-	-	-
Total FUNDING to RESERVES	**-**	**-**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**2,112,450**	**2,426,000**	**2,519,200**
Funding			
Municipal			
Memorandums of Understanding Apportionment	1,052,000	1,052,000	1,089,000
Municipal Other	576,153	946,000	945,000
Government Grants			
Other Provincial	201,563	220,000	217,000
Federal	208,774	208,000	118,200
Self Generated			
Miscellaneous	39,719	-	-
Funding From Reserves			
Water Management Plan	-	-	80,000
Gauge Reserve	18,000	-	50,000
Land Sale Proceeds Reserve	-	-	20,000
Stabilization Reserve	16,241	-	-
TOTAL REVENUE	**2,112,450**	**2,426,000**	**2,519,200**
Net Surplus/ (Deficit)	**-**	**-**	**-**

P&S #9 - Burford Tree Nursery & Planting Services

The Nursery/Planting operations includes operation of the Burford Tree Nursery and sourcing and provision of stock and planting services to the public and other GRCA programs (i.e., Category 1 and 2 programs).

Specific Activities:

- Plant trees on private lands (cost recovery from landowner) and on GRCA lands.
- Operate Burford Tree Nursery to grow and supply native and threatened species.
- Source trees from external commercial nurseries.



	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	289,416	306,000	321,000
Administration Expenses	15,631	15,400	16,900
Other Operating Expenses	526,216	656,000	626,000
Total OPERATING Expenditures	**831,263**	**977,400**	**963,900**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**831,263**	**977,400**	**963,900**
Funding			
Government Grants			
Federal	3,008	-	-
Self Generated			
Burford Nursery	440,417	475,000	475,000
Landowner Contributions (Tree Planting)	226,478	230,000	250,000
Donations - Foundation			
TOTAL REVENUE	**669,903**	**705,000**	**725,000**
Net Surplus/(Deficit)	**(161,360)**	**(272,400)**	**(238,900)**

P&S #10 - Conservation Services

Special projects under the conservation services program include special studies and evaluations, and events such as children's water festivals.

Specific Activities:

In 2026, efforts will focus on:

- Co-ordination of the Brantford-Brant Children's Water Festival.
- Mill Creek Rangers Program.

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	7,148	28,000	12,200
Administration Expenses	3,100	36,200	26,200
Other Operating Expenses	6,329	22,000	3,000
Total OPERATING Expenditures	**16,577**	**86,200**	**41,400**
Total CAPITAL Expenditures			
Mill Creek Rangers Program	46,904	40,000	40,000
Waterloo Wellington Children's Water Festival	944	-	6,000
Heritage River Plaques	11,476	-	-
Great Lakes Agricultural Stewardship Initiative	1,159	-	-
Water Management Plan	9,238	-	-
Brant/Brantford Water Festival	38,538	45,000	45,000
Haldimand Children's Water Festival	21	-	-
Water Management Plan	-	10,000	-
Total SPECIAL PROJECT Expenditures	**108,280**	**95,000**	**91,000**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**124,857**	**181,200**	**132,400**
Funding			
Municipal			
Municipal-Other	16,500	-	15,000
Government Grants			
Other Provincial	21,572	40,000	-
Self Generated			
Donations - Foundation	69,265	70,000	70,000
Donations - Other	-	15,000	-
Funding from Reserves			
Cambridge Desiltation	1,931	-	2,000
Transition Reserve	944	-	6,000
TOTAL REVENUE	**110,212**	**125,000**	**93,000**
Net Surplus/(Deficit)	**(14,645)**	**(56,200)**	**(39,400)**

P&S #11 - Environmental Education Program

This category includes costs and revenues associated with the environmental education program. The environmental education program provides curriculum-based programs to about 30,000 students annually, as well as some community groups throughout the watershed.

Specific Activities:

- Provide hands-on, curriculum-based, environmental education school programs under agreements with four school boards in the watershed, as well as individual schools. Programs are delivered at five environmental education centres (Apps' Mill near Brantford, Taquanyah near Cayuga, Guelph Lake, Laurel Creek in Waterloo, Shade's Mills in Cambridge), as well as at schools, GRCA Conservation Areas and virtually.
- Provide community programs under agreements with third parties (i.e., watershed municipalities, etc.)



P&S #11 - Environmental Education Program

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation & Benefits	652,360	672,000	706,000
Administration Expenses	65,068	68,000	74,000
Other Operating Expenses	174,693	213,000	219,000
Total OPERATING Expenditures	**892,121**	**953,000**	**999,000**
Major Repairs & Maintenance Projects	35,932	-	-
Total CAPITAL Expenditures	**35,932**	**-**	**-**
Guelph Lake Nature Centre	477,733	650,000	100,000
Total SPECIAL PROJECT Expenditures	**477,733**	**650,000**	**100,000**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**1,405,786**	**1,603,000**	**1,099,000**
Funding			
Municipal			
Municpal-Other	532	-	-
Self Generated			
Donations - Foundation	376,091	-	-
Nature Centre Revenue - Schools	641,951	600,000	610,000
Nature Centre Revenue - Community	2,500	-	-
Nature Centre Revenue - Miscellaneous	323	-	-
Funding from Reserves			
Transition Reserve	251,389	353,000	389,000
Land Sale Proceeds Reserve (GLNC)	69,000	650,000	100,000
Shades Mills Nature Centre Reserve	19,000	-	-
Guelph Lake Nature Centre Reserve	45,000	-	-
TOTAL REVENUE	**1,405,786**	**1,603,000**	**1,099,000**
Net Surplus/(Deficit)	**-**	**-**	**-**

P&S #12 - Property Rentals

Property Leasing activities include residential, cottage lots, agricultural and other miscellaneous lease or licence agreements.

Specific Activities:

Leasing portfolio includes:

- 733 cottage lots at Belwood Lake and Conestogo Lake.
- 1,200 hectares of agricultural land.
- 8 residential units.
- Over 50 other lease/license agreements for use of GRCA lands.

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	372,557	473,000	497,000
Administration Expenses	50,366	35,000	36,800
Other Operating Expenses	948,924	601,700	594,700
Total OPERATING Expenditures	**1,371,847**	**1,109,700**	**1,128,500**
Property Rentals	-	-	50,000
Land Sale Proceeds	335,000	-	-
Total FUNDING to RESERVES	**335,000**	**-**	**50,000**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**1,706,847**	**1,109,700**	**1,178,500**
Funding			
Self Generated			
Belwood	1,090,027	1,087,000	1,110,000
Conestogo	1,309,380	1,302,000	1,329,000
Agricultural	277,537	270,000	280,000
Residential	103,883	115,000	86,000
Miscellaneous	395,476	376,000	403,000
Miscellaneous - Gain on Contaminated Sites	334,578	-	-
Funding FROM Reserves			
Cottage Lot Operations	120,000	-	-
Property Rental Reserve	255,000	-	-
TOTAL REVENUE	**3,885,881**	**3,150,000**	**3,208,000**
Net Surplus/(Deficit)	**2,179,034**	**2,040,300**	**2,029,500**

P&S #13 - Hydro Production

This program generates revenue from 'hydro production'.

Specific Activities:

- Generate hydro from turbines in 4 dams, Shand, Conestogo, Guelph and Drimmie.

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	71,283	70,000	73,000
Administration Expenses	1,039	-	-
Other Operating Expenses	37,316	25,500	95,500
Total OPERATING Expenditures	**109,638**	**95,500**	**168,500**
General Capital	-	66,500	-
Total FUNDING to RESERVES	**-**	**66,500**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**109,638**	**162,000**	**168,500**
Revenue			
Self Generated			
Hydro Production-Belwood	264,551	315,000	285,000
Hydro Production-Conestogo	107,688	105,000	205,000
Hydro Production-Guelph	1,229	40,000	40,000
Hydro Production-Elora	9,902	15,000	15,000
TOTAL REVENUE	**383,370**	**475,000**	**545,000**
Net Surplus/(Deficit)	**273,732**	**313,000**	**376,500**

P&S #14 - Conservation Areas

These programs include costs and revenues associated with delivering recreational programs on GRCA lands and include the costs and revenues associated with day-use, camping, concessions, and other activities at GRCA active Conservation Areas.

Specific Activities:

- Operate 11 “active” Conservation Areas (8 camping and 3 exclusively day-use) and Luther Marsh Wildlife Management Area which are enjoyed by over 1.7 million visitors annually. These visitors also help generate significant spin-off revenues for the local economies.
- Offer camping, hiking, fishing, swimming, boating, picnicking, skiing and related facilities.
- Provide over 2,000 campsites – second only to the provincial park system as a provider of camping accommodation in Ontario.
- Provide 500 seasonal camping sites at 7 different locations.
- Operate 2 large pools [1.85 acres (Canada’s largest outdoor pool) and 1.5 acres in size]
- Manage hunting programs at various sites.
- Employ over 230 students seasonally within the conservation areas.
- General repairs to Conservation Area buildings, roads, bridges, pools, electrical infrastructure, water infrastructure, and septic infrastructure.



P&S #14 Conservation Areas

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	6,248,487	6,117,000	6,423,000
Administration Expenses	281,237	253,000	303,800
Other Operating Expenses	4,644,812	4,170,000	4,471,800
Total OPERATING Expenditures	**11,174,536**	**10,540,000**	**11,198,600**
Total CAPITAL Expenditures	**701,834**	**2,000,000**	**2,000,000**
Conservation Area Reserve	2,735,000	-	-
Total FUNDING to RESERVES	**2,735,000**	**-**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**14,611,370**	**12,540,000**	**13,198,600**
Funding			
Self Generated			
Brant	1,610,451	1,300,000	1,370,000
Byng Island	1,320,043	1,050,000	1,110,000
Belwood Lake	406,122	375,000	375,000
Conestogo Lake	616,471	600,000	600,000
Elora Gorge	3,134,998	2,400,000	2,650,000
Elora Quarry	528,630	350,000	450,000
Guelph Lake	1,985,216	1,650,000	1,750,000
Laurel Creek	843,905	700,000	700,000
Pinehurst Lake	1,140,682	975,000	975,000
Rockwood	1,643,709	1,475,000	1,475,000
Shade's Mills	697,675	525,000	545,000
Total Fee Revenue	13,927,902	11,400,000	12,000,000
Donations-Foundation	31,981	-	-
Other Areas Income	58,959	-	-
Miscellaneous Income	9,515	71,000	71,000
Funding From Reserves			
Conservation Areas - Capital Projects	-	500,000	500,000
TOTAL REVENUE	**14,028,357**	**11,971,000**	**12,571,000**
Net Surplus/(Deficit)	**(583,013)**	**(569,000)**	**(627,600)**

P&S #15 - Administrative Support

Administrative Support includes expenses related to finance, communications, capital support and other administrative expenses that support Category 3 programs and services.

	Actual 2025	Budget 2025	Budget 2026
Expenditures and Funding to Reserves			
Compensation and Benefits	718,344	706,000	691,000
Administration Expenses	121,719	139,400	145,800
Insurance	182,616	208,500	190,000
Other Operating Expenses	150,086	240,000	212,723
Total OPERATING Expenditures	**1,172,765**	**1,293,900**	**1,239,523**
Stabilization Reserve-Category 3	124,440	-	-
Total FUNDING to RESERVES	**124,440**	**-**	**-**
TOTAL EXPENDITURES AND FUNDING TO RESERVES	**1,297,205**	**1,293,900**	**1,239,523**
Funding			
Self Generated			
Miscellaneous	63,513	-	-
TOTAL REVENUE	**63,513**	**-**	**-**
Net Surplus/(Deficit)	**(1,233,692)**	**(1,293,900)**	**(1,239,523)**

Supplementary Information (Digital Information & Innovation and Motor Pool)

1) DIGITAL INFORMATION & INNOVATION - COMPUTER CHARGES

The work of the DI&I Group includes wages, capital purchases and ongoing maintenance, and operation is funded through the Information Systems and Technology Reserve. The Information Systems & Technology Reserve is sustained through a chargeback framework. A “Computer Charge” is allocated to the individual programs based on the number of users and the nature of system usage or degree of reliance on DI&I activities and services.

The Digital Information and Innovation (DI&I) group leads GRCA's information management activities; develops and acquires business solutions; and oversees investment in information and communications technology as detailed below:

Specific Activities:

- Develop and implement GRCA's long-term information management, information technology and communications plans.
- Assess business needs and develop tools to address requirements, constraints and opportunities. Acquire and implement business and scientific applications for use at GRCA. Manage information technology and business solutions implementation projects on behalf of GRCA, GRCF and the Lake Erie Source Protection Region.
- Develop and implement GRCA's Geographic Information Systems (GIS) technology and spatial data infrastructure. Manage GRCA's water-related data. Create and maintain standards for the development, use and sharing of corporate data. Develop policies and implement tools to secure GRCA's data and IT and communications infrastructure.
- Acquire, manage and support GRCA's server, storage, network and personal computer infrastructure to support geographic information systems (GIS); flood forecasting and warning, including real-time data collection; database and applications development; website hosting; electronic mail; internet access; personal computing applications; and administration systems, including finance, property and human resources.
- Develop and operate a wide area network connecting 14 sites and campus style wireless point-to-multipoint networks at Head Office, Conservation Areas, Environmental Education Centres and Flood Control Structures. Develop and operate an integrated Voice over IP Telephone network covering nine sites and 220 handsets. Support and manage mobile phones, smart phones and pagers. Develop, implement and maintain GRCA's DI&I disaster recovery plan.
- Operate on-line campsite reservation and day-use systems with computers in 10 Conservation Areas. Provide computers and phone systems for use at environmental education centres.
- Build and maintain working relationships with all other departments within GRCA. Develop and maintain partnerships and business relationships with all levels of government, Conservation Ontario, private industry and watershed communities with respect to information technology, information management, business solutions and data sharing.

2) VEHICLES AND EQUIPMENT – MOTOR POOL CHARGES

Motor Pool charges are allocated to the individual sections based on usage of motor pool equipment. Effectively, motor pool charges are included under administrative costs or other operating expenses, as applicable, on P&S #1 to #15.

Specific Activities:

- Maintain a fleet of vehicles and equipment to support all GRCA programs.
- Purchases of new vehicles and/or equipment.
- Disposal of used equipment.
- Lease certain equipment.

Information Management & Motor Pool

	Actual 2025	Budget 2025	Budget 2026
Expenditures			
Information Management			
Compensation and Benefits	1,253,110	1,394,000	1,464,000
Administrative Expenses	21,182	25,500	36,900
Software and Hardware Maintenance	264,702	187,500	187,500
Supplies and Services	39,838	54,000	54,000
Total OPERATING Expenditures	**1,578,832**	**1,661,000**	**1,742,400**
Capital Expenses	**232,182**	**300,000**	**400,000**
LESS Internal Charges	**(1,601,600)**	**(1,532,000)**	**(1,787,400)**
NET Unallocated Expenses	**209,414**	**429,000**	**355,000**
Motor Pool			
Compensation and Benefits	314,538	330,000	346,000
Administrative Expenses	19,223	26,000	27,600
Insurance	62,006	63,000	64,500
Motor Pool Building and Grounds Maintenance	14,478	10,000	10,000
Equipment, Repairs and Supplies	408,935	336,000	336,000
Fuel	213,491	284,000	284,000
Total OPERATING Expenditures	**1,032,671**	**1,049,000**	**1,068,100**
Capital Expenses	**674,067**	**675,000**	**675,000**
LESS Internal Charges	**(1,675,646)**	**(1,400,000)**	**(1,600,000)**
NET Unallocated Expenses	**31,092**	**324,000**	**143,100**
TOTAL EXPENDITURES	**240,506**	**753,000**	**498,100**

3) Grand River Conservation Authority Members (2026)

Region of Waterloo (including Cities of Kitchener, Waterloo, Cambridge and Townships of North Dumfries, Wellesley, Wilmot and Woolwich
Doug Craig (Cambridge), Mike Devine (Citizen), Jim Erb (Waterloo), Sue Foxton (North Dumfries), Joe Gowing (Kitchener), Gord Greavette (Citizen), Colleen James (Kitchener), Matt Rodrigues (Kitchener), Sandy Shantz (Woolwich), and Pam Wolf (Cambridge)

Regional Municipality of Halton
John Challinor II

Haldimand and Norfolk Counties
Dan Lawrence and Rob Shirton

City of Hamilton
Alex Wilson

County of Oxford
Bruce Banbury

City of Brantford
Gino Caputo and Kevin Davis

City of Guelph
Christine Billings and Ken Yee Chew

Townships of Amaranth, East Garafraxa, Southgate and Melancthon and Town of Grand Valley
Guy Gardhouse

Townships of Mapleton and Wellington North
Lisa Hern

Municipality of North Perth and Township of Perth East
Jerry Smith

Township of Centre Wellington
Shawn Watters

Town of Erin, Townships of Guelph-Eramosa and Puslinch
James Seeley

County of Brant
Brian Coleman and David Miller

GRAND RIVER CONSERVATION AUTHORITY

AUDITED FINANCIAL STATEMENTS

AND INDEPENDENT AUDITOR'S REPORT THEREON

DECEMBER 31, 2025

GRAND RIVER CONSERVATION AUTHORITY

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DECEMBER 31, 2025

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2. Statement of Operations and Changes in Accumulated Surplus
3. Statement of Cash Flows
4. Statement of Changes in Net Financial Assets

Notes to the Financial Statements

Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

Management Report

Management's Responsibility for the Financial Statements

The accompanying financial statements of Grand River Conservation Authority (the "Authority") are the responsibility of the Authority's management and have been prepared in compliance with legislation, and in accordance with Canadian public sector accounting standards. A summary of the significant accounting policies are described in Note **1** to the financial statements.

The preparation of financial statements necessarily involves the use of estimates based on management's judgment, particularly when transactions affecting the current accounting period cannot be finalized with certainty until future periods.

The Authority's management maintains a system of internal controls designed to provide reasonable assurance that assets are safeguarded, transactions are properly authorized and recorded in compliance with legislative and regulatory requirements, and reliable financial information is available on a timely basis for preparation of the financial statements. These systems are monitored and evaluated by Management.

The Audit Committee of the Authority meets with the external auditors to review the financial statements and discuss any significant financial reporting or internal control matters prior to the approval of the financial statements by the Members.

The financial statements have been audited by KPMG LLP, independent external auditors appointed by the Authority. The accompanying Independent Auditor's Report outlines their responsibilities, the scope of their examination and their opinion on the Authority's financial statements.

[redacted]
Samantha Lawson
CAO

K Armstrong
Karen Armstrong
Deputy CAO and Secretary-Treasurer

March 2, 2026

KPMG LLP
120 Victoria Street South, Suite 600
Kitchener, ON N2G 0E1
Canada
Tel 519 747 8800
Fax 519 747 8811

INDEPENDENT AUDITOR'S REPORT

To the Members of Grand River Conservation Authority

Opinion

We have audited the financial statements of Grand River Conservation Authority (the Authority), which comprise:

- the statement of financial position as at December 31, 2025
- the statement of operations and changes in accumulated surplus for the year then ended
- the statement of changes in net financial assets for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Authority as at December 31, 2025, and its results of operations, its changes in net financial assets and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the ***"Auditor's Responsibilities for the Audit of the Financial Statements"*** section of our auditor's report.

We are independent of the Authority in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

KPMG LLP, an Ontario limited liability partnership and member firm of the KPMG global Authority of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. KPMG Canada provides services to KPMG LLP.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Authority's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Authority or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Authority's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Authority's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Authority to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.



Chartered Professional Accountants, Licensed Public Accountants

Kitchener, Canada

March 2, 2026

STATEMENT 1

GRAND RIVER CONSERVATION AUTHORITY

(Established by the Conservation Authorities Act)

Statement of Financial Position

As at December 31, 2025

(with comparative information for 2024)

	2025	2024
Financial Assets		
Cash	$ 9,413,194	$ 12,258,647
Investments (Note 2)	56,511,030	49,733,153
Accounts Receivable - Government Grants	402,039	448,943
Accounts Receivable - Municipal Levies and Other	82,409	256,827
Other Receivables	2,325,375	3,136,977
	68,734,047	65,834,547
Financial Liabilities		
Accounts Payable and Accrued Liabilities (Note 6)	2,981,622	4,526,198
Deferred Revenue (Note 3)	4,787,530	4,786,766
Deposits	293,614	337,279
Asset Retirement Obligations (Note 5)	2,227,821	2,254,627
	10,290,587	11,904,870
Net Financial Assets	58,443,460	53,929,677
Non-Financial Assets		
Tangible Capital Assets (Note 4)	99,602,096	98,151,657
Prepaid Expenses and Inventory	485,060	429,765
	100,087,156	98,581,422
ACCUMULATED SURPLUS	$ **158,530,616**	$ **152,511,099**

ACCUMULATED SURPLUS COMPRISED OF

Accumulated Surplus - Reserves - Operating	(Note 9)	$ 15,041,570	$ 14,193,452
Accumulated Surplus - Reserves - Capital	(Note 9)	44,164,415	40,525,606
Accumulated Surplus - Reserves - Motor Pool	(Note 9)	1,450,356	1,396,234
Accumulated Surplus - Other		500,000	498,777
Accumulated Surplus - Tangible Capital Assets		97,374,275	95,897,030
ACCUMULATED SURPLUS		$ **158,530,616**	$ **152,511,099**

Commitments and Contingencies (Notes 8 and 10)

(see accompanying notes to the financial statements)

GRAND RIVER CONSERVATION AUTHORITY **STATEMENT 2**

STATEMENT OF OPERATIONS AND CHANGES IN ACCUMULATED SURPLUS

For the Year Ended December 31, 2025

(with comparative information for 2024)

	Budget 2025 Note 7	Actual 2025	Actual 2024
Revenue (Note 16)			
Municipal			
Grants:			
Apportionment	$ 13,757,000	$ 13,757,000	$ 13,292,000
Other	946,000	593,185	728,463
Total Municipal Revenue	**14,703,000**	**14,350,185**	**14,020,463**
Government Grants			
MNR Transfer Payments	449,688	449,688	449,688
Source Protection Program-Provincial	780,000	605,097	820,925
Other Provincial	1,747,500	1,991,592	1,557,104
Federal	208,000	219,205	309,678
Total Government Grants	**3,185,188**	**3,265,582**	**3,137,395**
Self-Generated			
User Fees and Sales:			
Resource Planning	924,000	1,019,605	911,841
Burford Tree Nursery and Planting Services	720,000	953,423	985,678
Conservation Areas User Fees	11,471,000	13,927,902	12,523,736
Environmental Education	600,000	644,774	609,612
Property Rentals	3,150,000	3,176,303	3,122,120
Hydro Generation	475,000	383,370	612,640
Grand River Conservation Foundation (Note 12)	197,000	521,020	1,568,931
Donations	15,000	39,730	26,069
Investment Income	2,300,000	2,187,918	2,597,296
Miscellaneous Income	-	1,398,899	66,261
Gain on Sale of Tangible Capital Assets (Note 4)	-	86,166	1,613,562
Total Self-Generated Revenue	**19,852,000**	**24,339,110**	**24,637,746**
Total Revenue	**$ 37,740,188**	**$ 41,954,877**	**$ 41,795,604**
Expenditures (Note 16)			
Watershed Management and Monitoring	6,554,803	6,501,104	6,348,777
Source Protection Program	780,000	605,097	820,925
Resource Planning	2,747,600	2,681,155	2,588,419
Watershed Stewardship	3,601,622	3,062,184	3,178,340
Conservation Land Management	4,564,486	4,429,279	3,998,650
Recreation and Education	12,484,944	13,337,173	12,002,357
Corporate Services / Information Systems and Motor Pool	5,963,763	5,319,368	5,259,625
Total Expenditures	**$ 36,697,218**	**$ 35,935,360**	**$ 34,197,093**
Annual Surplus	**1,042,970**	**6,019,517**	**7,598,511**
Accumulated Surplus, Beginning of Year		**152,511,099**	**144,912,588**
Accumulated Surplus, End of Year		**$ 158,530,616**	**$ 152,511,099**

(see accompanying notes to the financial statements)

GRAND RIVER CONSERVATION AUTHORITY
STATEMENT OF CASH FLOWS
For the Year Ended December 31, 2025
(with comparative information for 2024)

	Actual 2025	Actual 2024
Operating Activities		
Annual surplus	$ 6,019,517	$ 7,598,511
Items not involving cash:		
Amortization	3,812,672	3,686,052
Gain on sale of tangible capital assets	(86,166)	(1,613,562)
Gain on asset retirement obligation settlement (Note 5)	(50,049)	-
Gain on contaminated site derecognition (Note 6)	(334,578)	-
Amortization of premiums and discounts on investments	91,469	(58,724)
Change in non-cash operating assets and liabilities:		
Accounts receivable	1,032,924	(1,426,344)
Prepaid expenses and inventory	(55,295)	(20,657)
Accounts payable and accrued liabilities	(1,209,998)	1,610,782
Deferred revenue and deposits	(42,901)	(179,149)
Net change in cash and cash equivalents from operating activities	9,177,595	9,596,909
Capital Activities		
Cash used to acquire tangible capital assets	(5,840,920)	(7,924,839)
Proceeds on sale of tangible capital assets (Note 4)	687,218	1,651,908
Net change in cash and cash equivalents from capital activities	(5,153,702)	(6,272,931)
Investing Activities		
Sales of Investments	21,400,000	18,660,000
Purchases of Investments	(33,536,393)	(26,947,474)
Net change in cash and cash equivalents from investing activities	(12,136,393)	(8,287,474)
Net change in cash and cash equivalents	**(8,112,500)**	**(4,963,496)**
Cash and cash equivalents, beginning of year	22,719,959	27,683,455
Cash and cash equivalents, end of the year	$ **14,607,459**	$ **22,719,959**
Cash and Cash Equivalents		
Cash	9,413,194	12,258,647
High interest savings account (Note 2)	5,194,265	10,461,312
	$ **14,607,459**	$ **22,719,959**
Non-Cash Transactions		
Asset Retirement Obligations (Note 5) and Increase in Tangible Capital Assets (Note 4)	$ 23,243	$ 7,875

(see accompanying notes to the financial statements)

STATEMENT 4

GRAND RIVER CONSERVATION AUTHORITY
STATEMENT OF CHANGES IN NET FINANCIAL ASSETS
For the Year Ended December 31, 2025
(with comparative information for 2024)

	Actual 2025	Actual 2024
Annual surplus	$ 6,019,517	$ 7,598,511
Acquisition of tangible capital assets	(5,840,920)	(7,924,839)
Amortization of tangible capital assets	3,812,672	3,686,052
Gain on sale of tangible capital assets	(86,166)	(1,613,562)
Asset retirement obligations	(23,243)	(7,875)
Proceeds on sale of tangible capital assets	687,218	1,651,908
	4,569,078	3,390,195
Net changes in prepaid expenses and inventory	(55,295)	(20,657)
Net change in financial assets	4,513,783	3,369,538
Net financial assets, beginning of year	**53,929,677**	**50,560,139**
Net financial assets, end of year	$ **58,443,460**	$ **53,929,677**

(see accompanying notes to the financial statements)

The Grand River Conservation Authority (the "Authority") manages water and other natural resources on behalf of 38 municipalities and approximately one million residents of the Grand River watershed. The Authority is a partnership of watershed municipalities, and provides an avenue to work together, addressing environmental issues and opportunities that serve to benefit the entire Grand River watershed. Incorporated under the Conservation Authorities Act, the Authority is one of 36 conservation authorities in the province.

(1) Summary of Significant Accounting Policies

The financial statements of the Authority are prepared by management in accordance with Canadian generally accepted accounting principles for governments as recommended by the Public Sector Accounting Board of the Canadian Chartered Professional Accountants.

The financial statements do not include the activities of the Grand River Conservation Foundation, an independent organization and a registered charity that raises funds to finance selected operating and capital expenditures of the Authority.

Significant aspects of the accounting policies adopted by the Authority are as follows:

(a) Government transfer payments and other revenue recognition

(i) Government transfers

Government transfers, which include municipal apportionment grants, Ministry of Natural Resources transfer payments, source protection program grants, and other provincial and federal grants, are recognized in the financial statements in the period in which events giving rise to the transfer occur, providing the transfers are authorized, any eligibility criteria have been met and reasonable estimates of the amount can be made. If government transfers contain stipulations which give rise to a liability, they are deferred and recognized in revenue when the stipulations and performance obligations are met.

(1) Summary of Significant Accounting Policies (continued)

(a) Government transfer payments and other revenue recognition (continued)

(ii) **Other revenues**

Other revenues from transactions with performance obligations for self-generated fees for conservation area user fees and environmental education, hydro generation, resource planning, and self-generated sales for Burford tree nursery and planting services, are recognized as the Authority satisfies a performance obligation by providing the promised goods or services to the payor.

Property rental revenue is recognized over the term of the agreement.

Other revenue such as miscellaneous income and unrestricted investment income from transactions with no performance obligations are recognized when the Authority has the authority to claim or retain an inflow of economic resources and when a past transaction or event is an asset. Unrestricted donations and grants are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

(b) Deferred Revenue and Deposits

Balance includes funds that have been advanced to the Authority from government agencies and/or the general public and as at year end the funds have not been expended nor the performance obligations performed for the purpose for which they were received. In most instances, service and/or product delivery is anticipated to be performed in the following fiscal period. Typical balances include tree planting cash receipts, rural water quality program funding from municipalities, and special projects funding that has been paid in advance of project completion. These amounts will be recognized as revenue in the fiscal year the expenditures and the performance obligations are performed.

(1) Summary of Significant Accounting Policies (continued)

(c) Classification of Expenditures

Expenditures are reported in seven main categories, which follow the format adopted by Conservation Ontario. By following these guidelines, there will be consistency of reporting by all Conservation Authorities in Ontario. These are further explained as follows:

Watershed Management and Monitoring

Watershed Management and Monitoring includes expenditures and revenues for programs which provide the information required to develop appropriate resource management strategies and to identify priority actions to maintain a healthy watershed. Also included are the maintenance and operations of all Flood and Erosion Control Structures and the operations of the Flood Forecasting and Warning system.

Source Protection Program

The Source Protection Program includes expenditures and revenues for the development of a “Drinking Water Source Protection” plan for the Lake Erie Source Protection Region (includes Grand River, Long Point Region, Kettle Creek, and Catfish Creek Conservation Authorities).

Resource Planning

Resource Planning includes expenditures and revenues associated with reviewing official plans, zoning bylaws, development plans and other planning proposals, in accordance with Conservation Authority and Municipal Agreements. It also includes, administration of floodplain regulations.

Watershed Stewardship

Watershed Stewardship includes those activities associated with providing service and/or assistance to private and public landowners, and community groups on sound environmental practices that will enhance, restore or protect natural heritage features on their properties.

(1) Summary of Significant Accounting Policies (continued)

(c) Classification of Expenditures (continued)

Conservation Land Management

Conservation Land Management includes all expenditures and revenues associated with the acquisition and management of land owned/managed by the Authority. This includes the protection of provincially significant conservation lands, woodlot management, rental/lease agreements and other revenues generated from managing lands and facilities. These expenditures do not include those associated with recreation and education programs on Authority lands.

Recreation and Education

Recreation and Education includes expenditures and revenues associated with delivering recreational and educational programs on Authority lands at a number of active conservation areas and environmental education centres.

Corporate Services / Information Systems and Motor Pool

Corporate services include the costs associated with head office facilities and functions other than technical staff and associated programs.

Net Information Systems and Motor Pool usage charges include the support areas that are charged out to other cost centres on an “as used” basis. When Information Systems and Technology are used, the cost centre is charged for the use of the asset.

Motor Pool is the vehicles and equipment that are used for operations and capital projects by other cost centres. When equipment or vehicles are used, the cost centre is charged for the use of the asset.

(1) Summary of Significant Accounting Policies (continued)

(d) Financial Instruments

Financial instruments are classified into three categories: fair value, amortized cost or cost. The following chart shows the measurement method for each type of financial instrument.

Financial Instrument	Measurement Method
Cash and cash equivalents	Cost
Accounts receivable and other receivables	Amortized Cost
Accounts payable and accrued liabilities	Amortized Cost

Financial instruments are recorded at fair value on initial recognition. Derivative instruments and equity instruments that are quoted in an active market are reported at fair value. All other financial instruments are subsequently recorded at cost or amortized cost unless management has elected to carry the instruments at fair value. The Authority has not elected to carry any such financial instruments at fair value.

Transaction costs incurred on the acquisition of financial instruments are measured subsequently at fair value are expensed as incurred. All other financial instruments are adjusted by transaction costs incurred on acquisition and financing costs, which are amortized using the straight-line method.

Financial assets are assessed for impairment on an annual basis at the end of the fiscal year. When a decline is determined to be other than temporary, the amount of the loss is reported in the statement of operations and adjusted through the statement of remeasurement gains and losses.

When the asset is sold, the unrealized gains and losses previously recognized in the statement of remeasurement gains and losses are reversed and recognized in the statement of operations.

(1) Summary of Significant Accounting Policies (continued)

(d) Financial Instruments (continued)

The Standards require an organization to classify fair value measurements using a fair value hierarchy, which includes three levels of information that may be used to measure fair value:

Level 1 – Unadjusted quoted market prices in active markets for identical assets or liabilities;

Level 2 – Observable or corroborated inputs, other than level 1, such as quoted prices for similar assets or liabilities in inactive markets or market data for substantially the full term of the assets or liabilities; and

Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets and liabilities.

The fair value hierarchy requires the use of observable market inputs whenever such inputs exist. A financial instrument is classified to the lowest level of the hierarchy for which a significant input has been considered in measuring fair value.

(e) Cash and Cash Equivalents

Cash and cash equivalents include cash on hand and short-term cash commitments which are highly liquid with original maturities of three months or less from acquisition.

(f) Accounts Receivable

Accounts Receivable is reported net of any allowance for doubtful accounts.

(g) Inventory

Inventory is valued at the lower of cost or replacement cost.

(h) Investment Income

The Authority follows the policy of consolidating funds on hand for investment purposes. Interest income is generally recognized into income when earned unless the provisions of a relevant agreement or legislation require that the income be restricted, then restricted interest income is recognized in deferred revenue until used for the specified purpose.

(1) Summary of Significant Accounting Policies (continued)

(i) Asset Retirement Obligations

An asset retirement obligation is recognized when, as at the financial reporting date, all of the following criteria are met:

(i) There is a legal obligation to incur retirement costs in relation to a tangible capital asset and other contract obligations;

(ii) The past transactions or events giving rise to the liability has occurred;

(iii) It is expected that future economic benefits will be given up; and

(iv) A reasonable estimate of the amount can be made.

The asset retirement obligation is based on management's best estimate of the expenditures to settle the obligation. A liability has been recognized based on estimated future expenses on retirement of the tangible capital assets. Assumptions used in the subsequent calculations are revised yearly.

(1) Summary of Significant Accounting Policies (continued)

(j) Tangible Capital Assets

Tangible capital assets are recorded at cost which include amounts that are directly attributable to acquisition, construction, development or betterment of the asset. The cost, less residual value, of the tangible capital assets, excluding land, are amortized in a straight-line basis over their estimated useful lives as follows:

Asset	Useful Life - Years
Site Improvements	10 - 50
Buildings	10 - 50
Furniture and Equipment	10 - 15
Motor Pool	5 - 10
Communications and Computer	5
Water Control Structures	20 - 80
Asset Retirement Obligations	10 - 80

Annual amortization is charged in the year of acquisition and in the year of disposal. Assets under construction are not amortized until the asset is available for productive use.

I. Contributions of tangible capital assets

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt and also are recorded as revenue.

II. Natural resources

Natural resources that have not been purchased are not recognized as assets in the financial statements.

III. Works of art and cultural and historic assets

Works of art and cultural and historic assets are not recorded as assets in the financial statements.

(1) Summary of Significant Accounting Policies (continued)

(k) Non-Financial Assets

Non-financial assets are not available to discharge existing liabilities and are held for use in the provision of services. They have useful lives extending beyond the current year and are not intended for sale in the ordinary course of operations.

(l) Contaminated Sites

Contaminated sites are defined as the result of contamination being introduced in air, soil, water or sediment of a chemical, organic, or radioactive material or live organism that exceeds an environmental standard.

A liability for remediation of contaminated sites is recognized, net of any expected recoveries, when all of the following criteria are met:

a) An environmental standard exists

b) Contamination exceeds the environmental standard

c) The Authority is directly responsible or accepts responsibility for the liability

d) Future economic benefits will be given up, and

e) A reasonable estimate of the liability can be made.

(m) Employee Future Benefits

The costs of multi-employer defined contribution pension plan benefits, such as the Ontario Municipal Employees Retirement System pensions, are the employer's contributions due to the plan in the period.

(1) Summary of Significant Accounting Policies (continued)

(n) Use of Estimates

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of revenue and expenses during the year. Significant items subject to such estimates and assumptions include accrued liabilities, contaminated site liability, contingencies, asset retirement obligations and tangible capital assets. Actual results could differ from estimates.

(2) Investments

Investments include the following:

	2025	2024
Strip Bond maturing within two to three years (Interest rate 1.22%) Fair value at December 31, 2025 - $nil (2024 – $2,169,231)	$ -	$ 2,300,000
GIC maturing within one year (Interest rates vary between 3.75% and 4.80%) Fair value at December 31, 2025 - $8,200,000 (2024 – $13,000,000)	8,200,000	13,000,000
GIC maturing within two to five years (Interest rates vary between 3.00% and 4.43%) Fair value at December 31, 2025 - $34,400,000 (2024 – $17,900,000)	34,400,000	17,900,000
Bonds maturing within three to six years (Interest rates vary between 2.24% and 5.49%) Fair value at December 31, 2025 - $8,702,342 (2024 - $1,990,072)	8,300,000	2,000,000
Bonds maturing within one year (Interest rate at 3.3%) Fair value at December 31, 2025 - $nil (2024 – $4,100,443)	-	4,100,000
High interest savings account (Interest rates vary between 2.05% and 2.78%) Fair value at December 31, 2025 - $5,194,265 (2024 - $10,461,312)	5,194,265	10,461,312
Sub-Total	$ 56,094,265	$ 49,761,312
Plus: Unamortized purchase net premiums and discounts	416,765	(28,159)
Total	$ 56,511,030	$ 49,733,153

All investments above are Level 2 investments except for the high interest savings account which is a Level 1 and a cash equivalent. There were no transfers between level 1 and 2.

(3) Deferred Revenue

Deferred revenue includes the following:

		2025		2024
Balance, end of year:				
Source Protection Program	$	494,773	$	340,177
Rural Water Quality Program		1,064,619		975,385
Water and Erosion Control Infrastructure		102,005		32,587
Other Watershed Programs		1,463,801		1,717,356
Cottage Rent		657,813		550,110
Other Miscellaneous		1,004,519		1,171,151
Total Deferred Revenue	$	4,787,530	$	4,786,766
Balance, beginning of year:				
Source Protection Program	$	340,177	$	378,724
Rural Water Quality Program		975,385		1,027,577
Water and Erosion Control Infrastructure		32,587		331,243
Other Watershed Programs		1,717,356		1,781,411
Cottage Rent		550,110		467,997
Other Miscellaneous		1,171,151		935,673
		4,786,766		4,922,625
Grant Contributions		1,626,419		2,241,875
Interest		2,159		546
Other		1,101,696		847,740
Total Contributions Received		2,730,274		3,090,161
Contributions Used		2,729,510		3,226,020
Total Contributions Used		2,729,510		3,226,020
Balance, end of year	$	4,787,530	$	4,786,766

(4) Tangible Capital Assets

Cost	Balance at 31-Dec-24	Additions	Disposals/ Transfers	Balance at 31-Dec-25
Land and Land Improvements	$ 30,892,523	$ -	$ (19,089)	$ 30,873,434
Site Improvements	20,408,180	1,287,478	(7,000)	21,688,658
Buildings	21,565,195	2,524,966	(723,555)	23,366,606
Furniture and Equipment	2,888,010	159,429	(171,501)	2,875,938
Motor Pool	6,785,377	693,050	(310,889)	7,167,538
Communications and Computers	2,285,443	148,861	(26,702)	2,407,602
Water Control Structures	104,914,914	2,095,278	-	107,010,192
Assets Under Construction	5,630,468	2,788,926	(3,857,068)	4,562,326
Asset Retirement Obligations (note 5)	2,254,627	23,243	(50,049)	2,227,821
	$ 197,624,737	$ 9,721,231	$ (5,165,853)	$ 202,180,115

Accumulated Amortization	Balance at 31-Dec-24	Disposals	Amortization Expense	Balance at 31-Dec-25
Site Improvements	$ 11,822,646	$ (7,000)	$ 572,775	$ 12,388,421
Buildings	11,786,629	(205,924)	516,740	12,097,445
Furniture and Equipment	1,724,080	(169,985)	196,762	1,750,857
Motor Pool	4,246,092	(295,895)	463,106	4,413,303
Communications and Computers	1,775,263	(26,703)	151,785	1,900,345
Water Control Structures	68,065,515	-	1,862,191	69,927,706
Asset Retirement Obligations	52,855	(2,226)	49,313	99,942
	$ 99,473,080	$ (707,733)	$ 3,812,672	$ 102,578,019

	Net Book Value 31-Dec-24	Net Book Value 31-Dec-25
Land and Land Improvements	$ 30,892,523	$ 30,873,434
Site Improvements	8,585,534	9,300,237
Buildings	9,778,566	11,269,161
Furniture and Equipment	1,163,930	1,125,081
Motor Pool	2,539,285	2,754,235
Communications and Computers	510,181	507,257
Water Control Structures	36,849,399	37,082,486
Assets Under Construction	5,630,467	4,562,326
Asset Retirement Obligations	2,201,772	2,127,879
	$ 98,151,657	$ 99,602,096

Cost	Balance at 31-Dec-23	Additions	Disposals/ Transfers	Balance at 31-Dec-24
Land and Land Improvements	$ 30,892,523	$ -	$ -	$ 30,892,523
Site Improvements	19,537,420	875,164	(4,404)	20,408,180
Buildings	19,677,721	1,954,569	(67,095)	21,565,195
Furniture and Equipment	2,723,853	194,372	(30,215)	2,888,010
Motor Pool	6,276,603	768,504	(259,730)	6,785,377
Communications and Computers	2,075,321	318,913	(108,791)	2,285,443
Water Control Structures	102,804,677	2,110,237	-	104,914,914
Assets Under Construction	3,927,388	3,618,450	(1,915,370)	5,630,468
Asset Retirement Obligations (note 5)	2,246,752	7,875	-	2,254,627
	$ 190,162,258	$ 9,848,084	$ (2,385,605)	$ 197,624,737

Accumulated Amortization	Balance at 31-Dec-23	Disposals	Amortization Expense	Balance at 31-Dec-24
Site Improvements	$ 11,306,837	$ (4,404)	$ 520,213	$ 11,822,646
Buildings	11,334,835	(60,952)	512,746	11,786,629
Furniture and Equipment	1,558,480	(30,215)	195,815	1,724,080
Motor Pool	4,038,468	(227,527)	435,151	4,246,092
Communications and Computers	1,752,043	(108,791)	132,011	1,775,263
Water Control Structures	66,226,144	-	1,839,371	68,065,515
Asset Retirement Obligations	2,110	-	50,745	52,855
	$ 96,218,917	$ (431,889)	$ 3,686,052	$ 99,473,080

	Net Book Value 31-Dec-23	Net Book Value 31-Dec-24
Land and Land Improvements	$ 30,892,523	$ 30,892,523
Site Improvements	8,230,583	8,585,534
Buildings	8,342,886	9,778,566
Furniture and Equipment	1,165,373	1,163,930
Motor Pool	2,238,135	2,539,285
Communications and Computers	323,278	510,181
Water Control Structures	36,578,533	36,849,399
Assets Under Construction	3,927,388	5,630,467
Asset Retirement Obligations	2,244,642	2,201,772
	$ 93,943,341	$ 98,151,657

(4) Tangible Capital Assets (continued)

Assets Under Construction

Assets under construction having a value of $4,562,326 (2024 - $5,630,467) have not been amortized. Amortization of these assets will commence when the asset is put into service.

Write-down of Tangible Capital Assets

The write-down of tangible capital assets during the year was $nil (2024 - $nil).

Gain on Sale of Tangible Capital Assets

During the year, the Authority disposed of assets with a total carrying value of $601,052. The total proceeds on these sales were $687,218, which resulted in a gain on sale of $86,166.

In 2024, the Authority disposed of assets with a total carrying value of $38,346. The total proceeds on these sales were $1,651,908, which resulted in a gain on sale of $1,613,562.

(5) Asset Retirement Obligations

The Authority owns and operates several buildings and structures that are known to have asbestos, which represents a health hazard upon demolition of the building and there is a legal obligation to remove it for $2,191,821 (2024 - $2,218,627).

The Authority has underground fuel tanks that will require future remediation where there is a legal obligation to remove the tank and remediate the site for $36,000 (2024 - $36,000).

All liabilities for asset retirement obligations are reported at current costs in nominal dollars without discounting.

Changes to the asset retirement obligations are as follows:

		2025		2024
Balance, beginning of the year	$	2,254,627	$	2,246,752
Add: additional obligations		23,243		7,875
Less: obligations settled in the year		(50,049)		-
Balance, end of the year	$	2,227,821	$	2,254,627

(6) Contaminated Site Liability

The Authority has an estimated liability of $478,333 as at December 31, 2025 (2024 – $812,912) for the future remediation of a contaminated property. At the beginning of the year, the contaminated site liability pertained to two properties acquired by the Authority in the 1970s in connection with flood control projects, consisting of a former landfill site in the City of Brantford and a former residential site in the City of Cambridge, each subject to remediation requests from the Ministry of the Environment, Conservation and Parks. The estimated remediation cost for the Brantford property is based on a detailed remediation plan prepared by a qualified external consultant. During the year, the Authority completed a risk evaluation of the Cambridge property in accordance with Public Sector Accounting Standard PS 3260, Liability for Contaminated Sites. Based on updated environmental site assessment information, contamination at this location was determined not to exceed applicable environmental standards, and the criteria for recognition of a liability were no longer met. As a result, the previously recognized contaminated site liability of $334,578 related to this property was derecognized during the year and is included in “Miscellaneous Income” on the Statement of Operations and Changes in Accumulated Surplus. Accordingly, the estimated liability at December 31, 2025 relates solely to the Brantford property.

(7) 2025 Budget

The budget figures are those adopted at the General Meeting of the Authority held February 28, 2025. The Authority only prepares a budget for the statement of operations, the budget figures in the statement of change in net financial assets has not been provided.

Budget figures have been translated to reflect changes in public sector accounting standards on the statement of operations and accumulated surplus by adjusting for amortization of tangible capital assets and excluding budgeted additions.

(8) Commitments

The Authority is committed under contracts for various infrastructure projects and expects to incur costs of approximately $3,635,816 in 2026.

(9) Accumulated Surplus

Land reserves represent the net proceeds of land sales and are available for approved projects including purchases of conservation lands within the Watershed in accordance with Authority policies and Provincial Regulations.

Accumulated surplus consists of tangible capital asset and other surplus and reserve funds. Details of the reserve funds are as follows:

	2025	2024
Operating		
Property and Liability Insurance	$ 304,106	$ 293,275
Building and Mechanical Equipment	1,754,448	1,516,060
Personnel	2,313,911	1,416,981
Transition	2,175,786	2,438,079
Apps' Mill Nature Centre	82,666	79,724
Laurel Creek Nature Centre	126,176	121,681
Guelph Lake Nature Centre	111,888	151,299
Shade's Mills Nature Centre	68,548	84,429
Taquanyah Nature Centre	24,963	24,074
Computer Replacement	827,774	1,004,111
Forestry Management	2,142,963	1,800,813
Cottage Operations	1,237,789	1,309,430
Property Rental	529,391	818,177
Planning Enforcement	564,311	570,732
Master Plan	477,962	460,939
Grand River Management Plan	128,152	123,587
Watershed Restoration	362,254	349,352
Water Management	1,119,169	1,080,709
Stabilization Reserve - Category 1	249,885	230,566
Stabilization Reserve - Category 2	21,885	36,769
Stabilization Reserve - Category 3	417,543	282,665
Total Operating Reserves	**$ 15,041,570**	**$ 14,193,452**
Capital		
Completion of Capital Projects	$ 162,000	$ 162,000
Cambridge Desiltation Pond	2,576	4,397
Gravel	292,110	281,707
General Capital	1,667,764	1,608,365
Major Dam Maintenance	2,995,471	3,184,852
Gauges	1,170,187	1,128,511
Conservation Area	12,757,990	9,666,021
Land Reserves	25,116,317	24,489,753
Total Capital Reserves	**$ 44,164,415**	**$ 40,525,606**
Motor Pool		
Motor Pool Equipment Replacement	$ 1,346,809	$ 1,296,376
Vehicle Insurance	103,547	99,858
Total Motor Pool Reserves	**$ 1,450,356**	**$ 1,396,234**
Total Reserves	**$ 60,656,341**	**$ 56,115,292**

(10) Contingencies

The Authority recognizes that liabilities may arise due to certain contract and labour relations matters that were outstanding at year end, in the normal course of business. Legal action may be taken against the Authority for personal injury claims, property damage and other contractual matters. The outcome of these actions is not presently determinable. It is management's opinion that the Authority's insurance coverage and/or accumulated surplus will adequately cover any potential liabilities arising from these matters.

(11) Pension and Retirement Benefits

The Authority makes contributions to the Ontario Municipal Employees Retirement System ("OMERS"), which is a multi-employer plan, on behalf of all eligible members of its staff. The plan is a defined benefit plan, which specifies the amount of the retirement benefit to be received by the employees based on the length of service and rates of pay.

Because OMERS is a multi-employer pension plan, any pension plan surpluses or deficits are the joint responsibility of Ontario municipal organizations and their employees. As a result, the Authority does not recognize any share of the OMERS pension surplus or deficit.

The latest available report for the OMERS plan was December 31, 2024. At that time the plan reported a $2.9 billion actuarial deficit (2023 - $4.2 billion actuarial deficit), based on actuarial liabilities of $140.8 billion (2023 - $134.6 billion) and actuarial assets of $137.9 billion (2023 - $130.4 billion). Ongoing adequacy of the current contribution rates will need to be monitored and may lead to increased future funding requirements.

In 2025, the Authority's contribution to OMERS was $1,512,758 (2024 - $1,357,830).

(12) Related Entity

The Grand River Conservation Foundation ("the Foundation") is an independent organization and a Registered Charity that raises funds to finance selected operating and capital expenditures of the Authority. Although the Foundation disburses funds at the discretion of its own Board of Directors, it only funds approved projects of the Authority and the Chair of the Authority is a permanent member of the Foundation Board.

During 2025, the Foundation contributed $521,020 (2024 - $1,568,931) to fund projects carried out by the Authority. At December 31, 2025, the amount due from the Foundation to the Authority is $145,987 (2024 - $1,292,643). This receivable is included in "Other Receivables" on the Statement of Financial Position.

(13) Financial Risks

(a) Credit risk:

Credit risk refers to the risk that a counterparty may default on its contractual obligations resulting in a financial loss. The Authority is exposed to credit risk with respect to the accounts receivable, cash and investments.

The Authority assesses, on a continuous basis, accounts receivable and provides for any amounts that are not collectible in the allowance for doubtful accounts. The maximum exposure to credit risk of the Authority as at December 31, 2025 is the carrying value of these assets.

The carrying amount of accounts receivable is valued with consideration for an allowance for doubtful accounts. The amount of any related impairment loss is recognized in the statement of operations. Subsequent recoveries of impairment losses related to accounts receivable are credited to the statement of operations. The balance of the allowance for doubtful accounts is $6,451 (2024 - $1,675).

There have been no significant changes to the credit risk exposure from 2024.

(b) Liquidity risk:

Liquidity risk is the risk that the Authority will be unable to fulfill its obligations on a timely basis or at a reasonable cost. The Authority manages its liquidity risk by monitoring its operating requirements. The Authority prepares budget and cash forecasts to ensure it has sufficient funds to fulfill its obligations.

Accounts payable and accrued liabilities are generally due within 30 days of receipt of an invoice.

(c) Interest rate risk:

Interest rate risk is the risk that the fair value of future cash flows or a financial instrument will fluctuate because of changes in the market interest rates.

Financial assets with variable interest rates expose the Authority to cash flow interest rate risk.

The Authority’s investments are disclosed in note 3.

There has been no change to the interest rate risk exposure from 2024.

(14) Public Sector Salary Disclosure

Grand River Conservation Authority is subject to The Public Sector Salary Disclosure Act, 1996. Salaries and benefits that have been paid by the Authority and reported to the Province of Ontario in compliance with this legislation are listed on the Ontario Ministry of Finance website at https://www.ontario.ca/page/public-sector-salary-disclosure#section-0 or can be provided in an alternate format upon request from the Authority.

(15) Comparative Information

Certain comparative information in the statement of cashflows has been reclassified to conform with the financial statement presentation adopted in the current year.

(16) Segmented Information

2025	Watershed Management and Monitoring	Source Protection Program	Resource Planning	Watershed Stewardship	Conservation Land Management	Recreation and Education	Corporate Services/IS and Motor Pool	Total
Revenue:								
Apportionment	$ 4,763,612	$ -	$ 1,823,600	$ 1,052,000	$ 2,778,900	$ -	$ 3,338,888	$ 13,757,000
Grants	2,221,338	605,097	-	1,027,569	4,231	532	-	3,858,767
User fees and Other	-	-	1,019,605	706,615	4,276,183	14,641,149	3,134,808	23,778,360
Donations	-	-	-	69,265	83,413	408,072	-	560,750
Total Revenue	6,984,950	605,097	2,843,205	2,855,449	7,142,727	15,049,753	6,473,696	41,954,877
Expenses:								
Salaries, Wages and Benefits	2,948,450	548,375	2,175,661	1,476,993	2,247,470	6,942,272	4,663,108	21,002,329
Operating Expenses	1,773,190	56,722	505,494	1,567,620	1,941,165	5,418,371	3,135,043	14,397,605
Amortization	1,779,464	-	-	17,571	240,644	976,530	798,463	3,812,672
Chargebacks	-	-	-	-	-	-	(3,277,246)	(3,277,246)
Total Expenses	6,501,104	605,097	2,681,155	3,062,184	4,429,279	13,337,173	5,319,368	35,935,360
Annual surplus/ (deficit)	$ 483,846	$ -	$ 162,050	$ (206,735)	$ 2,713,448	$ 1,712,580	$ 1,154,328	$ 6,019,517

2024	Watershed Management and Monitoring	Source Protection Program	Resource Planning	Watershed Stewardship	Conservation Land Management	Recreation and Education	Corporate Services/IS and Motor Pool	Total
Revenue:								
Apportionment	$ 4,648,611	$ -	$ 1,685,600	$ 1,017,000	$ 2,629,901	$ -	$ 3,310,888	$ 13,292,000
Grants	1,857,524	820,925	-	1,081,481	22,448	83,480	-	3,865,858
User fees and Other	-	-	911,842	787,732	5,533,423	13,133,705	2,676,044	23,042,746
Donations	-	-	-	84,685	64,687	1,445,628	-	1,595,000
Total Revenue	6,506,135	820,925	2,597,442	2,970,898	8,250,459	14,662,813	5,986,932	41,795,604
Expenses:								
Salaries, Wages and Benefits	2,945,974	551,787	2,062,348	1,353,779	2,043,348	6,402,748	4,353,771	19,713,755
Operating Expenses	1,644,141	269,138	526,071	1,809,998	1,714,958	4,695,526	2,963,271	13,623,103
Amortization	1,758,662	-	-	14,563	240,344	904,083	768,400	3,686,052
Chargebacks	-	-	-	-	-	-	(2,825,817)	(2,825,817)
Total Expenses	6,348,777	820,925	2,588,419	3,178,340	3,998,650	12,002,357	5,259,625	34,197,093
Annual surplus/ (deficit)	$ 157,358	$ -	$ 9,023	$ (207,442)	$ 4,251,809	$ 2,660,456	$ 727,307	$ 7,598,511

Mark Sutcliffe
Mayor | Maire

Office of the Mayor
City of Ottawa
110 Laurier Avenue West
Ottawa, Ontario K1P 1J1
Tel.: 613-580-2496
Fax: 613-580-2509
Email: Mark.Sutcliffe@ottawa.ca

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110, avenue Laurier Ouest
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Tél. : 613-580-2496
Téléc. : 613-580-2509
Courriel : Mark.Sutcliffe@ottawa.ca

February 26th, 2026

The Honourable Michael Kerzner
Solicitor General
Ministry of the Solicitor General
George Drew Building
25 Grosvenor St. Toronto, ON M7A 1Y6
SOLGEN.Correspondence@ontario.ca

By electronic submission

Re: Proposed New Regulation under the Restricting Public Consumption of Illegal Substances Act

Dear Solicitor General,

Please be advised that Ottawa City Council, at its meeting of February 25, 2026, considered and approved the following motion:

MOTION

Moved by / Motion de: Councillor S. Plante
Seconded by / Appuyée par: Mayor M. Sutcliffe

WHEREAS the *Restricting Public Consumption of Illegal Substances Act, 2025* (RPCISA) was brought into force on June 5, 2025; and

WHEREAS the Ministry of the Solicitor General (SOLGEN) is considering regulatory amendments to the RPCISA to prescribe special constables employed by authorized public transit agencies, including OCTranspo special constables for the purpose of the Act, thereby granting them the same enforcement powers as police officers, and is seeking public input on this proposal until March 1st; and

WHEREAS the City of Ottawa has invested significant resources to improve public safety in the downtown core and the ByWard Market; and

WHEREAS OC Transpo deploys on average approximately 4 special constables in the downtown daily, and 13 deployed across the city-wide transit network, who are already present in high-traffic transit environments, including stations, platforms, and bus stops throughout the downtown core and across the city; and

Mark Sutcliffe
Mayor | Maire

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Courriel : Mark.Sutcliffe@ottawa.ca

WHEREAS public transit riders include workers, students, seniors, people with disabilities, youth, and low-income residents who rely on transit as their primary or only mode of transportation and require a safe environment at all times; and

WHEREAS restoring ridership is essential to the financial sustainability of Ottawa's public transit system, to achieving the City's climate and transportation goals, and to ensuring equitable access to employment, education, healthcare, and community services; and

WHEREAS enabling OCTranspo special constables to enforce the RPCISA would allow for timely, proportionate, and location-specific interventions focused on transit spaces, while reducing reliance on police response for matters that occur primarily within the transit system; and

WHEREAS any extension of authority under the RPCISA would be accompanied by appropriate training and would operate alongside existing public health, outreach, and harm reduction services, recognizing that enforcement alone does not address substance use but that clear rules and safe public spaces remain necessary;

THEREFORE BE IT RESOLVED that the City of Ottawa endorse the proposed regulatory amendments under the *Restricting Public Consumption of Illegal Substances Act, 2025*; and

BE IT FURTHER RESOLVED that the Mayor write to the Solicitor General of Ontario in support of the proposal before March 1st, 2026; and

BE IT FURTHER RESOLVED that the Clerk share this motion with other Municipalities in Ontario, prior to March 1st, 2026; and,

BE IT FURTHER RESOLVED that the Mayor write the Solicitor General of Ontario to renew or extend the funding associated with the Ontario-Ottawa agreement.

Should you have any questions in this regard, please do not hesitate to contact the undersigned.

Yours truly,

[redacted]

Mark Sutcliffe
Mayor
City of Ottawa

cc. All Ontario Municipalities
Association of Municipalities of Ontario (AMO)

Rideau Lakes
1439 County Road 8, Delta, ON K0E 1G0
T. 613.928.2251 | 1.800.928.2250 | F. 613.928.3097
rideaulakes.ca

March 10, 2026

Dear Senator,

Re: Rideau Lakes Concerns re Alto High Speed Rail Project (Bill C-15 Budget)

We in Rideau Lakes Township are writing this letter because of major concerns about the Alto High Speed Rail Project (HSR), as well as a request to fully evaluate our concerns of Bill C-15 in relation to Alto HSR and expropriation of land.

The Alto HSR is lacking full and meaningful consultation of critical information for the early design and development phase. We recognize that having this information is important to the engineers in determining routes that minimize disruptions to the communities, residents, businesses, farmland, waterways, environment, and ecosystems that they pass through. What we have experienced is less than adequate information upon which to base our ability to conduct impact assessments involving our rural communities, agriculture, businesses, and countless heritage buildings and monuments. Alto's recently proposed Southern Ontario route included a 10 km wide corridor, and they provided high-level maps which are not useful in determining the impacts which more detailed route maps would give us and that are vital to our informed feedback. Without more information from Alto, this reduces our more local and valuable ability to provide critical information to Alto planners and engineers.

HSR will divide communities. There will be a major impact on our roadways for school buses, public transportation and emergency vehicles given the many closed roadways when fences are erected along the HSR route. This will increase mortality and morbidity as it will take longer to receive timely care. Farther to travel will also increase emissions and costs for plowing and road maintenance. Without more information from Alto, this reduces our local and valuable ability to provide critical information to Alto planners and engineers.

The Southern route would traverse the UNESCO recognized Frontenac Arch Biosphere Region, the ancestral lands of the Haudenosaunee (Kanien'kehá꞉ka) and Anishinaabeg (Algonquin); where a land bridge of the Canadian Shield connects the Algonquin and Laurentian Highlands to the Adirondack Mountains in the USA. Many animals use this migration route in both directions every year, and unless wildlife corridors are included in the ALTO plans, this would cut off their migration.

This does not begin to speak to the negative impact on tourism which is estimated in the order of $30 million for the UNESCO Rideau Canal system from Ottawa to Kingston.

Another major concern is that the government proposes to grant Alto, as a Crown Corporation, the right to 3 methods of property expropriation! Until now the government itself held the right to a single method of property expropriation. This causes our residents varying degrees of stress ranging to mental anguish if their properties are affected and they will not get full current market value if they decided to sell. Under the new proposed legislation, they would be forced to sell to the Corporation! This is of particular concern to many potentially affected property owners who are in the business of farming and feeding our population.

Cost analysis to build the railway in the northern and southern routes has not been done. We have also been told that a route parallel to the St. Lawrence River and Lake Ontario is not viable. We do not have enough information to understand why this option is not viable.

Rideau Lakes Township is asking you, and your Senate colleagues, to undertake your considered review of our concerns that are being sent to you for First Reading. We hope that you will see that this portion of Bill-C15 (HSR and expropriation) is premature, given that there are many unanswered questions and important issues have not been adequately addressed in the information provided. There has been inadequate public consultation to move to the development stage of this generationally important Canadian transportation project affecting so many lives along whatever corridor may eventually be approved. Should the Senate determine that a delegation to a Senate committee be appropriate with a view to consolidating recommendations for changes that would go back to the House of Commons, we would be available to participate, of course upon invitation.

Thank you for your attention in this very important matter affecting all of us here and across Ontario! It would be very much appreciated if I could receive a response in order to brief my Council.
Yours respectfully,



Arie Hoogenboom
Mayor, Rideau Lakes Township
mayor@rideaulakes.ca
613-323-0901

Cc: Prime Minister of Canada
All Members of Parliament
All Provincial Cabinet Ministers
MPP Steve Clark
The Federation of Canadian Municipalities
The Association of Municipalities of Ontario
All Ontario Municipalities

TOWNSHIP OF
McNab/Braeside

Regular Council Meeting Resolution Form

Date:	February 17, 2026	No:	RESOLUTION - 56-2026
Moved by Councillor Kevin Rosien		Disposition:	CARRIED
Seconded by Deputy Mayor Scott Brum		Item No:	14.2

Description: Ontario Heritage Organization Development Grant Advocacy

RESOLUTION:

WHEREAS Ontario municipalities are legislated to preserve records of enduring and historical value, and community archives play a critical role in fulfilling this responsibility, particularly in rural and smaller municipalities; and

WHEREAS The Heritage Organization Development Grant (HODG) is the only provincial operating grant available to grassroots, non-profit heritage organizations, including community archives and historical societies across Ontario; and

WHEREAS The maximum annual HODG grant of $1,545 per organization has remained effectively unchanged for more than 15 years, resulting in a significant erosion of its real value due to inflation, such that its current purchasing power is approximately two-thirds of what it was in 2010; and

WHEREAS Rising operating costs related to insurance, utilities, records preservation, digitization, accessibility, and volunteer coordination have increased financial pressure on heritage organizations, often requiring municipalities to absorb additional costs to ensure continuity of service; and

WHEREAS Strengthening HODG would represent a modest but high-impact provincial investment that would help stabilize community archives, reduce pressure on municipal budgets, and safeguard Ontario's public records and local heritage for future generations;

NOW THEREFORE BE IT RESOLVED THAT Council formally support a review and modernization of the Heritage Organization Development Grant, including restoring its real purchasing power through inflationary adjustment and exploring options for increased or multi-year operating stability; and

BE IT FURTHER RESOLVED THAT This resolution be forwarded to the Minister of Tourism, Culture and Gaming, local Members of Provincial Parliament, AMO, and Ontario municipalities for consideration and support.

[redacted]

MAYOR

Recorded Vote Requested by:_____

	Yea	Nay
Mayor Lori Hoddinott	____	____
Deputy Mayor Scott Brum	____	____
Councillor Kevin Rosien	____	____
Councillor Robert Campbell	____	____
Councillor Jill Campbell	____	____

Declaration of Pecuniary Interest:_____
Disclosed his/her/their interest(s), vacated he/her/their seat(s), abstained from discussion and did not vote

Tamara Russell Barr

From: Regional.Clerk <regional.clerk@york.ca>
Sent: March 6, 2026 8:05 AM
Subject: Regional Council Decision - Proposed Motion from Mayor Lovatt

Caution! This message was sent from outside your organization.

Allow sender | Block sender | Report

On February 26, 2026 Regional Council adopted the following motion:

Whereas the Province of Ontario has implemented the Blue Box Extended Producer Responsibility (EPR) framework, transferring responsibility for municipal recycling to producer responsibility organizations and their contractors, including Circular Materials Ontario;

And Whereas Circular Materials Ontario has engaged multiple private collection contractors to deliver recycling services to municipalities across Ontario, including those within the Regional Municipality of York;

And Whereas municipalities throughout Ontario are experiencing inconsistent recycling collection service levels under the new EPR model, including differences in collection frequency, missed collections, accepted materials, cart provision, contamination management, customer service response times, and contractor accountability;

And Whereas residents in some municipalities are receiving reduced or inferior recycling collection services compared to others, despite participating in the same provincial Blue Box program;

And Whereas these service level inequities have resulted in increased resident complaints, confusion, reduced participation in recycling programs, and declining public confidence in Ontario's recycling system;

And Whereas upper- and lower-tier municipalities, including York Region, no longer have direct operational control over Blue Box recycling collection, yet continue to experience the impacts of service disruptions and resident dissatisfaction;

And Whereas the intent of Extended Producer Responsibility was to improve environmental outcomes, efficiency, and accountability, not to create unequal treatment of Ontario residents based on municipal boundaries;

And Whereas access to reliable and effective recycling collection is an essential public service and should be fair, consistent, and equitable for all residents of Ontario, regardless of where they live;

Therefore Be It Resolved That the Council of The Regional Municipality of York calls upon the Province of Ontario to intervene to ensure that Circular Materials Ontario and its contractors provide fair, consistent, and equitable recycling collection service levels across all municipalities in Ontario;

And That the Province be requested to establish, enforce, and publicly report on consistent province-wide service standards for Blue Box recycling, including collection frequency, missed-collection

recovery, accepted materials, cart provision, customer service response times, and contractor performance;

And That the Province require Circular Materials Ontario to promptly address collection service level inequities and performance gaps between municipalities, including those impacting York Region;

And That this resolution be circulated to the Premier of Ontario, the Minister of the Environment, Conservation and Parks, all Ontario Members of Provincial Parliament, the Association of Municipalities of Ontario (AMO), and Circular Materials Ontario and all Mayors of Ontario

Regards,

Christopher Raynor (he/him) | Regional Clerk, Regional Clerk's Office, Corporate Services Department
---
The Regional Municipality of York | 17250 Yonge Street | Newmarket, ON L3Y 6Z1
O: 1-877-464-9675 ext. 71300 | christopher.raynor@york.ca | york.ca

Our Mission: **Working together to serve our thriving communities – today and tomorrow**

THE CORPORATION OF THE TOWNSHIP OF PAPINEAU-CAMERON

4861 Highway 17, P.O. Box 630, Mattawa ON P0H 1V0
Office: (705) 744-5610 • Fax: (705) 744-0434 • Garage: (705) 744-5072
E-mail: admin@papineaucameron.ca Website: www.papineaucameron.ca

February 26, 2026

The Ontario Veterinary College
50 Stone Road East
Guelph, ON N1G 2W1

RE: Ontario Veterinary College expansion of enrollment capacity

---

The Council of The Corporation of The Township of Papineau-Cameron met at their Regular Council Meeting on February 24, 2026 and passed the attached resolution 2026-50 that relates to the Ontario Veterinary College's enrollment capacity.

Yours truly,

[redacted]

Venessa Wilson
Administrative Assistant

Encl: Resolution 2026-50, Township of Papineau-Cameron

Cc: The Ontario Ministry of Agriculture, Food and Agribusiness
The Canadian Veterinary Medical Association
The Honorable Victor Fedeli, MPP, Minister of Economic Development, Job Creation and Trade
The Honorable Trevor Jones, MPP, Minister of Agriculture, Food and Agribusiness
The Honorable Nolan Quinn, MPP, Minister of Colleges, Universities, Research Excellence and Security
Association of Municipalities of Ontario
All Ontario Municipalities

THE CORPORATION OF THE TOWNSHIP OF PAPINEAU-CAMERON

4861 Highway 17, P.O. Box 630, Mattawa ON P0H 1V0
Office: (705) 744-5610 • Fax: (705) 744-0434 • Garage: (705) 744-5072
Website: www.papineaucameron.ca

DATE: February 24, 2026 **RESOLUTION NUMBER:** 2026-50

MOVED BY: [redacted] **SECONDED BY:** [redacted]

WHEREAS large animal livestock owners in Northern Ontario have extremely limited access to large animal veterinary services;

AND WHEREAS the cost of large animal veterinary services in Northern Ontario is significantly higher due to long travel distances and the limited number of large animal veterinarians available to service the region;

AND WHEREAS it has come to the attention of the Council of Papineau-Cameron Township that three qualified individuals within our community have applied to the Ontario Veterinary College for large animal veterinary, but were denied admission due to limited enrollment capacity;

THAT the Council of Papineau-Cameron Township formally requests that the Ontario Veterinary College, the Ontario Ministry of Agriculture, Food and Agribusiness, and the Canadian Veterinary Medical Association consider expanding enrollment capacity at the Ontario Veterinary College to allow more qualified applicants to pursue certification as large animal veterinarians.

AND FURTHER THAT a copy of this resolution be forwarded to the Ontario Veterinary College, the Ontario Ministry of Agriculture, Food and Agribusiness, the Canadian Veterinary Medical Association, the Hon. Victor Fedeli MPP Minister of Economic Development, Job Creation and Trade, the Hon. Trevor Jones MPP Minister of Agriculture, Food and Agribusiness, the Hon. Nolan Quinn MPP Minister of Colleges, Universities, Research Excellence and Security, Association of Municipalities of Ontario, and Ontario Municipalities for their consideration and support.

CARRIED: [redacted]
(Mayor)

NOT CARRIED: _____
(Mayor)

Recorded Vote (Upon Request of Councillor _____) Section 246 (1) Municipal Act

RECORDED DIVISION VOTE	YES Signature	NO Signature	ABSTAIN Signature
Mayor Robert Corriveau			
Deputy Mayor Shelley Belanger			
Councillor Keith Dillabough			
Councillor Jason Bélanger			
Councillor Mélanie Chenier			

COPY

Notice of Public Meeting to Adopt the Melville-Park West HCD Plan in Dundas

Hamilton

What?	You are invited to attend either in-person or virtually and provide input at this public meeting hosted by the **Planning Committee**, in accordance with subsection 41.1(6)(b) of the *Ontario Heritage Act*.
When?	**Tuesday, May 5, 2026**. Meeting starts at **9:30am**
Where?	**Hamilton City Hall**, Council Chambers, 2nd Floor 71 Main Street West, Hamilton
Purpose of the Meeting.	The Planning Division will be presenting a report at this meeting recommending that Council adopt the **Melville-Park West Heritage Conservation District Plan** in Dundas and pass a by-law designating the proposed district under Part V of the *Ontario Heritage Act*. The City of Hamilton is conducting meetings in a hybrid format via an in-person and Webex platform. All Hybrid Meetings can be viewed at: www.hamilton.ca/MeetingAgendas If a person does not make oral submissions at this public meeting or make written submissions to Council c/o the City Clerk at the Office of the City Clerk before the by-law to adopt this Plan is passed and then appeals, the Ontario Land Tribunal may dismiss all or part of their appeal without holding a hearing.

RECEIVED
MAR 12 2026
Township of Puslinch

Learn more. Share your thoughts. Stay Involved.

Want to learn more about what is being recommended?

A copy of the Melville-Park West Heritage Conservation District Plan and other information relating to this matter can be found by visiting the project webpage at www.hamilton.ca/melvilleHCD, or by contacting staff at:

Alissa Golden, Cultural Heritage Program Lead
Phone: 905-546-2424 ext. 1202, Email: alissa.golden@hamilton.ca
and CulturalHeritagePlanning@hamilton.ca

The Planning Division's staff report will be available on or after April 28, 2026. The report can be accessed on the Planning Committee agenda www.hamilton.ca/MeetingAgendas.

How can I participate before a decision is made?

There are a number of ways you can participate:

- Attend the meeting in-person or virtually.
- Register to speak at the meeting.
- Submit a pre-recorded video with your comments.
- Submit written comments **by noon on May 4, 2026**, to the Legislative Coordinator, Planning Committee by email at clerk@hamilton.ca.

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Township of Puslinch

For instructions on the various ways to participate, visit the City's website www.hamilton.ca/requesttospeak to review the Public Participation Guide for Hybrid Meetings.

Be sure to review the "Appeal Rights" and "Collection of Personal Information" sections of this letter.

Additional information and *Ontario Heritage Act* requirements.

Appeal Rights.

In accordance with the provisions of subsection 41(4) of the *Ontario Heritage Act*, any person who objects to the by-law may appeal to the Ontario Land Tribunal by giving the Tribunal and the clerk of the municipality, within 30 days after the date of publication of the public notice of the by-law being passed, a notice of appeal setting out the objection to the by-law and the reasons in support of the objection, accompanied by the fee charged by the Tribunal.

In accordance with subsection 41(8) of the *Ontario Heritage Act*, if a person does not make oral submissions at this public meeting or make written submissions to Council c/o the City Clerk at the Office of the City Clerk before the by-law to adopt this Plan is passed and then appeals, the Ontario Land Tribunal may dismiss all or part of their appeal without holding a hearing.

Collection of Personal Information.

Information respecting this matter is being collected under the authority of Part IV of the *Ontario Heritage Act*, R.S.O. 1990, c. O.18. All comments and opinions submitted to the City of Hamilton on this matter, including the name, address and contact information of persons submitting comments and/or opinions, will become part of the public record, will be made available to the general public **and will appear on the City's website unless you request that the City remove your personal information.**

Questions about this collection should be directed to:

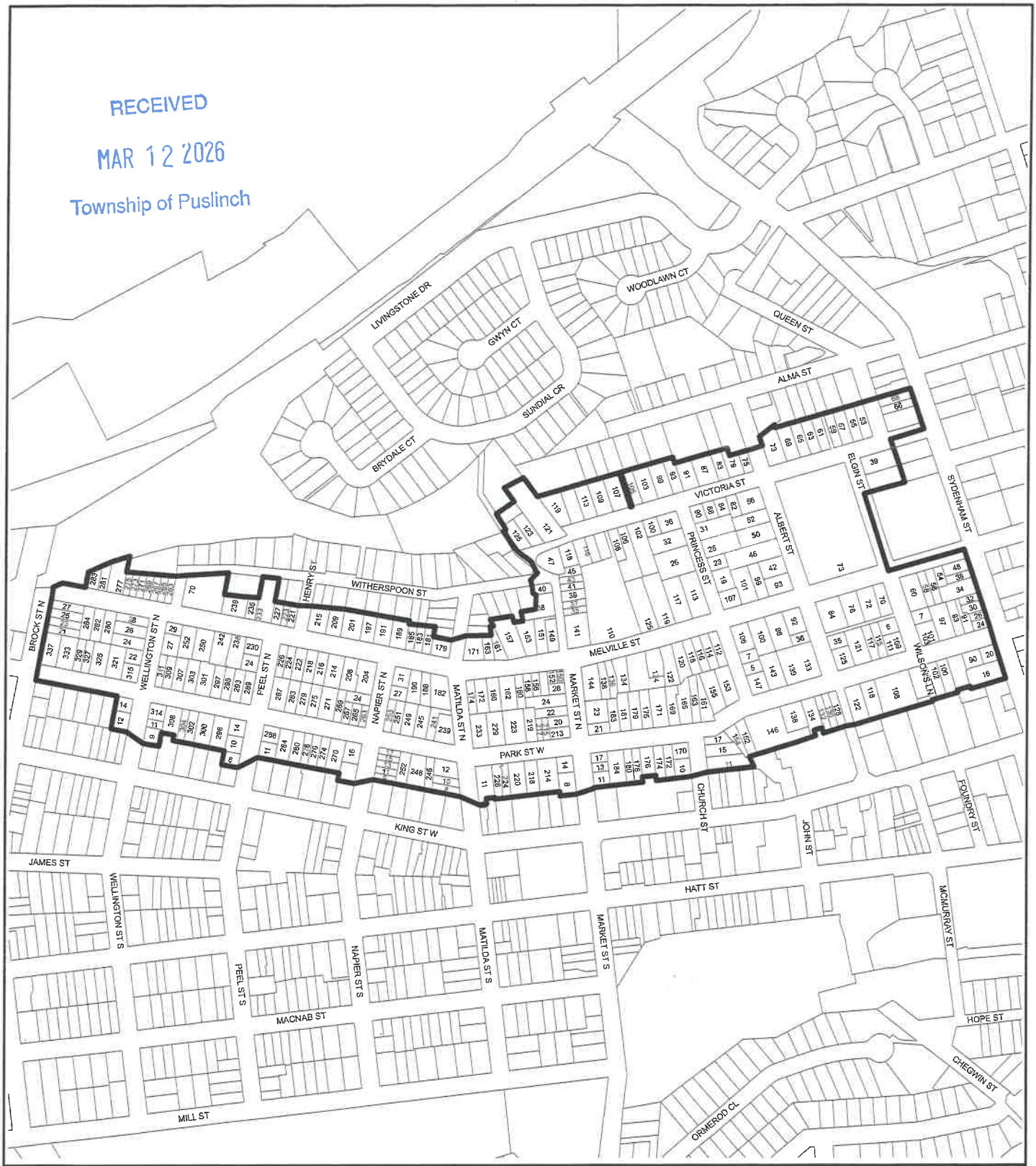
Legislative Coordinator, Planning Committee
City of Hamilton, 71 Main Street West, 1st Floor.
Hamilton, ON, L8P 4Y5
Or by E-mail: clerk@hamilton.ca

Accessibility Accommodations.

If you need any accommodations to attend and participate at the meeting, please contact the Office of the City Clerk at clerk@hamilton.ca one week prior to the meeting. Advance requests are highly encouraged to enable us to meet your needs adequately.

This Notice was issued by the Legislative Coordinator, Planning Committee on March 6, 2026.

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MAR 12 2026
Township of Puslinch



Legend

Melville-Park West Heritage Conservation District

Melville-Park West Heritage Conservation District

Date: January 27, 2026

Not To Scale

Hamilton

PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT

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Township of Puslinch

Hamilton

City of Hamilton Public Participation Guide for Hybrid Meetings

The City of Hamilton is now conducting Standing Committee meetings in a hybrid format via an in-person and Webex platform. Members of the public are also able to view meetings online.

Please visit https://www.hamilton.ca/council-committee/council-committee-meetings/meetings-and-agendas to access the livestream for **Standing Committees**.

MEMBERS OF THE PUBLIC ARE ADVISED TO CHECK THE CITY'S WEBSITE FREQUENTLY FOR UP TO DATE INFORMATION ON MEETING SCHEDULING AS MEETING DATES AND TIMES MAY CHANGE.

1. STANDING COMMITTEES

Written Submissions

Members of the public who would like to participate in a statutory public meeting or a Standing Committee meeting are able to provide comments in writing via mail or email in advance of the meeting. Comments can be submitted by emailing clerk@hamilton.ca or by mailing the Legislative Coordinator of the respective Standing Committee, City of Hamilton, 71 Main Street West, 1st Floor, Hamilton, Ontario, L8P 4Y5. Comments must be received by noon the day before the meeting. Any written comments received after the deadline will be included on the next Council agenda.

Comments can also be placed in the drop box which is located at the back of the 1st Floor of City Hall, 71 Main Street West. All comments received by noon two business days before the meeting will be included in the agenda.

Pre-Recorded Submissions

Members of the public can participate in a statutory public meeting or a Standing Committee meeting by submitting a pre-recorded video **by noon two business days before the meeting**. The video must be no longer than 5 minutes in length and will be reviewed before the meeting to ensure it adheres to the City's procedures and protocols in presenting to Council. The video can be submitted by emailing clerk@hamilton.ca or dropping off a USB at the City Hall drop box located at the back of the 1st Floor of City Hall, 71 Main Street West, to the attention of the Legislative Coordinator of the respective Standing Committee. Any videos that do not adhere to the City's procedures and protocols will not be presented at the meeting.

Oral Submissions During the Hybrid Meeting

Members of the public can participate at hybrid meetings, virtually or in person as of April 25, 2022, regarding statutory public meeting or Standing Committee items by participating through Webex via computer or phone or in-person. Participation in either of these formats requires pre-registration with delegations being no longer than 5 minutes in length.

Persons wishing to delegate on a matter that is listed on the Committee agenda, shall submit a Request to Speak form no later than 12:00 noon the business day before the meeting. If the Committee is meeting on a Monday, the deadline will be 12:00 noon on the Friday before.

To register to participate by Webex either via computer or phone, members of the public must submit a Request to Speak form which can be found at https://www.hamilton.ca/council-committee/council-committee-meetings/request-speak-committee-council. Upon registering for a meeting, members of the public who are participating virtually will be emailed a link for the Webex meeting. The link must not be shared with others as it is unique to the registrant.

All members of the public who register to participate virtually will be contacted by City Staff to confirm details of the registration prior to the meeting and provide an overview of the public participation process.

We hope this is of assistance and if you need clarification or have any questions on how to participate in a statutory public meeting, please email clerk@hamilton.ca or by phone at 905-546-2424 extension 4408.

The Corporation of the Municipality of St. Charles
RESOLUTION PAGE

Regular Meeting of Council

Agenda Number:	5.4.2.
Resolution Number	2026-022
Title:	Resolution of Support - Hornepayne - Small Northern New Residential Property Tax Class
Date:	February 18, 2026

Moved by: Councillor Pothier

Seconded by: Councillor Lachance

WHEREAS there is a visible disparity between the northern and southern population of Ontario;
AND WHEREAS northern Ontario has an abundance of opportunity in the form of municipally serviced building lots for both Industry and population growth;
AND WHEREAS high residential property taxes in northern Ontario discourage and prohibit the construction of new residential single family dwellings;
AND WHEREAS the addition of a Small Northern New Residential property tax class and subclass would create an incentive for the building of new homes in small northern Ontario communities;
BE IT THEREFORE RESOLVED THAT Council for the Corporation of the Municipality of St-Charles does hereby request that the Honorable Minister Peter Bethlenfalvy, the Minister of Finance, amends the Assessment Act to include a Small Northern New Residential property tax class and subclass.
AND BE IT FURTHER RESOLVED that this resolution be forwarded to the Honourable Doug Ford Premier of Ontario; your Municipalities MPP; the Honourable Minister Peter Bethlenfalvy, Minister of Finance; the Honourable Minister George Pirie, Minister of Northern Economic Development and Growth; the Honourable Minister Rob Flack, Ministry of Municipal Affairs and Housing; AMO; FONOM; NOMA; NEOMA; NESMG; and ROMA.

[redacted] **CARRIED**

MAYOR

Lifewater Canada: Kenya 2026

Stan Denhoed

I did not appreciate water scarcity until I went to Kenya and saw the donkey trains with shepherds at their heels and four or five 20-liter jugs on their backs, in the heat.



Daily water delivery to school where we were drilling the well

I did not appreciate what vision Life Water Canada had until I saw the muddy holes where domestic water was taken and used for cooking, irrigation and washing. The donkeys and other domestic animals trod in the water.



The water source.

I refused to believe that this was a source of water. Even now, I am doubting that this happens, every day in many places around the world. But I did see it. And it maybe harder for me to understand because I am an engineer that specializes in groundwater and organizes well drilling so Canadian companies and communities have clean drinking water at their taps. I have seen countless wells drilled in Ontario, almost all successfully, with the outcome being a clean source of water. We have hundreds of companies in Ontario that make a good living at drilling those wells, because it is successful. We also see burgeoning communities abandon perfectly good groundwater aquifers for larger permanent surface water sources because, they too are drinkable. The aquifers recover because our four seasons include a rest period, fall and winter. Surplus water is available in great quantities and infiltrates, replenishing the underground reservoirs or runs off into the surface water system, replenishing those reservoirs. All in all, for the most part, our seasons, our precipitation patterns, create an environment of incredible water surplus.

Other places in the world are not so fortunate. Sub Sahara Africa, where Lifewater Canada operates in three countries (Kenya, Liberia and Nigeria) is one of those less fortunate areas. For example, in Kenya, there is bi- modal precipitation with two rainy seasons separated by continued warm weather and high evaporation and evapotranspiration. Flash flooding during the rainy season and dry rivers otherwise.



The dry river and efforts to chase receding waters.

Rain harvesting, a successful endeavour, is only good for so long once the rains cease. Detritus and animal/bird feces also contaminates this rainwater. Infiltration rates are low, maybe 20 to 30 mm per year compared to the 200 to 300 mm/year I experience here in Ontario. Latitude and elevation play a much bigger role in groundwater resources than I ever imagined. Only in the upper plateaus, above 2000 m did we observe flowing streams, indicative of perennial groundwater discharge. This

all because of the orographic lifting of water laden winds from the Indian Ocean, keeping Mount Kenya and Kilimanjaro shrouded in clouds and creating moist conditions below.



The moist plains at 2200 metres above sea level

But there is groundwater. Despite arid conditions and low infiltration rates, there are underground reservoirs of water. Valleys are filled with weathered rock, often the only rock remaining are the quartz and feldspars from the ancient felsic magma extrusions in this active volcanic area.



The arid plain east of Mount Kenya

The Kisumu area, specifically the Kanu Plain has tens of metres of sediment that is saturated almost to the ground surface. The Mwingi area, on the eastern flank of Mt. Kenya has both exposed rock and buried valleys that retain water from the bimodal rainy seasons. Fresh water, mere metres below the feet of the weather-beaten shepherds. And it may as well be on the moon. There are no drilling companies waiting for your call. Even if there were, they would be out of the financial reach of most Kenyans. That is where Lifewater Canada comes in. We have specialized teams of well drillers in three locations around Kenya, one in Nigeria, three in Liberia and one in Haiti. We have purchased drilling equipment suitable for the environmental conditions, road conditions, and social conditions available in each country.



Our heavy drill rig at the school.

We have trained people from each country to supervise and use the drilling equipment. We have advance teams scouting out the next well location and there is no shortage of need. By all intents and purposes, Lifewater Canada is a well drilling organization with the purpose of providing the knowledge and equipment to provide clean clear drinking water where otherwise none is available.

And wow, can our teams drill. With drill rigs assembled out of the back of pickup trucks or mounted on light vehicles, we drill. The two wells I observed were forty to fifty metres deep. Through unconsolidated lacustrine sediments along Lake Victoria to gneissic basement rocks east of Mt. Kenya. And there was water. Five to ten metres below the ground surface. Enough coarse material in the lacustrine deposits for a good well and enough fractures in the gneiss to deliver ten to fifteen liters per minute.



Our light drill rig on the job. Still, we drilled 40 m easily.

And that is enough. Low producing wells with adequate storage will be used all day, fitted with hand pumps there is hardly a break in the action.



Testing the well yield. Lots of helpers on the drill rig.

When those wells are completed, the community flourishes. Children can go to school because they no longer need to swish sticks at donkeys, guiding them to water sources that no one should be drinking in the first place. Gardens spring up around the wells either fed by pails of water or where

more industrious, pipes lead from the well to nearby rows of corn and mango trees. Food and water security is attained.



One of our wells completed three years ago. An oasis.



Another one of our wells.

The gratitude, palpable.



And we feel great about doing our part. As a director of Lifewater Canada I could not be prouder of an organization that delivers life giving water where it is most needed, at the family level. As a Canadian, living in a water rich area it is hard for me to empathize with those without that water, because I have never experienced it. We can help. We should help, because with small donations from Canada, we can change the trajectory of many lives, uplift communities, give hope and dignity and give life rather than watch it being taken away from water borne disease.

REPORT FIN-2026-009

TO: Mayor and Members of Council

PREPARED BY: Michelle Cassar, Deputy Treasurer

PRESENTED BY: Mary Hasan, Director of Finance/Treasurer

MEETING DATE: March 25, 2026

SUBJECT: 2025 Lease Financing Agreement Summary Report

RECOMMENDATIONS

That Report FIN-2026-009 entitled 2025 Lease Financing Agreement Summary Report be received; and

That Council accepts the Treasurer's statement that all lease financing agreements are non-material and have been made in accordance with the Township's Lease Financing Agreement Policy as outlined in Schedule B to Report FIN-2026-009.

Purpose

The purpose of this report is to comply with the Treasurer's reporting requirements as set out by Ontario Regulation 653/05 of the *Municipal Act, 2001*.

Background

Lease financing agreements represent long-term commitments of the municipality beyond the term of Council. It is a requirement pursuant to Section 11 of Ontario Regulation 653/05, as amended, at least once a year, the Treasurer report to Council to ensure all lease financing agreements have been made in accordance with the Township's approved policy which is attached as Schedule B to this report.

The intent of the Act and regulation is to impose a higher level of due diligence on lease financing agreements for municipal capital facilities.

A list of the Township's active lease financing agreements as of December 31, 2025 and December 31, 2024 are outlined in Schedule A. Each of the leases on the attached Schedule A represent a non-material lease in accordance with the Township's Lease Financing Agreement Policy.

Financial Implications

The Township's 2025 and 2024 leases consist of 1 photocopier lease, 1 large format digital scanner lease and 1 postage meter lease. The expiry dates for the current agreements range from 2026 to 2028. See below for a summary of the information provided in Schedule A to this report:

- Annual 2025 cost of lease financing agreements is $5,549.
- Remaining balance of the payments in future years is $13,075 as of December 31, 2025 and $18,228 as of December 31, 2024.
- Remaining balance of lease payments in future years as a percentage of the Township's combined long-term debt including leases is 100% as of December 31, 2025 and 100% as of December 31, 2024 as the Township repaid its long-term debt in 2018
    a) As of December 31, 2025 and December 31, 2024, the Township has zero long-term debt.

Applicable Legislation and Requirements

Ontario Regulation 653/05 of the *Municipal Act, 2001*

Engagement Opportunities

N/A

Attachments

Schedule A – Treasurer's 2025 Lease Financing Agreements Summary Report

Schedule B – Lease Financing Agreement Policy

Respectfully submitted,

Michelle Cassar
Deputy Treasurer

Reviewed by:

Mary Hasan
Director of Finance/Treasurer

Township of Puslinch

Schedule A

Treasurer's 2025 Lease Financing Agreements Summary Report

Department	Lessor	Description of Lease	Lease Term	# of Units	Annual Cost	Full Term Cost	Dec. 31, 2024 Balance Remaining	2025 Cost	Dec. 31, 2025 Balance Remaining
Corporate	Quadient	Postage Meter	November 12, 2024 to November 11, 2025	1	See below	$ 396	$ 363	$ 363	$ -
Corporate	Quadient	Postage Meter	November 12, 2025 to November 11, 2026	1	$ 396	$ 396	$ -	$ 33	$ 363
Corporate	Information Network System INS	Photocopier	January 15, 2023 to January 14, 2028	1	$ 2,265	$ 11,323	$ 6,793	$ 2,265	$ 4,528
Corporate	Information Network System INS	Large Format Digital Scanner	November 1, 2024 to Dec 1, 2028	1	$ 2,888	$ 11,553	$ 11,072	$ 2,888	$ 8,184
			Totals		$ 5,549	$ 23,668	$ 18,228	$ 5,549	$ 13,075
	Total of all other long-term debt (includes both principal and interest)						$ -		$ -
						Percentage	100.0%		100.0%

TITLE: LEASE FINANCING AGREEMENT POLICY

DATE: May 6, 2015

SUBJECT: LEASE FINANCING AGREEMENT POLICY
File No. A09 LEA

Purpose:

1. To adopt a statement of the Township of Puslinch's (Township) lease financing agreement policies and goals. Ontario Regulation 653/05, as amended, requires the adoption of such a statement before a municipality may enter into a lease financing agreement.

2. To provide guidance to staff when contemplating lease arrangements for the provision of **Municipal Capital Facilities** as defined in Ontario Regulation 603/06, as amended.

3. To ensure that both staff and Council are aware of the entire cost of the financial lease, of any special risks to the **Township** that are attached to the lease agreement and that alternative sources of financing have been considered.

Definitions

Financing Lease: a lease allowing for the provision of **Municipal Capital Facilities** and the lease may or will require payment by the municipality beyond the term of Council;

Municipal Capital Facilities: includes land, as defined in the Assessment Act, works, equipment, machinery and related systems and infrastructures.

Material Lease: a **Financing Lease** that would result in a **Material Impact** for the **Township**.

Material Impact: means costs or risks that significantly affect, or would reasonably be expected to have a significant effect on, the debt and financial obligation limit prescribed under Ontario Regulation 403/02, as amended.

Township: the Corporation of the Township of Puslinch

Statement of Lease Financing Agreement Policies and Goals:

1. The **Township**'s objective is to preserve and improve the long-term financial health of the **Township** and to ensure that prices paid for goods and services make optimum use of **Township** resources. When staff consider the option of a lease financing arrangement, the evaluation of the option must strictly adhere to this goal.

2. Prior to entering into a **Material Lease** the following considerations will be taken into account:

    a. The financial risks and benefits of the lease transaction, such as a comparison between the fixed and estimated costs and the risks associated with the proposed agreement and those associated with other methods of financing, the effective rate(s) of interest, a sensitivity analysis for leases with variable lease payments, a schedule of all fixed amounts of payment and that which may be required by any extension or renewal of the agreement, and a statement of any contingent payment options associated with termination, replacement, loss, guarantees and indemnities;

    b. The non-financial risks and benefits of the lease transaction;

    c. County of Wellington feedback after written notification to the County is provided regarding the lease financing agreement being considered;

    d. The independent legal and financial opinions of the transaction, including the legality of the terms and provisions of any proposed agreement or agreements, and any other legal considerations affecting the lease transaction;

    e. An assessment regarding whether the financial and non-financial risks associated with the agreement are reasonable; and

    f. An assessment regarding whether the cost of financing in the proposed financing agreement is lower than other methods of financing available to the **Township** such as debt, reserves, operating funds.

    g. The costs and risks associated with a proposed lease financing agreement in the report shall be assessed as of the date the report is made. The summary of information in the report shall include all information required for the entire term of the proposed lease financing agreement, including any possible extensions or renewals.

    h. At any time after a report regarding a potential lease financing agreement has been made, but before the proposed lease financing agreement is

entered into, if the Director of Finance/Treasurer becomes of the opinion that a changed circumstance with respect to the proposed agreement may result in a **Material Impact** for the **Township**, the Director of Finance/Treasurer shall as soon as reasonably possible update the report and present the updated report to Council.

3. The Director of Finance/Treasurer, in accordance with legislative requirements, shall submit an annual report on lease financing agreements to Council. The report shall include the following:

    a. A description of the estimated proportion of the total financing arrangements of the **Township** that is undertaken through lease financing agreements to the total long-term debt of the **Township** and a description of the change, if any, in that estimated proportion since the previous year's report;

    b. A statement by the Director of Finance/Treasurer as to whether, in his or her opinion, all lease financing agreements were made in accordance with the statement of leasing policies and goals adopted by the **Township**; and

    c. Any other information that Council may require or that, in the opinion of the Director of Finance/Treasurer, should be recorded.

Non-Material Lease Financing Agreements:

1. It is recognized that certain categories of **financing leases** will not involve costs or risks that will significantly affect, or would reasonably be expected to have an effect on the financial debt repayment and financial limits prescribed for the **Township.** The following leases are considered non-material leases:

    a. Leases for office equipment including photocopiers, multi-functional printers, postage meters, etc. which have been entered into in accordance with the **Township**'s Purchasing and Procurement Policy; and

    b. Leases of real property where the lease is nominal, token consideration or consideration that does not exceed the materiality level of the audited financial statements.

REPORT FIN-2026-010

TO: Mayor and Members of Council

PREPARED BY: Michelle Cassar, Deputy Treasurer

PRESENTED BY: Mary Hasan, Director of Finance/Treasurer

MEETING DATE: March 25, 2026

SUBJECT: 2026 Temporary Borrowing By-law

RECOMMENDATIONS

THAT Report FIN-2026-010 entitled 2026 Temporary Borrowing By-law be received; and

THAT Council give 3 readings to By-law No. 2026-012 being a by-law authorizing external temporary borrowings of $1,500,000 in 2026.

Purpose

Section 407 of the *Municipal Act, 2001*, allows for a municipality to pass a by-law authorizing the temporary borrowing of funds of an amount that Council considers necessary to meet the current expenditures for the year. Council must pass this temporary borrowing by-law annually if they wish to utilize it in a given year.

Background

Township staff continually monitor and project the Township's cash flow requirements to ensure adequate cash is available to meet anticipated needs. Township staff would review cash deposits in the bank and short-term investments prior to utilizing the external temporary borrowings permitted in Section 407 of the *Municipal Act, 2001*. The temporary borrowings would only be utilized in extenuating circumstances. In at least the previous twelve (12) years, no external temporary borrowing has been required to meet current expenditures.

It is recommended that Council enact a by-law permitting staff to borrow up to $1,500,000 in the event that it is deemed necessary to borrow funds externally to meet short-term needs until the Township's main revenue source of property taxes is levied and collected.

Section 407 of the *Municipal Act, 2001* permits a municipality to authorize temporary borrowing, until the taxes are collected and other revenues received, of an amount that Council considers necessary to meet the current expenditures for the year. Unless otherwise approved by the Ontario Land Tribunal, that amount cannot exceed:

a.) from January 1 to September 30: 50 percent of the total estimated revenues of the municipality as set out in the adopted budget; and

b.) from October 1 to December 31: 25 percent of the total estimated revenues of the municipality as set out in the adopted budget.

For the purposes of this By-law, the estimated revenues do not include revenues derivable or derived from any borrowings, including through any issue of debentures, any prior year surplus, revenues related to tax arrears, and a transfer from a capital fund, reserve fund or reserve. The maximum amount of temporary borrowing allowed by the Act is as follows:

	2026 Budget
Total Operating Revenues	$3,332,690
Total Taxation Levy	$5,935,575
Less: Interest on Current Taxes	-$290,500
Less: Penalty on Tax Arrears	-$57,000
Prior Year Surplus Utilized	$0
Funding from Operating Discretionary Reserves	-$236,123
Adjusted estimated revenues	$8,684,642

- $4,342,321 – the maximum amount that may be borrowed at any one time on a temporary basis from January 1st to September 30th, 2026; and
- $2,171,160.50 – the maximum amount that may be borrowed at any one time on a temporary basis from October 1st to December 31st, 2026.

The Township is able to temporarily borrow funds from the bank at the Prime Rate. In prior years, the Township has not utilized external temporary borrowings for cash flow purposes. However, a situation may arise where an unexpected payment may be required or several large payments may be required prior to the collection of property taxes.

With a temporary borrowing by-law in place, staff will have the ability to act quickly in the best financial interest of the Township by borrowing funds temporarily. At this time, it is not known if the Township will require temporary borrowing of funds in 2026, however, it is financially prudent to have this authorization in place.

If the Township was required to borrow funds beyond a one-year period or beyond the term of Council to help finance certain approved capital projects, then the Township through Council would consider a debenture through the County of Wellington to ensure compliance with Provincial legislation.

Financial Implications

There is no financial impact to the operating budget unless borrowing is required.

As of the date of writing this Report, the Prime Rate is 4.45% as of March 4, 2026. The rates have decreased compared to prior year's rate of 4.95% as of April 23, 2025.

The annual interest amount owed will vary depending on how many days an amount remains drawn. Interest payments are charged on the account on a monthly basis and there is flexibility to reduce the temporary borrowing balance as the Township's cash flow becomes adequate to meet anticipated needs.

The following examples provide an illustration of the financial implications associated with temporary borrowing based on the current Prime Rate of 4.45%:

1.) Should the Township require temporary borrowing of $750,000, the monthly interest owed would be approximately $2,781 and the annual interest owed would be approximately $33,375
2.) Should the Township require temporary borrowing of $1,500,000, the monthly interest owed would be approximately $5,563 and the annual interest owed would be approximately $66,750

Applicable Legislation and Requirements

Section 407 of the *Municipal Act, 2001*

Engagement Opportunities

N/A

Attachments

None

Respectfully submitted,

Michelle Cassar

Deputy Treasurer

Reviewed by:

Mary Hasan

Director of Finance/Treasurer

REPORT FIN-2026-012

TO:	Mayor and Members of Council
PREPARED BY:	Michelle Cassar, Deputy Treasurer
PRESENTED BY:	Mary Hasan, Director of Finance/Treasurer
MEETING DATE:	March 25, 2026
SUBJECT:	Remuneration and Expenses Paid to Members of Council and Others - 2025

RECOMMENDATIONS

THAT Report FIN-2026-012 entitled Remuneration and Expenses Paid to Members of Council and Others – 2025 be received.

Purpose

Section 284 (1) of the *Municipal Act, 2001,* requires the Treasurer of a Municipality to submit a statement to Council itemizing remuneration and expenses in each year on or before March 31st paid to the following:

a. each Member of Council in respect to his or her services as a member of Council or any other body, including a local board, to which the member has been appointed by Council or on which the member holds office by virtue of being a member of Council;
b. each member of council in respect of his or her services as an officer or employee of the municipality or other body described in clause (a); and
c. each person, other than a member of Council, appointed by the Municipality to serve as a member of any body, including a local board, in respect of his or her services as a member of the body.

Background

The authority to pay Council and Committee members remuneration or per diems, including benefits (if applicable) and reimbursement of business expenses for the 2025 fiscal year is outlined in By-law No. 072-2024 passed by Council on December 18, 2024.

The Township provides reasonable remuneration or per diems to members of Council and Committee appointees.

The Township also provides expense reimbursement to Members of Council and Committee members for reasonable and permitted expenses incurred while carrying out their respective roles and responsibilities.

Members of local boards who are appointed by the Township also receive payments from the local boards. These payments must be reported per Section 284 (1) of the *Municipal Act, 2001*.

Schedule A lists the total Remuneration and Expenses paid to or on behalf of Members of Council and Others During the Year 2025 in accordance with Section 284 (1) of the *Municipal Act, 2001*.

Financial Implications

Funds are provided in the Council Operating Budget for Council's remuneration and reimbursement for reasonable and permitted expenses. Funds are also provided in the Committee cost centres for remuneration and expenses paid to Committee members. These are budgeted annually through the Operating Budget process.

The expenses shown in Schedule A include both mileage and allowable business expenses per the Township's policies.

Applicable Legislation and Requirements

Section 284(1) of the *Municipal Act, 2001*

Engagement Opportunities

The Remuneration and Expenses paid to Members of Council and Others during the year are posted on the Township's website. Council expenses are also itemized on the Township's website with supporting documentation (ie. detailed receipts). This information is posted on the Council Remuneration and Expenses Page on Puslinch.ca

Attachments

Schedule A – Remuneration and Expenses Paid to Members of Council and Others During the Year 2025.

Respectfully submitted,

Michelle Cassar
Deputy Treasurer

Reviewed by:

Mary Hasan
Director of Finance/Treasurer

Township of Puslinch
Remuneration and Expenses Paid to Members of Council and Others During 2025

			Sub-Total	Sub-Total	
Member of Council	Remuneration	Benefits *	Remuneration	Expenditures	Grand Total
	$	$	$	$	$
James Seeley, Mayor	42,193	11,376	53,569	-	53,569
Russel Hurst, Councillor	22,168	1,542	23,710	-	23,710
Jessica Goyda, Councillor	22,168	9,794	31,962	-	31,962
Sara Bailey, Councillor	22,168	9,794	31,962	2,207	34,169
John Sepulis, Councillor	22,168	8,684	30,852	-	30,852
Totals	$ 130,865	$ 41,192	$ 172,056	$ 2,207	$ 174,264

* Benefits include employer portion of Extended Health Care, Hospital Semi-Private, Dental, Drug, Vision Care, and Out of Province Coverage, Employer's Health Tax (EHT) and Canada Pension Plan (CPP) if applicable. Employment Insurance (EI) is exempt.

Township of Puslinch
Remuneration and Expenses Paid to Members of Council and Others During 2025

			Sub-Total	Sub-Total	
Committee	Local Board	Member	Remuneration/ Per Diem	Expenditures	Total
Committee of Adjustment	N/A	Amanda Knight	$ 659	$ -	$ 659
Committee of Adjustment	N/A	Paul Sadhra	$ 989	$ -	$ 989
Committee of Adjustment	N/A	Chris Pickard	$ 1,099	$ -	$ 1,099
Committee of Adjustment	N/A	Kim McCarthy	$ 769	$ -	$ 769
Committee of Adjustment	N/A	Kirolous Attia	$ 220	$ -	$ 220
N/A	Conservation Halton	Sara Bailey	$ 900	144	$ 1,044
N/A	Conservation Halton - Source Protection Committee	David Rodgers	$ 600	29	$ 629
N/A	Grand River Conservation Authority	Chris White	$ 3,838	503	$ 4,340
N/A	Grand River Conservation Authority	James Seeley	$ 773	68	$ 840
N/A	Grand River Conservation Authority - Source Protection Committee	John Sepulis	$ 850	27	$ 877
N/A	Hamilton Conservation Authority	Susan Fielding	$ 3,000	886	$ 3,886
Totals			$ 13,696	$ 1,657	$ 15,353

REPORT CAO-2026-004

TO: Mayor and Members of Council

PREPARED BY: Courtenay Hoytfox, CAO

PRESENTED BY: Courtenay Hoytfox, CAO

MEETING DATE: March 25, 2026

SUBJECT: Establishing and Regulating By-law

RECOMMENDATION

That Report CAO-2026-004 entitled Establishing and Regulating By-law be received for information.

Purpose

The purpose of this report is to provide Council with clarification regarding the application of the Limitation of Service provisions within By-law 006-2026, specifically as it relates to technical rescue services, and to outline considerations related to operations, liability, and potential future refinements to the by-law.

Background

By-law 006-2026 amended the Township's Fire Department Establishing and Regulating By-law (By-law 018-2019) to, among other matters, clarify limitations of service with respect to technical rescue. Section 5 of the by-law exempts the Fire Department from providing technical rescue services, including but not limited to high-angle rescue, confined space rescue, trench rescue, structure collapse rescue, and water/ice rescue, where such services require specialized equipment, training, or staffing beyond the approved level of service.

The inclusion of these limitations is consistent with historical Council direction and the Township's Fire Master Plan. At the October 6, 2016 Special Council Meeting, Council endorsed recommendations to reduce the level of emergency response services for confined space rescue and slope/high-angle rope rescue from an operational capability to an awareness level of response, and directed that these service levels be reflected in the Establishing and Regulating By-law.

Council also directed the Fire Chief to investigate options for the delivery of operational-level specialized emergency response services, including confined space, high-angle rope, trench rescue,

and hazardous materials response. In 2016 staff supported these recommendations and undertook to revise the applicable by-law to reflect the approved service levels. This included exploring service delivery arrangements, such as agreements with neighbouring municipalities (e.g., Centre Wellington) for the provision of specialized rescue services.

These decisions reflect a policy-based approach to defining the Township's fire protection service levels, aligning available resources, training, and risk with the services provided.
While the by-law establishes a limitation of service for technical rescue, it is recognized that emergency response situations may require firefighters to take immediate action to protect life and property. In practice, certain rescue activities that may be broadly characterized as "technical" (such as vehicle extrication in complex circumstances) may still occur where they fall within the training, certification(s), and capabilities of responding personnel. The Establishing and Regulating By-law does not preclude such rescues but rather removes such activities from the Township's list of obligatory services as a matter of policy.

Financial Implications

There are no immediate financial implications associated with this report.

Any future amendments to the Establishing and Regulating By-law, or changes to service delivery models (including potential agreements for specialized rescue services), may have financial implications. These could include costs related to training, equipment, staffing, or contractual service agreements, which would be brought forward for Council consideration through a future report.

Applicable Legislation and Requirements

Fire Protection and Prevention Act, 1997
Municipal Act, 2001
O. Reg. 343/22: Firefighter Certification

Engagement Opportunities

None

Attachments

None

Respectfully submitted,

Courtenay Hoytfox
CAO

REPORT CAO-2026-005

TO:	Mayor and Members of Council
PREPARED BY:	Courtenay Hoytfox, CAO
PRESENTED BY:	Courtenay Hoytfox, CAO
MEETING DATE:	March 25, 2026
SUBJECT:	2026-2030 Township Strategic Plan

RECOMMENDATION

That Report CAO-2026-005 entitled 2026-2030 Township Strategic Plan be received for information; and

That Council approves the 2026-2030 Township Strategic Plan as [presented/amended].

Purpose

The purpose of this report is to provide Council with the final draft of the 2026-2030 Township Strategic Plan incorporating Council's feedback from the previous iteration.

Background

The Plan's development followed follow the approved structured process:

- Phase 1 – Launching & Planning - COMPLETE
- Phase 2 – Environmental Scan and Background Report - COMPLETE
- Phase 3 – Internal Engagement: Council, Committees, & Staff (October - November 2025) - COMPLETE
- Phase 4 – External Engagement: Community, Stakeholders, & Sector Groups (November – December 2025) - COMPLETE
- Phase 5 – Final Review and Adoption (February – March 2026)

The plan development is on track for final review and adoption. The following revisions have been incorporated into the final draft of the plan attached as Schedule "A" to this report:

- Refinement to language to improve the clarity of the document; and

- Addition of the following wording to Strategic Priority Pillar #1:
  "Climate related risks will be considered, where relevant across all strategic pillars to support long term resilience, fiscal sustainability and informed decision making."

Financial Implications

None

Applicable Legislation and Requirements

None

Engagement Opportunities

Township website, Social Media, EngagePuslinch surveys, Workshops, and surveys.

Attachments

Schedule "A" 2026-2030 Township Strategic Plan Final Draft

Respectfully submitted,

Courtenay Hoytfox
CAO

--- 2026-2030 ---

TOWNSHIP OF

PUSLINCH

EST. 1850

Strategic Plan

Land acknowledgement

As the Township of Puslinch looks ahead, it is important to acknowledge the lands and histories that have shaped our community. This acknowledgment affirms our responsibility to the people and territories connected to this place, and to advancing respectful relationships going forward.

The lands we know today as the Township of Puslinch have been home to Indigenous peoples since time immemorial. We acknowledge that we are on the traditional territory of the Hatiwendaronk, as well as the treaty lands and traditional territory of the Anishinaabe and Haudenosaunee.

With increasing encroachment by non-Indigenous settlers in the Township of Puslinch, the Anishinaabe and Haudenosaunee could not continue their traditional lifestyle and settled in their villages along the Credit River and in the Grand River Valley. These Indigenous nations uphold their Treaty Rights within our jurisdiction.

Today, the Township of Puslinch remains home to Indigenous peoples from across Turtle Island. We are grateful to have the opportunity to share and respect Mother Earth and are committed to building constructive and cooperative relationships with the Indigenous nations.



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Township of Puslinch Council

Mayor's Message

Puslinch is a community defined by its people, its rural heritage, and its strong sense of place. From our farms and natural landscapes to our hamlets, volunteer organizations, and local businesses, what makes Puslinch special is not only where we are, but how we choose to grow and care for the community we share.



The 2026–2030 Strategic Plan is a roadmap for the years ahead. It reflects the voices of residents, community groups, advisory committees, staff, and Council, and it provides clear direction for how we will protect what matters most while preparing responsibly for the future. This plan is not about doing everything, it is about doing the right things, with intention, accountability, and respect for our rural character.

As pressures from growth, traffic, infrastructure demands, and environmental change continue to affect municipalities across Ontario, Puslinch remains committed to locally driven decision-making, sound financial stewardship, and thoughtful planning. This Strategic Plan helps ensure that growth is managed carefully, services remain responsive, and investments align with community priorities.

On behalf of Council, I would like to thank everyone who took the time to participate in the engagement process and share their perspectives. Your input has shaped this plan and will continue to guide our work. Together, we will build a Township that remains welcoming, connected, and resilient today and for generations to come.

Mayor James Seely
jseeley@puslinch.ca | 519-763-1226

Your Councillors



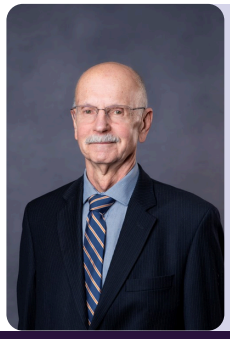
Councillor Sara Bailey
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Councillor Russel Hurst
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Councillor John Sepulis
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519-763-1226

Our 2026-2030 Strategic Plan

Protecting What Matters, **Planning** for Tomorrow

Vision:

Puslinch is a connected rural community that grows with intention. Protecting its farmland, natural landscapes, and small-town character while providing the services, opportunities, and connections residents need to thrive today and for generations to come.



Rural heritage, environmental stewardship, and natural resource protection



Managed growth and complete communities



Connected, safe, and accessible communities



Good governance, financial stewardship, and organizational excellence

Mission:

The Township of Puslinch serves its community through thoughtful planning, responsible stewardship, and strong local governance. We work collaboratively to manage growth, protect our rural heritage and environment, support community well-being, and deliver reliable services that reflect the values and priorities of our residents.

Strategic priority

Rural heritage, environmental stewardship, and natural resource protection

#1 Priority identified by residents: Protecting the environment









We will preserve Puslinch's rural character, farmland, natural landscapes, and environmental assets while promoting sustainable growth.

#1 Reason to live in the Township: Rural, open areas

Preserve Farmland and Rural Landscapes:
Implement policies and programs targeting at protect agricultural lands, scenic areas, and open spaces from incompatible development.

Protect Natural Resources and Biodiversity:
Safeguard watercourses, wetlands, woodlands, and other ecological assets through conservation, sustainable land management, and environmental monitoring. Climate related risks will be considered, where relevant across all strategic pillars to support long term resilience, fiscal sustainability and informed decision making.

Promote Sustainable Growth Practices:
Ensure that new development and infrastructure projects respect the Township's rural character and environmental limits.

Celebrate and Strengthen Community Heritage:
Support initiatives that preserve historic sites, cultural landscapes, and local traditions that contribute to Puslinch's unique identity.

Strategic priority

Managed growth and complete communities

#2 Priority identified by residents: effective land use planning

We will support balanced, well-planned residential, commercial, and employment development and local business growth, ensuring housing diversity, affordability, resilient infrastructure, and a balanced tax base.



78% of residents surveyed like the proximity to larger centres

Enable Balanced Growth and a Sustainable Tax Base:

Support appropriate housing and employment development that creates local jobs, respects rural character, and strengthens the municipal tax base.



Maintain Infrastructure Readiness:

Ensure road infrastructure, servicing, and public facilities can accommodate growth without compromising rural character.

Encourage Responsible Land Use:

Implement the Township-specific Official Plan to guide development sustainably.



Foster Economic Opportunities:

Support local businesses, entrepreneurship, tourism, and strategic investment by creating a predictable, business-friendly environment that strengthens long-term economic vitality.

Strategic priority

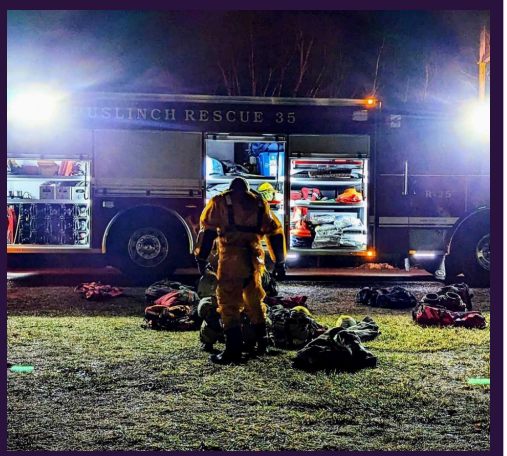
Connected, safe, and accessible communities

94% of residents surveyed are satisfied living in Puslinch

We will strive to enhance inclusive, safe, and accessible transportation, active mobility, recreation, and community spaces while strengthening community connectedness, volunteerism, and civic engagement so all residents feel supported, connected, and represented.







82% of residents access community events in neighbouring municipalities

Enhance Community Participation:

Provide meaningful opportunities for residents to contribute to planning, programs, and decision-making, while fostering shared responsibility for community safety and well-being.

Strengthen Community Spirit:

Expand recreation, arts, and cultural programs that bring people together. Host festivals, fairs, and events that showcase Puslinch's history and community spirit.

Promote Inclusivity and Accessibility:

Expand community centers, parks, and year-round activity spaces for all ages. Enhance transportation options where feasible. Ensure programs, spaces, and services are equitable for all residents.

Support Volunteerism and Local Leadership:

Encourage residents and community groups to take active roles in shaping their community. Partner with schools, libraries, and community organizations for Township and community led programming.

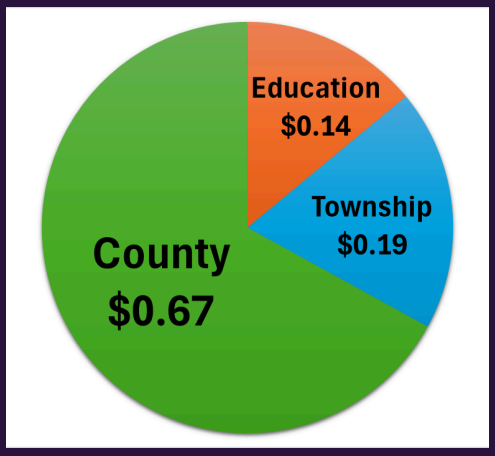
Strategic priority

Good governance, financial stewardship, and organizational excellence

#3 Priority identified by residents: Developing a more balanced industrial/commercial tax base

We will ensure transparent decision-making, responsible financial management, and service excellence to maintain public trust and long-term municipal sustainability.







Top 5 community issues:

1. **High taxes**
2. **High speed internet**
3. **Balanced tax base**
4. **Environmental protection**
5. **Quality of life**

Ensure Transparent Decision-Making:

Communicate clearly about planning, budgeting, and municipal decisions.

Maintain Financial Stewardship:

Manage tax dollars responsibly while balancing service levels and growth.

Strengthen Organizational Capacity:

Develop staff and processes to support effective, efficient municipal operations and enhance capacity.

Foster Partnerships and Collaboration:

Work with neighbouring municipalities, post-secondary institutions, and community organizations to deliver better outcomes.

Acknowledgements

We extend our sincere appreciation to the residents, community partners, and stakeholders of Puslinch who generously shared their time, perspectives, and insights to help shape this Strategic Plan



Advisory Committees who participated in workshops to help imagine the future.



Community Partners who lent their wisdom and experience through surveys.



The many residents who told us about the future they envision for the community they call home.



Township staff who worked hard to shape this Strategic Plan and offered their ideas to innovate our services.

Accountability Monitoring Results

Accountability: monitoring results

Strategic priority #1: Rural Heritage, Environmental Stewardship, and Natural Resource Protection

1.1 Preserve Farmland and Rural Landscapes

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Continue to support the Top Aggregate Producing Municipalities in Ontario (TAPMO).	CAO/ Corporate Services	County	Increased membership; increased awareness	2026-2030	In progress
b.	Continue to enhance awareness of site alteration permissions through building permit activity.	Building	Corporate Services	Regulatory compliance improvements	2026-2030	In progress
c.	Promote awareness of Farm Safety Program.	Fire	Corporate Services	Engagement with farming community	2026-2030	In progress
d.	Continue to promote awareness of the Farm Tax incentive program.	Finance	–	Inclusion on the website and tax insert/newsletter	2026-2030	In progress

Accountability: monitoring results

Strategic priority #1:
Rural Heritage, Environmental Stewardship, and Natural Resource Protection

1.2 Protect Natural Resources and Biodiversity

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Monitor, evaluate, and participate in water resource plans/studies/reports that impact the Township.	Corporate Services	Township consultants & Source Water	Actively participate by submitting comments, reviews, and reporting to Council and the Public	2026-2030	In progress
b.	Continue to educate and bring awareness to building code updates, septic smart, etc.	Building	–	Updated guides, handouts, website	2026-2030	In progress
c.	Enhance collaboration with Conservation Authorities regarding emergency services.	Fire	–	Trail signage and access improvements; aligned emergency communications	2026-2030	In progress

Accountability: monitoring results

Strategic priority #1:
Rural Heritage, Environmental Stewardship, and Natural Resource Protection

1.2 Protect Natural Resources and Biodiversity

	Project	Lead Dept.	Support	KPIs	Target Year	Status
d.	Develop a tree planting program in partnership with Green Legacy.	Community Services	PW; Corporate Services; Advisory Committees	Approval of a by-law/policy; trees planted	2028	–
e.	Continue to promote awareness of the Managed Forest Tax Incentive and Conservation Tax incentive programs.	FInance	–	Inclusion on the website, tax insert/newsletter	2026-2030	In progress

Accountability: monitoring results

Strategic priority #1:
Rural Heritage, Environmental Stewardship, and Natural Resource Protection

1.3 Promote Sustainable Growth Practices:

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Develop educational awareness initiatives at parks and trails.	Community Services	PW; Advisory Committees	Program adopted; initiatives launched	2028	–
b.	Energy Conservation Demand Management Plan monitoring and updates.	Finance	–	Report to Council	2029	–
c.	Increase awareness of well interference and mitigation such as well incasement.	Building	Corporate Services; Source Water	Compliance for new development and redevelopment	2026-2030	In progress
d.	Continue to educate and bring awareness to zoning, heritage, and Conservation Authority requirements (applicable law).	Building	–	Updated guides, handouts, website	2026-2030	In progress

Accountability: monitoring results

Strategic priority #1:
Rural Heritage, Environmental Stewardship, and Natural Resource Protection

1.4 Celebrate and Strengthen Community Heritage

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Continue advancing the Heritage Designation Program.	Corporate Services	Heritage Committee	Properties designated	2026-2027	In progress
b.	Continue advancing the Heritage Plaque Program.	Corporate Services	Heritage Committee	Plaques installed	2026-2030	In progress
c.	Continue advancing the Heritage Financial Incentive Grant Program.	Corporate Services	Finance; Building	Policy & Program adopted	2026-2027	In progress
d.	Establish a Heritage Education Program.	Corporate Services	Heritage Committee; Fire	Program established	2027	–

Accountability: monitoring results

Strategic priority #2: Managed growth and complete communities

2.1 Enable Balanced Growth and a Sustainable Tax Base:

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Residential Land Study.	CAO	County	OPA 131 adoption	2026/2027	In progress
b.	Employment Land Study.	CAO	County	OPA 131 adoption	2026/2027	In progress
c.	Additional Residential Unit (ARU) Grant Program.	CAO	Corporate Services; Building; Finance	Grant program uptake	2026/2027	In progress
d.	Continue to evaluate the Township Zoning By-law to support housing diversity.	Corporate Services	Building	Housing keeping amendments	2026-2030	In progress
e.	Increasing awareness of employment land inventory.	Corporate Services	Building	Maintain and promote land inventory	2026-2030	–
f.	Continue to work with the County of Wellington to ensure accurate tax assessment.	Finance	–	Annual repporting	2026-2030	In progress

Accountability: monitoring results

Strategic priority #2:
Managed growth and complete communities

2.2 Maintain Infrastructure Readiness

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Highway 6 Bypass advocacy and monitoring project progress.	Corporate Services/CAO	—	Interim measures implemented; public communication	2026-2030	In progress
b.	Traffic and speed monitoring and mitigation.	Corporate Services/CAO	Public Works	Speed mitigation implemented	2026-2030	In progress
c.	Maintain Fire & Rescue Service operational readiness.	Fire	CAO	Maintain adequate staffing levels; training	2026-2030	In progress
d.	Continue to monitor the performance and efficiency of the outdoor rink.	Community Services	Public Works	Usage reports	2026-2030	In progress
e.	Ensuring DCs and CIL of Parkland are sustainable through updates to by-laws.	Finance	CAO	Studies and reporting to Council	2027	–

Accountability: monitoring results

Strategic priority #2:
Managed growth and complete communities

2.2 Maintain Infrastructure Readiness

	Project	Lead Dept.	Support	KPIs	Target Year	Status
f.	Implement the recommendations of the Transportation Master Plan	CAO	Public Works; Finance	Incorporate recommendations into the budget and AM	2027	–
g.	Implement the recommendations of the Fire Master Plan	Fire	CAO, Finance, Corporate Services	Incorporate recommendations into the budget and AM	2026	-

Accountability: monitoring results

Strategic priority #2:
Managed growth and complete communities

2.3 Encourage Responsible Land Use

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Official Plan Development.	Corporate Services	Planning Consultant	Official Plan Adoption	2028	–
b.	Township initiated Zoning By-law Amendment.	Corporate Services	Planning Consultant	ZBA adoption	2029	–
c.	Maintain and monitor fire service agreements.	FIre	CAO; Finance	Regular reporting to Council	2026-2030	In progress
d.	Continue to provide inspection services related to new lot creation conditions.	Building	Corporate Services	Severance condition clearance	2026-2030	In progress

Accountability: monitoring results

Strategic priority #2:
Managed growth and complete communities

2.4 Foster Economic Opportunities

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Complete Community Improvement Plan (CIP) update.	Finance	Corporate Services; County	Updated CIP	2026	In progress
b.	Continue to monitor, evaluate, and promote opportunities to expand offerings within the CIP.	Corporate Services	Finance; Building; County	Updated CIP	2027-2030	–
c.	Expand the support of local businesses through the various Township initiatives.	Corporate Services	–	Meet current goals and bring recommendations to expand to Council	2027-2029	–
d.	Implement the Gateway Signage recommendations included in the Employment Land Study.	Corporate Services	Finance	Signage installed	2027	–

Accountability: monitoring results

Strategic priority #2:
Managed growth and complete communities

2.4 Foster Economic Opportunities

	Project	Lead Dept.	Support	KPIs	Target Year	Status
e.	Promote & participate in pre-consultation services for development and redevelopment.	Corporate Services	All depts.	Improved application processing timelines	2026-2030	In prorgess
f.	Continue to adhere to legislative timelines for building permit approvals.	Building	–	Permit issuances within legislative timelines	2026-2030	In progress
g.	Beautification of the downtowns.	Corporate Services	Finance	Installation of planters, signage, benches, etc.	2026	In progress
h.	Investigate community benefits charges applicability within the Township.	Finance	CAO	Report to Council	2027	–

Accountability: monitoring results

Strategic priority #3:
Connected, safe, and accessible community

3.1 Enhance Community Participation

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Continue to promote the “virtual counter” through CloudPermit.	Corporate Services	Building	User engagement metrics	2026-2030	In progress
b.	Continue to promote fire public education.	FIre	Corporate Services	Number of events; number of communications; decrease in call volumes	2026-2030	In progress
c.	Continue to promote engagement opportunities through EngagePuslinch.	Corporate Services	All depts.	Annual communications report results	2026-2030	In progress
d.	Engage with emergency services to promote educational awareness.	Community Services	Fire	Regular engagement with OPP, Fire, Safe Communities, Emergency Management, Crime Stopper, etc.	2026-2030	In progress

Accountability: monitoring results

Strategic priority #3
Connected, safe, and accessible community

3.2 Strengthen Community Spirit

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Continue to support and attend local and Township led events.	Corporate Services	All depts.	Increase event participation	2026-2030	In progress
b.	Develop and implement Township run recreational, cultural, and wellness programming including paid drop-in and registered programming.	Community Services	–	Program development and implementation	2026	In progress
c.	Continue to host the Township Community Showcase through partnerships with local groups.	Corporate Services	Community Services	Annual event	2026-2030	In progress
d.	Implement the recommendation from the Recreation and Parks Master Plan.	Community Services	PW	Incorporate recommendations into the budget and AM	2027	–

Accountability: monitoring results

Strategic priority #3:
Connected, safe, and accessible community

3.3 Promote Inclusivity and Accessibility

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Enhance accessibility of our trail systems through monitoring and maintenance.	Community Services	PW	Increased user participation	2027	–
b.	Enhance awareness, particularly with youth, regarding the County Ride Well program to extend transportation options within Puslinch and Guelph.	Community Services	–	Increased user participation	2026-2030	In progress
c.	Monitor and update the Township *Accessibility for Ontarians with Disabilities Act* 5-year plan and annual reporting to ensure Township facilities/digital platforms remain accessible and compliant.	Community Services	–	Compliance with the Plan and legislation	2026-2030	In progress

Accountability: monitoring results

Strategic priority #3:
Connected, safe, and accessible community

3.4 Support Volunteerism & Local Leadership

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Continue to enhance community partnerships and local volunteerism.	Corporate Services	All depts.	Increased annual grant program participation; awards and recognition; Township support	2026-2030	In progress
b.	Partner with the local/nearby schools to establish a volunteer fair to connect youth with community groups.	Community Services	--	Host a volunteer fair	2028	–
c.	Continue to collaborate with local sports groups and community groups to promote recreation and expand internal capacity.	Community Services	–	Promote events; support groups with resources and grants	2026-2030	In progress

Accountability: monitoring results

Strategic priority #4:
Good governance, financial stewardship, and organizational excellence

4.1 Ensure Transparent Decision-Making

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Monitor and update the procedural by-law when required.	Corporate Services	—	By-law enactment	2028	–
b.	Conduct elected/appointed official training.	Corporate Services/CAO	All dept.	Training delivered	2027	–
c.	Continue to enhance accessibility, transparency, integrity of the voting process for the municipal and school board election.	Corporate Services	–	Alternative voting method	2029	–
d.	Continue to ensure Township reporting is open and transparent.	Corporate Services	–	Annual reports	2026-2030	In progress
e.	Monitor/Improve Records Management Program.	Corporate Services	–	Update Records Retention By-law	2029	–
f.	Review committee TORs.	Corporate Services	Community Services	Council approval of TORs	2028	–

Accountability: monitoring results

Strategic priority #4:
Good governance, financial stewardship, and organizational excellence

4.2 Maintain Financial Stewardship

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Improve and modernize the Township Procurement Policy and practices.	Finance	Corporate Services	Council approval of updated Policy	2027	–
b.	Continue to investigate revenue streams related to recreation, cultural, and well-being programs to better utilize Township facilities.	Community Services	–	Better utilization of Township facilities	2026-2030	–
c.	Conduct the Compensation and Benefits Review.	CAO	HR; Finance	Council approval of compensation and benefits review	2028	–
d.	Continue to provide financial stewardship through successful audit, balanced budgets, and oversight of expenditures.	Finance	All depts.	Reporting to Council	2026-2030	In progress

Accountability: monitoring results

Strategic priority #4:
Good governance, financial stewardship, and organizational excellence

4.3 Strengthen Organizational Capacity

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Conduct Service Delivery Reviews (all depts.).	CAO	All depts.	Service Delivery Standards Update	2028	–
b.	Conduct an IT security audit & RFP for managed service provider.	Corporate Service	Finance	RFP awarded	2029	–
c.	Continue by-law and policy reviews in accordance with 5 year schedule.	Corporate Services	All depts.	Updated By-laws/Policies annually per schedule	2026-2030	In progress
d.	Develop/maintain service delivery standards for all service sectors.	CAO	All depts.	Standards established (following review in 2028)	2027-2029	–
e.	Develop service continuity planning (risk-based exercise to prevent service interruptions).	CAO	All depts.	Planning document established	2027	–

Accountability: monitoring results

Strategic priority #4:
Good governance, financial stewardship, and organizational excellence

4.3 Strengthen Organizational Capacity

	Project	Lead Dept.	Support	KPIs	Target Year	Status
f.	Monitor regulatory updates to all by-laws to enable expansion of AMPS program.	Corporate Services	–	AMP program updates	2026-2030	In progress
g.	Continue to leverage opportunities to improve workflows and processes through system implementation and automation.	CAO	All depts.	Reporting to Council on opprotunites; implementation	2026-2030	In progress
h.	Continue to enhance professional development and training opportunities for staff.	CAO	All depts.	Talent recruitment, retention	2026-2030	In progress
i.	Develop comprehensive workforce planning tools such as a succession plan for each dept.	CAO	All depts.	Plan completion	2027	–

Accountability: monitoring results

Strategic priority #4:
Good governance, financial stewardship, and organizational excellence

4.3 Strengthen Organizational Capacity

	Project	Lead Dept.	Support	KPIs	Target Year	Status
j.	Continue to enhance employee performance management practices to increase capacity and retention.	HR	CAO	Updated Performance Management Policy and Program	2029	–
k.	Enhance DEIB (Diversity, Equity, Inclusion, and Belonging) Program and Training.	HR	All depts.	Program delivery	2027	–

Accountability: monitoring results

Strategic priority #4:
Good governance, financial stewardship, and organizational excellence

4.4 Foster Partnerships & Collaboration

	Project	Lead Dept.	Support	KPIs	Target Year	Status
a.	Expand youth engagement programs.	Corporate Services	Advisory Committees; Community Services	Deliverables met	2026-2030	In progress
b.	Maintain and enhance relationships with the County and other municipal partners.	CAO	All depts.	Participate in networking and shared initiatives	2026-2030	In progress
c.	Maintain and enhance relationships with Aberfoyle PS, high schools, and post secondary insitutions.	Human Resources	All depts.	Participate in networking and shared initiatives such as volunteering/ work opportunities	2026-2030	In progress
d.	Maintain and enhance economic development partnerships.	CAO	All depts.	Expand the Township's Economic Development Program	2026-2030	In progress

Accountability: monitoring results

Strategic priority #5:
Good governance, financial stewardship, and organizational excellence

5.4 Foster Partnerships & Collaboration

	Project	Lead Dept.	Support	KPIs	Target Year	Status
e.	Enhance collaboration with the Guelph Junction Railroad (GJR)	CAO	Fire	Improved communication; mitigate fire risks; share resources	2026-2030	In progress

--- 2026-2030 ---

TOWNSHIP OF

PUSLINCH

EST. 1850

Strategic Plan

REPORT COR-2026-013

TO: Mayor and Members of Council

PREPARED BY: Justine Brotherston, Director of Corporate Services /Municipal Clerk

PRESENTED BY: Justine Brotherston, Director of Corporate Services /Municipal Clerk

MEETING DATE: March 25, 2026

SUBJECT: 2024 & 2025 Annual Aggregate Monitoring Reports

RECOMMENDATION

That Report COR-2026-013 entitled 2024 & 2025 Annual Aggregate Monitoring Reports be received for information; and,

That Council direct staff to provide the Township's Peer Reviewers comments to the pit operator and the Ministry of Natural Resources for response.

Purpose

The purpose of this report is to provide Council with remaining 2024 Annual Aggregate Monitoring Reports and the first 2025 Annual Aggregate Monitoring Report and Peer Reviews for Council's information and to seek Council's direction to send the comments from the Township's Peer Reviewers to the pit operator and the Ministry.

Background

Pit Licence	Report Type	Recommendations from Peer Reviewer
5609 – Aberfoyle Pit 2	2024 Annual Monitoring Report	Refer to **"Schedule A"**
5737 – McMillan Pit	2024 Annual Water Quality Analysis Report	Refer to **"Schedule B"**

625189 – Roszell Pit	2025 Ecological and Aquatic Monitoring Report	Refer to **"Schedule C"**

Financial Implications

Peer Reviews are budgeted through the 2026 Budget approved by Council and may be cost recoverable depending on development agreements.

Applicable Legislation and Requirements

None

Engagement Opportunities

None

Attachments

Schedule "A" 5609 2024 Aberfoyle Pit 2 Monitoring Report and Peer Review
Schedule "B" 5737 2024 McMillian Pit Water Quality Analysis Report & Review
Schedule "C" 625189 2025 Ecological and Aquatic Monitoring Report & Review

Respectfully submitted,

Justine Brotherston
Director of Corporate Services/
Municipal Clerk

Reviewed by:

Courtenay Hoytfox,
CAO

Harden Environmental Services Ltd.
4622 Nassagaweya-Puslinch Townline Road
Moffat, Ontario, L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099

Groundwater Studies
Geochemistry
Phase I / II
Regional Flow Studies
Contaminant Investigations
OMB Hearings
Water Quality Sampling
Monitoring
Groundwater Protection Studies
Groundwater Modelling
Groundwater Mapping

Our File: 0132

December 15, 2025

Township of Puslinch
7404 Wellington Road 34
Guelph, ON
N1H 6H9

Attention: Courtenay Hoytfox
CAO

Dear Courtenay:

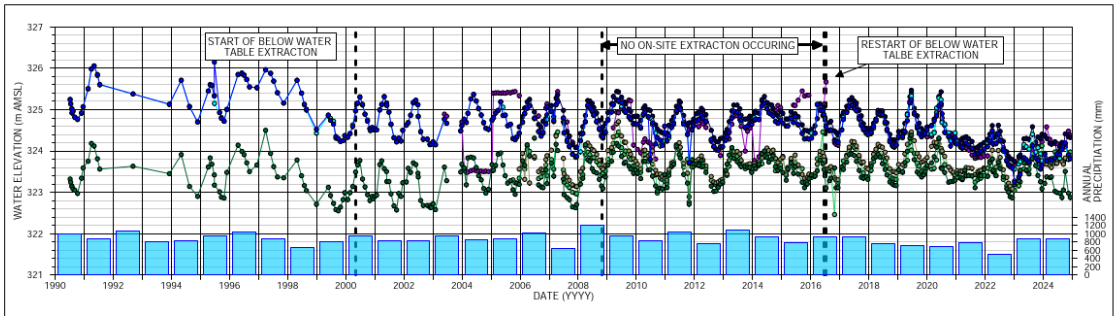
Re: Dufferin Aggregates Aberfoyle Pit #2 (CRH Canada Group)

Report Reviewed: 2024 Annual Monitoring Report, Aberfoyle Pit No. 2, 28 March 2025, GHD

Our comments on the 2024 Annual Report are as follows[1]:

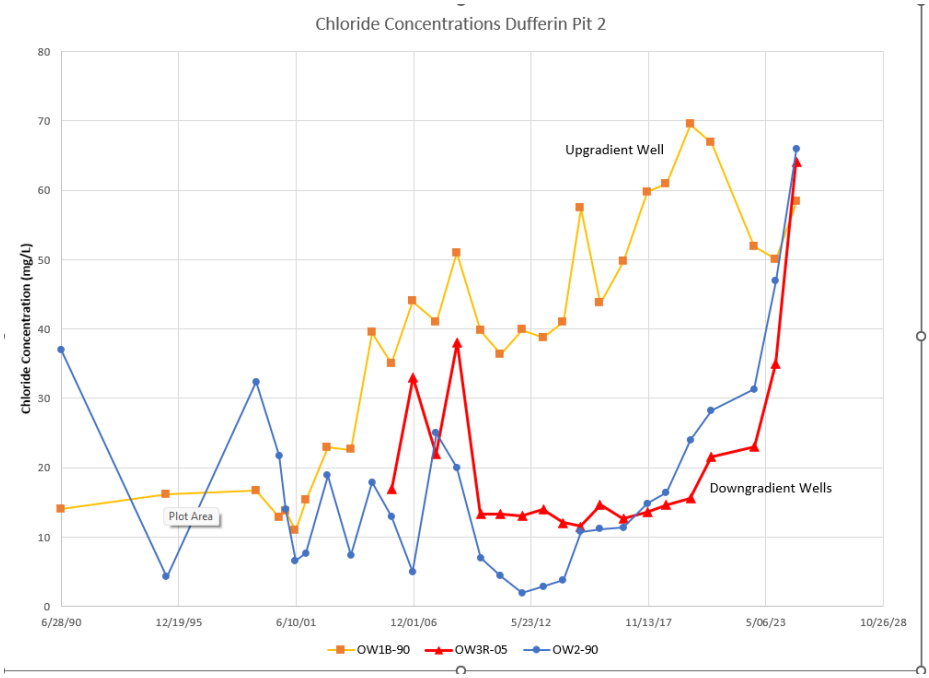
1) The data presentation in Figures 3.1 through 3.3 provides all historical data in a clear precise manner. As an example, the figure below shows groundwater elevations in upgradient wells (upper line) and downgradient wells (lower line). The interesting observation from this data is how separate the two lines are in the early 1990's (left side of graph) and how close they are on the right-hand side in 2024. This is the effect on groundwater levels because of the pit pond creation, where the upper line is trending slightly downward and the lower line is trending slightly upward. There is a departure from historical trends in 2024 where OW2-90 has markedly lower water levels than nearby OW3R-05. There is no explanation for this, nor any cause for immediate concern. This trend should be monitored and evaluated should it continue.

[1] Figures presented herein are screen shots from the March 2025 GHD report except for chloride graph which is based on data obtained from several annual reports.



2) The water levels in the wetland and private pond located north of Dufferin Pit No. 2 and east of the former Tikal Pit are more similar in historical water level pattern to the upgradient monitoring wells in comparison to downgradient monitoring wells. It remains our opinion that the water level in wetland monitor SW2-91 has been mainly dry since the spring of 2020 due to the passive drawdown effect caused by the expansion of below water table extraction in Dufferin Pit No. 2.

3) The history of chloride concentrations in groundwater at the Dufferin Pit No. 2 is depicted below. We interpret this pattern of general increase in chloride concentrations to reflect road salting efforts by the Township and County on both County Road 34 and Watson Road South. There is no other reasonable source of chloride. The drawdown effect of the westward pit pond expansion may alter groundwater flow patterns subtly, by drawing water in from the east and releasing it to the west. That may explain why the chloride concentration in downgradient wells has been increasing. The chloride concentration in both OW3R-05 and OW2-90 has increased significantly in the past eight years. Concentrations are below provincial water quality standards, but the trend is indicative of salt use in the Township.



Concluding Remarks

Although the pit is an approved land use, the continued westward expansion of the pit pond will result in greater drawdown of groundwater levels east of the pit. There are wetlands reliant on groundwater in the area of influence of the pit and remedies should be explored to limit those impacts, including the emplacement of fine-grained material along the eastern and northern underwater side slopes of the pit pond.

A land use planner may be able to evaluate if provincial policy statements or official plan policies of the County of Wellington are being contravened. We note that the pit pond extends into the area formerly regulated by the GRCA as shown on the attached map.

The changes in water quality do not require additional investigation at this time.

Sincerely
Harden Environmental Services Ltd.

[redacted]

Stan Denhoed, P.Eng., M.Sc.
Senior Hydrogeologist

Encl: Site map


POND2
WP1-25
SW1-25
GW1A-90
GW1B-90
SW2-25
POND1
FORMER
TIKALPIT
(CBM)
GW7-25
GW2-90
GW3R-25
GW4R-25

2024 Annual Monitoring Report

Aberfoyle Pit No. 2

Dufferin Aggregates, a CRH Company

28 March 2025

→ The Power of Commitment



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Appendix A 2024 Laboratory Water Quality Analyses

1. Introduction

GHD was retained by Dufferin Aggregates, a CRH Company (Dufferin) to complete the 2024 groundwater sampling program and Annual Monitoring Report (AMR) for Dufferin Aberfoyle Pit No. 2 (Site). The Site is located on part of the west half of Lots 22 and 23, Concession 9, Township of Puslinch, in the County of Wellington as presented on Figure 1.1.

The area licenced for extraction is 78.1 hectares (ha) (193 acres), of which an area of 68.0 ha (168 acres) will be extracted above the water table, and 53.4 ha (132 acres) below the water table. Prior to May 2000, Dufferin only extracted aggregate above the water table as per the phasing of operations on the Site plans approved by the Ministry of Natural Resources (MNR).

Extraction of aggregate below the water table was initiated in 2000. Below water table extraction occurred through to 2008, at which point all on-Site extraction ceased. On-Site extraction (above and below the water table) recommenced in 2016 and has continued through 2024. Extraction of aggregate below the water table in 2024 occurred from January 3 to December 15. Please note that a Permit to Take Water (PTTW) is not required for the aggregate operation at the Site since no water taking occurs (i.e., pumping of groundwater or surface water).

The initial monitoring program for the Site was developed by Conestoga-Rovers & Associates (now GHD)[1,2]. This program was subsequently approved by the Ministry of the Environment, Conservation and Parks (MECP), and was initiated during the summer of 1990.

The primary purpose of the monitoring program is as follows:

– Collect water level and water quality information, during mining of aggregate, to evaluate the impacts of extraction on local shallow groundwater and surface water.
– Provide recommendations regarding the monitoring program, as necessary.

The monitoring program in 2024 consisted of the following:

– Monthly hydraulic (manual water level) monitoring of on-Site monitoring wells and on- and off-Site surface water locations.
– Groundwater quality monitoring at five on-Site monitoring wells.
– Wetland soil water quality monitoring at one off-Site wetland piezometer.

In addition, ARA Site Plans – Operational Plan Note K.8 requires the implementation of the contingency plan outlined in the August 1991 Final Monitoring Report which specifies the following:

– If no precipitation occurs for 30 consecutive days, the mining operation will be adjusted.
– If a long term (100-day) drought should occur, it is planned to operate above the water table to negate any potential impacts to water levels due to drought conditions. In the unlikely event that any water supply was adversely interrupted by on-Site mining of aggregate below the water table, a temporary water supply would be provided immediately, and a new bedrock well would be constructed for the owner.

The following provides a summary of the geological/hydrogeological setting followed by a summary and interpretation of the 2024 hydraulic monitoring and water quality results.

1 CRA, 1988. Assessment of Mining Impact, Aberfoyle Pit No. 2, Puslinch Township, Wellington County
2 CRA, 1991. Final Monitoring Report, Dufferin Aggregates Aberfoyle Pit No. 2, Township of Puslinch, County of Wellington

2. Geological/Hydrogeological Setting

The Site occurs within the Horseshoe Moraines physiographic region (Chapman and Putnam, 1984)[3]. The Paris and Galt moraines are the two major features, which constitute this region. The Site occurs between these two moraines within a spillway channel that consists of sand, or sand and gravel deposits. This sand and gravel deposit contains the surficial unconfined (water table) aquifer beneath the Site. This deposit has a thickness of about 12 metres (m) in the central portion of the Site and decreases in thickness towards the southwest. Available information indicates that groundwater flow within the water table aquifer occurs in a general southwesterly direction. The surficial sand and gravel deposit is underlain by fine-grained material consisting of clayey silt to silty clay.

Overburden at the Site is underlain by dolostone bedrock of the Middle Silurian Guelph Formation. The Site occurs near the contact with dolostone of the underlying Amabel Formation. Bedrock occurs at a depth of about 15 to 30 m below the original ground surface near the Site and decreases in elevation in a general southwesterly direction. The bedrock aquifer is primarily utilized as a source of domestic water supply in the area.

3. Hydraulic Monitoring Program

The current hydraulic monitoring program consists of monthly water level measurements. Water levels are collected by Dufferin with periodic support from GHD. Monitoring is completed at the on-Site monitoring wells, and on- and off-Site surface water locations presented on Figure 3.1. Well construction details for the monitoring wells within the program are provided in Table 3.1.

3.1 Precipitation Data

The 2024 daily and monthly precipitation data obtained from Environment Canada for the Kitchener/Waterloo Station (I.D. # 6144239)[4] are presented on Figure 3.2 and compared to the monthly Environment Canada Climate Normals (1981-2010) prepared for the Station I.D. #6149387 (former station ID for the Region of Waterloo Airport). Where data was unavailable at Station ID #6144239 data from the Environment Canada Roseville Station (ID #6147188) was reviewed and supplemented into the dataset, where applicable.

As shown on Figure 3.2, precipitation totals varied significantly month to month compared to historical averages with both a wet period from January to August (117% of the Climate Normal) and a dry period from September to December (54% of the Climate Normal). However, the 2024 total annual precipitation of 878.2 mm was only slightly below the Climate Normal of 916.3 mm (i.e., 96% of the Climate Normal).

3.1.1 Precipitation Contingency Plan

In 2024, no prolonged periods without precipitation were identified (i.e., exceeding 30-days). The longest periods without precipitation in 2024 occurred between February 16 and February 26 (11 days) and October 14 and October 24 (11 days); as recorded at the Environment Canada weather station located in Kitchener/Waterloo (I.D. # 6144239). The lowest 30-day precipitation total in 2024 was observed twice between January 27 and February 25, with a 30-day total of 3.4 mm.

Implementation of the contingency measures was not required in 2024.

[3] Chapman, L.J., and Putnam, D.F. 1984: Physiography of Southern Ontario; Ontario Geological Survey

[4] Environment Canada Station # 6144239 (Region of Waterloo Airport; 21 km west of the Site) data has been reference herein consistent with previous annual monitoring reports. Data from Station ID 6143092 (Guelph Turfgrass Institute; 10 km northwest) has also been review for consistence. Station #6144239 will continue to be reported in subsequent AMRs.

3.2 Hydraulic Monitoring

3.2.1 Monitoring Program

The 2024 water elevations are presented in Table 3.2. Water levels have been monitored since May 1990, with monthly levels generally taken since May 1999. The program currently consists of water level measurements at the following locations:

– Monitoring wells: OW1A/B-90, OW2-90, OW3R-05, OW4R-05, and OW7-05
– Piezometers: WP1-93
– Staff Gauges: SW6-03, SW2-91, Pond 1, and Pond 2

3.2.2 Groundwater Monitoring

Wells OW3R-05 and OW4R-05 were completed in September 2005 as replacement wells for OW3-90 and OW4-90. OW3-90 and OW4-90 were installed around the Site perimeter so that they would not have to be removed during aggregate operations. However, apart from four monitoring events, well OW3-90 had been dry since installation and monitoring well OW4-90 had been continuously dry. The surficial sands and gravels at these two locations were only about 2 m thick and underlain by fine-grained material. The new wells were installed further east of the dry wells where the sands and gravels are thicker, thus allowing monitoring of water levels. OW3-90 and OW4-90 were subsequently sealed and abandoned in 2007. In addition, new monitoring well OW7-05 was also installed in September 2005 to allow monitoring of groundwater levels within the eastern upgradient part of the Site.

Hydrographs presenting the 2024 and historical groundwater elevations for wells located in the sand and gravel are plotted against precipitation on Figure 3.3. The upper and lower panels of Figure 3.3 show the long-term historical and 2024 groundwater elevations, respectively. The locations include OW1A-90, OW1B-90 and OW7-05 in blue shading located along the northeastern (upgradient) property boundary of the Site, OW2-90 and OW4R-05 located near the southwestern (downgradient) property boundary, and OW3R-05 located more central to the Site, all three in green shading.

Review of Figure 3.3 shows that water levels in the upper sand and gravel wells have historically exhibited similar seasonal trends. In general, groundwater levels increased during the spring, with surplus precipitation relative to potential evapotranspiration. Levels typically decreased toward the latter part of the year, which is attributed to a water deficit, and often increased near the end of the year in response to increased precipitation during the fall. The water levels in these wells generally exhibited the above-noted trend during 2024; however, due to the size and expanded footprint of the below water table extraction area (or “lake”) the magnitude of the fluctuations has generally decrease due to the buffering capacity of the lake.

The overall trend in water levels generally follows the trend in total annual precipitation with some degree of lag time as can be observed in the declining water levels between 2020 and late 2022. As originally anticipated and approved, an overall flattening of the water table over the pond area (i.e., decreasing water levels on the upgradient side and increasing water levels on the downgradient side) can also be observed in the historical water level data as is to be expected following the advancement of a below water table pond. Below water table extraction at the former Tikal Pit west of the Site (cross- and down-gradient) was approved after Aberfoyle Pit #2 and has contributed to changes to the local groundwater resources west of the Site.

The observed water levels within the lake are also presented on Figure 3.3 (location SW6-03); additional details on the surface water monitoring program are presented in Section 3.2.3. When comparing groundwater elevations with the lake water level, the flattening of the water table can be observed as an overall decrease in water levels immediately upgradient of the Site (as observed at OW1A-90 and OW1B-90; approximately 30 m upgradient from the pond) and an increase in water levels downgradient of the Site (as observed at OW3R-05; approximately 150 m downgradient of the pond). As can be seen on Figure 3.3, water levels at SW6-03 generally mimic the groundwater elevations observed at OW1A-90 and OW1B-90. As the lake footprint progressed from Northeast to southwest, a gradual decrease in

average water levels within the lake and immediately upgradient of the pond (i.e., OW1A-90, OW1B-90 and OW7-05) can be observed. An increase in water levels approaching the lake level can also be observed at downgradient monitoring wells (i.e., OW3R-05 and OW4R-05) as the extraction footprint approaches these wells. Water levels collected at OW2-90 between May and December appear to deviate from described trends above. Further investigation of OW2-90, including a re-survey of the reference elevation at this monitoring location, are recommended in 2025.

The resulting influence of the flattening of the water table is typically negligible within a short distance from the pond extents. No impacts to local private water supply wells have been identified nor are impacts anticipated; even given the cumulative impacts of the former Tikal Pit.

Water level monitoring at OW3R-05 ceased in November 2024 as the location was removed as part of Site preparation for extraction in 2025. Dufferin will work with MNR to update the monitoring program in 2025.

3.2.3 Surface Water Monitoring

Hydrographs presenting the 2024 and historical surface water elevations are plotted against precipitation on Figure 3.4. The upper and lower panels of Figure 3.4 show the long-term historical and 2024 surface water elevations, respectively. The 2024 surface water monitoring program is outlined below:

– The surface water monitoring program in 2024 consisted of monthly water level measurements at Pond 1, Pond 2, SW2-91, WP1-93, and SW6-03.
– SW6-03 was installed in 2003 to allow measurement of water levels within the below water table extraction area and reinstalled in May 2022 after being damaged by ice in the winter of 2022.

Recovery of surface water deficits can be observed following the extended dry period between 2020 and 2022. However, with only slightly below normal precipitation in 2024, full recovery has not been observed. Historical low water levels observed in 2022 were not observed in 2024. On an annual basis, maximum water elevations typically occur in the spring and minimum elevations in the fall or winter. The longer-term surface water level trends typically correspond with trends in annual precipitation.

Surface water features northwest of the Site (monitored by instruments SW2-91, WP1-93, and Pond 2) are plotted with groundwater levels along the northwest Site boundary (OW1A-90 and OW2-90) and precipitation on Figure 3.5. As presented on Figure 3.5, and discussed above, historical low surface water elevations observed in 2022 were not observed in 2024. It should be noted that SW2-91 has been routinely dry since late 2019, however, following significant precipitation in July 2023, SW2-91 remained predominantly wet for the remainder of 2023.Similarly to 2023, in 2024 there was non-dry readings at SW2-91 from July through September and in December. Overall, historical monitoring results, including during extraction, demonstrate a constant downward vertical hydraulic gradient between surface water elevations observed north of the Site and on-Site groundwater elevations.

Water level monitoring at Pond 1 has been completed throughout the program. Pond 1 is separated from Aberfoyle Pit #2 by the lake at the former Tikal Pit west of the Site as shown on Figure 3.1. Monitoring at Pond 1 should be removed from the monitoring program, as recommended in previous AMRs because surface water levels at Pond 1 are dependant on conditions at the former Tikal Pit which was not approved at the time of monitoring program development.

4. Water Quality Monitoring Results

The potential water quality influence of aggregate extraction below the water table is evaluated by comparing background and upgradient water quality in the on-Site monitoring wells with water quality in on-Site/downgradient wells during aggregate operations. The groundwater quality results are also compared to 2020 MECP Ontario Drinking Water Quality Standards (ODWQS), including the Aesthetic Objectives (AO) and Operations Guidelines (OG) revised

in June 2006. The monitoring well groundwater quality is compared to the ODWQS for illustrative purposes only since the ODWQS pertain to municipal water supply and are not directly applicable to groundwater quality.

Samples collected from the monitoring locations for analysis of metal parameters were field filtered. Samples collected for general chemistry and petroleum hydrocarbon (PHC) F1 to F4 analysis were not filtered. All samples were collected in laboratory-supplied sample bottles supplied by the receiving laboratory (ALS) and placed in an ice-filled cooler for sample preservation after collection. The samples were submitted under chain of custody procedures to ALS Laboratory, Waterloo, Ontario.

Section 4.1 presents the sampling program. A summary of the results is provided in Section 4.2. A copy of the 2024 water quality results, as received from ALS, is provided in Appendix A.

4.1 Sampling Program

Prior to initial extraction of aggregate below the water table in May 2000, groundwater sampling was conducted to determine background water quality. In general, three sampling events were conducted for the monitoring wells OW1A-90 / OW1B-90 (upgradient) and OW2-90 (downgradient) between 1990 and 1999. Samples were subsequently collected twice per year during 2000 and 2001, and on an annual basis commencing in 2002 (typically during the fall). Upgradient groundwater quality continues to be monitored annually at OW1A-90 and OW1B-90.

Annual sampling was conducted on October 3, 2024. Groundwater samples were collected from on-Site monitoring wells OW1A-90, OW1B-90, OW2-90, OW3R-05, and OW4R-05. All water samples were analyzed for general chemistry and dissolved metals. Results are presented in Table 4.1. Duplicate general chemistry, dissolved metals, and PHC F1 to F4 samples were collected from OW2-90 for Quality Assurance/Quality Control (QA/QC). Following recommendations from the 2022 AMR, the outdated total petroleum hydrocarbon (TPH) method of analysis was transitioned to PHC F1 to F4 analysis in 2023, which is the current Ontario method for analyzing hydrocarbons in groundwater. PHC F1 to F4 analysis was performed on samples from OW1B-90, OW2-90 (including duplicate sample), and OW3R-05. PHC F1 to F4 have generally consistent detection limits, for comparable carbon groupings, as the previous TPH analyses.

4.2 Groundwater Quality Assessment

The following provides a summary of the groundwater quality results for the 2024 sampling program. The 2024 groundwater quality data for the monitoring locations are summarized on Table 4.1. Figure 4.1 presents a summary of the historical background (1990 to 1999) and upgradient (OW1A-90 and OW1B-90) water quality results compared to the 2024 Site-wide detections. PHC F1 to F4 analyses were used instead of TPH for 2024 to analyze hydrocarbons in the groundwater. 2024 PHC F1 to F4 results are presented on Figure 4.1; all PHC F1 to F4 sample results have been non-detect (ND) at the associated laboratory reporting limits since transition of the lab methods in 2023.

Site-wide analytical results for 2024 were all below the ODWQS except for dissolved iron at upgradient wells OW1A-90 (0.815 milligrams per litre [mg/L]) and OW1B-90 (0.899 mg/L) which where above the ODWQS of 0.3 mg/L. Dissolved iron is naturally occurring; furthermore, the ODWQS for iron is an aesthetic objective and is not a health concern. As presented on Figure 4.1, iron concentrations, prior to extraction below the water table, ranged from non-detect to 2.51 mg/L and as shown, the iron concentrations detected in 2024 occurred within the historical range.

As further shown on Figure 4.1, in 2024, groundwater concentrations across the Site were within (or below) the ranges of background water quality detections (between 1990 and 1999) and/or upgradient water quality (between 2000 and 2002) at OW1A-90 and OW1B-90. As a result of lower laboratory detection limits, the concentration of total phosphorus at OW2-90 was detected below the historical range of observed concentrations.

Water quality monitoring at wetland piezometer WP1-93 continued in 2024. As previously presented, there are no discernible trends in the total phosphorus or temperature results; beyond the influence of ambient air temperatures given the time of year of the sampling. 2024 phosphorus results are consistent with upgradient groundwater results on-Site (0.008 to 2.92 mg/L, as presented in Figure 4.1). The Site is not a source of phosphorus and no impacts to

phosphorus levels at WP1-93 are anticipated to occur as a result of ongoing below water table extraction at the Site. As previously recommended, wetland soil water sampling at WP1-93 should be removed from the monitoring program; however, monthly water elevation monitoring should continue at WP1-93.

5. Conclusions and Recommendations

Based on the results of the 2024 annual monitoring program, the following conclusions are provided:

- The total annual precipitation in 2024 (878.2 mm) was slightly below the climate normal of 916 mm.
- Groundwater levels in the on-Site monitoring wells are influenced by seasonal fluctuations in precipitation and longer-term precipitation trends as well as a general flattening of the water table in the vicinity of the below water table extraction area lake.
- Water levels at all surface water locations are dependant on precipitation; water levels observed in 2024 were within the normal range.
- The groundwater quality results indicate that the measured parameter concentrations generally occur within the historical range of concentrations and met available health-based ODWQS.
- Water quality in the area has not been impacted by below water table extraction of aggregate.

Based on the results of the 2024 annual monitoring program the following are recommended:

- PHC F1 to F4 analysis at OW1B-90 and OW2-90 should continue into 2025 to stay in line with current Ontario analytical methods for analyzing hydrocarbons in groundwater.
- Dufferin should work with MNR to update the monitoring program to address the removal of OW3R-05 in November 2024.
- OW2-90 should be re-surveyed in 2025 to evaluate water level trends observed in 2024.
- Wetland soil water sampling at WP1-93 should be removed from the monitoring program; however, monthly water elevation monitoring should continue at WP1-93.
- As recommended in previous AMRS, water level monitoring at Pond 1 should be removed from the monitoring program since this location is separated from Aberfoyle Pit #2 by the lake at the former Tikal Pit north of the Site.
- The remainder of the 2024 hydraulic and water quality monitoring program be continued in 2025.

All of which is respectfully submitted,

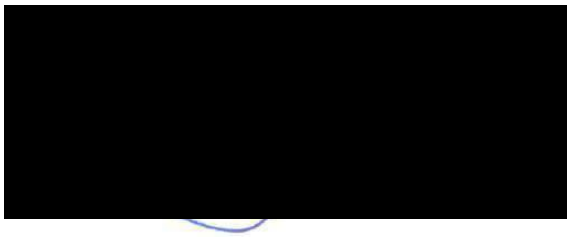
GHD Limited



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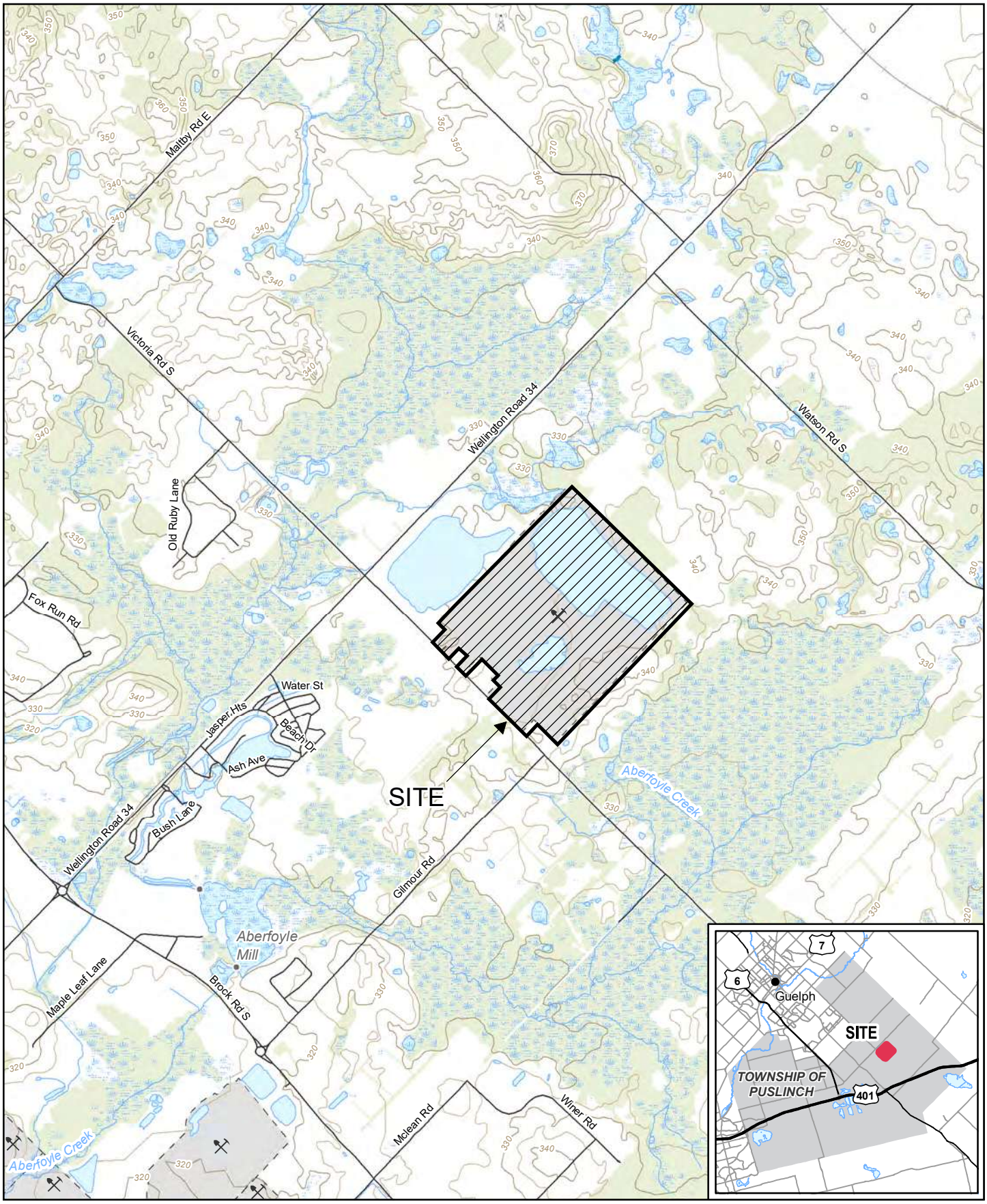


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Figures



Paper Size ANSI A

0 170 340 510 680

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

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DUFFERIN AGGREGATES
ABERFOYLE PIT NO. 2
TOWNSHIP OF PUSLINCH, ONTARIO
2024 ANNUAL MONITORING REPORT

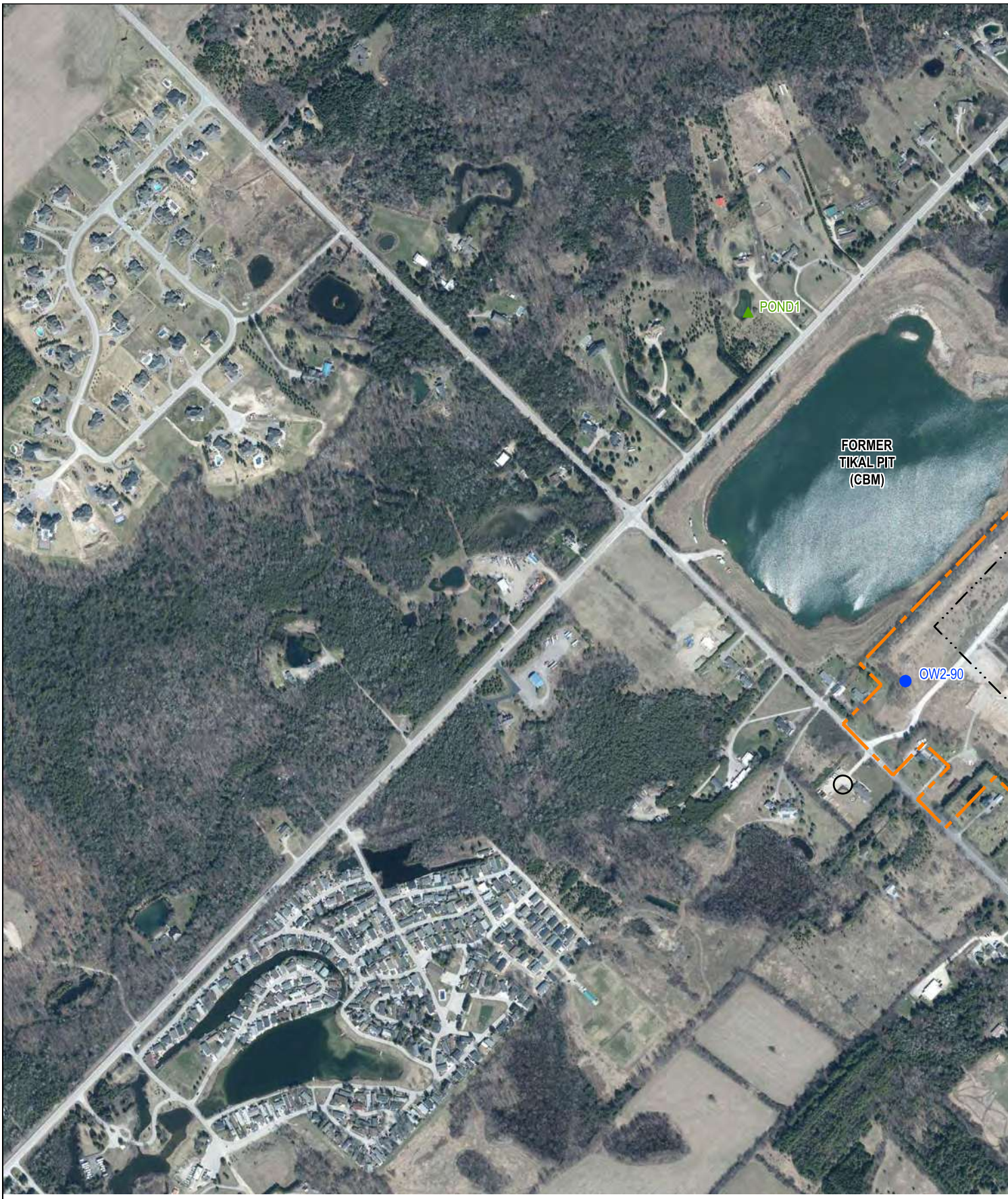
Project No. **12575802**
Revision No. **-**
Date **Jan 23, 2025**

SITE LOCATION MAP

FIGURE 1.1

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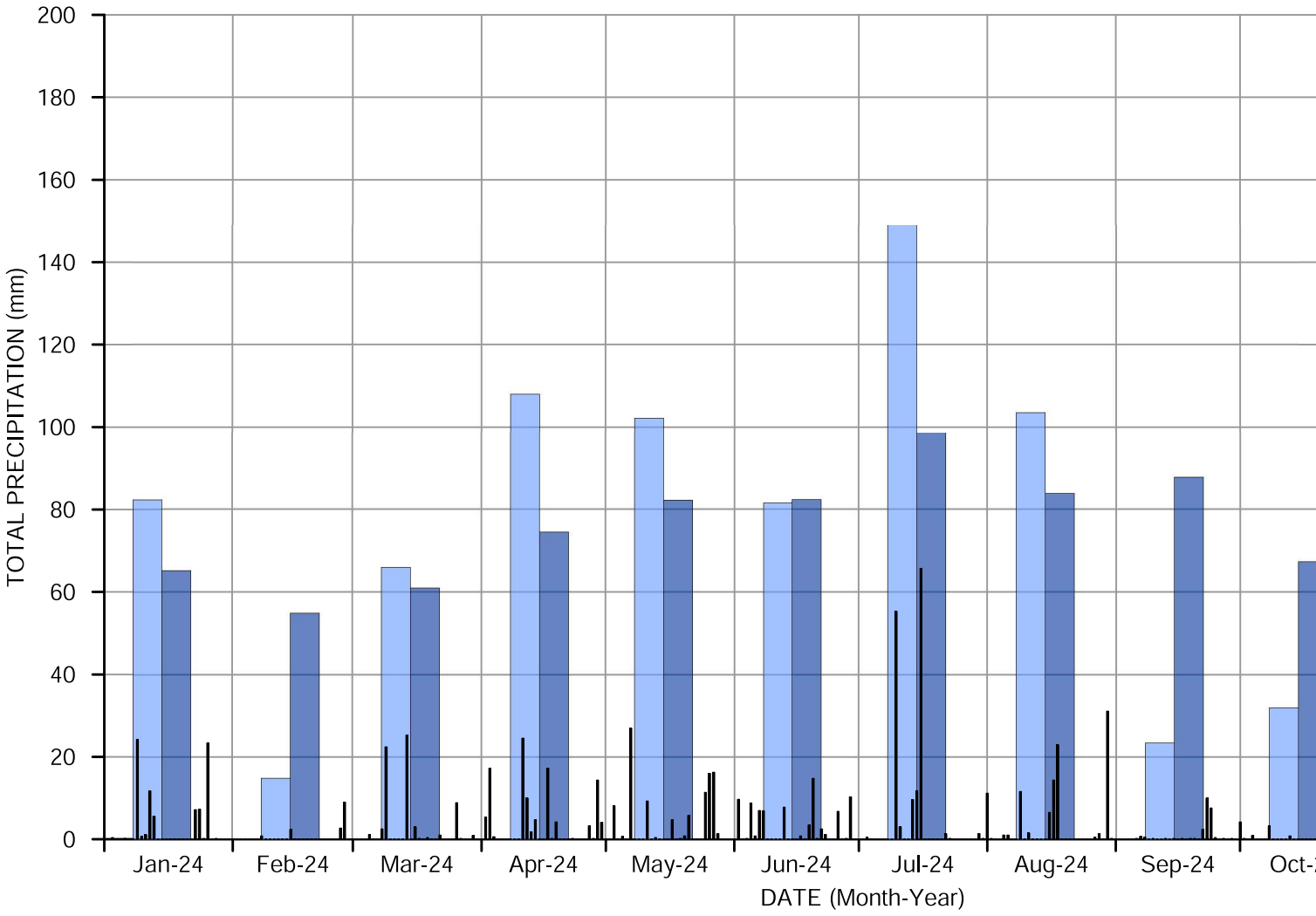
Data source: MNRF NRVIS, 2018. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry. © Queen's Printer 2025.



LEGEND

- PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF DUFFERIN POND EXCAVATION (OCTOBER 2024)
- LIMIT OF EXTRACTION BELOW THE WATER TABLE
- MONITORING WELL LOCATION
- STAFF GAUGE LOCATION
- PIEZOMETER LOCATION

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NOTE:
(1) Kitchener/Waterloo data obtained for Environment Canada Station #6144239.
(2) Climate Normals obtained from Waterloo Wellington A (Environment Canada Station #6149387).

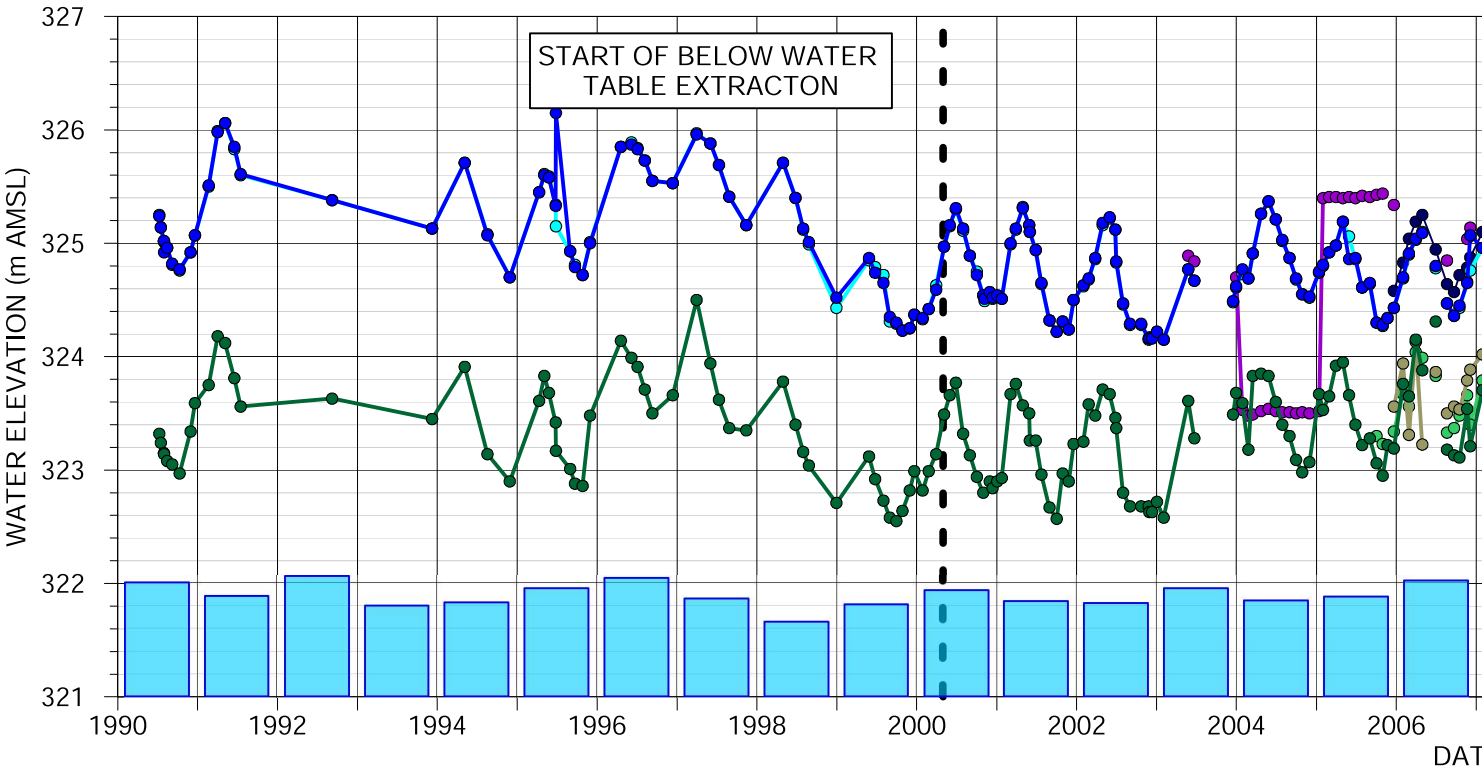
LEGEND
- Monthly Precipitation
- Daily Precipitation
- Climate Normals (1981-2010, Region of Waterloo Airport)

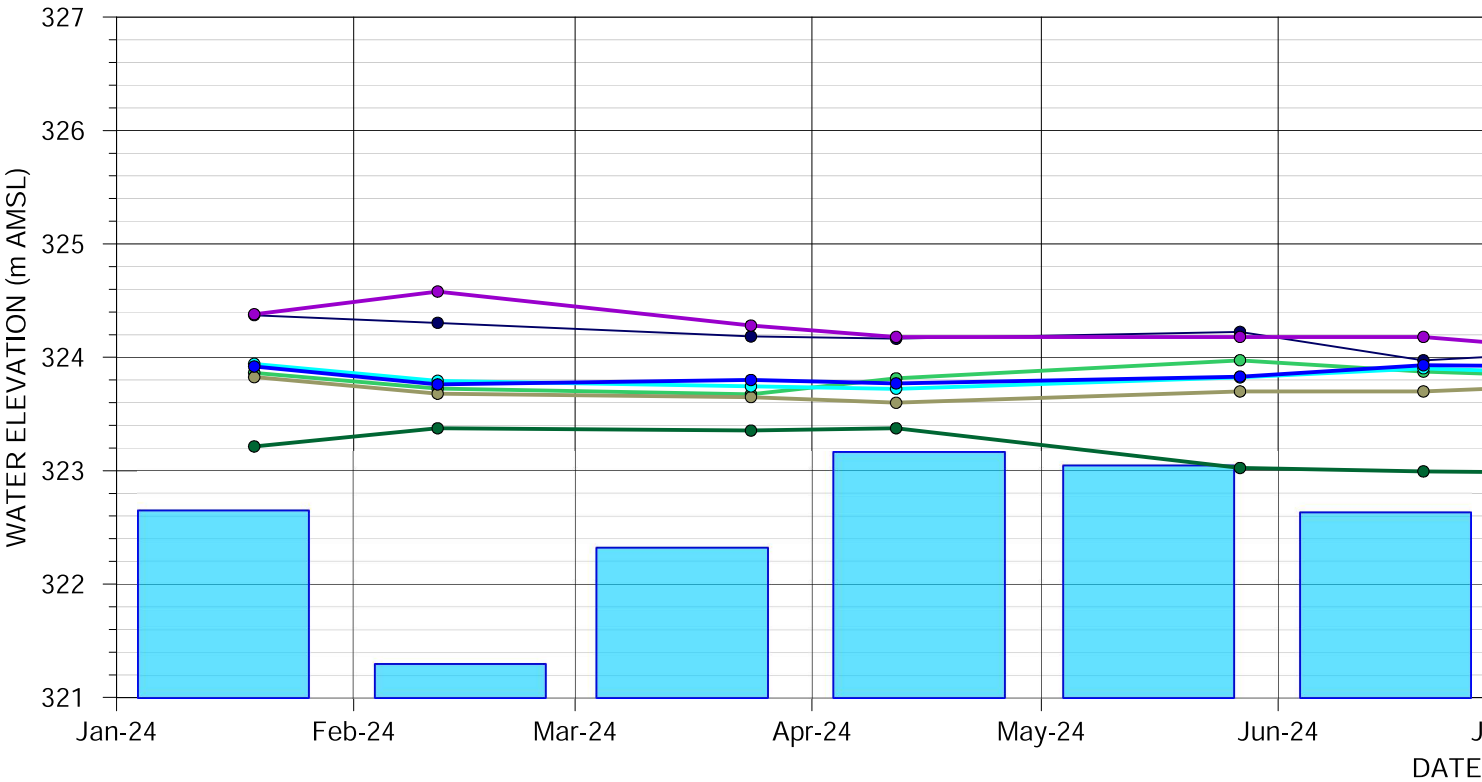
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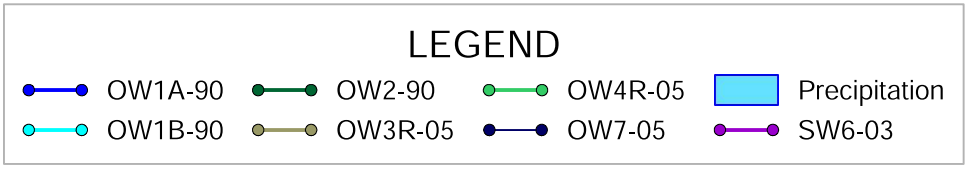
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2024 PRECIPITATION SUM

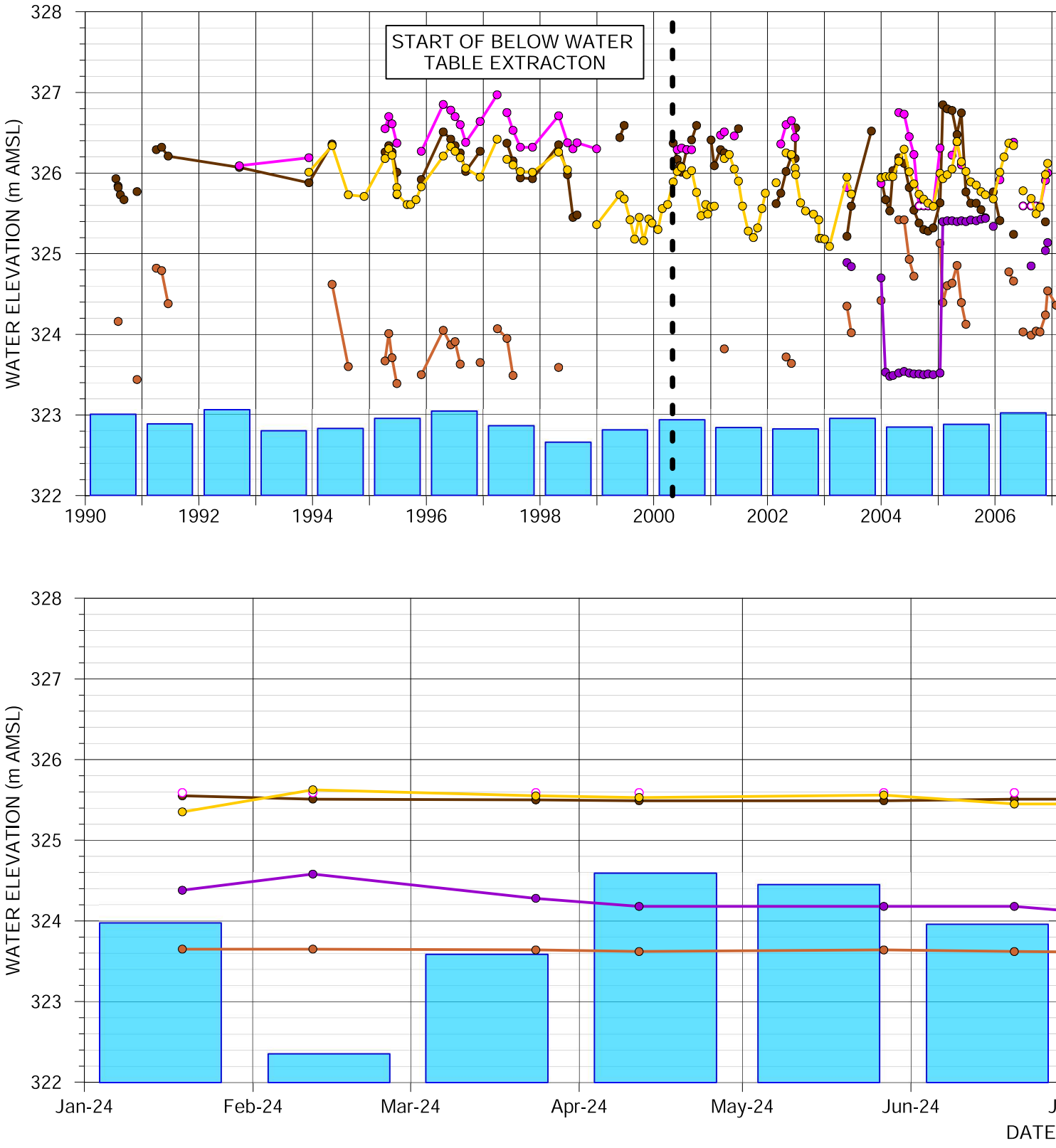
HEG file: N:\CA\Waterloo\Projects\662\12575802\Workshare\Grapher\AMR\2024\Figure 3.2 - Precipitation.grf

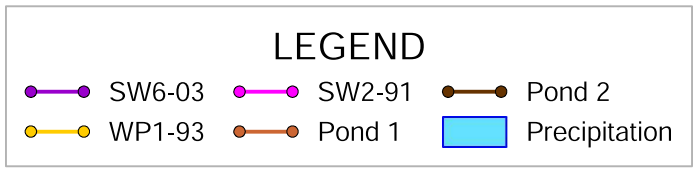




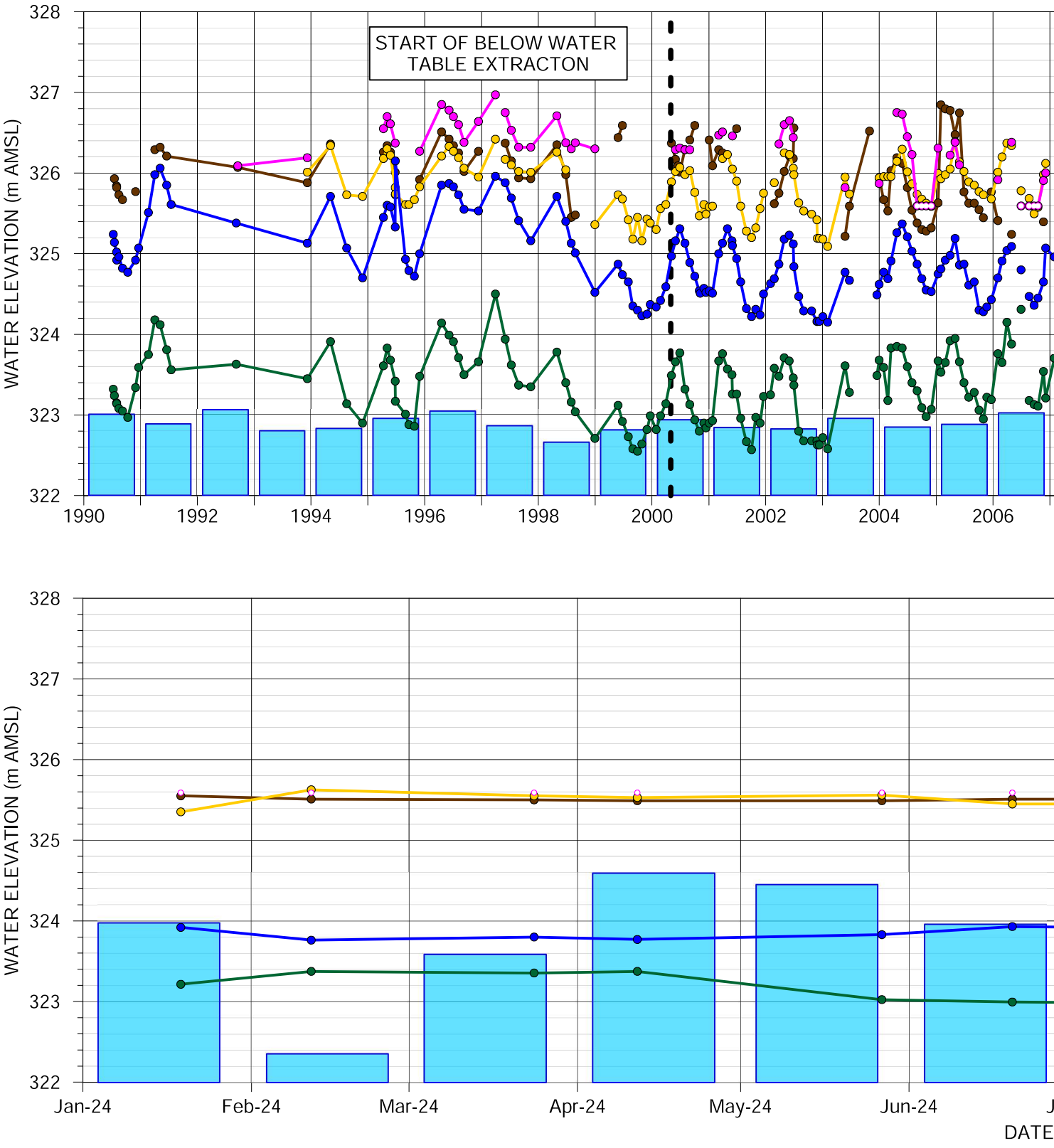


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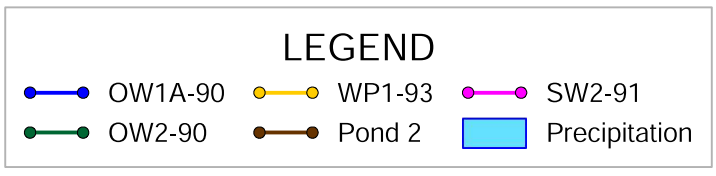


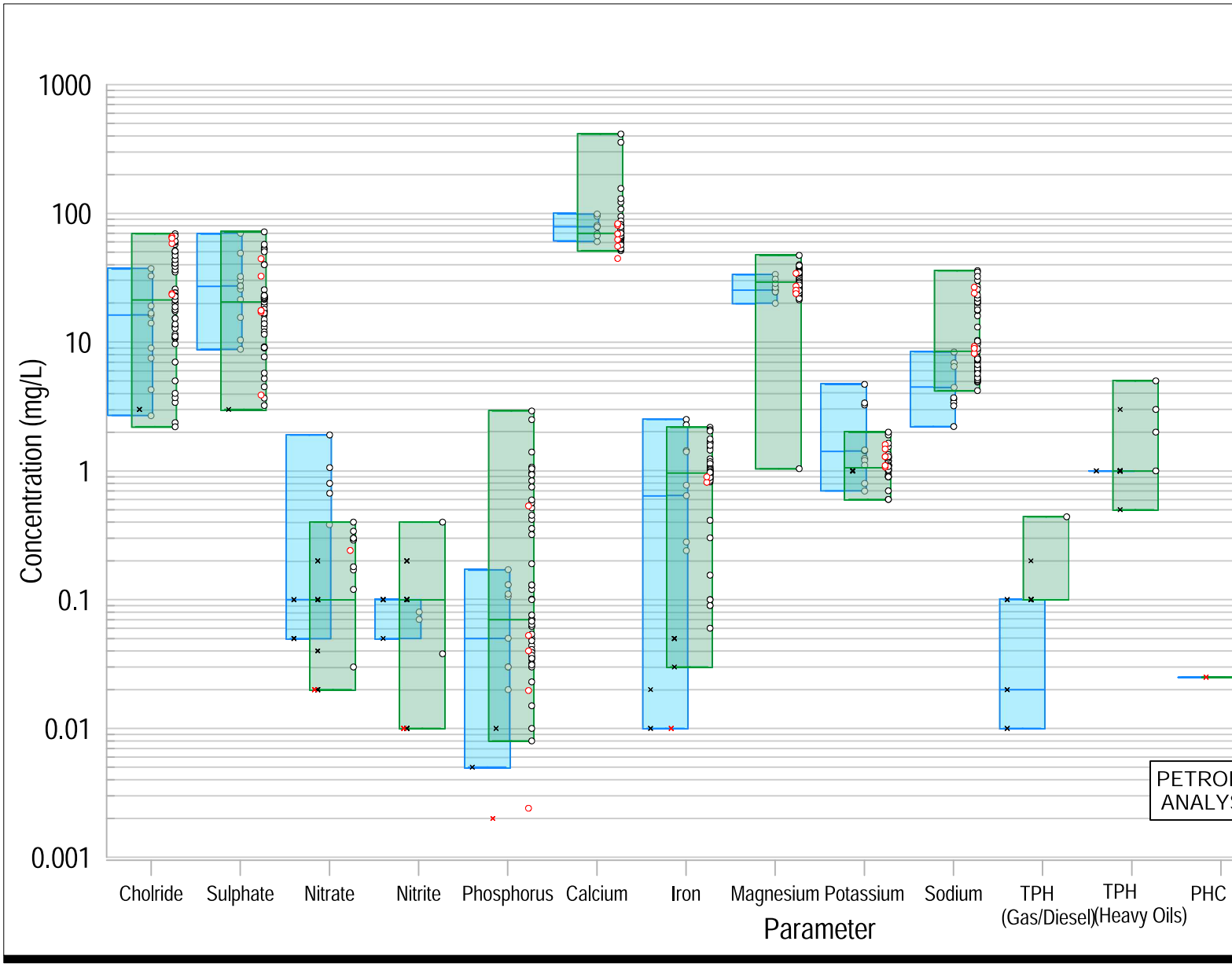


HEG file: N:\CA\Waterloo\Projects\662\12575802\Workshare\Grapher\AMR\2024\Figure 3.4-Surface Water Hydrograph.grf


START OF BELOW WATER TABLE EXTRACTON
WATER ELEVATION (m AMSL)
328
327
326
325
324
323
322
1990
1992
1994
1996
1998
2000
2002
2004
2006

WATER ELEVATION (m AMSL)
328
327
326
325
324
323
322
Jan-24
Feb-24
Mar-24
Apr-24
May-24
Jun-24
DATE


LEGEND
OW1A-90
WP1-93
SW2-91
OW2-90
Pond 2
Precipitation



Maximum Observed Concentration*
Individual Sample Concentration
Median*
Minimum Observed Concentration*
Non-Detect (Reported Detection Limit)
* conservatively includes non-detect results reported at the limit of detection

Background - OW1A-90, OW1B-90, and OW2-90 (1990 to 1999)
Upgradient - OW1A-90 and OW1B-90 (2000 to 2022)
2024 Result
2024 Non-Detect Result

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HISTORICAL WATER QUA
RESULTS SUMMARY

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Tables

Table 3.1

Monitoring Network Details
Dufferin Aggregates Aberfoyle Pit No. 2
Township of Puslinch, Ontario

Monitoring Location No.	Ground Surface Elevation [3] (m)	Reference Elevation (m)	Reference Elevation Survey Date	Total Depth Drilled (m)	Screened Interval	
					Depth (m bgs)	Elevation (m)
Monitoring Wells						
OW1A-90	329.89	330.71	10/5/2017	20.42	18.3 - 19.8	311.60 - 310.08
OW1B-90	329.92	330.843	10/5/2017	11.28	9.14 - 10.7	320.78 - 319.25
OW2-90	325.83	326.874	10/5/2017	9.75	5.18 - 6.71	320.65 - 319.12
OW3R-05 [1]	324.27	325.299	10/5/2017	13.4	3.4 - 6.6	320.87 - 317.67
OW4R-05 [1]	339.51	340.274	10/5/2017	26.8	20 - 23.4	319.51 - 316.11
OW7-05 [1]	333.41	334.324	10/5/2017	23.8	11.2 - 14.3	322.21 - 319.11
Surface Water						
SW2-91	325.55	325.59 [2]	10/5/2017	--	--	--
SW6-03	--	324.18 [2]	4/29/2022	--	--	--
Pond 1	--	323.60 [2]	10/5/2017	--	--	--
Pond 2	--	324.50 [2]	4/19/2023	--	--	--
Pezometers						
WP1-93	--	327.05	10/5/2017	--	0.76 - 1.52	--

Notes:

(1) Installed by Jagger Hims Limited. Screened intervals based on estimate from borehole logs.
(2) Zero mark on staff gauge plate
(3) Historical ground surface elevation; survey dates vary.

Table 3.2

2024 Water Elevation Data
Dufferin Aggregates Aberfoyle Pit No. 2
Township of Puslinch, Ontario

Location:	OW1A-90	OW1B-90	OW2-90	OW3R-05	OW4R-05	OW7-05	SW2-91	SW6-03	Po
Date									
	330.71	**330.843**	**326.874**	**325.299**	**340.274**	**334.324**	**325.59**	**324.18**	**32**
01/19/2024	323.92	323.94	323.21	323.83	323.86	324.37	325.59	324.38	32
02/12/2024	323.76	323.79	323.37	323.68	323.72	324.30	325.59	324.58	32
03/24/2024	323.80	323.74	323.35	323.65	323.67	324.18	325.59	324.28	32
04/12/2024	323.77	323.72	323.37	323.60	323.81	324.16	325.59	324.18	32
05/27/2024	323.83	323.82	323.02	323.70	323.97	324.22	325.59	324.18	32
06/20/2024	323.93	323.90	322.99	323.70	323.87	323.97	325.59	324.18	32
07/26/2024	323.91	323.82	322.97	323.80	323.79	324.10	325.61	323.98	32
08/23/2024	324.04	324.03	322.87	323.74	323.77	324.20	325.69	324.18	32
09/10/2024	324.18	324.14	323.05	323.68	323.71	324.10	325.57	324.18	32
10/03/2024	324.19	324.16	323.50	323.83	323.79	324.41	DRY	324.10	32
11/13/2024	323.91	323.79	322.97	DECOMMISSIONED	323.87	324.34	DRY	324.48	32
12/05/2024	323.81	323.84	322.87	DECOMMISSIONED	323.97	324.32	325.53	324.38	32

Notes:

All elevations shown are in meters above mean sea level (m AMSL)
NM - No measurement recorded on indicated date

Table 4.1

2024 Water Quality Results
Dufferin Aggregates Aberfoyle Pit No. 2
Township of Puslinch, Ontario

Sample Location:			**OW1A-90**	**OW1B-90**	**OW2-90**
Sample ID:			**GW-12575802-100324-EH-05**	**GW-12575802-100324-EH-06**	**GW-12575802-100324-EH-0**
Sample Date:			**3-Oct-2024**	**3-Oct-2024**	**3-Oct-2024**
Parameters	**Units**	**ODWQS**			
field temperature	celcius	-	**--**	**--**	**--**
field pH		6.5-8.5	7.6	7.36	7.29
field Conductivity	µS/cm	-	577	685	651
Chloride	mg/L	250	23.8	58.3	65.9
Nitrate (as N)	mg/L	10	<0.020	<0.020	<0.020
Nitrite (as N)	mg/L	1	<0.010	<0.010	<0.010
Phosphorus, total	mg/L	-	0.0527	0.040	<0.0020
Sulphate (as SO_4)	mg/L	500	17.1	3.88	17.6
Calcium, dissolved	mg/L	-	62.6	69.3	80.8
Iron, dissolved	mg/L	0.3	**0.815**	**0.899**	<0.010
Magnesium, dissolved	mg/L	-	34.2	27.2	24.9
Potassium, dissolved	mg/L	-	1.07	1.6	1.29
Sodium, dissolved	mg/L	200	9.26	26.7	8.18
F1 (C6-C10)	mg/L	-	--	<0.025	<0.025
F2 (C10-C16)	mg/L	-	--	<0.1	<0.1
F3 (C16-C34)	mg/L	-	--	<0.25	<0.25
F4 (C34-C50)	mg/L	-	--	<0.25	<0.25
Hydrocarbons, total (C6-C50)	mg/L	-	--	<0.37	<0.37

Notes:

ODWQS	Ontario Drinking Water Quality Standards, 2020, including June 2003, revised 2006 Aestetic Objective and Operational Guidelines.
--	Not analyzed.
<	Not detected at the associated reporting limit
µS/cm	MicroSiemens per centimetre
µg/L	Microgram per litre
mg/L	Milligram per litre
0.9	Concentration detected above the ODWQS

Table 4.1

2024 Water Quality Results
Dufferin Aggregates Aberfoyle Pit No. 2
Township of Puslinch, Ontario

Sample Location:			**OW3R-05**	**OW4R-05**	
Sample ID:			**GW-12575802-100324-EH-03**	**GW-12575802-100324-EH-04**	**SW-12575**
Sample Date:			**3-Oct-2024**	**3-Oct-2024**	**3-**
Parameters	**Units**	**ODWQS**			
field temperature	celcius	-	**--**	**--**	
field pH		6.5-8.5	7.72	7.82	
field Conductivity	µS/cm	-	574	442	
Chloride	mg/L	250	64	23.4	
Nitrate (as N)	mg/L	10	<0.020	0.241	
Nitrite (as N)	mg/L	1	<0.010	<0.010	
Phosphorus, total	mg/L	-	<0.0020	0.0197	
Sulphate (as SO_4)	mg/L	500	44.4	32.5	
Calcium, dissolved	mg/L	-	55.5	44.6	
Iron, dissolved	mg/L	0.3	<0.010	<0.010	
Magnesium, dissolved	mg/L	-	25.3	23.8	
Potassium, dissolved	mg/L	-	1.48	1.1	
Sodium, dissolved	mg/L	200	24	8.94	
F1 (C6-C10)	mg/L	-	<0.025	--	
F2 (C10-C16)	mg/L	-	<0.1	--	
F3 (C16-C34)	mg/L	-	<0.25	--	
F4 (C34-C50)	mg/L	-	<0.25	--	
Hydrocarbons, total (C6-C50)	mg/L	-	<0.37	--	

Notes:

ODWQS	Ontario Drinking Water Quality Standards,
--	Not analyzed.
<	Not detected at the associated reporting lir
µS/cm	MicroSiemens per centimetre
µg/L	Microgram per litre
mg/L	Milligram per litre
0.9	Concentration detected above the ODWQS

Appendices

Appendix A

2024 ALS Laboratory Water Quality Analyses

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS

Work Order	: **WT2429599**	Page	: 1 of 6
Client	: **GHD Limited**	Laboratory	: ALS Environmental - Waterloo
Contact	: Mathieu Pare	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 12575802-20Y24-01	Date Samples Received	: 03-Oct-2024 17:45
PO	: 735-011691	Date Analysis Commenced	: 07-Oct-2024
C-O-C number	: ----	Issue Date	: 10-Oct-2024 15:12
Sampler	: EH		
Site	: ----		
Quote number	: 12575802-20Y24-01 735-011691		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
John Tang	Lab Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Senior Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Senior Analyst	Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Unit	*Description*
-	no units
µg/L	micrograms per litre
mg/L	milligrams per litre

>: greater than.
<: less than.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

WT2429599-001

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-01

Client sampling date / time: 03-Oct-2024 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Chloride	16887-00-6	65.9	0.50	mg/L	E235.Cl/WT	07-Oct-2024	09-Oct-2024	1694701
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/WT	07-Oct-2024	09-Oct-2024	1694697
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/WT	07-Oct-2024	09-Oct-2024	1694698
Phosphorus, total	7723-14-0	<0.0020	0.0020	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391
Sulfate (as SO4)	14808-79-8	17.6	0.30	mg/L	E235.SO4/WT	07-Oct-2024	09-Oct-2024	1694702
Dissolved Metals								
Calcium, dissolved	7440-70-2	80.8	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Iron, dissolved	7439-89-6	<0.010	0.010	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Magnesium, dissolved	7439-95-4	24.9	0.0050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Potassium, dissolved	7440-09-7	1.29	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Sodium, dissolved	7440-23-5	8.18	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Dissolved metals filtration location	---	Field	-	-	EP421/WT	-	08-Oct-2024	1695583
Hydrocarbons								
F1 (C6-C10)	---	<25	25	µg/L	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814
F2 (C10-C16)	---	<100	100	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F3 (C16-C34)	---	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F4 (C34-C50)	---	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons, total (C6-C50)	n/a	<370	370	µg/L	EC581SG/WT	-	09-Oct-2024	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	97.6	1.0	%	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Dichlorotoluene, 3,4-	95-75-0	104	1.0	%	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

WT2429599-002

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-02

Client sampling date / time: 03-Oct-2024 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Chloride	16887-00-6	65.7	0.50	mg/L	E235.Cl/WT	07-Oct-2024	09-Oct-2024	1694701
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/WT	07-Oct-2024	09-Oct-2024	1694697
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/WT	07-Oct-2024	09-Oct-2024	1694698
Phosphorus, total	7723-14-0	0.0024	0.0020	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391
Sulfate (as SO4)	14808-79-8	17.6	0.30	mg/L	E235.SO4/WT	07-Oct-2024	09-Oct-2024	1694702
Dissolved Metals								
Calcium, dissolved	7440-70-2	83.0	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Iron, dissolved	7439-89-6	<0.010	0.010	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Magnesium, dissolved	7439-95-4	24.8	0.0050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Potassium, dissolved	7440-09-7	1.29	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Sodium, dissolved	7440-23-5	8.18	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Dissolved metals filtration location	---	Field	-	-	EP421/WT	-	08-Oct-2024	1695583

Analytical Results

WT2429599-002

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-02

Client sampling date / time: 03-Oct-2024 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Hydrocarbons								
F1 (C6-C10)	---	<25	25	µg/L	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814
F2 (C10-C16)	---	<100	100	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F3 (C16-C34)	---	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F4 (C34-C50)	---	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons, total (C6-C50)	n/a	<370	370	µg/L	EC581SG/WT	-	09-Oct-2024	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	92.1	1.0	%	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Dichlorotoluene, 3,4-	95-75-0	100	1.0	%	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

WT2429599-003

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-03

Client sampling date / time: 03-Oct-2024 11:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Chloride	16887-00-6	64.0	0.50	mg/L	E235.Cl/WT	07-Oct-2024	09-Oct-2024	1694701
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/WT	07-Oct-2024	09-Oct-2024	1694697
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/WT	07-Oct-2024	09-Oct-2024	1694698
Phosphorus, total	7723-14-0	<0.0020	0.0020	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391
Sulfate (as SO4)	14808-79-8	44.4	0.30	mg/L	E235.SO4/WT	07-Oct-2024	09-Oct-2024	1694702
Dissolved Metals								
Calcium, dissolved	7440-70-2	55.5	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Iron, dissolved	7439-89-6	<0.010	0.010	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Magnesium, dissolved	7439-95-4	25.3	0.0050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Potassium, dissolved	7440-09-7	1.48	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Sodium, dissolved	7440-23-5	24.0	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Dissolved metals filtration location	---	Field	-	-	EP421/WT	-	08-Oct-2024	1695583
Hydrocarbons								
F1 (C6-C10)	---	<25	25	µg/L	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814
F2 (C10-C16)	---	<100	100	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F3 (C16-C34)	---	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F4 (C34-C50)	---	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons, total (C6-C50)	n/a	<370	370	µg/L	EC581SG/WT	-	09-Oct-2024	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	97.4	1.0	%	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Dichlorotoluene, 3,4-	95-75-0	104	1.0	%	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

WT2429599-004

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-04

Client sampling date / time: 03-Oct-2024 12:45

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Chloride	16887-00-6	23.4	0.50	mg/L	E235.Cl/WT	07-Oct-2024	09-Oct-2024	1694701
Nitrate (as N)	14797-55-8	0.241	0.020	mg/L	E235.NO3/WT	07-Oct-2024	09-Oct-2024	1694697
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/WT	07-Oct-2024	09-Oct-2024	1694698
Phosphorus, total	7723-14-0	0.0197	0.0020	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391
Sulfate (as SO4)	14808-79-8	32.5	0.30	mg/L	E235.SO4/WT	07-Oct-2024	09-Oct-2024	1694702
Dissolved Metals								
Calcium, dissolved	7440-70-2	44.6	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Iron, dissolved	7439-89-6	<0.010	0.010	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Magnesium, dissolved	7439-95-4	23.8	0.0050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Potassium, dissolved	7440-09-7	1.10	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Sodium, dissolved	7440-23-5	8.94	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Dissolved metals filtration location	---	Field	-	-	EP421/WT	-	08-Oct-2024	1695583

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

WT2429599-005

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-05

Client sampling date / time: 03-Oct-2024 14:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Chloride	16887-00-6	23.8	0.50	mg/L	E235.Cl/WT	08-Oct-2024	09-Oct-2024	1696943
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/WT	08-Oct-2024	09-Oct-2024	1696945
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/WT	08-Oct-2024	09-Oct-2024	1696946
Phosphorus, total	7723-14-0	0.0527	0.0020	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391
Sulfate (as SO4)	14808-79-8	17.1	0.30	mg/L	E235.SO4/WT	08-Oct-2024	09-Oct-2024	1696944
Dissolved Metals								
Calcium, dissolved	7440-70-2	62.6	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Iron, dissolved	7439-89-6	0.815	0.010	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Magnesium, dissolved	7439-95-4	34.2	0.0050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Potassium, dissolved	7440-09-7	1.07	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Sodium, dissolved	7440-23-5	9.26	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Dissolved metals filtration location	---	Field	-	-	EP421/WT	-	08-Oct-2024	1695583

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

WT2429599-006

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-06

Client sampling date / time: 03-Oct-2024 14:40

Analytical Results

WT2429599-006

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: GW-12575802-100324-EH-06

Client sampling date / time: 03-Oct-2024 14:40

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Chloride	16887-00-6	58.3	0.50	mg/L	E235.Cl/WT	08-Oct-2024	09-Oct-2024	1696943
Nitrate (as N)	14797-55-8	<0.020	0.020	mg/L	E235.NO3/WT	08-Oct-2024	09-Oct-2024	1696945
Nitrite (as N)	14797-65-0	<0.010	0.010	mg/L	E235.NO2/WT	08-Oct-2024	09-Oct-2024	1696946
Phosphorus, total	7723-14-0	0.0400	0.0020	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391
Sulfate (as SO4)	14808-79-8	3.88	0.30	mg/L	E235.SO4/WT	08-Oct-2024	09-Oct-2024	1696944
Dissolved Metals								
Calcium, dissolved	7440-70-2	69.3	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Iron, dissolved	7439-89-6	0.899	0.010	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Magnesium, dissolved	7439-95-4	27.2	0.0050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Potassium, dissolved	7440-09-7	1.60	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Sodium, dissolved	7440-23-5	26.7	0.050	mg/L	E421/WT	08-Oct-2024	08-Oct-2024	1695583
Dissolved metals filtration location	----	Field	-	-	EP421/WT	-	08-Oct-2024	1695583
Hydrocarbons								
F1 (C6-C10)	----	<25	25	µg/L	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814
F2 (C10-C16)	----	<100	100	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F3 (C16-C34)	----	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
F4 (C34-C50)	----	<250	250	µg/L	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons, total (C6-C50)	n/a	<370	370	µg/L	EC581SG/WT	-	09-Oct-2024	-
Chromatogram to baseline at nC50	n/a	YES	-	-	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	92.0	1.0	%	E601.SG/WT	08-Oct-2024	09-Oct-2024	1695833
Dichlorotoluene, 3,4-	95-75-0	93.6	1.0	%	E581.F1-L/WT	08-Oct-2024	08-Oct-2024	1696814

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

WT2429599-007

Sub-Matrix:**Water** (Matrix: **Water**)

Client sample ID: SW-12575802-100324-EH-01

Client sampling date / time: 03-Oct-2024 15:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Anions and Nutrients								
Phosphorus, total	7723-14-0	0.535	0.0200	mg/L	E372-U/WT	08-Oct-2024	09-Oct-2024	1695391

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2429599**	Page	: 1 of 11
Client	: **GHD Limited**	Laboratory	: ALS Environmental - W
Contact	: Mathieu Pare	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, U Waterloo, Ontario Can
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 12575802-20Y24-01	Date Samples Received	: 03-Oct-2024 17:45
PO	: 735-011691	Issue Date	: 10-Oct-2024 15:13
C-O-C number	: ----		
Sampler	: EH		
Site	: ----		
Quote number	: 12575802-20Y24-01 735-011691		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, a references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "–-" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to m requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutio are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and th when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding t

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analys*
Anions and Nutrients : Chloride in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-01	E235.Cl	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Chloride in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-02	E235.Cl	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Chloride in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-03	E235.Cl	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Chloride in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-04	E235.Cl	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Chloride in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-05	E235.Cl	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Chloride in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-06	E235.Cl	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Nitrate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-01	E235.NO3	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc

Matrix: **Water** Evaluation: × = Holding t

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				
			Preparation Date	*Holding Times*		*Eval*	*Analy*
				Rec	*Actual*		
Anions and Nutrients : Nitrate in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-02	E235.NO3	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc
Anions and Nutrients : Nitrate in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-03	E235.NO3	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc
Anions and Nutrients : Nitrate in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-04	E235.NO3	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc
Anions and Nutrients : Nitrate in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-05	E235.NO3	03-Oct-2024	08-Oct-2024	7 days	5 days	✓	09-Oc
Anions and Nutrients : Nitrate in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-06	E235.NO3	03-Oct-2024	08-Oct-2024	7 days	5 days	✓	09-Oc
Anions and Nutrients : Nitrite in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-01	E235.NO2	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc
Anions and Nutrients : Nitrite in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-02	E235.NO2	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc
Anions and Nutrients : Nitrite in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-03	E235.NO2	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc
Anions and Nutrients : Nitrite in Water by IC							
HDPE [ON MECP]							
GW-12575802-100324-EH-04	E235.NO2	03-Oct-2024	07-Oct-2024	7 days	4 days	✓	09-Oc

Matrix: **Water** Evaluation: × = Holding t

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analy*
Anions and Nutrients : Nitrite in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-05	E235.NO2	03-Oct-2024	08-Oct-2024	7 days	5 days	✓	09-Oc
Anions and Nutrients : Nitrite in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-06	E235.NO2	03-Oct-2024	08-Oct-2024	7 days	5 days	✓	09-Oc
Anions and Nutrients : Sulfate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-01	E235.SO4	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Sulfate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-02	E235.SO4	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Sulfate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-03	E235.SO4	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Sulfate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-04	E235.SO4	03-Oct-2024	07-Oct-2024	28 days	4 days	✓	09-Oc
Anions and Nutrients : Sulfate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-05	E235.SO4	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Sulfate in Water by IC							
HDPE [ON MECP] GW-12575802-100324-EH-06	E235.SO4	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] GW-12575802-100324-EH-01	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc

Matrix: **Water** Evaluation: × = Holding t

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				
			Preparation Date	*Holding Times*		*Eval*	*Analy*
				Rec	*Actual*		
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] GW-12575802-100324-EH-02	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] GW-12575802-100324-EH-03	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] GW-12575802-100324-EH-04	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] GW-12575802-100324-EH-05	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] GW-12575802-100324-EH-06	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)							
Amber glass total (sulfuric acid) [ON MECP] SW-12575802-100324-EH-01	E372-U	03-Oct-2024	08-Oct-2024	28 days	5 days	✓	09-Oc
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS							
HDPE dissolved (nitric acid) GW-12575802-100324-EH-01	E421	03-Oct-2024	08-Oct-2024	180 days	5 days	✓	08-Oc
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS							
HDPE dissolved (nitric acid) GW-12575802-100324-EH-02	E421	03-Oct-2024	08-Oct-2024	180 days	5 days	✓	08-Oc
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS							
HDPE dissolved (nitric acid) GW-12575802-100324-EH-03	E421	03-Oct-2024	08-Oct-2024	180 days	5 days	✓	08-Oc

Matrix: **Water** Evaluation: × = Holding t

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation			Eval	Analy
			Preparation Date	Holding Times Rec	Holding Times Actual		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS							
HDPE dissolved (nitric acid) GW-12575802-100324-EH-04	E421	03-Oct-2024	08-Oct-2024	180 days	5 days	✓	08-Oc
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS							
HDPE dissolved (nitric acid) GW-12575802-100324-EH-05	E421	03-Oct-2024	08-Oct-2024	180 days	5 days	✓	08-Oc
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS							
HDPE dissolved (nitric acid) GW-12575802-100324-EH-06	E421	03-Oct-2024	08-Oct-2024	180 days	5 days	✓	08-Oc
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)							
Glass vial (sodium bisulfate) GW-12575802-100324-EH-01	E581.F1-L	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	08-Oc
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)							
Glass vial (sodium bisulfate) GW-12575802-100324-EH-02	E581.F1-L	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	08-Oc
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)							
Glass vial (sodium bisulfate) GW-12575802-100324-EH-03	E581.F1-L	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	08-Oc
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)							
Glass vial (sodium bisulfate) GW-12575802-100324-EH-06	E581.F1-L	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	08-Oc
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID							
Amber glass/Teflon lined cap (sodium bisulfate) GW-12575802-100324-EH-01	E601.SG	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	09-Oc
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID							
Amber glass/Teflon lined cap (sodium bisulfate) GW-12575802-100324-EH-02	E601.SG	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	09-Oc

Matrix: **Water** Evaluation: × = Holding t

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				
			Preparation Date	*Holding Times*		*Eval*	*Analy*
				Rec	*Actual*		
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID							
Amber glass/Teflon lined cap (sodium bisulfate)							
GW-12575802-100324-EH-03	E601.SG	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	09-Oc
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID							
Amber glass/Teflon lined cap (sodium bisulfate)							
GW-12575802-100324-EH-06	E601.SG	03-Oct-2024	08-Oct-2024	14 days	5 days	✓	09-Oc

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: × = *QC frequency outside specifica*

Quality Control Sample Type			Count		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	
Laboratory Duplicates (DUP)					
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1696814	1	19	
Chloride in Water by IC	E235.Cl	1696943	2	14	
Dissolved Metals in Water by CRC ICPMS	E421	1695583	1	20	
Nitrate in Water by IC	E235.NO3	1694697	2	38	
Nitrite in Water by IC	E235.NO2	1696946	2	38	
Sulfate in Water by IC	E235.SO4	1696944	2	7	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1695391	1	20	
Laboratory Control Samples (LCS)					
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1696814	1	19	
Chloride in Water by IC	E235.Cl	1696943	2	14	
Dissolved Metals in Water by CRC ICPMS	E421	1695583	1	20	
Nitrate in Water by IC	E235.NO3	1694697	2	38	
Nitrite in Water by IC	E235.NO2	1696946	2	38	
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1695833	1	20	
Sulfate in Water by IC	E235.SO4	1696944	2	7	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1695391	1	20	
Method Blanks (MB)					
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1696814	1	19	
Chloride in Water by IC	E235.Cl	1696943	2	14	
Dissolved Metals in Water by CRC ICPMS	E421	1695583	1	20	
Nitrate in Water by IC	E235.NO3	1694697	2	38	
Nitrite in Water by IC	E235.NO2	1696946	2	38	
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1695833	1	20	
Sulfate in Water by IC	E235.SO4	1696944	2	7	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1695391	1	20	
Matrix Spikes (MS)					
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1696814	1	19	
Chloride in Water by IC	E235.Cl	1696943	2	14	
Dissolved Metals in Water by CRC ICPMS	E421	1695583	1	20	
Nitrate in Water by IC	E235.NO3	1694697	2	38	
Nitrite in Water by IC	E235.NO2	1696946	2	38	
Sulfate in Water by IC	E235.SO4	1696944	2	7	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1695391	1	20	

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Chloride in Water by IC	E235.Cl ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chroma detection.
Nitrite in Water by IC	E235.NO2 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chroma detection.
Nitrate in Water by IC	E235.NO3 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chroma detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Waterloo	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chroma detection.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically u persulfate digestion of the sample.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Waterloo	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile by this method.
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	CCME Fraction 1 (F1) is analyzed by static heads headspace vials and are heated and agitated or VOCs to partition between the aqueous phase a Henry's law. Analytical methods for CCME Petroleum Hydrocar fully with the Reference Method for the Can qualified, all required quality control criteria of the including response factor and linearity requirements.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	Sample extracts are subjected to in-situ silica gel for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocar fully with the Reference Method for the Cana qualified, all required quality control criteria of the including response factor and linearity requirements.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
SUM F1 to F4 where F2-F4 is SG treated	EC581SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CC F3(C16-C34), and F4(C34-C50), where F2-F4 have is not used within this calculation due to overlap with oth

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Waterloo	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and headspace autosampler. An aliquot of the headspace is
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic extracted using a hexane liquid-liquid extraction.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2429599**	Page	: 1 of 8
Client	: GHD Limited	Laboratory	: ALS Environmental - Waterloo
Contact	: Mathieu Pare	Account Manager	: Rick Hawthorne
Address	: 455 Phillip Street Waterloo ON Canada N2L 3X2	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 12575802-20Y24-01	Date Samples Received	: 03-Oct-2024 17:45
PO	: 735-011691	Date Analysis Commenced	: 07-Oct-2024
C-O-C number	: ----	Issue Date	: 10-Oct-2024 15:13
Sampler	: EH		
Site	: ----		
Quote number	: 12575802-20Y24-01 735-011691		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
John Tang	Lab Analyst	Waterloo Inorganics, Waterloo, Ontario
Nik Perkio	Senior Analyst	Waterloo Inorganics, Waterloo, Ontario
Nik Perkio	Senior Analyst	Waterloo Metals, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for appl summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sar Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low co times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP			
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*
Anions and Nutrients (QC Lot: 1694697)								
WT2429584-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020
Anions and Nutrients (QC Lot: 1694698)								
WT2429584-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010
Anions and Nutrients (QC Lot: 1694701)								
WT2429584-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	4.07	3.98
Anions and Nutrients (QC Lot: 1694702)								
WT2429584-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	14.4	14.3
Anions and Nutrients (QC Lot: 1695391)								
WT2429556-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0400	mg/L	10.1	10.0
Anions and Nutrients (QC Lot: 1696943)								
WT2429599-005	GW-12575802-100324-EH-05	Chloride	16887-00-6	E235.Cl	0.50	mg/L	23.8	23.8
Anions and Nutrients (QC Lot: 1696944)								
WT2429599-005	GW-12575802-100324-EH-05	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	17.1	17.2
Anions and Nutrients (QC Lot: 1696945)								
WT2429599-005	GW-12575802-100324-EH-05	Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020
Anions and Nutrients (QC Lot: 1696946)								
WT2429599-005	GW-12575802-100324-EH-05	Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010
Dissolved Metals (QC Lot: 1695583)								
WT2429572-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.500	mg/L	209	214
		Iron, dissolved	7439-89-6	E421	0.100	mg/L	<0.100	<0.100
		Magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	57.4	58.0
		Potassium, dissolved	7440-09-7	E421	0.500	mg/L	3.74	3.83
		Sodium, dissolved	7440-23-5	E421	0.500	mg/L	300000 µg/L	299
Hydrocarbons (QC Lot: 1696814)								
WT2429601-001	Anonymous	F1 (C6-C10)	---	E581.F1-L	25	µg/L	<25	<25

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result
Anions and Nutrients (QCLot: 1694697)					
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020
Anions and Nutrients (QCLot: 1694698)					
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010
Anions and Nutrients (QCLot: 1694701)					
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50
Anions and Nutrients (QCLot: 1694702)					
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30
Anions and Nutrients (QCLot: 1695391)					
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020
Anions and Nutrients (QCLot: 1696943)					
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50
Anions and Nutrients (QCLot: 1696944)					
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30
Anions and Nutrients (QCLot: 1696945)					
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020
Anions and Nutrients (QCLot: 1696946)					
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010
Dissolved Metals (QCLot: 1695583)					
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050
Hydrocarbons (QCLot: 1695833)					
F2 (C10-C16)	----	E601.SG	100	µg/L	<100
F3 (C16-C34)	----	E601.SG	250	µg/L	<250
F4 (C34-C50)	----	E601.SG	250	µg/L	<250
Hydrocarbons (QCLot: 1696814)					
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identi results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample		
					Spike	Recovery (%)	Rec
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low
Anions and Nutrients (QCLot: 1694697)							
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.9	90.0
Anions and Nutrients (QCLot: 1694698)							
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	102	90.0
Anions and Nutrients (QCLot: 1694701)							
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0
Anions and Nutrients (QCLot: 1694702)							
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0
Anions and Nutrients (QCLot: 1695391)							
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.333 mg/L	108	80.0
Anions and Nutrients (QCLot: 1696943)							
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0
Anions and Nutrients (QCLot: 1696944)							
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0
Anions and Nutrients (QCLot: 1696945)							
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.7	90.0
Anions and Nutrients (QCLot: 1696946)							
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	101	90.0
Dissolved Metals (QCLot: 1695583)							
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	101	80.0
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	98.7	80.0
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	103	80.0
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	2.5 mg/L	103	80.0
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	104	80.0
Hydrocarbons (QCLot: 1695833)							
F2 (C10-C16)	----	E601.SG	100	µg/L	4000 µg/L	96.7	70.0
F3 (C16-C34)	----	E601.SG	250	µg/L	8270 µg/L	97.1	70.0
F4 (C34-C50)	----	E601.SG	250	µg/L	4470 µg/L	111	70.0
Hydrocarbons (QCLot: 1696814)							
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	90.9	80.0

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processe samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS)			
					Spike		Recovery (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	L
Anions and Nutrients (QCLot: 1694697)								
WT2429584-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.37 mg/L	2.5 mg/L	94.9	75
Anions and Nutrients (QCLot: 1694698)								
WT2429584-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.494 mg/L	0.5 mg/L	98.8	75
Anions and Nutrients (QCLot: 1694701)								
WT2429584-001	Anonymous	Chloride	16887-00-6	E235.Cl	98.6 mg/L	100 mg/L	98.6	75
Anions and Nutrients (QCLot: 1694702)								
WT2429584-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.3 mg/L	100 mg/L	99.3	75
Anions and Nutrients (QCLot: 1695391)								
WT2429556-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	--	ND	70
Anions and Nutrients (QCLot: 1696943)								
WT2429599-005	GW-12575802-100324-EH-05	Chloride	16887-00-6	E235.Cl	96.7 mg/L	100 mg/L	96.7	75
Anions and Nutrients (QCLot: 1696944)								
WT2429599-005	GW-12575802-100324-EH-05	Sulfate (as SO4)	14808-79-8	E235.SO4	96.3 mg/L	100 mg/L	96.3	75
Anions and Nutrients (QCLot: 1696945)								
WT2429599-005	GW-12575802-100324-EH-05	Nitrate (as N)	14797-55-8	E235.NO3	2.33 mg/L	2.5 mg/L	93.2	75
Anions and Nutrients (QCLot: 1696946)								
WT2429599-005	GW-12575802-100324-EH-05	Nitrite (as N)	14797-65-0	E235.NO2	0.487 mg/L	0.5 mg/L	97.4	75
Dissolved Metals (QCLot: 1695583)								
WT2429572-002	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	--	ND	70
		Iron, dissolved	7439-89-6	E421	0.465 mg/L	0.5 mg/L	93.1	70
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	--	ND	70
		Potassium, dissolved	7440-09-7	E421	23.7 mg/L	25 mg/L	94.8	70
		Sodium, dissolved	7440-23-5	E421	ND mg/L	--	ND	70
Hydrocarbons (QCLot: 1696814)								
WT2429601-001	Anonymous	F1 (C6-C10)	---	E581.F1-L	1960 µg/L	2000 µg/L	98.2	60

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Waterloo
Work Order Reference
WT2429599

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	GHD Ltd. (Acct GHDL100)
Contact:	Mathieu Pare
Phone:	519-340-3758
	Company address below will appear on the final report
Street:	455 Phillip St.
City/Province:	Waterloo, ON
Postal Code:	N2L 3X2
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	GHD Ltd. (GHDL100)
Contact:	

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☑ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Mathieu.Pare@ghd.com
Email 2	See SSOW/PO
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accountspayableCDN@ghd.com
Email 2	

Turnaround Time (TAT) Requested
☐ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge mi
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge mi
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge mi
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge mi
☐ Same day [E2] if received by 10am M-S - 200% rush surcha
☐ fees may apply to rush resuests on weekends, statutory holid routine tests
Date and Time Required for all E&P TATs:
For tests that can not be performed according

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	WT2023GHDL1000187	AFE/Cost Center:	PO#
Job #:	12575802-20Y24-01	Major/Minor Code:	Routing Code:
PO / AFE:	735-011691	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Rick H

Sampler: Ethan Haight

Analysis

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	F1	F2-F4	Anions	Dissolved Metals	Total Phosphorus	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	GW-12575802-100324-EH-01	03 OCT 24	11:00	Water	7	✓	✓	✓	✓	✓			
	-02		11:00		7	✓	✓	✓	✓	✓			
	-03		11:50		7	✓	✓	✓	✓	✓			
	-04		12:45		3			✓	✓	✓			
	-05		14:10		3			✓	✓	✓			
	-06		14:40		7	✓	✓	✓	✓	✓			
	SW-12575802-100324-EH-01		15:30		1					✓			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Dissolved Metals
Field Filtered.

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☑ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				7.1	2.6	4.7	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by: [redacted]	Date:	Time:
Ethan Haight	10/03/2024	17:35					07-04-24	17:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized** DW COC form.



Dougan Ecology
3 - 7 Edinburgh Road South, Guelph, ON, N1H 5N8

January 19, 2026

Township of Puslinch
7404 Wellington Rd. 34
Puslinch, Ontario
N0B 2J0
Attn. Monika Farncombe, Planning and Corporate Services Coordinator

RE: Ecology Peer Review – St. Mary's McMillian Pit (2024) - Ecological Monitoring Report (8Trees Inc, March 2025)

Dear Monika,

Thank you for retaining Dougan Ecology to review the **Monitoring Report for St. Mary's McMillian Pit License # 5737** prepared by 8Trees Inc (dated March 8, 2025). It is our understanding that the purpose of this monitoring report is to assess and track the effects of groundwater discharge from the McMillan Pit on the water and habitat quality of Tributary 3 of Mill Creek using benthic macroinvertebrate communities as long-term biological indicators. The report follows BioMAP-based indices to evaluate current conditions, identify temporal trends, and assess potential effects associated with quarry operations by integrating the cumulative influence of environmental stressors over annual life cycles rather than relying solely on point-in-time measurements.

We offer the following comments on the monitoring report:

- The purpose and regulatory context of the monitoring program are not clearly defined in the introduction. Please specify whether this monitoring is being conducted for compliance, baseline confirmation, impact assessment, or long-term trend analysis related to pit operations.
- The spatial scope of the monitoring is introduced only generally. Please clarify whether Tributary T3 is the sole monitoring location and how it relates spatially to the pit and extraction areas.
- Please confirm whether the study reach length used for sampling has remained consistent over time

- Please provide justification for conducting one site visit per monitoring year, rather than two seasonal surveys (spring and fall), which are typically required under BioMAP protocols.
- Key assumptions of the BioMAP analysis (e.g., expected community type, trigger thresholds such as WQI = 14) are introduced later in the report. Consider summarizing these briefly in the introduction to frame the results interpretation.
- The objectives of the qualitative vs. quantitative sampling components are not stated. Consider briefly explaining in the introduction how each contributes to the overall assessment of water quality.
- The role of the various consultants is mentioned, but their responsibilities in sampling, identification, analysis, and reporting are not clearly differentiated in the introduction. Consider clarifying who conducted field sampling, taxonomic identification, data analysis, and report preparation.
- Please provide additional detail regarding the total number of qualitative samples collected, including how many were taken from each habitat type along the length of the tributary. Clarify the rationale for conducting multiple qualitative samples from upstream backwater/wetland habitats, in addition to the main tributary.
- Please clarify whether substrate type, channel form, canopy cover, and instream habitat features were assessed at the time of sampling. These variables can influence community composition and interpretation of WQI results.
- The report references "Mean Sensitivity" and "Qualitative Mean Sensitivity Value," but the calculation methods are not fully described. Please clarify whether Mean Sensitivity was calculated using the top 25% of taxa per BioMAP guidance and whether this was applied consistently across all years.
- The statistical interpretation of the long-term declining WQI trend requires further clarification. Given the very low coefficient of determination ($R^2 = 0.0063$), please elaborate on the ecological relevance of the trend and whether it is considered meaningful or statistically robust.
- Although flows were described as adequate at the time of sampling, no quantitative hydrologic data are provided. Please clarify whether discharge, depth, or velocity measurements were collected and how flow variability between years is accounted for in trend interpretation.
- The discussion suggests potential climate change influences on long-term WQI trends; however, no supporting environmental data are presented. Consider clarifying whether this interpretation is speculative or supported by regional hydrological or temperature data.
- The report concludes that no negative impacts from extraction activities have been detected; however, the linkage between monitoring results and specific extraction phases or timelines is not clearly described. Please clarify how monitoring results are spatially and temporally linked to extraction activities.
- The statement that habitat quality remains high is based on biological indicators alone. Please clarify whether any physical habitat assessments were conducted to support this conclusion.

Table 1. Technical Comments for McMillian Monitoring Report

ID	Technical Comment	Section / Figure	Page #	Required Action
1	An error was identified in the Table of Contents related to the appendices.	Table of Contents	Page 2	Review and correct the appendix reference in the Table of Contents.
2	The reference document cited for the field procedures (TCG McMillan Report 1996/1997) was not provided, limiting the ability to verify the methods used.	Methods / References	Page 3	Please provide a copy of the reference report for our review.
3	Locations of Q1 and Q2 quantitative samples, and all qualitative sampling locations are not clearly illustrated.	Figure 2 / Appendix B (Study Area Map)	Page 5 and page 12	Clearly show all quantitative and qualitative sampling locations on the study area map.
4	Sampling methods are unclear, including the specific quantitative benthic sampling technique(s) used; noted text in field notes in Appendix B is illegible.	Methods / Appendix B (Benthic Field Notes)	Page 3 and Page 15	Please clarify the sampling methods employed, including the specific quantitative benthic sampling technique(s) used.

The proponent's report concludes that no negative impacts to water quality from pit operations have been detected based on the 2024 benthic macroinvertebrate results. While the biological data presented indicate that the tributary remains in an unimpaired condition relative to BioMAP thresholds, the reliance on a single seasonal sampling event and the absence of supporting hydrologic and water quality data limit the strength of this conclusion. As such, the conclusion can be considered preliminary and cannot be fully supported until the identified data gaps and methodologies are addressed.

Please do not hesitate to contact the undersigned with any questions on the above.

Sincerely,



Grace Bruckman, F& W Techno., OBBN
Ecologist – Technologist, GIS Support



Todd Fell, BLA, OALA, CSLA, CERP
Principal

Dougan Ecology

Website: www.8trees.ca

March 8, 2025

Ministry of Natural Resources & Forestry
1 Stone Rd. West, Guelph,
Ontario, Canada
N1G 4Y2
Phone: 519-826-4927
Fax: 519-826-4929.

ATTN: Aggregates Technical Specialist
AYGUaggregates@ontario.ca

RE: Monitoring Report for McMillan Pit License # 5737
(formerly submitted under on behalf of CBM – St Mary's Cement - McMillan Pit License # 5737)

Dear Aggregates, Technical Specialist,

We are pleased to submit the 2024 report as complementary work for the McMillan Gravel Pit. The "Monitoring Program –McMillan Property" follows the original protocol (Limnoterra Ltd. January 15, 1998), modified with agreement from James Williams of your office January 27, 2010.

Extraction ceased on the site in 2004 and in 2010 CBM – St Mary's Cement requested and obtained a reduction of monitoring requirements from your office. Monitoring now conducted for the site is benthic macroinvertebrate sampling in tributary T3 and calculation of a water quality index based on BioMAP methods as a long-term volunteer monitoring program.

The analysis for 2024 includes data for the site from 1997 to 2024. Extraction activities ceased on the site in 2004, thus 2005 to 2024 monitoring data represents 20 years of monitoring conditions beyond the extraction period.

Please do not hesitate to contact us if you have questions or require clarification.

Regards,

Anne Yagi MSc., EP, CERP
President
8Trees Inc.

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Figure 3. Benthic Invertebrate BIOMAP water quality monitoring of the McMillan Pit 1997-2024 6

Introduction:

Tributary 3 of Mill Creek is the nearest discharge point of groundwater crossing the pit site and reflects the quality of groundwater discharging from the McMillan Pit (Figure 1 and 2). Water quality monitoring is based on an assessment of the benthic biota that Tributary 3 supports. The community of benthic biota is subject to the full rigor of the environment through the annual or biannual life cycles of the species. The community therefore represents the integrated temporal effects of all pollutants and environmental conditions through the year and not only those conditions at the time of sampling.

The composition of benthic macroinvertebrate communities reflects water and habitat quality in streams. BioMAP (Biological Monitoring and Assessment Program) is a water quality assessment tool designed for southern Ontario watercourses. It provides a quantitative measure of water quality that can be used to diagnose water quality at a site, monitor water quality over time, and evaluate the impact of point source and diffuse source pollution on water quality. The index calculated for a watercourse is based on sensitivity values assigned to each macroinvertebrate species. The sensitivity values are based on the species tolerance to factors of pollution. (organics, reduced dissolved oxygen, suspended solids, temperature, metals, acidity, nutrients etc). Because this site has monitoring results over decades, a simple index is now used that reflects a full methodology employed through the pre-during-post extraction period of the quarry licence.

Methods:

Benthic macroinvertebrates were collected from Tributary T3 on September 25, 2024 (Figure 2 and Appendix A). Two quantitative samples (Q1 and Q2) were collected from the site, downstream of Regional Side Road 20. A qualitative sample was taken from various types of habitats extending along the tributary length downstream of and including the same areas as samples Q1 and Q2 and sampling from the small backwater area/wetland just upstream of Side Road 20. Sampling procedures followed the BioMAP protocols described in the BioMAP Report SWR-1[1] and have been outlined previously (refer to TCG McMillan Report 1996/1997). Aquatic Ecostudies Limited provides expert benthic identification services for the samples collected by 8Trees Inc. Field notes, sampling maps and photos are provided in Appendix A.

Water Quality Analysis:

The BioMAP analysis methodology was used to analyze the results and obtain a Water Quality Index for the Tributary (WQI). Sensitivity values from Version 110430 Sensitivity Values for Aquatic Macroinvertebrates of Ontario were used for the 2024 analysis. Sensitivity Values can range from 4 to 0 which correspond to the longitudinal distribution of macroinvertebrates along the river continuum. A value of 4 designates species that typically inhabit small,

[1]Griffiths, R.W. 1993. BioMAP: Concepts, Protocols and Sampling Procedures for the Southwestern Region of Ontario. BioMAP Report SWR-1. Ministry of Environment and Energy, Southwestern Region, London, Ontario. The sensitivity values for the 2011 analysis were the updated version 110430.

groundwater fed, headwater creeks with a predominance of leaf and wood litter as the main energy source. A value of 3 corresponds to larger more open streams with solar radiation driving greater periphyton growth supporting species that feed on attached algae, and so on down to species ranked 0 that feed on fine particulate organic matter most abundant in turbid slow moving warm aquatic systems.

In the Mill Creek tributary T3 we expect to see a population dominated by species with ranks of 4 and 3 and a BioMAP analysis calculation of greater than 14 Water Quality Index (WQI).

Mean Sensitivity refers to the average sensitivity of the top 25% of the species collected. For Mill Creek we expect to see a Mean Sensitivity above 3.



Photo from google earth

Photo from Limnoterra Ltd Report, early 2000's

Figure 1: McMillan Pit Setting in 2017 (left) and in the early 2000's (right)

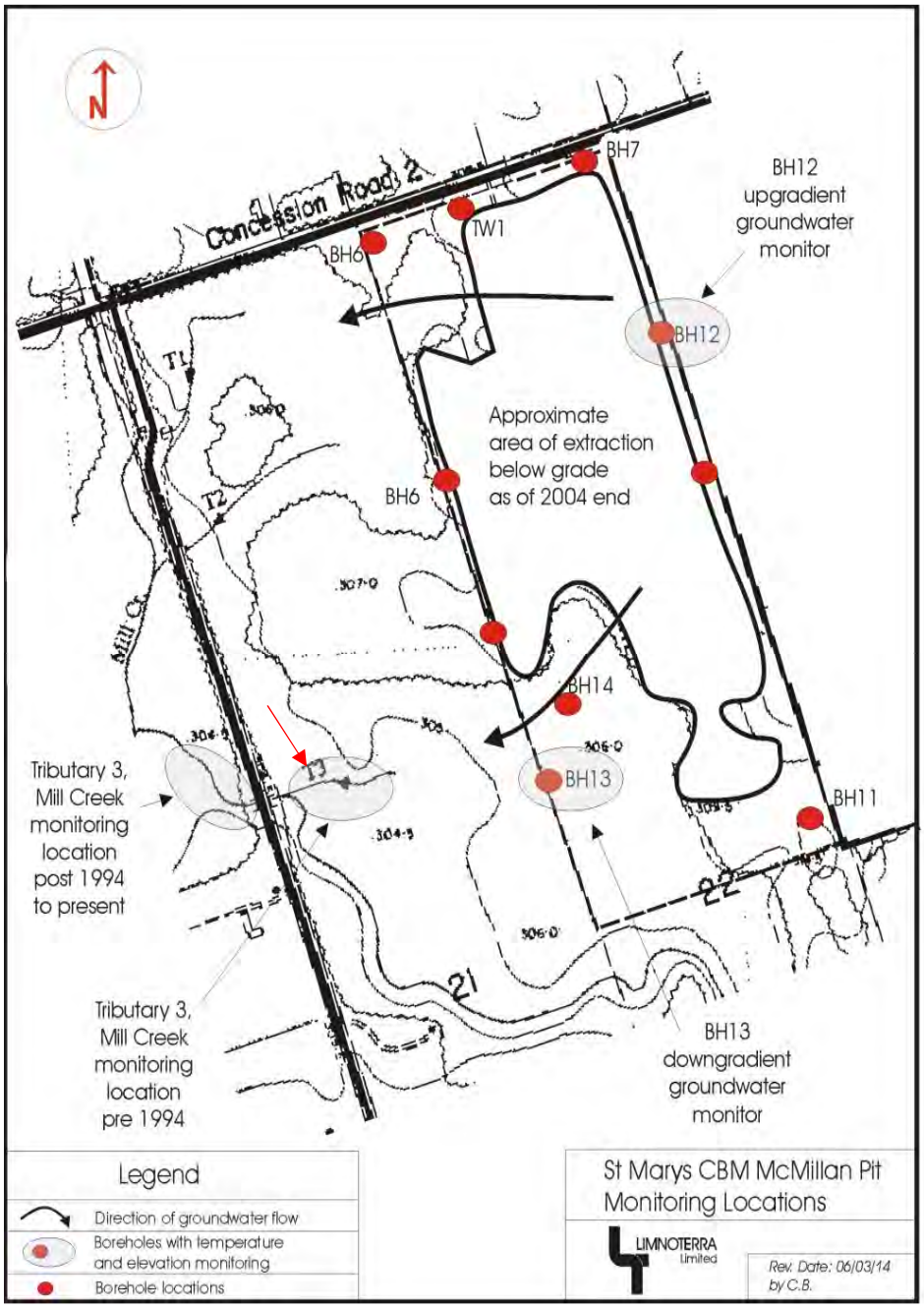


Figure 2: Location of Tributary T3 benthic monitoring as originally set up by Limnterra Ltd, showing groundwater boreholes and direction of groundwater movement across the landscape towared Mill Creek. Monitoring at Tributary T3 is the closest permanent stream to the pit.

Water Quality Proposed Trigger:

WQI > 14 (i.e. unimpaired condition).

No indication of change to water quality & habitat when WQI > 14 for Tributary T3.

If WQI<14, follow up investigation (such as review of species change through time to confirm & assess nature of any change).

Results

Results of the BioMAP analysis from 1997 – 2024 are shown graphically in Figure 3 and listed in Table 1. The WQI for 2024 is 19.3 (average of 17.9 at Q1 and 20.6 at Q2). Water flows in the tributary at the time of sampling in September were adequate to take a full sample, similar to previous years.

The species composition collected in 2024 is also similar to previous years and the organisms collectively represents a creek system typical of a closed canopy, cool-to-cold water creek. The habitat quality remains high as indicated by the presence of sensitive species. The WQI varies from year to year and through time, and there is an overall, slight declining trend (Figure 3). However, there is increased uncertainty in the trend due to the poor fit of the linear model (R^2= 0.0063; Figure 3).

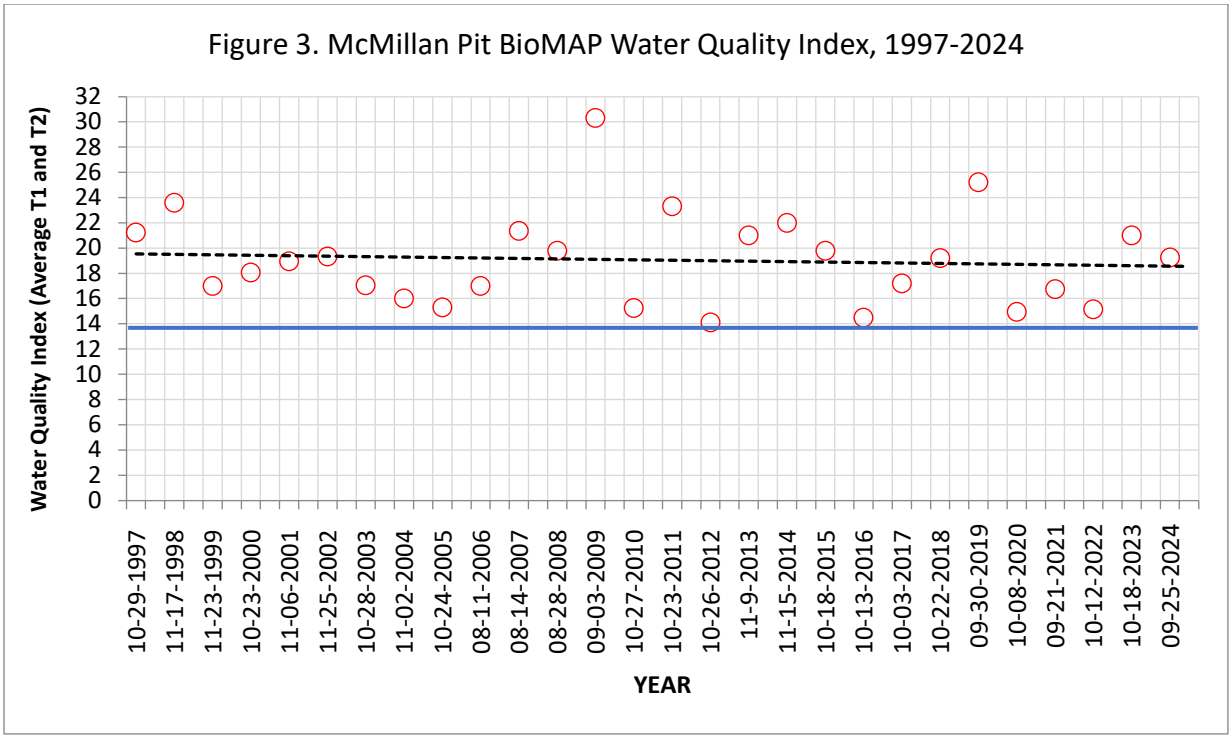


Figure 3. Benthic Invertebrate BIOMAP water quality monitoring downstream of the McMillan Pit, 1997-2024 (28yrs). The blue line represents the water quality trigger (WQI < 14). The black line indicates a slight overall declining trend (negative slope y =-0.036 X + 90.85; R^2 = 0.0063) but a poor fit to the linear model.

Table 1: Benthic Analysis Results 1997 – 2024

Date	Water Quality Index (Q1)	Water Quality Index (Q2)	Ave QI	Qualitative Mean Sensitivity Value
10-29-1997	23.3	19.1	21.2	3.67
11-17-1998	22.6	24.6	23.6	3.20
11-23-1999	18.5	15.5	17.0	3.50
10-23-2000	15.6	20.5	18.1	3.17
11-06-2001	20.6	17.3	19.0	3.20
11-25-2002	20.5	18.2	19.3	3.25
10-28-2003	15.6	18.5	17.1	3.33
11-02-2004	13.1	18.9	16.0	3.25
10-24-2005	14.9	15.7	15.3	3.20
08-11-2006	15.9	18.1	17.0	3.43
08-14-2007	24.6	18.1	21.4	3.16
08-28-2008	21.6	18.0	19.8	4.00
09-03-2009	32.1	28.5	30.3	3.71
10-27-2010	13.6	16.9	15.3	3.29
10-23-2011	21.8	24.8	23.3	4.00
10-26-2012	11.7	16.5	14.1	3.25
11-9-2013	20.4	21.6	21.0	3.33
11-15-2014	19.2	24.8	22.0	3.17
10-18-2015	21.2	18.4	19.8	3.50
10-13-2016	13.8	15.2	14.5	3.17
10-03-2017	14.3	20.1	17.2	3.33
10-22-2018	22.6	15.9	19.2	3.33
09-30-2019	25.1	25.3	25.2	3.17
10-08-2020	13.9	16.0	15.0	3.20
09-21-2021	19.1	14.4	16.8	3.27
10-12-2022	12.2	18.1	15.2	3.29
10-18-2023	21.5	20.5	21.0	3.83
09-25-2024	17.9	20.6	19.3	3.57
Overall			**19.1**	**3.39**

Table 2: Qualitative Benthic Sampling Results 2024

Qualitative Analysis		
Taxa	**SV**	
Parapsyche apicalis	4	
Rhyacophila minora	4	
Rhyacophila minora	4	
Leuctra	4	
Aquarius	3	
Pycnopsyche	3	
Oligostomis	3	
BioMAP(q) score:	3.57	Top 25%

Conclusion:

The water quality index remains above the trigger level of WQI=14. The overall species composition continues to reflect the community collections of previous years and the benthic community in Tributary 3 remains representative of a southern Ontario unimpaired creek showing a Qualitative Mean Sensitivity Value over 3. No negative impacts to water quality due to extraction activities have been detected in the 2024 benthic macroinvertebrate sampling. However, when considering the entire 27-year data set there is a slight declining trend in the WQI.

A comparative analysis with other long-term data sets may help explain the slight declining trend. Biological systems are affected by both local and broader regional factors. Local factors such as increased water temperature, sedimentation, changes in water chemistry and nutrients would affect a biological system faster and the WQI would reflect these changes. The 27-year WQI does not reflect an impaired environment.

Additional analysis of the full historical data set may reveal correlative and causative factors that may be contributing to the declining trend. For example, the overall trend may be correlated to broader scale climate change effects on temperature and precipitation rather than local effects (Colombo et al. 2007; Wang et al., 2014). A review of other long term benthic datasets in the vicinity of this watershed is also warranted.

References

Colombo, S., D. McKenney, K.M. Lawrence, and P.A. Gray. 2007. Climate Change Projections for Ontario: Practical Information for Policymakers and Planners. Technical Report number CCRR_05 Science and Information Division, Ontario Ministry of Natural Resources and Great Lakes Foresty Centre, Canadian Forest Service.

Griffiths, R.W. 1993. BioMAP: Concepts, protocols and sampling procedures for the southwestern region of Ontario. BioMAP Report SWR-1. Ministry of the Environment and Energy, Southwestern Region, London, Ontario 30 pp.

Griffiths, R.W. 1996. BioMAP: A Biological Measure of Water Quality for Creeks, Streams and Rivers SWR-4. Ministry of the Environment and Energy, Southwestern Region, London, Ontario. 16 pp. + Appendix 15 pp

Griffiths, R.W. 1999. BioMAP: Bioassessment of Water Quality. Published by Niagara College, Niagara-on-the-Lake, Ontario. 110pp.

Griffiths, R.W. 1998. BioMAP: A How to Manual. Ontario Ministry of Municipal Affairs and Housing, Policy Planning Branch, Toronto, Ontario. 77 pp. and appendices.

Wang, X., G. Huang and J. Lu. 2014. Projected increases in intensity and frequency of rainfall extremes through a regional climate modeling approach. Journal of Geophysical Research: Atmospheres 119 (23), DOI: 10.1002/2014JD022564

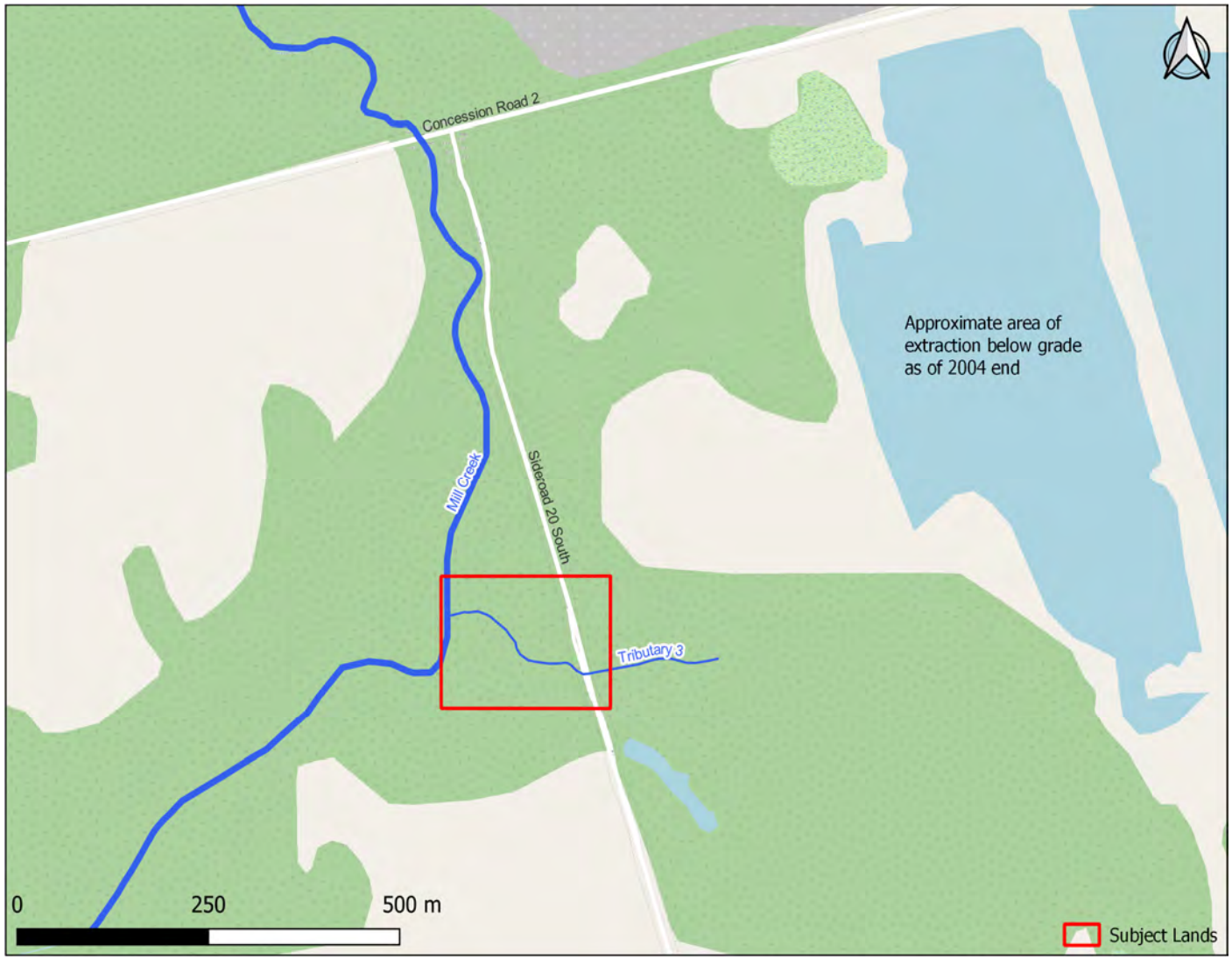
APPENDIX A: Raw Data 2024

Table 3: Quantitative Benthic Sampling Results 2024. Density of macroinvertebrates (No. per 0.05 sq. m.) collected from Tributary 3 (T3), a tributary of Mill Creek, downstream of the CBM McMillan Pit near Side Rd. 20, Puslinch Township. Samples collected on Sep 25, 2024, by C. Blott – no students available. Quantitative Sample locations: Q1 ~50 downstream of Side Rd 20, Q2 within 15m downstream of Side Rd 20 Qualitative Sample location: from ~100m below Side Rd 20 up to water cress marsh on east side of Side Rd 20

	SV	Qual	T1	T2
Insects:				
AQUATIC MOTH:				
Pyralidae	2	P		
ALDERFLIES:				
Sialidae:				
Sialis	2		1	
BEETLES:				
Dytiscidae:				
Agabus	2	P		
BUGS:				
Gerridae:				
Aquarius	3	P		
CADDISFLIES:				
Goeridae:				
Goera	3			2
Hydropsychidae:				
Parapsyche apicalis	4	P		
Lepidostomatidae:				
Lepidostoma	4		1	
Limnephilidae:				
Hydatophylax	4	P		
Limnophilus	1	P	3	
Psychoglypha subborealis	4			2
Pycnopsyche	3	P		
Molannidae:				
Molanna	2	P	2	
Phryganeidae:				
Oligostomis	3	P		
Psychomyiidae:				
Lype	3			
Rhyacophilidae:				
Rhyacophila lobifera	3			
Rhyacophila minora	4	P	4	2
DRAGONFLIES:				
Cordulegastridae:				
Cordulegaster	3	P		
MAYFLIES:				
Baetidae:				
Baetis ?brunneicolor	3	P		
Leptophlebiidae:				

	SV	Qual	T1	T2
Paraleptophlebia	3	P	1	
STONEFLIES:				
Leutridae:				
Leuctra	4	P		1
Nemouridae:				
Nemoura trispinosa	3	P		1
TRUE FLIES:				
Chironomidae:				
Chironomus	0	P		1
Conchapelopia	2		2	
Heterotrissocladius	1	P		
Macropelopia	3	P		2
Micropsectra	3	P	2	4
Natarsia	3	P		
Parametriocnemus	3	P		
Prodiamesa	3	P		2
Tvetenia	2	P		
Empididae	2	P		
Tabanidae:				
Chrysops	2		3	
Tipulidae:				
Hexatoma	2	P		
Limonia	2	P	1	
Crustaceans:				
AMPHIPODS:				
Gammaridae:				
Crangonyx	2	P		
Hyalellidae:				
Hyalella	2	P		
Molluscs:				
SNAILS:				
Physiidae:				
Physa	0	P		
Annelids:				
WORMS:				
Lumbriculidae	2	P	3	
Naididae:				
immature, with hair chaete	0			64
Number of taxa		30	11	10
Number of organisms			23	81
BioMAP(q) score		3.57		
BioMAP(d) Score			17.9	20.6

APPENDIX B: Study Area Map, Field Notes and Site Photos



General Study Area map prepared by J. DeVuyst



Sample methods collecting creek morphometrics (date October 17, 2023) - no photos in 2024



Qualitative Sample collection using 60µm D-Net Photo (date Oct 17, 2023) – no photos in 2024

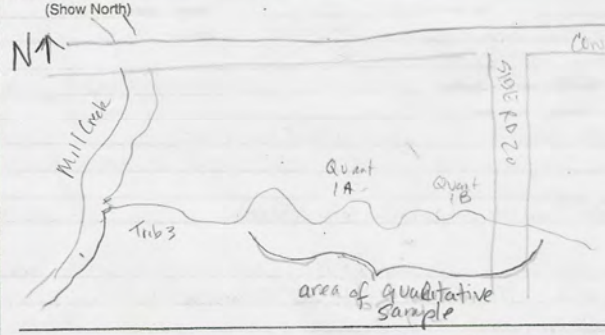
Ronald W. Griffiths, PhD
DUTTON, Ontario

BENTHIC SURVEY FIELD NOTES

SURVEY: MILL CR TRIB 3 BENTHIC SURVEY DATE: Sept 25/24
BODY OF WATER: TRIB 3 (T3) on Mill Creek STATION: ~~S~~ Trib 3
LOCATION: Tushack Township 1230 - 1630 hr.
SAMPLING EQUIPMENT: Modified T-Sampler
OTHER SAMPLES COLLECTED: Temp
COMMENTS: Collected by 8Trees Inc.

Site Characteristics:
Stream width 2m (wet width + 1m soggy edge) Depth ____ Substrate Sand gravel small woody debris
Water Clarity clear Odour None
Macrophytes <1% Macrophytes Algae None
Bank Vegetation Mixed forest (a lot of organic matter) Land Use forest with gravel pit upstream
General air temp = 22.3°C @ 1415hr 100% cloud Breeze = 1-2
Ran into Rob Messier with GRCA gathering data together
was just heading off to see Friends of Mill Creek

Map:
(Show North)



Sampling Site	Water Temp.	Dis. Oxygen	pH	Conductivity	Water color	Current
Quad 1A	13.1°C				clear	~35/m x 2m x 2cm

(over)

1) Location: Qualitative 1A ~ 4m d/s of Side Rd 20
Depth: 20 cm Sampler Fullness: Full 3/4 Sample Bottles: 1A
Sediment Type: Sand + gravel Odour: None
Sediment Characteristics: 50% fine sand 30% coarse sand 10% fine gravel 5% lg gravel 5% lg woody debris
Macrophytes: none sparce common abundant tiny bit of coltsfoot (1 sprout in water)
Algae: none sparce common abundant
Invertebrates: none noted
Notes: green freeze all along the length of the creek from top to bottom ~ 1 every 1 meter. Never have green freeze in this system before

2) Location: Quantitative 1B ~ 4m d/s of Side Rd 20
Depth: 23 cm Sampler Fullness: 3/4 Sample Bottles: 1B
Sediment Type: lg gravel 60% small gravel 20% Odour: None
Sediment Characteristics: sand 10% lg + sm woody debris 10% bit of organics
Macrophytes: none sparce common abundant duckweed, potamogeton, water cress ~ 1%
Algae: none sparce common abundant
Invertebrates: None noted
Notes: I added ~ 3 handfulls of the creek substrate adjacent to sampler that was outside the thalweg & had accumulation of fine woody debris organics (not normally done - I don't know why I did it!)

3) Location: Qualitative Sample 1C from ~ 80m d/s of Side Rd to the East side of Side Rd
Depth: ____ Sampler Fullness: ____ Sample Bottles: 1C
Sediment Type: gravel sand organic fine + lg Odour: None
Sediment Characteristics: woody debris
Macrophytes: none sparce common abundant potamogeton, watercress, duckweed, coltsfoot
Algae: none sparce common abundant
Invertebrates: ~~water striders~~ (list before I counted spares)
Notes: ~~potted~~ 1 blacknose dace, 1 stickleback, 2 mudminnows
forest is eastern cedar, hemlock, white birch, some dead ash.

Addition Information: Ran into Rob Messier (GRCA) was heading up to talk with the friends of Mill Creek, and said there's a lot of long term data showing gains in coltsfoot invasives -> buckthorn (glossy) is very dense in groundcover near road out in ~20m. beyond that ~~beyond~~ much less dense ground cover of mature ferns mainanthemum

Collector: C Blott for 8Trees Inc Notes By: CBlott

Field Notes September 25, 2024

Appendix C: Company CV and Associates

Anne R. Yagi MSc.

President and Senior Ecologist, 8Trees Inc.

November 2016 - Present

M.Sc. Ecology and Evolution, Brock University (June 2020),
Thesis "Flood survival strategies of overwintering snakes"

B.Sc. Honours Zoology, University of Guelph (May 1984),
Undergraduate Project: "Reproductive Behaviour of Dwarf Gourami's (***Trichogaster lalius***)"

Internationally Certified Ecological Restoration Practitioner (CERP)

Post Graduate Research: "Assisted hibernation to ensure overwinter survival of neonatal snakes during a period of environmental stochasticity within a drain managed peatland"

Snake Communal Hibernaculum Design patent pending (August 2022)

Professional Memberships

- Environmental Careers Organization of Canada, Certified Environmental Professional (EP) in the areas of Research and Development, Fish and Wildlife and Natural Resource Management (since 2018)
- Chair of the Fowler's Toad Recovery Implementation Team and member since 2001
- Member of the Canadian Eastern Massasauga Rattlesnake Recovery Implementation Group (CEMRRIG) (since 1998)
- Member of the Canadian Herpetological Society (CHS) and Canadian Herpetological Society 2019 award recipient: "Blue Racer Award" in recognition of significant contributions to the conservation of amphibians and reptiles in Canada.
- Member of the Society for the Study of Amphibians and Reptiles
- Member of the Society for Ecological Restoration (SER)
- American Fisheries Society (Past Member)

Certifications and Training

- Ecological Lands and Soils Classification Training and Certification (1998)
- Ontario Wetlands Evaluation Certification, Evaluator status (1984 to present)
- Aquatic Habitat Certification (1989)
- Electrofishing Class 1 (all types) Certification (repeat training from 1989 to 2010)
- Wetland Plants Identification Training
- Amphibian and Reptile ID training Toronto Zoo (1990)
- Fish Identification Royal Ontario Museum Course (1995)

Development Planning Projects

8Trees Inc. 2025. Annual Monitoring Report for McMillan Pit License # 5737 prepared for the landowner March 2025.

8Trees Inc. 2025. Technical Review of RMON Work Order Tree By-Law 2020-79 for Dominion and Bernard Rd. Town of Fort Erie, prepared for the landowner Februray 2025

8Trees Inc. 2025. Environmental Impact Study Report for Dominion and Bernard Rd, Town of Fort Erie, prepared for the landowner (in progress).

8Trees Inc. 2025. Wetland Evaluation update and mapping revisions for 1047 Milburough Town Line, Milton ON, prepared for the landowner (in progress).

8Trees Inc. 2024. Woodland Management Plan in settlement proceedings of an Ontario Lands Tribunal Hearing OLT-23-001119, Aqueduct and Gadsby Rd City of Welland, prepared for the landowner November 29 2024.
8Trees Inc. 2024. Annual Monitoring Report for McMillan Pit License # 5737 prepared for the landowner.
8Trees Inc. 2024 Terms of Reference for an Environmental Impact Study Report for Dominion and Kraft Rd, Town of Fort Erie, prepared for the landowner DRAFT June 2024
8Trees Inc. 2024 Species at Risk Screening Rare Birds and Bats for 436- 440 Ridge Rd. and ESA Data Gathering Form, Town of Fort Erie Final Draft Oct 2024; prepared for the landowner.
8Trees Inc. 2024. Environmental Screening and Restoration Plan for Niagara Escarpment Planning Area 1996 Hollow Rd. Thorold ON. July 2024
8Trees Inc. 2024. Environmental Background Study Report and Ecological Restoration Plan for a Riparian Buffer for 411-415 Niagara Blvd Fort Erie, prepared for the landowner June 2024.
8Trees Inc. 2024 EIS Terms of Reference Recommendations for Dominion and Bernard Rd. Town of Fort Erie prepared for the landowner June 2024.
8Trees Inc. 2024 ESA Act Data Gathering Form and Technical Memo for working near Fowler's toad habitat: an Evaluation and Mitigation Plan for 2969 Thunderbay Rd. Town of Fort Erie, prepared for the landowner May 2024.
8Trees Inc. 2023. Annual Monitoring Report for McMillan Pit License # 5737 prepared for the landowner.
8Trees Inc. 2023, Wetland Evaluation update and mapping revisions for Dominion and Kraft Rd, Town of Fort Erie, prepared for the landowner.
8Trees Inc. 2023, Wetland Evaluation update and mapping revisions for Milburough Town Line, Milton ON, prepared for the landowner.
8Trees Inc. 2023, Peer Review of the Port Colborne Quarry Expansion with wetland restoration recommendations. Prepared for the Niagara Water Quality Alliance group
8Trees Inc. 2023, Environmental Background Study Report and Woodland Buffer Ecological Restoration Plan for 1039 Church St. Fenwick, prepared for the landowner
8Trees Inc. 2023, Tree Preservation Plan and Woodland Ecological Restoration Project for 5379 Abino Hills Rd., Prepared for the landowner regarding a new septic field and home renovation.
8Trees Inc. 2023, EIS Amendment and Woodland Management and Improvement Project for 368 Aqueduct St. and 155 Gadsby Ave, City of Welland, Ontario. Prepared for the landowner.
8Trees Inc. 2022. Annual Monitoring Report for McMillan Pit License # 5737, prepared for the landowner.
8Trees Inc. 2022, Environmental Background Study Report and Ecological Restoration Plan for 5379 Abino Hills Rd., Prepared for the landowner regarding a new septic field within an ANSI.
8Trees Inc. 2022. Environmental Impact Study for 124 Forks Rd. Dain City, City of Welland, prepared for the landowner regarding a three lot severance application.
8Trees Inc. 2022. Environmental Background Study Report in support of a wetland boundary revision south of Wainfleet Bog naturalized farmlands, prepared for SARP fund
8Trees Inc. 2021. Annual Monitoring Report for McMillan Pit License # 5737, prepared for the landowner.
8Trees Inc. 2021. Woodland Management and Restoration Plan. Netherby and QEW, prepared for the landowner.
8Trees Inc. 2021. Environmental Impact Study and Ecological Restoration Plan for 12260 Lakeshore Rd., Township of Wainfleet, Ontario. prepared for landowner
8Trees Inc.2021. Delegation Technical Document in support of the abandonment of 1.5km section of the Biederman Drain for the purposes of Species at Risk habitat protection and population recovery, for agency review puposes. (SARP fund)
8Trees Inc. 2020. Annual Monitoring Report for McMillan Pit License # 5737, prepared for the landowner.

8Trees Inc. 2020. Environmental Impact Study for Black Creek Center, Town of Fort Erie, Ontario. Prepared for the landowner. 64pp, regarding a 100-200 unit Retirement home build.
8Trees Inc. 2020. Scoped Environmental Impact Study for 368 Aqueduct St. and 155 Gadsby Ave, City of Welland, Ontario. Prepared for the landowner. 184pp.
8Trees Inc. 2020. Environmental Impact Study for 495 Bernard Ave, Town of Fort Erie, Ontario. Prepared for the landowner, 75pp, regarding a housing development.
8Trees Inc. 2019. Annual Monitoring Report for McMillan Pit License # 5737, prepared for the landowner.
8Trees Inc. 2018. Annual Monitoring Report for St Mary's Cement McMillan Pit License # 5737, prepared for the landowner.
8Trees Inc. 2017. Annual Monitoring Report for St Mary's Cement McMillan Pit License # 5737, prepared for the landowner.

8Trees Research Led Projects:

- COSEWIC Status Update for the Massasauga in Canada (2022 to 2024) for Environment Canada
- City of Thorold Frog Pond enhancement-restoration project and eco-passage (2022 - 2024)
- Volunteer PhD committee member for J. Choquette 2019-2024 "Managing translocations for Massasauga Recovery in Ojibway Prairie" Laurentian University (2020 to 2024)
- "A long-term study on Massasauga (***Sistrurus catenatus***) Inhabiting a partially mined peatland: A standard method to characterize snake overwintering habitat" OSARF 2017 to present.
- "Managing an ecological trap on the reptile community inhabitating a partially mined peatland in Southern Ontario"; CWS winter 2018 and 2019; 2017 to present. (SARP fund)
- Bat Echolocation surveys, using roving method for treed parklands (2020 to present)
- Science Advisor to Haldimand Stewardship Council "Haldimand County Gray Ratsnake (***Pantherophis spiloides***) and Foxsnake (***Pantherophis gloydi***) population recovery project"; 2017 to present. (SARP fund)
- Federation of Ontario Nature, "Pelee Island Blue Racer (***Coluber constrictor foxii***) and Foxsnake (***Pantherophis gloydi***) Hibernation habitat restoration project"; 2018 to 2026 (SARP and HSP fund)
- Great Lakes Fund Project, Wetland and woodland ecological restoration techniques in a post agricultural landscape (2022-present) 2022-2023.
- Fuciarelli Peatland Restoration Plan, prepared for Conservation Halton (2022-2023)
- Eastern Foxsnake (***Pantherophis gloydi***) population resilience to habitat loss (2022)
- "Building on Success: Using Habitat Modeling and outreach to confirm habitat suitability for Gray ratsnake and Foxsnake in Niagara-Hamilton", 2020 (SARP fund)
- Woodland Restoration through the application of © Lalicide Chondro on invasive plant species (2022).
- "Monitoring the human impact on Fowler's toad at Niagara Beaches"; 2018 to 2022 (SARP fund)
- Input and review provided for "Best Management Practices for Identifying, Managing and Creating Habitat for Ontario's Species at Risk Snakes" (page 9: Yagi Life Zone model)
- Student and young professional mentoring through EcoCanada Internship program and Brock University (Annually 1 to 6 students, since 2018)

Software Development

- Citizen Science Data Collection Tool "My Field App" for reporting species observations
- Citizen Science Data Collection Tool "My Fish App" for reporting fishing trips (In development)

Public Presentations (Guest Speaker)

- "Why Stormwater Ponds are not Vernal Pools" Nottawasaga Conservation Authority (March 2024) and Fort Erie Residents (Jan 2021)
- "Citizen Science- Importance of data collection" Chippawa Area residents 2020

- "Wetlands and Drainage Impacts" PATH Citizen's Mother Earth Day 2022

Conference Oral Presentations

- Society for Ecological Restoration. 2024. International Conference Victoria, BC. Mitigating an Ecological Trap on an endangered Massasauga (***Sistrurus catenatus***) population during a bog restoration project
- Canadian Herpetological Society 2023. What Went Wrong: A Case study of an Eastern Foxsnake (***Pantherophis gloydi***) population in Southern Ontario. Ottawa. Canadian Conference
- Ichthyology and Herpetology Conference. Rochester NY. 2018 Managing an Ecological Trap on an endangered species Massasauga (***Sistrurus catenatus***) by using Forced hibernation International Conference
- Society for Ecological Restoration World Conference. 2021. Mitigating an Ecological Trap on an endangered Massasauga (***Sistrurus catenatus***) population during a bog restoration project. (Online)
- Canadian Herpetological Society Canadian Conference. 2020 Energy Costs of Hibernation in neonatal snakes in a variable Environment (Online)
- Canadian Herpetological Society. Canadian Conference. 2019. A Long-term study on Massasauga (***Sistrurus catenatus***) Inhabiting a partially-mined peatland: A standardized method to characterize Snake Overwintering Habitat. Montreal PQ,
- Canadian Herpetological Society. Canadian Conference 2018. Managing an Ecological Trap on an endangered species Massasauga (***Sistrurus catenatus***) by using Forced hibernation (update). Kamloops BC.
- Canadian Herpetological Society. Canadian Conference. 2017. Managing an Ecological Trap on an endangered species Massasauga (***Sistrurus catenatus***) by using Forced hibernation. Brandon, MB.
- Midwest Fish and Wildlife Conference 2008. Life Zone Model Hypothesis and Implications for snake overwintering survival.

Scientific Peer Reviewed Publications

Yagi A.R. and G. Tattersall (In Prep-2025) Assisted Hibernation- A Technique to ensure overwinter survival of temperate neonatal snakes.

Yagi A.R., C. Blott and K.T. Yagi.2025. Summary of the Wainfleet Bog Ecosystem State of Environment as reflected by long-term trends of two at risk reptile populations. The Canadian Herpetologists/L'Herpetologiste Canadien Vol 14 (1): 14–22.

Yagi A.R. and K.T. Yagi. 2024. Development irregularities observed in a viviparous species during a population growth spurt, The Canadian Herpetologists/L'Herpetologiste Canadien Vol 13 (1): 7–10.

Yagi A.R. and K.T. Yagi. 2023. Length Matters! A reminder to collect and report biometric data. The Canadian Herpetologists/L'Herpetologiste Canadien Vol 12 (1): 17-19.

Yagi A. R. 2020. Flood survival strategies of overwintering snakes. MSc. Thesis Brock University, St Catharines, Canada.

Yagi, A. R., R. J. Jon Planck, K. T. Yagi, and G. J. Tattersall. 2020. A long-term study on Massasaugas (***Sistrurus catenatus***) Inhabiting a partially mined peatland: A standard method to characterize snake overwintering habitat. Journal of Herpetology, 54: 235–244.

Yagi, A. R. and G. J. Tattersall. 2018. "Please Don't Step on the Hummocks": Summer Refugia for Massasauga Rattlesnakes." The Canadian Herpetologists/L'Herpetologiste Canadien 8(1): 22-24.

Yagi, A. R., Abney, C., Bukovics, T., Breton, B., Blott, C., Yagi, K. 2018. "The Young and the Restless: Postpartum Breeding and Early Onset Sexual maturity in an Isolated Northern Population of Massasauga Rattlesnakes." The Canadian Herpetologists /L'Herpetologiste Canadien 8(1): 24-26

Yagi, A. R. 2017. Managing an Ecological Trap in a Partially Mined Peatland in Southern Ontario. The Canadian Herpetologists/L'Herpetologiste Canadien Vol. 7 (1) 15-16.

Hileman, E.T., King, R.B., Adamski, J.M., Anton, T.G., Bailey, R.L., Baker, S.J., Bieser, N.D., Bell Jr, T.A., Bissell, K.M., Bradke, D.R., Campa III, H., …A. Yagi [+44].2017. Climatic and geographic

predictors of life history variation in Eastern Massasauga (Sistrurus catenatus): A range-wide synthesis. PloS one, 12(2), p.e0172011
Yagi A.R. and R. J. Planck . 2012. Identification, Characterization and Subterranean Delineation of Critical Eastern Massasauga Hibernation Habitat in a Partially Mined Peatland for the Purposes of Species Recovery, Poster Ontario Nature Conference, Toronto 2012.
Jones P.C., R.B.King, R.L.Bailey, K.Bissell, H.Campa,III, (+25) and A.Yagi.2012. Population Ecology Range-Wide Analysis of Eastern Massasauga Survivorship. J. Wild. Man. 76(8):1576-1586; DOI:10.1002/jwmg.418
Yagi A. R, R. J. Planck and P. Hache. 1999a. Post Assessment of the Shriner's (Branch W-5-1) Creek Ecological Design, Niagara Falls Ontario: Did Past Planning Goals meet the Public Expectations? Proceedings of the Second International Conference on Natural Channels. March 1999. Niagara Falls, Ontario. Canada.
Yagi A.R., and G. Harrington. 1999b. Combining a Golf Course Re-Design with Natural Channels-Lessons learned from a St Catharines Urban Stream. Proceedings of the Second International Conference on Natural Channels. March 1999. Niagara Falls Ontario, Canada.
Yagi A.R. and Frohlich K. 1998a. An Interim Report on Wainfleet Bog Restoration: Challenges and Future Direction, Second Inter Global symposium for the Conservation of Eastern Massasauga rattlesnakes, Toronto Zoo p. 164 to 169
Yagi A.R., R.J Planck and P. Hache. 1996 "An Approach to Ecosystem Restoration" – Presented at 57th U.S. Midwest Fish and Wildlife Conference, Dec 5 1996, Detroit Michigan Yagi A.R. 1997. Welland River Fisheries Study with Management Recommendations. Ontario Ministry of Natural Resources unpublished manuscript.
Fraser, J.Z., Yagi, A.R., and R.J. Planck. 1994. A Natural Approach to Watercourse Modification in Urbanizing Watersheds: Shriners Creek Case Study, proceedings of the First International Conference on Rivers and Guidelines for Natural Channel Systems, Jan 1994. Niagara Falls Ontario, Canada

8Trees Publications

8Trees Inc. 2025 (In progress). Ontario's Species at Risk: Shorelines featuring Pelee Island
8Trees Inc. 2024. My Nature Notes
8Trees Inc. 2023. Ontario's Herps at Risk: Wetlands

8Trees Inc. Biological Study Reports

Yagi A.R. and K.T. Yagi. 2024. Technical Analysis of Massasauga populations in Canada, Appendix 6 in COSEWIC update report prepared for COSEWIC Secretariat 24pp.
Yagi A.R.2023. DRAFT Description of Residence of Massasauga (***Sistrurus catenatus***) in Canada, prepared for the COSEWIC Secretariat and Environment Canada. 15pp.
Yagi, A.R., K.T. Yagi, F. Papini, C.Blott, M.Babin and J. de Vuyst.2023. Adaptive Management of an Ecological Trap: restoration of Species at Risk Reptiles in a partially mined peat bog. Report for Ontario Parks Permit Final Report 2017-2022, Ministry of Environment, Conservation and Parks.
Yagi A.R. and C. Blott. 2023. Pelee Island Hibernacula characterization, construction and monitoring report (2018 to 2023), prepared in partnership with Natural Resource Solutions Inc. for Ontario Nature
Yagi, K.T., B. Breton, T. Bukovics, C. Blott, and A.R. Yagi. 2021. Fowler's toad recovery project: Assessing Human Impacts at Niagara Beaches. Final report for 2018-20, Ministry of Environment, Conservation and Parks, 32pp.
Yagi, A.R., K.T. Yagi, et al. 2020. Building on Success: Investigating the presence of Gray Ratsnake and Eastern Foxsnake using Habitat Suitability Modelling, and occurrence information to initiate standardized monitoring in priority Niagara-Hamilton areas. Final report for 2019-20, Ministry of Environment, Conservation and Parks, 29pp.
Yagi, A.R., K.T. Yagi, C. Blott, T. Bukovics, and B. Breton. 2020. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2019-20. Species at Risk Stewardship Fund, Ministry of Environment, Conservation and Parks, 79pp.

Yagi, A.R., et al. 2019. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2019-20. Species at Risk Stewardship Fund, Ontario Ministry of Natural Resources and Forestry.
Yagi, A.R. and K.T. Yagi. 2018. Habitat use by two populations of species at risk, Massasauga and Spotted turtles, in a partially mined peatland ecosystem – through periods of dry and wet habitat cycles from 1999 to 2016. prepared for Canadian Wildlife Service, Environment Canada. 20pp.
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Yagi A.R., et al. 2017. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2017-18. Species at Risk Stewardship Fund, Ontario Ministry of Natural Resources and Forestry.

Management Biologist

Ministry of Natural Resources and Forestry (Vineland Field Office, Guelph District)

Held positions of Management Biologist, Fish and Wildlife Biologist, Fisheries Enhancement Officer, Assistant District Biologist and Summer student from 1981 to 2016 (32 years).

Provincial Awards:

- Amethyst Award Grand River Fisheries Management Plan part of a management team (1999)
- Ministry of Natural Resources Pride and Excellence in Leadership Award (1999) part of a management team for the Recovery of the Peregrine Falcon in Ontario

Highlights:

- Identified, examined and accepted as an expert witness (Federal, Provincial Court and OMB hearings) in the areas of fisheries biology and fisheries habitat, wetlands, deer biology, freshwater turtles, Massasauga rattlesnakes and general wildlife biology.
- Provincial Wetland Evaluations Niagara- Hamilton-Haldimand (est > 200 evaluations and updates)
- Aerial Photo interpretation (stereoscope for photos and digital orthoimagery)
- Fish Community Monitoring Project Niagara River Watershed (1997 to 2016)
- Forest Resource Inventory Mapping with respect to Deer Wintering Habitat
- Species at Risk Surveys and habitat delineation (amphibian, reptile, plants)
- Ecological Land Classification Mapping and identifying natural heritage features
- Winter Habitat Use by Wildlife: via Helicopter Surveys (White-tailed deer, wild turkeys, raptors, swans, ducks, geese)
- Niagara River Remedial Action- Fish population Impairment- Determination of Delisting Criteria
- Field Investigation of Headwater Channel Erosion and related impacts on the Fenwick Regional ANSI, Provincially Significant Wetlands and Species at Risk
- Welland River Fish Passage White Sucker and Walleye Telemetry Project at Old Welland Canal Junction (2000, 2013 to 2015)
- Navy Island Deer Exclosures project and woodland management recommendations
- Restoration of the Walleye population in the Welland/Niagara River system
- Grand River Fisheries Management Plan
- Species at Risk Habitat Stewardship and Education projects (Fowler's toad, Massasauga, Spotted turtle, Blanding's turtle, Gray Ratsnake, Allegheny Mountain Dusky, Northern Dusky salamander, American Water-willow, White Wood Aster, Butternut, Flowering Dogwood, American Chestnut)
- Radio telemetry studies for Massasauga, Spotted Turtle, Wild Turkey and White-tailed deer

- Manage SAR field technicians and summer students and external funding sources annually since 2000 with an operating budget of $50K to $100K. All projects included surveys and monitoring, habitat enhancement, restoration, and design and creation of outreach and educational products. These projects also included mentoring and liaison with partners including universities, agencies, landowners and other interested stakeholders.
- As part of this species at risk team we were the first to identify Allegheny Mountain Dusky Salamander in the Niagara Gorge
- Ecosystem restoration project (1998 to present) - managing two species at risk populations Massasauga and Spotted turtle before, during and after stochastic flooding of the central peat mined fields. This included mark –recapture (> 600) massasaugas and (>400) spotted turtle observations since 1998. I designed and implemented a hibernation habitat study where I introduced the "life zone" hypothesis. A "life zone" is a subterranean space where snakes successfully overwinter. This space does not freeze or flood completely and is the focus of my graduate and post graduate studies. "Overwintering behaviour and survival of temperate neonatal snakes" and the development of the "forced hibernation technique". This technique is a biological test of the life zone to confirm snakes can survive within the associated habitat. A positive population growth trend has resulted.
- Fowler's toad Recovery Team Chair >5,000 observation records, Ontario Dusky Salamander Recovery Team Co-Chair, Gray Ratsnake and Massasauga rattlesnake and Ontario SAR turtle Recovery Team member
- Peregrine Falcon Recovery and Master Bander (1996 to present)

Other Highlights include:

- NPCA: Welland River Restoration Committee Recognition Award (2002)
- NPCA Conservation achievement awards (2002 to 2008)
- Niagara River Bathymetry, Habitat Mapping, and habitat creation projects
- Niagara Region Fish Habitat Types with Management Rationale for municipal planning
- Binbrook Reservoir Electrofishing, and live trap netting projects
- Adult Walleye transfer from Bay of Quinte, Lake Ontario to Binbrook Reservoir
- Spring thermal flux studies Niagara River and Upper Niagara River Tributaries
- Long term thermal monitoring of last remaining Brook trout fishery Upper Twelve Mile Creek
- Upper Twelve Mile Creek Brook Trout Population Assessment 1984, 2000, 2008
- Upper Twelve Mile Creek Restoration Projects (1989 to 1995)
- Frenchman's Creek Grass Roots Watershed Restoration Project (1991 to 1995)
- Point Abino Drain Fisheries Study- Pre and Post Drainage Works 2001 – 2002
- Welland River Fish Community Assessment 1997
- Walleye Restoration Project, Grand River, Welland River and Community Involvement
- Lake Ontario Littoral Zone, Lake Gibson, Martindale Pond and Old Welland Canal Fish Community
- Wild turkey reintroduction, trap and transfer international project (1986 to 1996)
- Ontario Conservation Fishing and Hunting Licence, Firearms Certificate (Restricted and Nonrestricted); Pleasure Boat Certificate, Standard First Aid and CPR,

Biological Study Reports

Yagi, A.R., A. Brant, S. Meyer, D.M. Green, S. Dobbyn, B. Johnson, and R. Tervo†. 2017. The Fowler's toad Stewardship Guide. prepared for Environment Canada Habitat Stewardship Program 61pp. updated version from 2007

Yagi A.R, K.T. Yagi and A.Brant. 2017. The Spotted Turtle Stewardship Guide, prepared for Environment Canada Habitat Stewardship Program 25pp. updated version from 2012

Yagi A.R. [updated 2016]. Niagara Region Fish Habitat Types with Management Rationale, Ontario Ministry of Natural Resources unpublished manuscript.

Yagi A.R and C.Blott. 2015. Niagara River RAP- Fish Population- Beneficial Use Impairment Delisting Criteria. Prepared for OMNR and NRRAP Advisory Committee.

Markle, T.M., A.R. Yagi and D.M. Green. 2013. Recovery Strategy for the Allegheny Mountain Dusky Salamander (***Desmognathus ochrophaeus***) and the Northern Dusky Salamander (***Desmognathus fuscus***) in Ontario. Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 30 pp.

Blott C., A.R.Yagi and V. Crombie. 2013. Niagara River (Ontario) Remedial Action Plan Interim Assessment of ***Degradation of Fish Populations*** Beneficial Use Impairment for the Niagara River Remedial Action plan (DRAFT) 51pp + Appendices

Yagi A.R and C. Blott. 2012. Niagara River Watershed Fish Community Assessment (1997 to 2011) Ontario Ministry of Natural Resources unpublish report 168pp + appendices

Yagi A.R. 2012. Field Investigation of Channel Erosion and related impacts on the Fenwick Regional ANSI, Provincially Significant Wetlands and Species at Risk, unpublished report for OMNR 20pp+appendix

Green D.M., A.R. Yagi and Hamel S. 2011. Recovery Strategy for the Fowler's Toad (***Anaxyrus fowleri***) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 21pp.

Yagi A.R., T. Markle, A. Brant and R. Tervo. 2010. Quebec and Ontario Stream Salamander Stewardship Guide, prepared for Environment Canada Habitat stewardship Program 37 p + iii

Yagi A.R, A.Brant and R.Tervo. 2009. Niagara Region Natural Areas Inventory Reptile and Amphibian Study 2006 to 2008. Ontario Ministry of Natural Resources and Land Care Niagara unpublished report for the Natural Areas Inventory prepared for the Niagara Peninsula Conservation Authority 78pp incl. separate Map Appendix.

Yagi A.R. and A. Timmerman. 2009. Ancaster Wintering Deer Survey 2009 - with Management Recommendations, unpublished report for the Hamilton Conservation Authority 37pp + iii.

Denyes D., A.R. Yagi, A. Brant, K.Wright. 2009. American Water- willow Stewardship Guide. prepared for Environment Canada Habitat stewardship Program 21p +ii

Yagi A.R and R. Tervo. 2008a. Species at Risk Habitat Mapping for the Allegheny Mountain Dusky Salamander (***Desmognathus ochrophaeus***) - a Test of Draft Habitat Mapping Guidelines. Unpublished report for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario 12pp.

Yagi A.R and R. Tervo. 2008b. Species at Risk Habitat Mapping for the Northern Dusky Salamander (***Desmognathus fuscus***)- a Test of Draft Habitat Mapping Guidelines. Unpublished report for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario 12pp.

Yagi A.R and R. Tervo. 2008c. Species at Risk Habitat Mapping for the Fowler's toad (***Bufo fowleri***)- a Test of Draft Habitat Mapping Guidelines. Unpublished report for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario

Yagi A.R and C. Blott. 2008d. Niagara River Watershed Fish Community Assessment (2003 to 2007) Ontario Ministry of Natural Resources unpublished report 197pp.

Yagi A.R. and M. Esraelian. 2008e. White-tailed Deer (***Ondocoileus virginianus***) Management Recommendations for the Niagara Parks Botanical Gardens - School of Horticulture Final Report. Ontario Ministry of Natural Resources 34pp.

Yagi A.R., A. Brant, S. Meyer, D.M. Green, S. Dobbyn, K. Frohlich, K. Hayes, B. Johnson, M. Oldham and R. Tervo.2007. The Fowler's toad Stewardship Guide. prepared for Environment Canada Habitat Stewardship Program 60pp.

Yagi A.R. and R. Tervo. 2006a. Black Ratsnake (***Elaphe obsoleta***) Telemetry Project 2001 to 2002: Oriskany Sandstone Area- Carolinian Population Final Report unpublished for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario. 25pp.

Yagi A.R. and R. Tervo. 2006b. Distribution of Fowler's toad (***Bufo fowleri***) in Aylmer District Based upon field surveys conducted in 2004 and 2005 with notes on Habitat for Recovery Planning Purposes, unpublished report prepared for Ontario Ministry of Natural Resources Aylmer District and OMNR SAR. 21pp.

Yagi A.R. and R. Tervo. 2006c. Guelph District Fowler's Toad (***Bufo fowleri***) - Historic Elemental Occurrence Verification, Current Presence/Absence information with notes on Preliminary Habitat Characterization for Recovery Planning Purposes, unpublished report prepared for the Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario. 10pp.

Yagi A.R and R. Tervo. 2005a. [Data Sensitive]Massasauga (***Sistrurus catenatus***) Population- Interim Report; unpublished report prepared for the Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario 11pp.

Yagi A.R., R. Drabick, J. Radford and K. Spence. 2005b. Lower Frenchman's Creek: Wetland Evaluation, and Fisheries Assessment-Between Niagara Parkway and Bowen Rd. Allowance

Yagi A.R. and D.Mills.2004. Niagara Glen Species at Risk Inventory Final Report 2004 (Data Sensitive) Ontario Ministry of Natural Resources unpublished report for the Niagara Parks Commission 30 pg.

Yagi A.R. and D.Mills.2003a. Interim Report: Fowler's Toad (***Bufo fowleri***) Abundance and Habitat Use at Morgan's Point Conservation Area with Habitat Enhancement Recommendations, Summer 2003, unpublished report prepared for the Niagara Peninsula Conservation Authority and OMNR SAR Peterborough, Ontario. 7pp.

Yagi A.R and R. Tervo. 2003b [Data Sensitive]Eastern Massasauga Rattlesnake (***Sistrurus catenatus***), Ministry of Natural Resources unpublished report.7pp.

Yagi A.R. 2003c. Point Abino Fisheries Drain Fisheries Study- Pre and Post Drainage Works 2001 – 2002, Ontario Ministry of Natural resources unpublished report, updated March 2010 11pp.

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Yagi A.R. 1998b. Old Welland Canal Fisheries Assessment. City of Welland. Ontario Ministry of Natural Resources unpublished manuscript.

Yagi A.R. 1997. Martindale Pond Fisheries Assessment with Notes on Richardson's Creek Fisheries Habitat Compensation Project. OMNR unpublished manuscript.

Sarvis, A.R. 1985. Brook Trout Distribution and Abundance within Upper Twelve Mile Creek. Ont. Min. Nat. Res. unpublished manuscript, 45pp.

Curriculum Vitae Biologist

Cathy Blott

BSc Honours Science, University of Waterloo, 1993

blott@intown.net

Cathy Blott is currently an Associate Habitat Restoration Biologist

with 8Trees Inc, specializing in hydrological system monitoring.

Cathy has over 28 years' experience in aquatic systems monitoring, and ecosystem restoration projects.

Some of her responsibilities at 8Trees Inc. include installation and management of hydrology monitoring systems (Wainfleet Bog and Pelee Island), conducting elevation surveys, downloading, and managing data, analysis of data, implementing and monitoring restoration project designs, prepare reports and proposals, and to mentor younger staff, students, and volunteers in the field. Cathy also conducts outreach events and builds partnerships with landowners, municipalities, and agencies to gain support for several ongoing projects. Cathy is our lead fisheries and hydrology expert for Environmental Impact studies as well as conducting soils, ELC, amphibian and bird surveys.

From 2008 to 2016 she worked as Fish Crew Leader, Integrated Resource Management Technician, Biologist and Acting Management Biologist for the MNRF. She worked on the Fish Community Monitoring of the Niagara River Watershed", Wainfleet Bog Winter Life Zone, hydrology monitoring and Niagara River RAP Beneficial Use Impairment projects.

From 2006 to 2008 she worked for the Ministry of Forests in BC (2006 to 2008) conducting environmental assessments for proposed channel diversions of the Fraser River for hydroelectric and Ministry of Transportation projects. She worked as part of a team to measuring stream flows, fish community impacts and to assessed fish passage within newly constructed channels.

Work in BC continues, as needed. In 2020, she sat in as the Professional Biologist on site at 2 river crossing construction projects in BC, monitoring for impacts to downstream water quality, as per provincial protocols. Detection of an impact results in an immediate Stop Work Order.

From 1996 to 2006 and again from 2013 to 2015, she worked for Limnoterra Ltd. (1996 to 2006) as a Biologist and field technician responsible for installing and managing water level loggers in creek and wetland ecosystems to assess ecosystem level impacts, watershed and site level impacts caused by subdivision stormwater discharges, drainage, road construction, channel diversions and aggregate resource mining.

After graduating from University of Waterloo, from 1993 to 1996 she worked at the University of Waterloo as the GIS technician for a multi-disciplined Grand River Watershed Study.

Specialized Training:

- Royal Ontario museum fish identification certifications
- Class 1 crew leader boat & backpack electrofishing license
- Standard First aid & CPR
- Marine Emergency Duties (MED A-4)

- Pleasure craft boating license
- Ontario Stream Assessment Protocol (OSAP) certification, Soils, Wetlands
- Arc GIS, Access, Excel, Sigma Plot

Highlighted Experience at MNRF:

- Coauthored Niagara Fish Community and Niagara River RAP- fish population reports
- Analyzed and managed MNRF's digital fish database
- Managed fish telemetry data collection at Welland River Syphons (2013 to 2015)
- Managed thermal studies of Upper Niagara River and Upper 12 Mile Creek
- Completed bathymetry, substrate, aquatic vegetation surveys, fish migration, and velocity studies within the Upper Niagara River and tributaries.
- Coordinated application of Great Lakes Acoustic (GLATOS) monitors in Niagara River watershed
- Fish Crew Leader Welland River Fish Assessment (Seine, Back-Pack, E-Boat) (2007)
- Managing Environmental restoration projects for Lower Grand River Land Trust.
- Assisting Habitat Haldimand in restoring of brook trout stream on Grand River
- Literature search & preparation of Draft Environmental Resource Study document for impending Class C Environmental Assessment of brown trout stocking in Lake Huron. (2010)
- Sturgeon sampling & commercial catch sampling, Nottawasaga Bay, Owen Sound (2008)
- District (2010) Fish Crew Leader MNR Zone 8, 10 & 11 North Bay, ON. (2009) Sault Ste Marie/Blind River (2008)
- Gill net surveys from (Broad Scale Fisheries Management Program). Field supervision of remote site access, fish sampling, remote camping, call in procedures, & data delivery. Use of small, motorized watercraft. Access by truck, plane and helicopter.

Highlighted Experience in private consulting, BC:

- Assisted with field studies & reports of fish community habitat & flow analysis to assess impacts for 5 mountain streams of Fraser River and North Thompson River valleys being proposed to divert for proposed Independent Power Production hydro-electric projects. Collected velocity transects for flow modelling and diversion channel design.
- Monitored & directed construction crew to ensure no impacts to river water quality during Ministry of Transportation riverbank repair: detection of an impact results in an immediate Stop Work Order to resolve issues.
- Monitored and directed construction crew to insure no impacts to fisheries during bridge construction on the Fraser River and the Inonochlin River in the Monashee Mountains.
- Conducted Fish Passage Culvert Inspections for Ministry of Forests & Prioritized Ministry of Transportation culvert replacement candidates based on fish community & habitat parameters, throughout the interior of BC.

Highlighted Experience with Limnoterra Ltd working under Dr. Jon Planck.

- Measured/assessed and successfully showed impacts to wetlands and fisheries of proposed groundwater pumping for a proposed subdivision development, Dunnville Ontario, on behalf of local citizens, that resulted in proposed development application being denied.
- Provided technical support at Municipal Hearing Board to successfully show impacts of proposed gravel pit pumping to a coldwater creek and provincially significant wetland, on behalf of the local community group that resulted in the development application being denied, Greenoch Creek PSW, Greenoch, Ontario.
- Measured and assessed watershed flow throughout Strasburg Creek watershed, the last remaining coldwater system in Kitchener, to assess impacts and inform design of proposed dense urban development. Kitchener, Ontario
- Measured and assessed flow and biological communities in receiving creek system downstream of gravel pit to ensure features were not impacted as part of annual Provincial Pit & Quarry licensing. Puslinch Township, Ontario
- Monitored ground water level & temperature, wetland water levels, creek stage/flow to assess impacts to natural features from gravel extraction as part of annual Provincial Pit & Quarry licensing for existing pits and for new pit applications. Four sites along the Grand River, Elora, Ontario.
- Measured and analyzed sewer system flow for assessment and designs to divert stormwater flow from sewage treatment plants in the Greater Toronto Area to address impact of raw, untreated sewage flowing into Lake Ontario during precipitation events. Used continuous monitoring technology developed by Dr. Planck, (continuous monitoring instruments were not commercially available at the time).
- Assisted with installation & monitoring of the first On-site Sewage Treatment systems in Ontario: Municipal Pilot Project, Clifford ON, Bronte Creek Tim Horton's Camp, Mountsberg, ON.
- Monitored construction of award-winning surface stormwater collection/treatment system for a 200ac subdivision, Humber Flats, Vaughan, ON. Following construction, monitored stormwater quality and flow, to show difference between surface treatment of stormwater compared to stormwater pond discharge. Data showed stormwater pond results in pulses of turbid, warm, nutrient-rich water discharging to natural watercourse, compared to a more consistent flow of cool, clear water discharging from the surface collection/treatment system. It is intended this data will be used to go before MECP to change provincial policy requiring stormwater ponds for urban development.

Dr. Ronald W. Griffiths: Summary of Taxonomic Expertise.

I began identifying benthic macroinvertebrates from lakes and watercourses in southwestern Ontario in 1975, while working as a student with the Ontario Ministry of the Environment in London, Ontario. Benthos has been central to my academic studies: My B.Sc. thesis undertaken at the University of Western Ontario examined the effect of sediment grain size and chemical contamination on benthic macroinvertebrate communities in St. Clair River; my M.Sc. thesis undertaken at the University of British Columbia explored the effect of fish predation on benthic macroinvertebrate abundance and production in streams, while my Ph.D. thesis undertaken at the University of Waterloo showed the non-linear impact of acidification on benthic community structure.

As an Aquatic Scientist with Aquatic Ecostudies Limited from 1983-1988 and later a Surface Water Specialist with Ontario Ministry of Environment for over 30 years, I identified benthos from across the Great Lakes and connecting waterways from St. Lawrence River to Thunder Bay harbor in a few dozen studies, as well as countless inland watercourses (e.g. Thames River, Saugeen River, Spencer Creek, Credit River, Bowmanville Creek) from the Ottawa River to Rainy River primarily for bioassessment of water quality. As chair of the Bioassessment Water Quality Committee for MOE in the early 1990s, I participated in the development and testing of the BioMAP water quality index based on macroinvertebrates in Ontario waters that has been used for over 30 years.

I currently have 1.8 million identified specimens in my museum collection. Recently I contributed to the discovery of a new species of oligochaete from Spanish Harbor and documented the range extension of the snail, ***Marstoni letsoni***, into Lake St. Clair and a species of ***Epeorus*** into Ontario from central North America. I have taxonomic certificates for Eastern EPT and Chironomids from the Society of Freshwater Science (I attend the meetings of the Certification Committee at SFS annual meetings). As a recognized taxonomic expert, I conducted benthic taxonomic workshops in USA, Canada, Thailand, Kenya and New Zealand.

Outside of the Great Lakes, I conducted several benthic surveys in Kenya, Thailand and New Zealand. In recognition of my research in Kenya and environmental outreach activities in Nairobi, Dr. Pat McCafferty of Purdue University named a species of baetid mayfly: ***Acanthiops griffithsi***, after me.

Furthermore, I have authored a course textbook on water quality assessment for Niagara College, published over 2 dozen papers in the primary literature, written more than 50 bioassessment reports and presented almost 100 scientific studies around the world.

Currently, I am the taxonomist on an US-EPA project to genetically bar code all benthic macroinvertebrate species in the Great Lakes with colleagues at Buffalo State University, examining the benthic community change in Lake St. Clair since early 1990s, assessing the impact of silts on the benthos in a Oregon river, documenting the distribution of basetid mayflies across southern Ontario, and assessing the impact of fish ranching on benthic community structure. **Detailed CV follows.**

Ronald W. Griffiths, Ph.D.

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ECOLOGIST: For the past 35 years, whether in academic, government or consulting environments, the primary focus of my research has centered on identifying those mechanisms and processes responsible for maintaining the structure and organization of freshwater communities. I am particularly interested in linking processes (e.g., pollution, physical disturbances, energy flow, predation, competition, species invasions) at the local scale with patterns observed at the landscape scale and applying this knowledge to resource issues, such as fisheries and water quality. My central approach to quantifying direct and indirect interactions is through perturbation (field) experiments, linking local interactions with landscape patterns through mathematical and GIS modeling, and verifying the predicted behavior of ecosystem components through adaptive management experiments. A sustainable development goal for society requires sound environmental policies and practices based on solid scientific understanding of ecosystem dynamics. While I have conducted most of my studies within the Great Lakes Basin, I have also taken opportunities to conduct studies in the freshwaters of British Columbia, Kenya, New Zealand, Thailand and Oregon.

EDUCATION:

Post-Doctoral Fellow, University of Guelph. 1999-2002.
Project: Sea Lamprey Larvae Population Dynamics.
Supervisor: Dr. F.W.H. Beamish.

PhD (Biology), University of Waterloo. 1987.
Thesis: Acidification as a model for the response of aquatic communities to stress.
Supervisors: Dr. J.C.H. Carter and Dr. H.B.N. Hynes.

MSc (Zoology), University of British Columbia. 1981.
Thesis: The effect of trout predation on the abundance and production of stream insects.
Supervisors: Dr. T.G. Northcote and Dr. J.D. McPhail.

BSc (Zoology), University of Western Ontario. 1978.
Thesis: Benthic communities as indicators of water quality in the St. Clair River.
Supervisors: Dr. R.H. Green and Dr. C.D. Ankney.

SCHOLARSHIPS AND AWARDS:

1998	Reach Award (Ontario Ministry of Municipal Affairs and Housing)
1985	Noranda Postgraduate Scholarship (UW)
1984	Noranda Postgraduate Scholarship (UW)
1982	NSERC Postgraduate Scholarship (UW)
1981	University of Waterloo Scholarship

1980 University of British Columbia Fellowship
1979 NSERC Postgraduate Scholarship (UBC)
1978 NSERC Postgraduate Scholarship (UBC)
1978 University of Western Ontario Gold Medal in Zoology
1978 Dean Russel Scholarship (UWO)
1977 University of Western Ontario Admission Scholarship
1977 Helen I. Battle Scholarship (UWO)
1976 University of Western Ontario Admission Scholarship
1976 Albert O. Jeffery Scholarship (UWO)
1975 University of Western Ontario Admission Scholarship
1974 University of Western Ontario Admission Scholarship
1974 Ontario Scholarship

PUBLICATIONS -- BOOKS and BOOK CHAPTERS:

Griffiths, R.W., D. Schloesser, B. Kovalak. 2014. Early responses to zebra mussel in the Great Lakes: A Journey from Information Vacuum to Policy and Regulation. Chapter 10: 135-175. In: T. Nalepa and D.W. Schoesser (eds). Quagga and Zebra Mussels: Biology, impacts and control. CRC Press, Boca Raton.

Griffiths, R.W. 1999. BioMAP: Bioassessment of Water Quality. Published by Niagara College, Niagara-on-the-Lake, Ontario. 110pp.

Griffiths, R.W. 1993. Effects of zebra mussels (***Dreissena polymorpha***) on the benthic fauna of Lake St. Clair. Chapter 25: pp 415-437. In: T. Nalepa and D.W. Schoesser (eds). Zebra Mussels: Biology, impact and control. Lewis Publ., Chelsea, MI.

Hudson, P.L., R.W. Griffiths and T.J. Wheaton. 1992. Review of habitat classification schemes appropriate to streams, rivers, and connecting channels in the Great Lakes Drainage Basin. Chapter 5: 74-107. In: W.D.N. Busch and P.G. Sly (eds). The development of an aquatic habitat classification system for lakes. CRC Press Inc., Boca Raton, FL.

PUBLICATIONS -- JOURNALS:

Griffiths, R.W. and T.G. Northcote. 2010. Are autumn-growing detritivorous mayflies most productive? Verh. int. Ver. Limnol. 30: 1613-1618.

Griffiths, R.W. and T.G. Northcote. 2006. Are autumn-growing detritivorous stoneflies most productive? Verh. int. Ver. Limnol. 29: 1925-1931.

Beamish, F.W.H., Ronald W. Griffiths, C. Kongchaiya, and P. Sonchaeng. 2005. Seasonal fish abundance and composition in three Thailand streams: Influence of discharge. Journal of Tropical Freshwater Biology 14: 37-60.

Griffiths, R.W., N. Newlands, D. Noakes, and F.W.H. Beamish. 2004. Northern pike growth and mortality in a northern Ontario river compared with that in lakes: influence of flow. Ecology of Freshwater Fishes 13: 136-144.

Griffiths, R.W., F.W.H. Beamish and C. Kongchaiya. 2003. Effects of rural development on the water quality of central Thailand streams. The Journal of Science, Technology and Humanities 1: 125-147.

Griffiths, R.W. 2002. Estimating the carrying capacity of catchments for agricultural development based on water quality. Verh. int. Ver. Limnol. 28: 1116-1120.

Griffiths, R.W., F.W.H. Beamish, B.J. Morrison and L.A. Barker. 2001. Factors affecting growth and size-at-metamorphosis of larval sea lamprey in lampricide-treated streams. Transaction of the American Fisheries Society 130: 289-306.

Griffiths, R.W. 2001. Mapping the water quality of streams using benthos and satellite imagery. Verh. int. Ver. Limnol. 27: 3550-3555.

Griffiths, R.W. 2000. Comment on: "A preliminary evaluation of the behaviour of the BioMAP water quality index". Canadian Water Resources Journal 25: 93-102.

Carbone, J., W. Keller, and R.W. Griffiths. 1998. Effects of changes in acidity on aquatic insect assemblages in rocky littoral habitats of lakes near Sudbury, Ontario. Restoration Ecology 6: 376-389.

Zaranko, D.T., R.W. Griffiths and N.K. Kaushik. 1997. Biomagnification of PCBs through a riverine food web. Environm. Toxicol. Chem. 16: 1463-1471.

Griffiths, R.W. and W.E. Keller. 1992. Benthic macroinvertebrate changes in lakes near Sudbury, Ontario, following a reduction in acid emissions. Can. J. Fish. Aquat. Sci. 49 (Suppl. 1): 63-75.

Griffiths, R.W. 1992. Effects of pH on community dynamics of Chironomidae in a large river near Sudbury, Ontario. Can. J. Fish. Aquat. Sci. 49 (Suppl. 1): 76-86.

Griffiths, R.W., D.W. Schloesser, J.H. Leach and W.P. Kovalak. 1991. Distribution and dispersal of the zebra mussel (***Dreissena polymorpha***) in the Great Lakes Region. Can. J. Fish. Aquat. Sci. 48: 381-1388.

Griffiths, R.W. 1991. Environmental quality assessment of the St. Clair River as reflected by the distribution of benthic invertebrates in 1985. In: M. Munawar and T. Edsall (eds.). Environmental assessment and habitat evaluation of the upper Great Lakes Connecting Channels. Hydrobiologia 219: 143-164.

Griffiths, R.W., S. Thornley and T. Edsall. 1991. Limnological aspects of the St. Clair River. In: M. Munawar and T. Edsall (eds.). Environmental assessment and habitat evaluation of the upper Great Lakes Connecting Channels. Hydrobiologia 219: 97-123.

Griffiths, R.W. 1991. Spatial distribution and dispersal mechanisms of zebra mussels in the Great Lakes Basin. Journal of Shellfish Research 10: 248.

Keller, W.E., L.A. Molot, R.W. Griffiths, and N.D. Yan. 1990. Response of benthos in acidified Bowland Lake to whole-lake neutralization. Can. J. Fish. Aquati. Sci. 47: 440-445.

PUBLICATIONS -- SYMPOSIA:

Griffiths, R.W. 1998. Phosphorus from sewage treatment plants: A vital resource for meeting water quality and fisheries objectives in the lower Great Lakes. In: Proceedings of the 27th Annual Water Environment Association of Ontario Technical Symposium. Toronto, Ontario. March 29-31. 12pp.

Griffiths, R.W. 1996. Mapping the water quality of streams. In: Proceedings of the Watershed Management Symposium. Held at the Canadian Centre for Inland Waters, Burlington, Ontario. December 6-8, 1995. Publ. by Canadian Water Resources Association, Cambridge, Ontario. pp 286-291.

Griffiths, R.W. 1993. Statistical applications: Matching theory with reality. In: Use of biostatistics in benthic ecological studies. (Canton, S. and M. Munn) The 6th Annual Technical Information Workshop of the North American Benthological Society. Held at the University of Calgary, Calgary, Alberta. May 24-28. 12 pp.

Griffiths, R.W., W.P. Kovalak and D.W. Schloesser. 1989. The zebra mussel, ***Dreissena polymorpha*** (Pallas, 1771), in North America: Impact on raw water users. In: Symposium: Service Water System Problems Affecting Safety-Related Equipment. Held in Charlotte, N.C., November 6-8. Sponsored by Nuclear Power Division, Electrical Power Research Institute, Palo Alto, CA. 17 pp.

PUBLICATIONS -- TECHNICAL REPORTS:

Griffiths, R.W. 2011. Water Quality Assessment of Beaver River downstream from water taking by Gott Enterprises (formerly Aquafarms 93), Grey County. Prepared for Ministry of the Environment, Southwestern Region, London, Ontario. 10 pp.

Griffiths, R.W. 2011. Water Quality Assessment of Brook Trout Creek (Tributary C), London, Ontario. Prepared for Ministry of the Environment, Southwestern Region, London, Ontario. 10 pp.:

Griffiths, R.W. 2010. Water Quality Assessment of Lake Rosalind, Bruce County, 2010. Prepared for Ministry of the Environment, Southwestern Region, London, Ontario. 14 pp.

Griffiths, R.W. 2010. Effects of Polycyclic Aromatic Hydrocarbons (PAHs) on the Aquatic Macroinvertebrate Life of Kettle Creek and Delineation of PAHs in the Sediments of Kettle Creek, at Port Stanley, Ontario, in 2009. Prepared for Ministry of Environment, Southwestern Region, London, Ontario. 48 pp.

Griffiths, R.W. 2001. Assessment of Water Quality Conditions at Sites in the Spencer Creek, Watershed in 2001. Prepared for the Hamilton Region Conservation Authority. 18 pp.

Griffiths, R.W. and M. Muter. 2001. Water Quality conditions along the eastern shoreline of Georgian Bay in the summer of 2000. Prepared for the Georgian Bay Association, Toronto. 19 pp. and appendices.

Griffiths, R.W. 2000. Assessment of Water Quality Conditions in the Spencer Creek during 1999. Prepared for the Hamilton Region Conservation Authority, Ancaster, Ontario. 25 pp.

Griffiths, R.W. and M. Muter. 2000. Water Quality conditions along the southeastern shoreline of Georgian Bay in the summer of 1999. Prepared for the Georgian Bay Association, Toronto. 22 pp. and appendices.

Griffiths, R.W., M. Muter and C. Sharp. 1999. Water Quality along the southeastern shoreline of Georgian Bay as indicated by benthic macroinvertebrates. Prepared for The Greater Bay Area Foundation. 12 pp.

Griffiths, R.W. 1998. Phosphorus, poisons and phyto-consumers: A synthesis of the factors affecting the western Lake Erie ecosystem over the past century. Prepared for Ontario Federation of Anglers and Hunters, Peterbough, Ontario. 34 pp.

Griffiths, R.W. 1998. BioMAP: A How to Manual. Ontario Ministry of Municipal Affairs and Housing, Policy Planning Branch, Toronto, Ontario. 77 pp. and appendices.

Aldom, J., E. Jamieson, T. Prout, M. Walsh, D. van Bakel, R.W. Griffiths, G. Palmateer. 1997. Rapid fecal coliform and ***Escherichia coli*** detection in the recreational waters of Lake Huron Beaches and an inland beach in 1997. Report prepared for Health Canada. 30 pp.

Griffiths, R.W. 1996. A biological measure of water quality for creeks, streams and rivers. BioMAP Report SWR-4. Ministry of the Environment and Energy, Southwestern Region, London, Ontario. 29 pp.

Glaskin-Clay, M., J. Aldom, T. Prout, D. van Bakel, R.W. Griffiths, and G. Palmateer. 1996. Rapid ***Escherichia coli*** test evaluation at eight bathing beaches. Prepared for Health Canada. 24 pp.

Palmateer, G., A. Scott, M. Glaskin-Clay, and R.W. Griffiths. 1995. Rapid Escherichia coli test: Field Evaluation. Prepared for Health Canada. 24 pp.

Westwood, J.D. and R.W. Griffiths. 1994. Environmental assessment of Mill Creek in the vicinity of the Port Elgin Landfill Site, Bruce County. BioMAP Report SWR-3. Ministry of the Environment and Energy, Southwestern Region, London, Ontario. 15 pp.

Griffiths, R.W. 1993. BioMAP: Concepts, protocols and sampling procedures for the southwestern region of Ontario. BioMAP Report SWR-1. Ministry of the Environment and Energy, Southwestern Region, London, Ontario. 30 pp.

Griffiths, R.W. 1989. The effect of in-place pollutants on the benthic invertebrate fauna of the Spanish River Harbour. Prepared for the Ministry of the Environment, Northeastern Region, Sudbury, Ontario. 27 pp.

Griffiths, R.W. 1989. Response of fecal bacteria and water chemistry in the Desjardine Drain to the 1987-1988 remedial construction activities on livestock farms. Prepared for the Ausable Bayfield Conservation Authority, Exeter, Ontario. 26 pp.

Griffiths, R.W., E. Carney, L. Nakamoto and K. Nicholls. 1989. Diatoms in central Ontario lakes: Ecology, habitat characteristics and utility for inferring past pH and alkalinity. Ministry of Environment, Water Resources Branch. 53 pp.

Griffiths, R.W. 1988. Environmental quality assessment of the St. Lawrence River in 1985 as reflected by the distribution of benthic invertebrate communities. St. Lawrence River Environmental Investigations. Volume 2. Ontario Ministry of the Environment, Water Resources Branch, Toronto, Ontario. 33 pp.

Griffiths, R.W. 1988. Effect of polynuclear aromatic hydrocarbons on the benthic invertebrate fauna of Kettle Creek at Port Stanley, Ontario. Prepared for Canviro Consultants, Waterloo, Ontario, and Ministry of the Environment, Southwestern Region, London, Ontario. 21 pp.

Griffiths, R.W. 1987. Environmental quality assessment of the Rainy River and Lake of the Woods from 1968 to 1983 as reflected by the distribution of benthic invertebrate communities. Prepared for the Ministry of the Environment, Northwestern Region, Thunder Bay, Ontario. 54 pp.

Griffiths, R.W. 1987. Environmental quality assessment of Lake St. Clair in 1983 as reflected by the distribution of benthic invertebrate communities. Prepared for the Ministry of the Environment, Southwestern Region, London, Ontario. 35 pp.

Griffiths, R.W. 1986. Effect of industrial development on the nearshore benthic fauna of Lake Erie near Nanticoke. Part I: Stelco Canada. Prepared for the Ministry of the Environment, West-Central Region, Hamilton, Ontario. 39 pp.

Griffiths, R.W. 1986. Temporal variation in the benthic invertebrate community of Bowland Lake following neutralization and trout stocking. Prepared for Booth Aquatic Research Group Inc, Toronto, Ontario. 29 pp.

Griffiths, R.W. 1985. Evaluation of pH calibration methods using sedimentary diatoms remains for reconstructing the pH history of Central Ontario lakes. Prepared for the Ministry of the Environment, Aquatic Biology Section, Rexdale, Ontario. 26 pp.

Griffiths, R.W. 1985. Water quality evaluation of the St. Mary's River as reflected by the distribution of benthic invertebrate communities. Prepared for the Ministry of the Environment, Water Resources Branch, Toronto, Ontario. 20 pp.

Griffiths, R.W. 1985. Effect of neutralization and trout predation on the benthic invertebrate community of Bowland Lake. Prepared for Booth Aquatic Research Group Inc., Toronto, Ontario. 28 pp.

PUBLICATIONS -- MEDIA ARTICLES:

Griffiths, R.W. 1999. Can a lake be too clear? B.A.S.S. Times, Volume 29 (October), page 3.

Griffiths, R.W. 1998. Why are Lake Erie's fish slipping away again? London Free Press, May 30th edition, page F1&F6.

Griffiths, R.W. 1998. Is Lake Erie too Clean? At Guelph, University of Guelph, Volume 42 (13): 4.

Griffiths, R.W. 1990. The zebra mussel: Just another addition? Sydenham Sportsman, Owen Sound, July. pp 12-13.

INVITED PRESENTATIONS: (31 since 1987)

Griffiths, R.W. 2014. Benthos power lakes dynamics. Buffalo State University, Buffalo, New York. February.

Griffiths, R.W. 2013. Zebra Mussel Invasion of the Great Lakes: Lessons from History. Preventing an Invasion: Building a Regional Defense against Quagga and Zebra Mussels. Pacific States Marine Fisheries Commission. Vancouver, Washington. May 15.

Griffiths, R.W. 2013. Bioassessment of Water Quality. Burapha University, Bang Saen, Thailand. March.

Griffiths, R.W. 2010. Is the diet and growth of wild and hatchery salmonids the same? Orgeon Dep't of Fish and Wildlife, Corvallis, Oregon. June.

Griffiths, R.W. 2007. Dreissenid mussels in North America. Lake Mead Fish Hatchery, Boulder City, Nevada. July.

Griffiths, R.W. and F.W.B. Beamish. 2005. Species Richness of Fish Assemblages in Thailand Streams. Presented at Canadian Conference for Freshwater Fisheries Research, Windsor, Ontario. January.

Griffiths, R.W. 1999. Phosphorus, poisons and phyto-consumers: A synthesis of the factors affecting the western Lake Erie ecosystem over the past century. Presented at the International Association of Great Lakes Research Annual Meeting, Cleveland, Ohio. May 26-29.

Griffiths, R.W. 1997. Ecology of Lake St. Clair. Lake St. Clair Symposium. St. Clair Shores, Michigan. March 20.

Griffiths, R.W. 1997. The lower Great Lakes: How to manage your aquaria. Presented at: 69th Annual Meeting of the Ontario Federation of Anglers and Hunters. Hamilton, Ontario February 20-23.

Griffiths, R.W. 1996. Mapping stream water quality using satellite imagery of riparian attributes. Presented at: The Fisheries Centre, University of British Columbia. May 30.

Griffiths, R.W. 1995. The effects of zebra mussels on the dynamics of the Lake St. Clair Ecosystem. Presented to: Biology Department, McGill University, Montreal. Feb 2.

Griffiths, R.W. 1994. The changing ecosystem of Lake St. Clair. Presented to: Michigan State Section of American Water Resources Association. St. Clair Shores, Michigan. Dec. 9.

Griffiths, R.W. 1993. The changing environment of Lake St. Clair. Presented at: The 3rd International Zebra Mussel Conference, Harbour Castle Westin Hotel, Toronto, Ontario. February 23-25.

Griffiths, R.W. 1991. Invasion of the Great Lakes by the zebra mussel, ***Dreissena polymorpha*** (Pallas, 1771), and the implications for users of raw water. Presented at the American Water Works Association/Ontario Municipal Water Association Joint Annual Conference, Royal Connaught Hotel, Hamilton, Ontario. April 28 - May 1.

Griffiths, R.W. 1990. Distribution and dispersal of zebra mussels. Presented at: The Zebra Mussel Information Session. Ministry of Natural Resources. Bristol Place Hotel, Toronto, Ontario. June 26.

Griffiths, R.W. 1990. Threat of the Zebra Mussel to recreation, industry, utilities and municipal water supplies. Presented at: Workshop on the potential threat of zebra mussels in the waters of the Commonwealth of Pennsylvania. Porreco Centre, Edinboro University, Edinboro, Pennsylvania. March 8-9.

Griffiths, R.W. 1989. Distribution, abundance, and impacts of zebra mussels in the Great Lakes Basin. Presented at: Zebra Mussels. Canadian Centre for Inland Waters Seminar Series, Bayfield Institute, Burlington, Ontario. November 17.

Griffiths, R.W. 1989. Fouling of drinking water intakes by zebra mussels. Presented at: The 1st International Zebra Mussel Conference, Ann Arbor, Michigan. June 13.

SCIENTIFIC PRESENTATIONS: (43 since 1978)

Griffiths, R.W. 2018. The fall emergence of the mayfly, ***Hexagenia limbata***, from western Lake Erie. Presented at the 34th Congress of the International Society of Limnology (SIL), Nanjing, China. August.

Griffiths, R.W. and D.W. Schloesser. 2017. The fall emergence of the mayfly, ***Hexagenia limbata***, from western Lake Erie. Presented at the Annual Meeting of the Society for Freshwater Science. Raleigh, N.C. June.

Griffiths, R.W. and D.W. Schloesser. 2016. The enigmatic mud snail, ***Marstonia letsoni***, invades Lake St. Clair. Presented at the Annual Meeting of the Society for Freshwater Science. Sacramento, CA. May.

Griffiths, R.W. 2016. Assessing water quality in streams on a watershed basis using a relationship between benthos and riparian land-use. Presented at the 33rd Congress of the International Society of Limnology (SIL), Torino, Italy. August.

Griffiths, R.W. 2015. Seasonal population dynamics and production of the predacious chloroperlid, ***Plumiperla diversa***, in a mountain stream. Presented at the Annual Meeting of the Society for Freshwater Science. Milwaukee, WI. May.

Griffiths, R.W. 2015. Effects of Zebra Mussels on the Oligochaete Tolerance Index (OTI). Presented at the 58th Annual Conference on Great Lakes Research. Burlington, Vermont. May.

Griffiths, R.W. 2014. Predictive power of water quality indices and biotic metrics in detecting sewage impacts in a species-rich river. Presented at the North American Benthological Society, 62th Annual Meeting, Portland, Oregon. May.

Griffiths, R.W. S. Cooper, H. Tane, and F.W.H. Beamish. 2013. Species richness in North and South temperate & Dry and Wet tropical streams. Presented at the North American Benthological Society, 61th Annual Meeting, Jacksonville, Florida. May.

Griffiths, R.W. S. Cooper, H. Tane, and F.W.H. Beamish. 2013. Species richness in North and South temperate & Dry and Wet tropical streams. Presented at the 32st Congress of the International Association of Theoretical and Applied Limnology, Budapest, Hungary. August.

Griffiths, R.W. and F.W.H. Beamish. 2012. Grazer resource tracking as a mechanism to explain low algal abundance in tropical streams. Presented at the North American Benthological Society, 60th Annual Meeting, Louisville, Kentucky. May.

Griffiths, R.W. 2011. Why Do Streams Go Green? Presented at the North American Benthological Society, 59th Annual Meeting, Providence, Rhode Island. May.

Griffiths, R.W. and T.G. Northcote. 2010. Does seasonal changes in mortality and growth explain differences in production of shredders, collectors, scrapers and a predator in a coastal mountain stream? Presented at the North American Benthological Society, 58th Annual Meeting, Santa Fe, New Mexico. June.

Griffiths, R.W. 2010. Does Land Use within a watershed affect the relationship between Water Quality and Riparian Vegetation? Presented at the 31st Congress of the International Association of Theoretical and Applied Limnology, Cape Town, South Africa. August.

Griffiths, R.W. and D.L.G. Noakes. 2009. Benthic community organization in replicate stream channels colonized through drift. Presented at the North American Benthological Society, 57th Annual Meeting, Grand Rapids, Michigan. May.

Griffiths, R.W. and T.G. Northcote. 2008. Are autumn growing detritivorous mayflies most productive? Presented at the North American Benthological Society, 56th Annual Meeting, Salt Lake City, Utah. May.

Griffiths, R.W. 2007. Does Land Use within a watershed affect the relationship between Water Quality and Riparian Vegetation? Presented at the North American Benthological Society, 55th Annual Meeting, Columbia, South Carolina. June.

Griffiths, R.W. and T.G. Northcote. 2007. Are autumn growing detritivorous mayflies most productive? Presented at the 30th Congress of the International Association of Limnology, Montreal Quebec. August 12-18.

Griffiths, R.W. and F.W.H. Beamish 2006. Macroinvertebrate Community Structure in Thai Streams: Examining Temperate Concepts in Tropical Streams. Presented at the North American Benthological Society, 54th Annual Meeting, Anchorage, Alaska. June 4-8.

Griffiths, R.W. 2005. Using historical surveys and ecological theory to assess water quality conditions when references sites are unavailable. Presented at the North American Benthological Society, 53th Annual Meeting, New Orleans, Louisiana. May 21-25.

Griffiths, R.W. and T.G. Northcote. 2004. Does autumn leaf-drop enhance detritivorous stonefly growth and production? Presented at the 28th Congress of the International Association of Limnology, Lahti, Finland. August 9-14.

Griffiths, R.W. 2004. Annual Variation in Benthic Composition at a riffle site on a creek: Implications for water quality assessment. Presented at the North American Benthological Society, 52th Annual Meeting, Vancouver, B.C. June.

Griffiths, R.W. 2003. Density-richness relationship: implications for water quality bioassessment. Presented at the North American Benthological Society, 51th Annual Meeting, Athens, Georgia. June.

Griffiths, R.W. 2002. Does autumn leaf-drop enhance detritivorous stonefly growth and production? A comparative study. Presented at the North American Benthological Society, 50th Annual Meeting, Pittsburg, Pennsylvania. May 27- June 1.

Griffiths, R.W. 2001. Estimating the carrying capacity of catchments for agricultural development based on water quality. Presented at the 28th Congress of the International Association of Limnology, Melbourne, Australia. February.

Griffiths, R.W. 2001. Predicting trout abundance using satellite imagery. Presented at the North American Benthological Society, 49th Annual Meeting, La Crosse, Wisconsin. June 3-6.

Griffiths, R.W. 2000. Predictions, properties and test of the BioMAP water quality model. Presented at the North American Benthological Society, 48th Annual Meeting, Keystone, Colorado. May 30-June 2.

Griffiths, R.W. 1998. Mapping stream water quality using benthos and satellite imagery. Presented at the 27th Congress of the International Association of Limnology, Dublin, Ireland. August 9-14.

Griffiths, R.W. 1998. A knowledge-based, biological measure of water quality for lotic systems. Presented at the North American Benthological Society, 46th Annual Meeting, Charlottetown, Prince Edward Island. June 2-5.

Griffiths, R.W., S.D. Cooper, and K. Mavuti. 1997. The macroinvertebrate fauna of streams in the Lake Naivasha Basin, Kenya. Presented at the North American Benthological Society, 45th Annual Meeting, San Marcos, Texas. May 27-30.

Griffiths, R.W. 1996. Mapping stream water quality. Presented at the North American Benthological Society, 44th Annual Meeting, Kalispell, Montana. June 3-6.

Griffiths, R.W. 1994. Habitat alterations caused by the keystone species, ***Dreissena polymorpha***. Presented at the International Association of Great Lakes Research, Annual Meeting, University of Windsor, Windsor, Ontario. June 6-10.

Griffiths, R.W. 1994. Ecosystem changes caused by the keystone species, ***Dreissena polymorpha*** . Presented at the North American Benthological Society, 42th Annual Meeting, Omni Hotel, Orlando, Florida. May 24-27.

Griffiths, R.W. 1993. Statistical applications: Matching theory with reality. In: Use of biostatistics in benthic ecological studies. (Canton, S. and M. Munn) The 6th Annual Technical Information Workshop of the North American Benthological Society. Held at the University of Calgary, Calgary, Alberta. May 24-28. 12 pp.

Griffiths, R.W. 1992. Effects of zebra mussels on the ecology of Lake St. Clair. Presented at the North American Benthological Society, 40th Annual Meeting, University of Louisville and Murray State University, Louisville, Kentucky. May 26-29.

Griffiths, R.W., J.H. Leach, D.W. Schloesser, W.Kovalak and T. Nalepa. 1990. Spatial and temporal distribution of the zebra mussel in the Great Lakes Region. Presented at the North American Benthological Society, 38th Annual Meeting, Virginia Polytechnical Institute, Blacksburg, Virginia. May 22-25.

Griffiths, R.W. and A.W. McLarty. 1989. Assessing the impact of industrial developments near Nanticoke on the nearshore benthic fauna of Long Point Bay, Lake Erie: Analysis of a 15-year monitoring program utilizing artificial substrates. Presented at the North American Benthological Society, 37th Annual Meeting, University of Guelph, Guelph, Ontario. May 16-19.

Griffiths, R.W. 1989. Zebra mussel invasion of North America. Presented at the 24th Congress of the International Association of Limnology, Munich, FRG. August 16-20.

Griffiths, R.W. 1987. Application of classification and discriminant analysis in analyzing benthic invertebrate and physicochemical data in terms of environmental quality. Presented at the North American Benthological society, 35th Annual Meeting, University of Maine, Orono, Maine. June 2-5.

Griffiths, R.W. 1986. Effect of acidification on chironomid community dynamics. Presented at the North American Benthological Society, 34th Annual Meeting, University of Kansas, Lawrence, Kansas. May 20-23.

Griffiths, R.W. 1985. Predictions and validation of an acidification model based on catastrophe theory. Presented at the North American Benthological Society, 33rd Annual Meeting, Oregon State University, Corvallis, Oregon. June 25-28.

Griffiths, R.W. and L. C. Sardella. 1984. Drift response of invertebrates to acidification: A possible mechanism. Presented at the North American Benthological Society, 32nd Annual Meeting, University of North Carolina, Raleigh, N.C. May 22-25.

Griffiths, R.W. and J.C. H. Carter. 1984. Effect of acidification on lotic insect emergence. Presented at the North American Benthological Society, 32nd Annual Meeting, University of North Carolina, Raleigh, N.C. May 22-25.

Griffiths, R.W. 1982. The effect of trout predation on the abundance and production of stream insect populations. Presented at the North American Benthological Society, 30th Annual Meeting, University of Michigan, Ann Arbor, MI. May 18-21.

TEACHING EXPERIENCE:

2016	Instructor: Macroinvertebrate Identification Workshop. Buffalo State University.
2007	Instructor: Bioassessment of Water Quality. Burapha University, Bang Saen, Thailand. Workshop, March.
2006	Instructor: BioMAP: Bioassessment of Water Quality, Niagara College. Fall Term.
2005	Instructor: BioMAP: Bioassessment of Water Quality, Niagara College. Fall Term.
2004	Instructor: Bioassessment of Water Quality. Burapha University, Bang Saen, Thailand. Workshop, March.
2003	Instructor: BioMAP: Bioassessment of Water Quality, Niagara College. Fall Term.
2002	Instructor: BioMAP: Bioassessment of Water Quality, Niagara College. Fall Term.
2001	Instructor: Bioassessment of Water Quality. Burapha University, Bang Saen, Thailand. Workshop, March.
2001	Instructor: Bioassessment of Water Quality - Field methods. Watershed Research Centre, Twizel, New Zealand. Summer Field Course. February.
2000	Instructor: Bioassessment of Water Quality - Field methods, University of Nippissing, North Bay. Summer Field Course. July.
1999	Instructor: Biology of Polluted Waters, University of Guelph. Fall Term.
1999	Instructor: BioMAP: Bioassessment of Water Quality, Niagara College. Fall Term.

1999 Instructor: Bioassessment of Water Quality - Field methods, Niagara College. Summer Field Course. August.

1998 Co-Instructor: Collection of biological samples and data analysis, Niagara College. Fall Term.

GRADUATE STUDENT SUPERVISION:

1995-98 Destun, K. Mapping stream fish distribution and abundance from riparian vegetation. MSc Thesis. University of Guelph. 122 pp.

1991-94 Zaranko, D. Polychlorinated biphenyls in an urban stream: Application of a food web model. MSc Thesis. University of Guelph. 130 pp.

CERTIFICATIONS:

Taxonomic Certification in Chironomidae. Society for Freshwater Science, 2017.

Taxonomic Certification in Eastern Ephemeroptera, Plecoptera and Trichoptera. Society for Freshwater Science, 2014.

Small Boat Operating Proficiency. Transport Canada, 2014.

Small non-pleasure Vessel Basic Safety (Med A3). Transport Canada, 2014.

ACTIVITIES:

2008- Affiliated Professor: Oregon Hatchery Research Center, Oregon State University, Corvallis, Oregon.

2001-14 Research Associate (with Dr. Bill Beamish): Burapha University, Bang Saen, Thailand.

2011-17 Chair, Science Policy Committee, Society for Freshwater Science.

2007-10 Science Policy Committee, North American Benthological Society.

1995-98 Associate Member, Faculty of Graduate Studies, University of Guelph.

1996-97 Member of the Grand River Strategic Monitoring Committee

1995-97 Technical Advisory, Rondeau Bay Rehabilitation Program.

1994-96 Member of the Lake Erie Lakewide Management Plan (LaMP), Ecosystem Objectives Group

1990-94 Associate member, Faculty of Graduate Studies, University of Guelph.

1992-93 Chair of the Provincial Biological Monitoring Committee, MOEE.

1991-95 Member of Review Committee for the American Water Works Association Research Foundation.

1990-91 Co-Chair of the Science Laboratory and Environmental Technology Program Review Panel at Fanshawe College, London, Ontario.

1989-92 Member of the SIL working group on Biological Monitoring.

1989-92 Member of the Board Advisory Committee of Fanshawe College.

1988-91 Canadian Coordinator of the Zebra Mussel Watch Committee.

1987-89 Stakeholder for the Bay of Quinte Remedial Action Plan.

1987-89 Member of an IJC working group for the Classification and Inventory of the Great Lakes Aquatic Habitats

RESEARCH SKILLS and EXPERTISE:

1. Statistics: I have a strong background in statistical analysis and study design (six University mathematics courses), particularly as applied to the analysis of environmental, limnological and biological data matrices. I am familiar with uni- and multivariate statistics, along with circular and Baysian statistical procedures.

2. Modelling: I learned a variety of ecological modelling techniques from Drs. C. Holling, C. Walters and R. Hillborn while I attended the University of British Columbia. I have expanded on this background of creating simulation models using difference and differential equations by incorporating the mathematics of catastrophe, chaos and fuzzy logic theory into models.

3. Geographic Information Systems: I am particularly familiar with raster GIS systems, which I have used to assess the spatial abundance and distribution of terrestrial resources and aquatic organisms, and map the water quality of streams using satellite multi-spectral imagery and benthic invertebrate field data.

4. Taxonomy of aquatic invertebrates: My taxonomic expertise for identifying benthic macroinvertebrates has been developed over the past 35 years. I currently have over 1.6 million identified specimens in my personal collection, primarily from Ontario, but with good representation from Oregon, British Columbia, East Africa, Thailand and New Zealand. I have contributed to the addition of five mayfly taxa to the provincial species list. Drs. C.R. Lugo-Ortiz and P. McCafferty at Purdue University named an East African mayfly: ***Acanthiops griffithsi*** after me in recognition of my stream bioassessment work in Kenya (Lugo-Ortiz and McCafferty 1998). I obtained a taxonomic certification in Eastern EPT and Chironomidae from the Society of Freshwater Science.

5. Ecosystem Modeling Workshop Facilitation: I have organized and facilitated ecosystem workshops as a means to synthesize interdisciplinary scientific information, reach consensus on complex environmental issues, and develop management plans with recommendations and options to meet specific goals. For example, I used this technique to develop Ecosystem Objectives for the Lake Erie Lakewide Management Program and to generate hypotheses related to the extensive beaching of aquatic plants along the Michigan and Ontario shorelines of Lake St. Clair.

ABOUD & ASSOCIATES INC.
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GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
LPAT TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

January 30, 2026

Our Project #: AA21-049A-030
Sent by email: mfarncombe@puslinch.ca

Monika Farncombe
Planning and Corporate Services CoordinatorTownship of Puslinch
7404 Wellington Rd 34, Puslinch ON N0B 2J0

Re: 2025 Ecological and Aquatic Monitoring Report Roszell Pit, Puslinch, License No. 625189 (Prepared by: Dance Environmental Inc.) Peer Review – Ecology

Dear Ms. Farncombe:

Aboud & Associates Inc. has been retained by the Township of Puslinch to complete a Peer Review of the 2025 Ecological and Aquatic Monitoring Report, as they pertain to the annual monitoring requirements of aggregate extraction within the Roszell road pit. The Roszell wetland is identified as part of the Speed River Provincially Significant Wetland complex. We have reviewed the following document as part of our assessment:

- 2025 Ecological and Aquatic Monitoring Report Roszell Pit, Puslinch Township. ARA Licence No. 625189. Dance Environmental Inc. December 22, 2025.
- 2024 Roszell Road Pit Ecological and Aquatic monitoring report peer review – Ecology (Aboud & Associates inc., January 23, 2025).
- 2025 Ecological and Aquatic Monitoring Report – Grand River Conservation Authority (GRCA) Review (GRCA, January 22, 2026).

Per the methods described in the report, the requirements of the annual monitoring report include the following components:

- Vegetation monitoring, including quadrat sampling of herbaceous vegetation, photo monitoring, soil moisture sampling, and tree and shrub health information.
- Salamander egg mass surveys and amphibian call surveys,
- Trout spawning surveys, including an evaluation of hydrogeological monitoring results and any evidence of resulting changes.

Additional monitoring was implemented in 2022 based on concerns noted during the 2021 monitoring season, this included weekly water level monitoring within the wetland from May until June and identifying the presence of any salamander egg masses or larvae during those visits.

The December 2025 report and associated appendices have identified the following regarding ecological and aquatic conditions of the associated natural heritage features in proximity to the Roszell pit:

- Vegetation surveys occurred within the same timing as previous surveys. Spring results demonstrate 19 instances of an increase and six instances of a decrease in percent cover categories compared to 2024 values. Fall results demonstrate 10 instances of an increase and seven instances of a decrease in percent cover categories compared to 2024 values. The majority of these changes occurred over one percent cover category, suggesting some fluctuation compared to 2024 results.

- Trout Redd Surveys occurred in the appropriate timing window and identified that trout spawning continues in both the main creek and tributary 7. No Trout Redds have ever been observed in tributaries 8 & 9 and are no longer surveyed per data included in the report. Redd numbers were above average for both the main creek and tributary 7.

- Salamander egg mass surveys conducted yearly since 2013 confirmed salamander breeding in the subject site in 2025 within Wetland Areas A and B. The 2025 number of egg masses was lower than in 2022, 2023 and 2024, with a decreasing trend observed over the past two survey years. This decline is inferred to be related to interannual variability in local precipitation, which may influence breeding success, recruitment and survival.

- Amphibian calling surveys completed in 2025 observed increased numbers of species at one site, and the same number at four of the sites. Population levels, inferred based on call levels, were similar or slightly lower than those found in 2024.

Based on our review of the provided information, Aboud & Associates find the monitoring report has appropriately identified several trends that have emerged in recent survey years and provides adequate discussion as to the explanation of these trends in the context of potential influence resulting from the operation of the aggregate extraction. Aboud & Associates notes that several comments provided in previous year's reports have not been adequately addressed or carried forward in the 2025 report. Further, Aboud & Associates has several comments relating to conclusions made in the report which should be further substantiated by evidence to reliably conclude the operation of the aggregate pit is not the likely cause for emerging trends.

Prior to acceptance of the report, the following components should be reviewed and addressed in an updated report:

- In reviewing Appendix 3, several dominant species listed are at <1% cover or have been absent from plots for several consecutive years. This suggest a possible change in the vegetation community however; no additional information is provided on which species are now dominant within the plots. If new species have filled those areas, they should be included in the dominant taxa list. If it is bare earth, this should be noted. Discussion should be included to evaluate if the change in community is the result of changes in wetland hydrology (i.e. community transitioning from wetland dominant species to upland species).

- A complete plant list should be appended that includes species present for each plot, or all field forms should be appended, an example field form from 2013 does not provide any additional information.

- Any community level changes in overall wetness index may indicate a change in groundwater levels and should be included and discussed in detail and compared with relevant hydrogeological data. Additionally, while a table containing the soil moisture conditions in the vegetation plots has been added, there is little discussion in the document as to what these results mean for the plant communities.

- As noted in 2022, 2023,2024 and 2025 during our review, review and analysis of the average wetness index for each vegetation plot, including all species observed, compared year to year, to determine any changes to the vegetation composition and wetness index should be included graphically, and discussed in the context of potential changes in groundwater level. This type of analysis has also been identified by the GRCA in their 2023 review. While mention of wetland indicator species have been added to the text, no analysis has been performed. We recommend completing a floristic quality assessment by plot and by year to determine changes to the floristic quality index, average wetness value, and average Coefficient of Conservatism to help determine if changes are as a result of hydrological changes, as opposed to agricultural changes.

- Tables 2-7 depicts the tree and shrubs transect counts well, however, discussion in the text also provides data on the tree and shrub counts present within the entire quadrat. In some cases, these numbers show differences from 2024, however an assessment of any trends persisting beyond 2024 has not been conducted. We recommend including the total tree count by quadrat to Tables 2-7 to supplement this assessment and provide discussion for any trends or changes compared to baseline monitoring years.

- Several statements have been made acknowledging a reduction in invasive and/or non-native species from the vegetation plots with the conclusion that these reductions represent an overall positive change. While this is true from an ecological perspective, it dismisses consideration of the underlying cause for change, particularly in

the context of the ongoing aggregate extraction. For example, Glossy Buckthorn (*Frangula alnus*) is an Ontario Wetland Evaluation System (OWES) listed wetland plant species and is known to dominate disturbed wetland communities and the reduction of this species may be an indicator of changes in the hydrology of the wetland. We recommend considering changes in vegetation composition through the lens of potential hydrological impacts regardless of invasive status.

- Standing water observations, depth measurements, and soil saturation classification information should be presented in a table or graph for all monitoring years. While statements in the text provide some context to which years were similar to others, these statements can often be subjective, and it would be more appropriate to support these claims with a table presenting the data. Additionally, comparison should focus on changes in relation to pre-extraction observations.

- Changes in salamander egg masses are inferred to be due to lower-than-average precipitation in past years, resulting in the wetland drying too soon to support survival. To support this claim, we recommend including annual precipitation data over the monitoring years to demonstrate this correlation. Where site specific information is not available, this information is readily available at a regional level from Environment Canada.

- The amphibian data presented in Section 4.4 (Table 14) does not indicate if amphibians were heard calling within or beyond 100 m of the survey station. If frogs calling from beyond 100 m of the survey station were excluded, this should be indicated in the data table.

- The recommendations section should include adaptive mitigation measures to address results of the amphibian and salamander breeding studies.

- In general, using more recent imagery for base mapping and figures is recommended.

- Appendix 3 does not include all species observed per year or plot.

- Complete species lists observed in each plot for each sampling year should be included as an appendix to the report, alternately, inclusion of all field forms should be included in the appendix.

Advisory comments:

- There are several spelling mistakes in the document, such as “staning” and “exisitng”.

- Figure 3 should be mentioned much earlier in the text (sections 3.3-3.5) and moved further up the document.

- The graph for station Frog_5 is absent from the report.

- For Table 8, consider displaying the results as a range with the mean in brackets to reduce the number of columns and table extending on multiple pages.
For example:

89-93
(91.2)

- We recommend including a line graph displaying mean soil moisture condition, with error bars representing the range, to aid in visually displaying trends over the monitoring years.

In conclusion, our review of the submitted report has determined that while the proponents have outlined the results of the monitoring for 2025, several comments from previous year's review have not been addressed and additional information is required in order to support the claims that changes observed are due to unrelated factors from the aggregate operation. As changes to the vegetation community have been observed, floristic quality assessment should also be performed and was identified as a requirement to be addressed in 2023 and 2024.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

[redacted]

Jordan Widmaier, B.Sc.
CAN-CISEC
Aquatic Ecologist

Reviewed by:

[redacted]

Cheryl-Anne Ross, B. Sc.
MNRF Certified ELC & OWES
Ecology Lead & Wildlife Ecologist

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Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

January 22, 2026
Via email

Monika Farncombe
Township of Puslinch
7404 Wellington Road 34
Puslinch, ON, N0B 2J0

Dear Monika Farncombe,

Re: 2025 Ecological and Aquatic Monitoring Report
Roszell Pit, ARA Licence No. 625189
CBM Aggregates

Grand River Conservation Authority (GRCA) staff has reviewed the above-noted 2025 Monitoring Report for the Roszell aggregate pit in the Township of Puslinch.

Documents Reviewed by Staff

Staff have reviewed the following documents submitted with this application:

- Ecological and Aquatic Monitoring Report, prepared by Dance Environmental Inc., dated December 22, 2025

Recommendation

We understand that the report demonstrates the 2025 findings and cumulative results of a biological monitoring program that began in 2013. The results indicate that extraction activities have not affected biological features or functions in the study area, and that wetland vegetation communities and watercourses remain unaffected. We support the recommendations stated on page 62 of the report.

Should you have any questions, please contact me at 519-621-2763 x 2231 or by email at iezorlu@grandriver.ca.

Sincerely,

[redacted]

Ismet Esgin Zorlu
Resource Planner
Grand River Conservation Authority

Copy: Dance Environmental (via email)

DANCE ENVIRONMENTAL INC.

2025
Ecological and Aquatic Monitoring Report
Roszell Pit,
Puslinch Township.
ARA Licence No. 625189.

Prepared for:
CBM Aggregates
55 Industrial Street
Toronto, ON
M4G 3W9
Attn: Stephen May

Prepared by:
Dance Environmental Inc.
807566 Oxford Rd. 29
R.R. #1
Drumbo, ON
N0J 1G0

December 22, 2025.
DE-382

1.0 BACKGROUND

Dance Environmental Inc. was retained on September 7, 2012 by CBM Aggregates to begin initial data collection on wetland vegetation, fish spawning, and sediment and erosion control monitoring in accordance with the site plans for the Roszell Pit, Puslinch Township.

The Roszell Pit was approved for aggregate extraction prior to 2012. The Roszell Pit is licenced for extraction into the water table.

The Summer of 2012 was characterized as a hot dry summer with lower than average precipitation, resulting in low water levels in streams and rivers throughout much of Ontario.

Aggregate extraction started to take place at the Roszell Pit in 2013, so the 2014 to 2023 monitoring provides data during aggregate extraction.

2.0 PURPOSE OF MONITORING

The monitoring started in the Autumn of 2012, and has continued yearly from 2013 to 2025. Monitoring has been conducted in order to meet ecological mitigation measures and ecological and aquatic monitoring requirements laid out in the site plan conditions for the Roszell Pit. The details of the ecological and aquatic mitigation measures for the Roszell Pit are outlined in the 2020 Ecological and Aquatic Monitoring Report, Roszell Pit prepared by Dance Environmental Inc. (Dance Environmental, 2020).

3.0 MONITORING METHODS

3.1 Vegetation Monitoring

Wetland Vegetation Quadrat Sampling

Objective: The objective of the vegetation quadrat sampling was to document the vegetation composition (species and relative abundance) and structure (vertical structure within the wetland) before extensive extraction had occurred, to record the baseline vegetation community conditions.

Baseline data were collected in 2012 (Autumn), to provide a basis for comparison as the extraction progresses both above and below the water table. In successive years (2013 to 2025) monitoring was conducted in Spring and Autumn.

Data Collection Methods:

The locations of the six 10x10 m quadrats which were established in 2012 are shown on Figure 1. The exact locations of the 10x10 m quadrats were randomly selected, but were generally placed near the upslope seepage areas of some of the tributaries within the Speed River Wetland Complex adjacent to the Roszell Pit, and were sited near existing piezometer locations. The location of quadrat placement was selected to specifically document vegetation and conditions around significant groundwater seepage features that the hydrogeology consultants had identified and monitored along the eastern margin of the wetland, to the west of the extraction area. Quadrats were

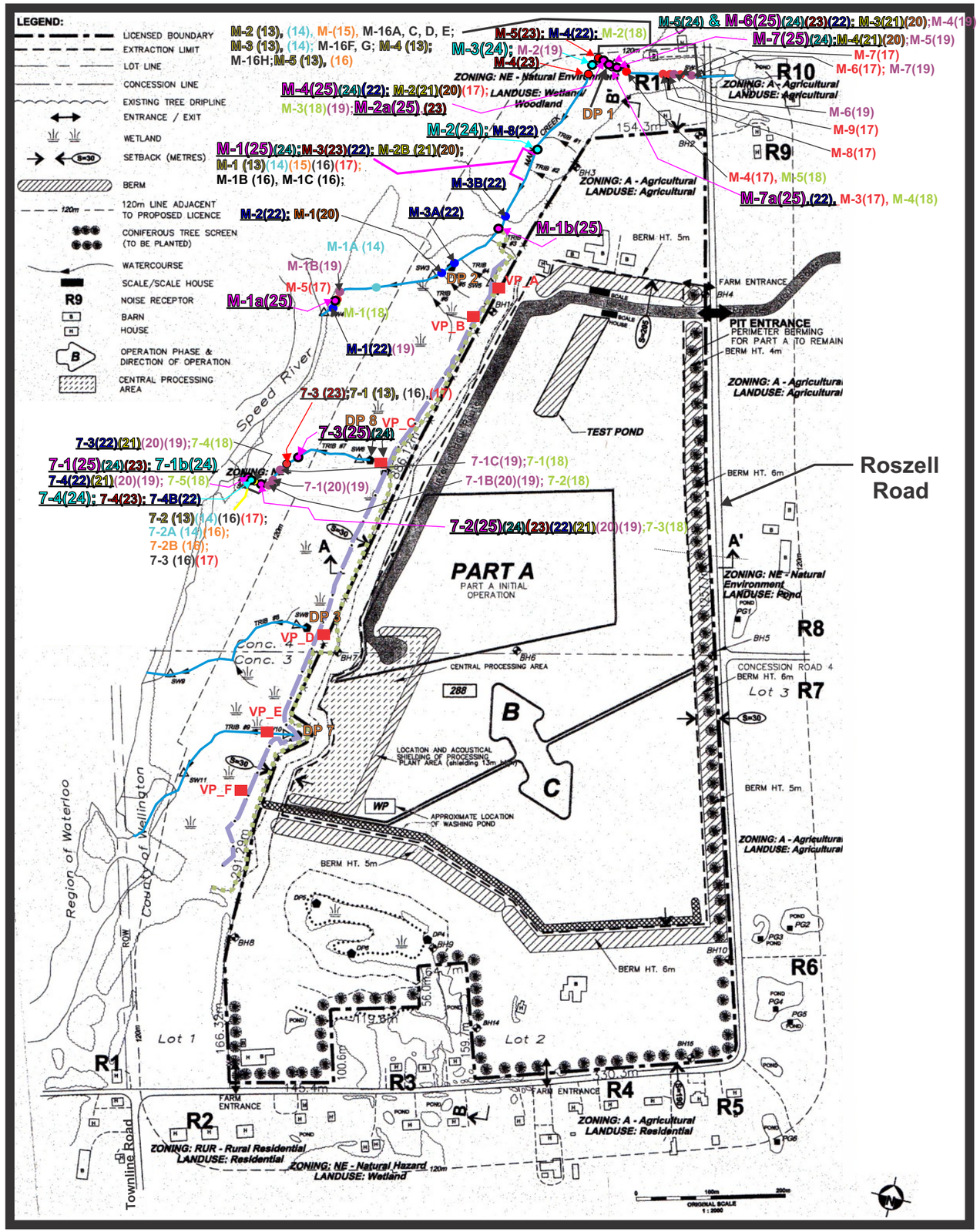


Figure 1. Location of Vegetation Plots and Creeks Surveyed and Locations of Trout Redds, 2013 to 2025, Roszell Pit.

LEGEND

- VP_A = Vegetation Plot & Photomonitoring Locations
- = Watercourse in Which Spawning Surveys Were Conducted
- = Wetland Limit (Flagged by Stovel & Associates Inc. and GRCA, 2005)
- = Existing Tree Dripline
- M-1 (13) = Trout Redd Location, 2013
- 7-1 (14) = Trout Redd Location, 2014
- M-1(15) = Trout Redd Location, December2015 or January 2016
- M-1(16) = Trout Redd Location, December 2016
- M-1(17) = Trout Redd Location, 2017
- M-1(18) = Trout Redd Location, 2018
- M-1(19) = Trout Redd Location, 2019
- M-1(20) = Trout Redd Location, 2020
- M-1(21) = Trout Redd Location, 2021
- M-1(22) = Trout Redd Location, 2022
- M-1(23) = Trout Redd Location, 2023
- M-1(24) = Trout Redd Location, 2024
- M-1(25) = Trout Redd Location, 2025

Base Map Source: Operational Plan Page 2 of 6. Stovel and Associates Inc. 2010.

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December 17, 2025

placed in these locations since this is where any change in groundwater discharge might be first observed and subsequently where vegetation changes could be first observed.

The centre of each quadrat was marked by a steel T-bar with the top sprayed white. The outer margins of each quadrat were marked by wooden stakes which had the tops sprayed orange. The ground vegetation was to be monitored during early Autumn 2012 and in successive years was monitored in both Spring and Autumn to ensure accurate identification of species and to capture plants blooming at different times throughout the season (CVC 2010).

Collection of Herbaceous Vegetation Information:
Four 1x1 m quadrats were then set-up to record the herbaceous species and their relative abundance within each of the 10x10 m quadrats. The 1x1 m quadrats were set-up so that the one corner of the quadrat was on the ordinal direction stake, with the quadrat being entirely inside the 10x10 m quadrat, see Figure 2. The percent cover that each species within the 1x1 m quadrat occupied was recorded. The percent cover within each 1x1 m quadrat that roots, deadfall, or mosses occupied were also recorded. The water depth within each 1x1 quadrant was recorded. These steps were repeated for each of the 4 quadrats within each of the six 10x10 m quadrats. An example of a completed data sheet from 2012, with data from a vegetation plot at the Roszell Pit, is contained in Appendix 1.

During both Spring and Autumn surveys the soil conditions within each of the 4 subplots of plots A to F are recorded. Soil conditions are identified as “dry, damp or saturated”, and if surface water is present its maximum depth is recorded. Each of the three soil conditions used to descried the soils is defined as:

- “Saturated” soils refer to soils that contain enough water when compressed between fingers water can be pressed out of the soil.
- “Damp” soils refer to soil conditions where when compressed soil may hold their compressed state, create the feeling of moisture on the fingers but no water is expressed by compressing the soils in hand.
- “Dry” soils refer to soils in hand being crumbly and not retaining their compressed state when pressed between fingers, and no water is expressed from the soil when compressed between fingers.

These are qualitative tests to understand general soil moisture conditions within the plot having three category ranges that soils can fit into, this has been the consistent method used since the start of the study and this allows for comparison between years.

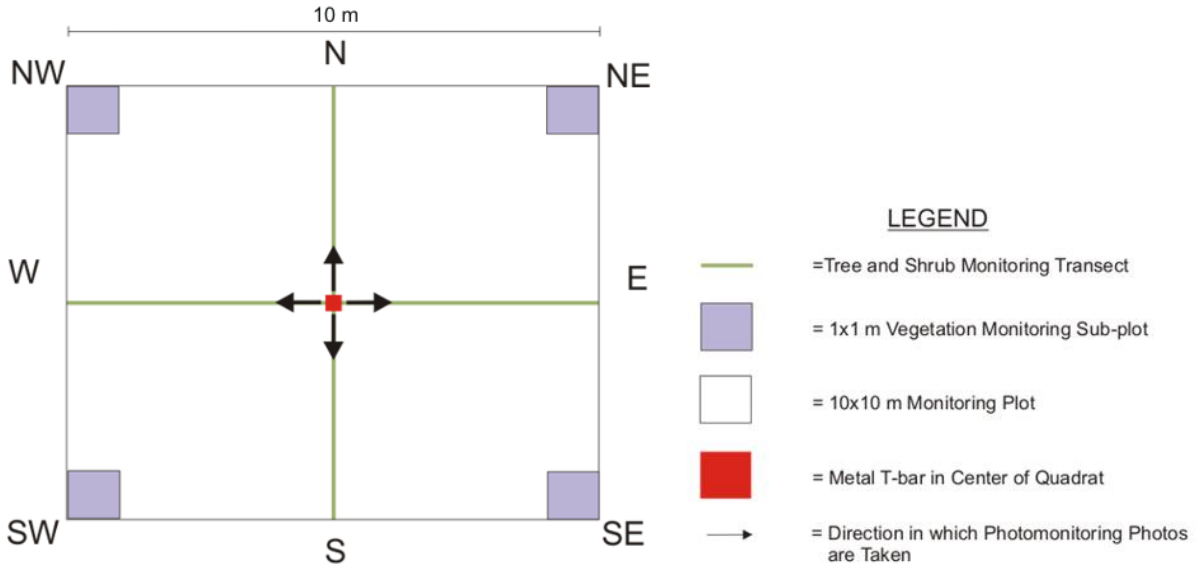
Assessment of change within the vegetation plots was completed by assessing a random sample of species within each subplot; the species assessed were a random selection based on meeting criteria for being a dominant species, invasive species, or wetland indicator species within the subplot. For consistency of evaluation the same species were assessed in each subplot each year to allow for comparison over time.

Collection of Tree and Shrub Information within Vegetation Plots:
As changes to shrubs and trees happens more in the long-term, data were to be collected on trees and shrubs within the vegetation plots only during the Autumn inventory.

Information on the trees and shrubs within the vegetation plots was modified from the 2012 baseline data collection year, based on Greg Scheifele's comments on the 2012 vegetation monitoring. In order to capture trends/changes in the higher strata within the 10x10 m quadrat, two transect lines were surveyed within each 10x10 m quadrat. The transect lines were conducted to record information about trees and shrubs including density, species composition, and strata (sub-canopy or understory) in which they are present within each of the six 10x10 m quadrats.

Trees or shrubs which were <10cm DBH were identified as being within the understory category for height class. For consistency between all six 10x10 m quadrats, the one transect line that was sampled ran north-south and the other ran east-west across each 10x10 m quadrat. Along each of the tree and shrub transect lines data were collected for a 1 m wide area centered along the entire transect. Standing dead trees were also recorded, along with the strata in which they occurred. An example of a completed data sheet from 2013, with data from the tree and shrub transect, is contained in Appendix 2.

Figure 2. Vegetation Monitoring Plot Layout and Position and Direction of Photomonitoring.



Starting in 2013, the health of each tree or shrub stem encountered along the east-west and north-south transect lines were to be recorded as dead, poor, or good.

It was also recommended by Greg Scheifele that tree health of all trees of >10cm dbh within the entire vegetation plot be recorded. For each tree >10cm dbh within the entire vegetation plot, the tree's health and whether it was a canopy or sub-canopy tree were recorded. We also recorded the same information for standing dead trees.

Soil Moisture:
A digital soil moisture meter (Vegetronics VG-METER-200 and VH-400 soil moisture sensor) was used to provide volumetric water content for soils in each of the six vegetation plots. The soil moisture probe was pressed into the soil until the entire probe was in the soil, and then a reading was taken. Soil moisture content was to be recorded as a percent. Soil moisture measurements were taken as a supplementary data at the vegetation plots, at the suggestion of Dance Environmental Staff, and not at the request of review agencies.

The soil probe data provides a soil moisture measure in the top 90mm of the soil layer. The soil moisture measurement are collected at the North, East, South, West and plot center stakes, compared to Notheast, Southeast, Southwest, and Northwest stakes where vegetation plots are located, in order to not disturb vegetation in the plots monitored. This supplemental data has not been collected as a primary source of data for identifying vegetation community change or significant species presence changes. Soil moisture data within the top soil layer was considered to have value for use in understanding change if there was ever a point when significant changes have been noted, and hydrological changes are anticipated to be the cause of the impact.

Photomonitoring:
As outlined in the site plans for the Roszell Pit, photomonitoring was to take place at fixed point locations so that photos can document potential changes to the vegetative conditions within the Speed River Wetland Complex adjacent to the Roszell pit.

Photomonitoring locations were to be located at the steel T-bar in the center of each of the 10x10 m vegetation quadrats. A total of six fixed point photo monitoring locations were set-up in 2012 with photos taken from the steel T-bar facing north, east, south and west, see Figure 2.

3.2 Spawning Surveys

The spawning surveys were to be conducted along Main Creek and Tributaries 7, 8, and 9 located within the Speed River Wetland Complex, to the west of the extraction area of the Roszell Pit. Surveyors wore polarized glasses and walked along each of the streams to be surveyed.

The location, number, size and species of redds were mapped and described on data sheets. Trout redds are the particular focus of the spawning surveys. Weather conditions including wind speed, percent cloud cover, precipitation, and air temperature were recorded during each survey visit and water temperatures were recorded for each of the streams or tributaries which were surveyed.

Observations of trout and their activities were recorded. Substrate conditions and water depth where spawning was observed were to be noted.

Spawning surveys were conducted on two dates to document the range of spawning dates and locations for Brook Trout.

The following approach was followed to determine whether the pit operation has affected fish habitat in a measurable way:

- Evaluate what the groundwater/hydrology consultant has determined about any significant changes in stream temperature, stream flow, ground water flux relative to meteorological conditions during the study period;
- Determine geographically where ground water/surface water changes have occurred relative to the aggregate pit margins and predicted impact zones;
- Where groundwater/ surface water data show significant changes the potential effects on fisheries data will be carefully inspected for any evidence of changes;
- In turn, any significant changes in trout redd number and location shifts would be compared with groundwater/surface water data trends.

3.3 Salamander Egg Mass Surveys

As part of the monitoring plan for the pit, annual surveys for salamander egg masses were to be undertaken. Spring 2013 was the first year that salamander egg mass surveys were conducted.

Salamander egg mass surveys were to focus on searching the wetland located in the southwestern end of the Roszell pit property. A survey was to be undertaken at the wetland in the Spring once the salamanders have laid their egg masses some time between April to May, as egg laying times are dependent upon weather conditions for each given year. At the beginning of the survey weather conditions including temperature, wind speed, water temperature, and water temperature were to be recorded.

To find and estimate numbers of egg masses of salamanders area searches throughout the wetland were to be conducted. Areas searches involved the searcher wearing chest waders, and walking throughout the wetland wearing polarized sun glasses, scanning into the water for egg masses. When egg masses were found they were to be identified to species along with number of eggs/egg masses, vegetation type that egg masses were attached to and any other details worth noting.

3.4 Amphibian Call Surveys

As outlined in the ecological and aquatic monitoring plan, amphibian call surveys were to be undertaken once extraction begins, so surveys began in 2013. Amphibian call surveys were undertaken in general accordance with the Marsh Monitoring Program Protocols. Surveys were to be undertaken at the wetland south of the southern most extraction limit for the pit, and at any adjacent properties (with ponds) where landowners provide permission to survey for frogs.

Surveys are to be conducted on three dates from April to June, at least 15 days apart. Night-time air temperature should be greater than 5°C (41°F) for the first survey, 10°C (50°F) for the second survey, and 17°C (63°F) for the third survey (MMP 2008). Surveys are to be conducted between one half hour after sunset and no later than midnight (MMP 2008).

Weather conditions were recorded for each of the surveys conducted, including wind speed, air and water temperature, cloud cover, and precipitation. Each survey station was monitored for 3 minutes. Surveys are to be conducted only when wind strength is between 0 and 3 on the Beaufort Scale (MMP 2008).

3.5 Water Level Monitoring within the Roszell Wetland, South of the Pit

For several reasons monitoring of the water levels in the Roszell wetland to the south of the Roszell Pit was undertaken on an approximately weekly basis from early May until the end of June. This monitoring started in 2022 as a result of the low water levels in the wetland noted during 2021, which was attributed to drought conditions throughout Summer 2021. This monitoring was continued during 2025.

Water levels were recorded within the wetland in polygons A, B, and C as identified for the salamander egg mass surveys. During the months of May and June water levels were recorded (in cm) in the deepest locations in each polygon when water was present. The presence of any salamander egg masses or larvae in the water which was present was to be recorded. The dug pond farther south of the Roszell Wetland was also monitored during the same May to June period with water depth recorded at a stake in the southwest corner of the pond, which had been put in during previous years. When water levels at the stake were 0cm, the distance to the water's edge from the stake was then recorded (in cm).

4.0 MONITORING RESULTS

4.1 Vegetation Monitoring

A total of six permanent vegetation monitoring plots were set up near the eastern edge of the Speed River Wetland Complex, adjacent to the extraction area of the Roszell Pit. Vegetation monitoring quadrats were set up on September 28, 2012 (Plots A, B, and C) and October 1, 2012 (Plots D, E, and F).

The UTM co-ordinates (obtained with a hand-held GPS) for vegetation monitoring plots A to F, are shown in Table 1.

Table 1. UTM Co-ordinates for the Center of Vegetation Monitoring Plots and Photo Monitoring Locations

Plot Name	UTM Co-ordinates
Plot A	17T 0557139 4812349
Plot B	17T 0557132 4812259
Plot C	17T 0557057 4811973
Plot D	17T 0557042 4811849
Plot E	17T 0557005 4811745
Plot F	17T 0557017 4811664

As outlined in the ecological and aquatic monitoring site plans, vegetation monitoring was to be conducted in the Spring and Autumn. The first Autumn vegetation information was conducted on September 28 and October 1, 2012, while the first set of

Spring vegetation information was collected on May 30, 2013. The 2013 Autumn vegetation inventory was conducted on September 20th.

It was noted when setting up the vegetation plots that cattle from the farm to the north of the Roszell Pit had access to the Speed River Wetland Complex in the area of vegetation plots A and B. The Spring and Autumn 2024 monitoring found that the cattle still had access to the areas of vegetation plots A and B, similar to what has been found historically.

The approach that has been taken based on our professional opinion is that change at the scale of tree and shrubs is the indicator of significant change. Trees and shrubs have deeper root systems (obtaining water from deeper below ground), comprise the broader vegetation community level (ELC community types), and are not as susceptible to short-term weather variations. In contrast herbaceous vegetation presence/absence and abundance can change due to a much wider range of uncontrollable variables, due to their ease of damage from weather, wildlife trampling or being eaten. Their shallower root systems make them much more susceptible to impact from the volume of annual precipitation and temperatures (which affect numbers and size or both). Weather can strongly influence the extent of plant seed germination as well. Herbaceous vegetation species are also always in a state of flux (they are not static), as soil minerals/nutrients, moisture, shade, wind, fallen wood debris, and wildlife browsing are just some of the natural influences which change herbaceous vegetation presence.

We have provided analysis of the herbaceous vegetation since the second year of data was collected, but it provides a micro scale impact assessment as it focuses on changes in a small patch of habitat within a larger overall vegetation community. Significant impacts would be a rapid change of vegetation community type. This has not been found to be the case within the Roszell Wetland, where the vegetation plot monitoring has been taking place since 2012.

It is important to remember that changes between one percent cover category and another can mean an estimated change of just 1%. Therefore, changes in more than 4 percent cover categories (from category “1-5%” and up) are potentially more suggestive of changes occurring in the plot.

The following summary of results from 2025 vegetation surveys are provided below firstly by Tree and Shrub data (indicative of the community level), followed by sub-plot quadrat data for Plots A to F (representing micro-level change) indicating ground cover conditions.

The Spring vegetation survey results showing selected species that have been assessed for change in percent cover from 2013-2025 within subplots are provided in Appendix 3. The Autumn vegetation survey results showing selected species that have been assessed for change in percent cover from 2012 -2025 within subplots are provided in Appendix 4. As indicated in the methods section above, species assessed

were a random selection based on meeting criteria for being a dominant species, invasive species, or wetland indicator species.

Tree and shrub data within the vegetation plots collected during the Autumn vegetation monitoring, at each of the six monitoring plots are summarized below.

2025 Tree/Shrub Data and Surface Water:

Spring surveys were completed on May 27, 2025 and Autumn surveys were completed on September 23 and 26, 2025. The tree and shrub transects are summarized in the following text for each vegetation plot with the numbers found in 2025 listed, and for reference the 2024 values are provided in brackets after the 2025 survey values.

Vegetation Plot A:

Vegetation Plot A was located in the upslope area where seepage begins which becomes Tributary #4, see Figure 1. Areas of rutted soils within vegetation Plot A were evident in Spring and Autumn 2024 due to cattle foraging within the vegetation plot area. Spring and Autumn surveys in 2025 indicated no recent presence of cattle within Plot A, for the first time in all of the years of monitoring.

In Spring 2025 water was present at <1-3mm depth in Plot A, similar to 2020, 2021, 2023 and 2024 findings. In Autumn 2025, 3 of 4 subplots had surface water ranging from 1-3mm, similar to 2022 but less than 2024 and 2023 where all sub-plots had surfaces water ranging from 1-5mm.

A generally limited abundance of trees and shrubs are present within vegetation Plot A and no change was noted in 2025, see Table 2. The east-west transect had three species: Glossy Buckthorn 9(9), Yellow Birch 1(1) and Eastern White Cedar 11(11). Two of the Glossy Buckthorn on the east-west transect were considered dead, same as noted in 2024. The loss of this species is not considered a concern as it is an undesirale invasive species.

The north-south transect had 1 Chokecherry in good health (same since 2020), Eastern White Cedar 4(4), Yellow Birch 1(1) and Glossy Buckthorn 1(1) recorded for second time.

All understory trees and shrubs were identified to be in good health, as in all previous years. In 2025 there was 1 Eastern White Cedar that was confirmed large enough to count (>10 cm dbh), it was in the sub-canopy of the northeast quadrant, in good health.

Table 2. Tree and Shrub Transect Data Totals at Plot A, from 2012 to 2025.

Plot A	Year													
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eastern White Cedar	15	0	0	0	6	8	8	8	8	15	15	14	15	15
Yellow Birch	1	0	0	0	2	2	1	1	1	2	2	2	2	2
Speckled Alder	0	1	1	0	0	0	0	0	0	0	0	0	0	0
Glossy Buckthorn	1	4	4	0	1	4	4	4	4	10	11	11	10	10
Chokecherry	0	1	1	1	1	1	1	1	1	1	1	1	1	1

*Values calculated by adding only good and fair condition trees/shrubs together from North-South and East-West transects.

Vegetation Plot B:

Vegetation Plot B was located approximately 33m to the southwest of Plot A, near the eastern wetland edge of the Speed River Wetland Complex. Vegetation Plot B was located in the upstream seepage area of Tributary #6, see Figure 1. In Spring and Autumn 2024 evidence of cattle use within the plot was noted. In Spring 2021 a large tree was noted to have fallen across part of the NW subplot and it was still there in 2025.

There was no surface water present in Spring 2025 (same as 2024 to 2020, and 2018) and soils were saturated in all plots same as 2024, while in 2023 two of the plots had dry soil in spring. No surface water was present in any of the sub-plots in Autumn 2025 same as in 2024 to 2021, and 2018 (NW plot in Autumn 2020 had <1mm). In Autumn 2025 at Plot B in the SE, NE and SW sub-plots soils were damp and the NW had saturated soils (same as 2024).

Tree and shrub transect data indicates Plot B contains slightly more trees and shrubs than Plot A (and it is similar in that they were all in the understory), but it is still a generally open habitat of predominantly herbaceous vegetation. The totals per tree/shrub species along both transects combined for those in Good or Fair condition are shown in Table 3. Species present within the east-west transect included Glossy Buckthorn 13(13), Eastern White Cedar 8(8), Yellow Birch 2(2), Red-Osier Dogwood 1(1), and Willow Sp. 5(5). In the north-south transect Glossy Buckthorn 14(14), Yellow Birch 3(4), and Eastern White Cedar 11(9).

Prior to 2024 no trees over 10cm dbh were within the 10x10m plot radius. Again in 2025 two Eastern White Cedar in good condition were recorded, with one in the NE quadrant and 1 in the SW quadrant.

Table 3. Tree and Shrub Transect Data Totals at Plot B, from 2012 to 2025.

Plot B	Year													
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eastern White Cedar	16	0	0	11	18	13	18	13	13	15	14	14	17	18
Yellow Birch	6	5	4	4	7	6	6	6	6	5	6	6	6	5
Glossy Buckthorn	18	17	31	23	23	21	24	26	25	25	28	30	27	27
Alternate-leaved Dogwood	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Red-Osier Dogwood	0	0	0	0	0	0	1	0	0	1	1	1	1	1
Willow Sp.	-	-	-	-	-	-	-	-	-	-	-	-	5	5

*Values calculated by adding only good and fair condition trees/shrubs together from North-South and East-West transects.

Vegetation Plot C:

The Vegetation Plot C was located in fresh-moist cedar swamp. Vegetation Plot C was located in the upstream seepage area of Tributary #7 and near drive point piezometer DP8, see Figure 1. The vegetation plot is on a slope with scattered seeps which flow downslope towards the cedar swamp.

Surface water was present in only 1 sub-plot (Southeast) in Spring 2025 at 1-3mm, which is similar to 2024, 2016, 2017, 2021 and 2022 which had 1-3mm (2023 and 2020 had 4-5mm standing water). The SW, NW and NE sub-plots all had damp soils in spring 2025 and 2024.

In Autumn the SE sub-plot had 1mm of flowing water. This is less than in 2024 & 2021 which had 3-4mm, while 2023 had 3-5mm of flowing water. Years with less water included 2018-2020 which had depths of 2-3mm. In 2025 the SW had saturated soils and NW & NE had dry soils. This varied from 2024 where the SW and NW sub-plots in 2024 had damp soils and only the NE had dry soils.

Tree and shrub diversity within the transects continues to be limited, with only two species being present, Glossy Buckthorn and Eastern White Cedar. The totals for tree/shrub species along both transects combined for those in Good or Fair condition in Plot C, are shown in Table 4. In the understory along the east-west transect Glossy Buckthorn 7(7) and Eastern White Cedar 2(2) were recorded to be present and in good

health. Along the north-south transect line in 2025 Eastern White Cedar 8(8) and Glossy Buckthorn 1(1) were recorded.

Tree data in 2025 shows Eastern White Cedar was recorded with 19(19) in good health, fair health 8(8), and none in poor health. Glossy Buckthorn was recorded in the SE, in the sub-canopy in good health with 3(3) trees recorded.

Table 4. Tree and Shrub Transect Data Totals at Plot C, from 2012 to 2025.

	Year													
Plot C	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eastern White Cedar	18	0	0	5	9	10	10	11	11	10	10	14	10	10
Glossy Buckthorn	2	3	1	2	3	3	5	4	4	7	7	7	8	8

*Values calculated by adding only good and fair condition trees/shrubs together from North-South and East-West transects.

Vegetation Plot D:

The Vegetation Plot D was located in wet cedar swamp located in the upstream seepage area which enters Tributary #8 near the eastern edge of the wetland. Vegetation Plot D was located just east of drive point piezometer DP3. This vegetation plot is on a slope with scattered seeps with marl deposits.

Standing water was present in the SE subplot in Spring 2025 at 1mm (2024 at 1-2mm), the SW and NE has damp soils (same as 2024). The NW sub-plot in Spring 2025 had standing water at 1mm similar to 2023, and 2021 had1-2mm noted (2024 had saturated soils in the NW sub-plot). Recent years with greater surface water include 2019, 2020, and 2022 which had 2-4mm of water.

In Autumn 2025 1mm of surface water was present in the SE sub-plot (2024 had 5mm), while the SW and NE had damp soils (same as 2024). In 2023 the SE had 3-4mm in the Autumn (more than noted in 2022 and 2021). The NW sub-plot only had saturated soils in Autumn 2025 (same as 2023).The NW subplot had 1-2mm of standing water in 2024 similar to 2022 and 2021 (at 1-2mm) and 2018 & 2020 had 2-3mm of water. In Spring and Autumn 2016 & 2017 no surface water was present in any sub-plots, which continues to suggest wetter soils being present in Plot D after 2018.

Within Vegetation Plot D there was 1 Common Buckthorn in good condition along the north-south transect, same since 2020 as shown in Table 5. The east-west transect in 2025 had 2 Eastern White Cedars and 1 Common Buckthorn which were now large enough to count.

Vegetation Plot D is located within cedar swamp, with Eastern White Cedar and Yellow Birch as the tree species of >10 cm dbh which were present within the entire plot. Eastern White Cedar was present with 22(23) in good health, and Yellow Birch with 2(2) also recorded in good health. The decrease of 1 White Cedar in the SE sub-plot was due to 1 mature tree fallen over at the roots.

Table 5. Tree and Shrub Transect Data Totals at Plot D, from 2012 to 2025.

	Year													
Plot D	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eastern White Cedar	13	0	0	0	0	0	0	0	0	0	0	0	0	2
Yellow Birch	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Buckthorn	0	0	0	0	0	0	0	0	1	1	1	1	1	2

*Values calculated by adding only good and fair condition trees/shrubs together from North-South and East-West transects.

Vegetation Plot E:

The Vegetation Plot E was located in fresh-moist cedar swamp. Vegetation Plot E was located in a seepage area approximately 30m downslope of the trail along the Speed River, in the bottomlands of the cedar swamp. The seepage area in which Vegetation Plot E was located is part of Tributary #9 and is located downslope of drive point piezometer DP7, see Figure 1.

In Spring 2025 no standing water was present in any of the sub-plots, similar to 2024, 2018 and 2016. In contrast, standing water was present at the NW sub-plot in 2023, 2020 and 2022 at 1-2mm. All four sub-plots in Spring 2025 & 2024 had saturated soils. In Autumn 2025 no standing water was present, and all sub-plots had saturated soils. While 2024 had 1-2mm of standing water at the NW sub-plot similar to 2019, 2020, 2022 and 2023 findings, in 2025 standing water was 15cm away from the NW subplot. The NE, SE, and SW sub-plots all had saturated soils in Autumn 2024.

Tree and shrub species along the north-south and east-west transects at >1m in height were very limited in this vegetation plot. Along the east-west transect Glossy Buckthorn 5(5) were present in good health, and 4(4) Eastern White Cedar in good health (3 cedars reached the height to be counted starting in 2023). In the north-south transect in for the first time 1 Eastern White Cedar was recorded now large enough to count. The totals per tree/shrub species along both transects combined for those in Good or Fair condition in 2025 at Plot E, are shown in Table 6.

There were four species of trees and shrubs of >10cm dbh found within the entire vegetation plot, including: Eastern White Cedar, Yellow Birch, Speckled Alder, and

White Elm. Within the entire Vegetation Plot E there were 17(19) Eastern White Cedar found in good health, 6(8) Yellow Birch were found in good health, 2(1) Speckled Alder and 1(1) White Elm was in good health now large enough to count. There was also 1 dead White Elm which has been present since 2018.

Table 6. Tree and Shrub Transect Data Totals at Plot E, from 2012 to 2025.

	Year													
Plot E	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eastern White Cedar	9	0		0	0	0	0	0	0	0	1	3	4	5
Yellow Birch	1	0	0	0	0	0	0	0	0	0	0	0	o	0
Black Ash	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Glossy Buckthorn	9	6	4	4	4	4	4	4	5	4	6	5	5	5

*Values calculated by adding only good and fair condition trees/shrubs together from North-South and East-West transects.

Vegetation Plot F:

The Vegetation Plot F was located in the bottomlands of a fresh-moist cedar swamp, dense with Eastern White Cedar. Vegetation Plot F was located in a seepage area downslope of the trail along the Speed River, to the west of the southeastern corner of the extraction area of the Roszell Pit. The closest drive point piezometer is DP7, to the northeast. Vegetation Plot F is not in a seepage area which contributes to a tributary through surface water flow, Tributary #9 is the closest tributary to this vegetation plot and is located to the west of it.

In Spring 2025, the SE sub-plot had flowing water at 1-2mm which is comparable to 2020-2024, 2016 and 2017. In 2019 and 2018 slightly deeper water was noted at 4-5mm in the SE sub-plot. In Spring 2025 the NW sub-plot had 1mm of staning water, same as in 2021 and similar to 2018 & 2016 which had 1-2mm noted. The NW sub-plot had 2-3mm of standing water in 2023, 2022, 2020 and 2019. Same as in 2024, the SW sub-plot had saturated soils and the NE sub-plot had damp soils. Overall, the SE had similar standing water depth to many other years in Spring, and the NW sub-plot showed a return of standing water similar to what has been observed historically (compared to a lack of standing water in 2024).

The SE sub-plot in Autumn 2025 Autumn 2019 and 2018 having less water at 1-2mm, less than noted in 2024 (at 2-3mm flowing water) and that of 2023 (at 3-4mm of flowing water), and years 2017, 2016, 2020-22 had 4-5mm. The SW sub-plot had saturated

soils and NE sub-plot had damp soils in Autumn 2025 and 2024. The NW sub-plot in 2025 had saturated soils with no standing water present, similar to years 2024 and 2018-2020. The 2024 results in the NW plot showed less surface water than in 2023, which had 4mm of standing water; 2022 and 2016 had 1-2mm recorded and 2021 had <1mm standing water at the NW sub-plot. The greatest water depths in the plot were noted in 2017 at 4-6mm deep. The 2025 and 2024 results were similar, but indicates surface water in the NW sub-plot are can be high variability between years.

The tree and shrub transect data from Vegetation Plot F indicates a limited understory, with only Eastern White Cedar being present along the east-west or north-south transects. The north-south transect had 7(7) Eastern White Cedar in good condition, 3(3) in fair condition and 10(11) dead. The 2025 count indicates no change other than 1 dead cedar was found to no longer be standing. The east-west transect had 2(2) Eastern White Cedar in good condition, 1(0) in fair condition and 10(11) dead. The 2025 East-west transect showed the same cedars in good health as in 2024 and that 1 cedar that was thought to be dead was considered to be in fair condition in 2025.

The decline of some of the cedars is not unexpected as it is typical in cedar swamp for some of the small saplings to died out from the heavy shading and competition with the larger canopy cedars. The totals per tree/shrub species along both transects combined for those in Good or Fair condition in Plot F, are shown in Table 7.

The tree count by quadrants for tree species within the entire vegetation plot that are >10cm dbh remained the same, including Eastern White Cedar, Tamarack, and White Birch. Eastern White Cedar was present in good health with 35(37), 1(0)fair, and 0(1) dead, and White Birch in good health with 1(1). The 2 standing dead Tamarack (snags of <8ft high) were still present in 2024. Overall, no significant change was noted in the trees within plot F in 2025.

Table 7. Tree and Shrub Transect Data Totals at Plot F, from 2012 to 2025.

	Year													
Plot F	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eastern White Cedar	50	0	0	0	0	0	0	0	0	7	11	15	12	13
White Birch	1	0	0	0	0	0	0	0	0	0	0	0	0	0

*Values calculated by adding only good and fair condition trees/shrubs together from North-South and East-West transects.

2025 Survey Results for Percent Cover in Quadrats:

The 2025 Spring vegetation plot survey was conducted on May 27, 2025 and the Autumn surveys were conducted on September 23 & 26, 2025. The data from vegetation plots A to F are summarized below. A summary by species and sub-plot of

the percent cover by certain species in Spring from 2013 to 2025 is provided in Appendix 3, and the data from the Autumn 2012 to 2025 surveys is summarized in Appendix 4.

Outside influences on Plot A and B have been noted since the initiation of the study, namely that the landowner allows his cattle to graze where the two plots are located. For several years discussion took place with the landowner and CBM staff to try to have him stop that practice, in that area. Those discussions were unsuccessful and Plots A and B have continued to experience varying levels of annual disturbance by cattle. This has resulted in deep depressions caused by cattle hooves in the soft, damp soils in that area, and which in turn creates colonizing areas where trampled vegetation becomes buried in the mud or if deep enough, the depressions collect standing water, and changes in colonizing species in these plots varies year by year. Also, as a result of cattle using the area of Plots A and B the occasional stake in the plots has been found knocked over or broken by the time of the next survey, so slight changes may result at these sites attributed to slight variances in where the replacement stake is placed. Reduced use by cattle was noted starting in 2023, and only in 2025 was no evidence of recent cattle use found in Plots A and B.

Plot A : Spring

- The subset of species recorded in each sub-plot, which have been listed in Appendix 3 annually, showed that in 2025 100% of the species listed showed no change in percent cover and moss increased by one percent cover category compared to 2024 (similar to 2023 findings).
- In Plot A in Spring 2025 Field Horsetail remained the same as 2024, and was an increase from 2023 and is a wetland indicator species.
- Comparison of 2025 with 2013 data (first year of Spring surveys) shows change in many of the species listed in Appendix 3, and as discussed in previous reports, the impacts of cattle grazing have influenced these changes greatly.
- Cattle impacts showed especially in 2018 in all sub-plots, from that point on several species started to no longer be recorded, with many of those not being present for >8 years.

Plot A: Autumn

- In Autumn 2025, 92% of the species assessed in Appendix 4 annually were found to show no change in percent cover within the sub-plots of Plot A.
- In Plot A in Autumn 2024 the wetland indicator, Bulblet Fern increased a percent cover category from 2023, and in 2025 remained at the same level as 2024.
- *Bidens connata* showed increases in 2024, but was not present in 2025 (same as 2019-2023).

Plot B: Spring

- The subset of species recorded in each sub-plot, which have been listed in Appendix 3 annually, showed that in 2025 90% of the species listed showed no change in percent cover or increased in percent cover compared to 2024.

- The Spring data indicates 10% (1 species) of those assessed in Appendix 3 showed a decline from 2024 data by multiple categories, for Kentucky Bluegrass. This decline is not seen as a negative as Kentucky Bluegrass is a non-native species and its decline is positive for the wetland.
- In Plot B 2018 is the year when more change in percent cover occurred compared to years previous, with less change occurring after that point in time. While some species change has occurred in Plot B, wetland indicator species are still present in many of the sub-plots, and the tree growth in the plots is changing the habitat over the 12 years of study away from semi-open habitat to treed, shaded cedar swamp. No cattle use in plot B in 2025 and less presence of cattle in recent years resulting in more consistent vegetation community inventory findings.

Plot B: Autumn

- In Autumn 2025, 94% of the species assessed in Appendix 4 annually were found to show either no change or increased in percent cover within the sub-plots of Plot B
- *Carex schweinitzii*, moss species, Field Horsetail have remained consistent in Autumn 2025 to 2024 and are wet tolerant/indicator species.
- Tall Buttercup increased one percent cover category in 2025, similar to 2021 and 2014 results.
- With yearly trampling, rutting and browsing within Plot B yearly results have varied widely between the 2012 pre-extraction year and 2025. In Appendix 4 moss species in the NW sub-plot which has remained at the same percent cover for all but one year of the 14 years of autumn surveys. Several other species such as Tall Buttercup in the SE and SW sub-plots have declined due to cattle trampling and/or browsing.
- With less cattle activity in recent years the species in Appendix A Plot B, show less negative variability than has been seen in the last 5 years.

Plot C: Spring

- Comparison of the 2025 Spring results to the 2024 results show that 82% of the species assessed in the Appendix 3 Table showed no change or increased in percent cover in 2025.
- Field Horsetail declined by 1% category to none being present (from 1-5% in 2024). However, this was the same as 2016, 2021 and 2022. Based on the variability of the species over the last 13 years, 2025 findings do not seem to be out of the ordinary.
- Wetland indicators that increased in percent cover in 2025 (shown in Appendix 3) included Field Horsetail (from 0 to 1-5%). Three-leaved Solomon Seal increased by a percent cover category to 6-15% cover.
- Comparison of 2025 results with the pre-extraction year 2013 data show that overall most species vary only slightly in percent cover between years (typically by one percent cover category). The 2025 findings are very similar to those of 2014 for many of the species.

- The comparison of 2025 results with the pre-extraction year 2013 data at Plot C in Spring for Bulblet Fern, shows variability between the sub-plots. The SE sub-plot had the same percent cover pre-extraction to 2025. In the SW Bulblet Fern shows having only 2 of 13 years with the same as in 2013 (pre-extraction) but overall, only a one percent cover category change has been noted between 2013 and 2025 findings. The consistent percent cover category in the SW for Bulblet Fern is what was found on 2025 and 2024 (1-5%), shown by 10 of 13 years being at that percent cover category. Similarly, the NE sub-plot shows a one percent cover category change between 2013 (pre-extraction year) and 2025, and that 2025 was the same as 8 of 13 years of data.

Plot C: Autumn

- In 2025 at Plot C 92% of species assessed in Appendix 4 showed no change or an increase in percent cover category compared within 2024 findings (compared with 85% for 2024 and 2023)
- There were 1 of 13 (8%) species assessed in Appendix 4 that showed a decline in percent cover. Bulblet Fern which declined by one percent cover category, the same as noted in 8 of 14 years and has been found to fluctuate back to higher percent cover. These declines were only noted in the SE sub-plot.
- Even though Bulblet Fern declined in percent cover in 2025 compared to 2024, it was still present at the same percent cover as 2013 (first extraction year in that subplot).
- Comparison of 2025 to 2012 pre-extraction data at Plot C as shown in Appendix 4 shows a mixed result of some wetland indicators showing no change or increases in percent cover and some species present in 2012 have not been present for several years. *Carex flava* shows the most change where from 2016 on in some of the sub-plots it was no longer present. This species prefers sun to partial shade, so the maturing canopy and shrub cover over the study period likely explains the change in percent cover for this species. Widespread change to multiple wetland indicator species, however, has not occurred in Plot C based on Autmun data.

Plot D: Spring

- Comparison of the 2025 Spring results to the 2024 results show that 100% of the species assessed in the Appendix 3 table showed no change (33%) or increased in percent cover (67%) in 2024. This is the reverse to 2024 compared to 2023 where more species showed no change than had increases.
- Species that showed an increased percent cover in Spring 2025 compared to 2024 included Bulblet Fern and Dwarf Scouring Rush (in two sub-plots), and *Carex pedunculata,* and moss species.
- Comparison of the 2025 Spring results to the 2013 results show that 92% (an increase from 75% in 2024) of the species assessed in the Appendix 3 table showed no change or increased in percent cover by 2025. The remaining 8% being Carex laptalea having only changed by 1 percent cover and has not been present

Plot D: Autumn

- Comparison of 2025 to 2024 autumn results showed 82% of species assessed had no change or an increase in percent cover, and 18% showed a decline in 2025 compared to 2024.
- The 2024 Autumn results compared to the 2023 results show 100% of the species assessed showed no change or increased in percent cover.
- The Autumn 2025 data showed Bulblet Fern and Field Horsetail as the species assessed in Appendix 4 that increased in percent cover in 2025, which are all wetland indicator species. Several other indicator species also maintained equal percent cover to the previous years.
- The species that showed a decline in 2025 autumn included Glossy Buckthorn (which is non-native and declines are considered positive). The other species that declined in percent cover was moss species by one percent category, but was still present at a greater extent than 2013 to 2020.
- Comparison of the 2024 Autumn results to the 2013 results show that 88% (7 of 8) of the species assessed in the Appendix 4 table showed no change or an increase in percent cover by 2025.

Plot E: Spring

- Comparison of the 2025 Spring results in Plot E to the 2013 results show that 46% of the species assessed in the Appendix 3 table showed no change or increased in percent cover in 2025 (in 2024, 85% showed no change or increase).
- 2025 compared to 2024 showed 85% of species assessed showed an increase or no change in 2025.
- Only 15% (2 species) assessed for Plot E in Spring showed a decline in percent cover. This decline was by only one percent cover category (5% change in cover maximum). The declines in percent cover were only found in the SE and SW sub-plots.
- Several of the species in Appendix 3 table for Plot E show a decline between 2013 (pre-extraction) and 2024 values, with declines by 2 or less percent cover categories, which over a 12-year period, is not seen as a significant change.
- 3 species that showed declines from 2013 to 2025 have become absent in the long term, not being present since 2014 or 2015.

Plot E: Autumn

- Comparison of 2025 data to 2024 at plot F shows 85% showed no change or increased present cover category. The 15% that showed a decline in 2025 from 2024 were by one percent cover category and were both Bulblet Fern.
- Comparison of 2025 data with 2012 data of the same species in Appendix 4, showed 78% have increased their percent cover and 22% have declined in percent cover from 2012.
- Comparison of the 2025 Autumn results in Plot E to the 2013 results show that 69% of the species assessed in the Appendix 4 table showed no change or increased in percent cover in 2025 (a change from 85% in 2024).

- The 31% of species assessed for Plot E in Autumn that showed a decline in percent cover from 2012 findings was by only one percent cover category.

Plot F: Spring

- Comparison of 2025 to 2024 results in spring at Plot F showed 92% of species showed no change or increase in percent cover. Moss species in the SW Sub-plot was the only species where a decline was noted, but was only by 1% cover category and 7 of the 13 years have also had no moss present (indicating its presence in the sub-plot fluctuates).
- Comparison of the 2025 Spring results in Plot E to the 2013 results show that 25% of the species assessed in the Appendix 3 table had no change or increased in percent cover when compared with 2025.
- Of the 75% of species assessed for Plot E in Spring that showed a decline in percent cover from 2013 to 2025 changes were by only one percent cover category.

Plot F: Autumn

- In the Appendix 4 table for Plot F, the Autumn data shows between 2012 (pre-extraction) and 2025, 83% showed a decline in percent cover for species assessed. Changes are primarily by 1 or two percent cover categories and for several the 2025 values have been the same for several preceding years. In several cases the percent cover change was in 2013 and remained low, indicating long term trend of these species being limited in percent cover over the study period.
- Comparison of the 2025 Autumn results in Plot F to the 2013 results show that 42% of the species assessed in the Appendix 4 table had no change or increased in percent cover in 2025.
- For the 58% of species assessed for Plot F in Autumn that had a decline in percent cover, most changes by only one percent cover category (5% change in cover maximum). The declines in percent cover by 2 percent cover categories were in the NW and SW sub-plots. These declines were for Moss sp. but 2024 and 2025 showed an increase in moss cover in the NE sub-plot compared to the percent cover found in 2013. Overall results were very comparable to the majority of other years for percent cover.
- The greatest change noted was in Dwarf Scouring Rush at the SW sub-plot, where it changed from 31-50% in 2012 and was 1-5% in 2025 (but the 2025 percent cover was the same as it was in 2013, and has increased from the 2021 to 2023 values).
- Plot F of all plots studied shows some change has occurred from 2012 to 2025, but does not show changes beyond what would be expected as natural change caused by the successional process within the community. This vegetation plot is in dense cedar swamp and increased tree growth over the 14 years of surveys cause changes in shade, cover etc., which are expected to influence species percent cover.

Soil Moisture:
Soil moisture was measured as supplemental data to indicate if significant changes were occurring to the top 90mm of soil.

The peer review of the annual monitoring report for the Roszell Pit by Aboud & Associates (2023) requested the inclusion of this information. Table 8 shows the soil moisture probe results.

Table 8. Range of Soil Moisture Conditions at the Six Vegetation Plots, 2012-2025.

Veg. Plot	2012 Fall Comments	2013 Spring (%)		2013 Fall (%)		2014 Spring (%)		2014 Fall (%)	
		Range	Mean	Range	Mean	Range	Mean	Range	Mean
A	Subplot SE: 3cm of water in cattle hoof print. Subplot SW: soil is saturated.	79-85	**82.0**	36-94	**74.8**	49-86	**77.4**	89-93	**91.2**
B	No standing water; soil is saturated.	70-80	**76.0**	81-91	**86.6**	26-90	**74.0**	85-95	**91.4**
C	Subplot SE: 1mm of standing water to soil is saturated.	18-79	**42.7**	32-91	**70.6**	29-93	**68.8**	60-92	**84.5**
D	No standing water.	11-76	**51.7**	9-90	**59.2**	33-85	**67.1**	40-90	**70.4**
E	Subplot NW: no standing water; soil very moist.	45-82	**65.8**	12-79	**55.4**	70-78	**74.4**	77-91	**84.4**
F	Subplot SE: 2mm of standing water in corner of quadrat.	7-72	**37.3**	46-95	**81.0**	43-88	**69.8**	64-89	**81.4**

Table 8. cont'd. Range of Soil Moisture Conditions at the Six Vegetation Plots, 2012-2025.

Veg. Plot	2015				2016				2017			
	Spring (%)		Fall (%)		Spring (%)		Fall (%)		Spring (%)		Fall (%)	
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean
A	67-98	**85.0**	49-96	**78.8**	1 to 2cm standing water & saturated soil.	**---**	91-98	**94.4**	8-98	**95.8**	92-99	**95.2**
B	21-92	**74.4**	81-97	**92.6**	1 to 4cm standing water & saturated soil.	**---**	88-98	**94.2**	40-98	**84.2**	86-98	**93.2**
C	26-98	**69.4**	43-97	**72.6**	67-98	**85.7**	42-98	**81.7**	58-97	**84.0**	37-98	**79.3**
D	25-98	**64.8**	17-98	**76.8**	25-92	**74.2**	31-98	**85.5**	42-94	**85.2**	27-98	**81.8**
E	13-79	**51.7**	24-92	**73.3**	45-95	**73.0**	83-96	88.8	42-98	**74.4**	69-95	**85.8**
F	30-91	**68.9**	73-93	**85.2**	70-87	**79.6**	75-94	90.0	49-98	**76.3**	82-94	**90.2**

Table 8. cont'd. Range of Soil Moisture Conditions at the Six Vegetation Plots, 2012-2025.

Veg. Plot	2018				2019				2020			
	Spring (%)		Fall (%)		Spring (%)		Fall (%)		Spring (%)		Fall (%)	
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean
A	10-98	**77.2**	97-98	**97.8**	45-98	**84**	44-96	**83.2**	82-95	**90.2**	81-98	**93**
B	35-98	**81.8**	84-98	**94.2**	63-95	**84.2**	40-96	**71.6**	75-92	**86.4**	12-98	**72.8**
C	20-98	**80.4**	45-98	**87.4**	53-95	**76.5**	42-98	**85**	45-95	**70.93**	8-95	**66.6**
D	77-98	**91.4**	11-98	**79.2**	3-96	**73.8**	81-98	**92.2**	20-95	**63**	45-98	**76**
E	9-96	**72**	40-96	**80.4**	27-91	**72.2**	9-93	**63**	51-93	**72.8**	32-93	**67.1**
F	80-96	**86.8**	83-98	**92.6**	87-98	**91.2**	87-94	**90.4**	21-94	**77.3**	63-92	**82.7**

Table 8. cont'd. Range of Soil Moisture Conditions at the Six Vegetation Plots, 2012-2025.

Veg. Plot	2021				2022				2023			
	Spring (%)		Fall (%)		Spring (%)		Fall (%)		Spring (%)		Fall (%)	
	Range	Mean*	Range	Mean*	Range	Mean*	Range	Mean*	Range	Mean*	Range	Mean*
A	45-88	**76.8**	NA	**NA**	8-99	**79**	76-99	**92.8**	45-99	**88**	58-99	**83.4**
B	30-95	**63.1**	NA	**NA**	44-99	**85.2**	9-99	**60.4**	26-99	**83.8**	12-99	**64**
C	22-98	**73.5**	38-99	**83**	31-99	**78.8**	40-99	**81**	45-99	**83.8**	49-99	**72.4**
D	30-96	**68**	5-99	**78.8**	12-99	**77.2**	5-99	**69.8**	39-99	**83.8**	15-99	**66**
E	33-95	**61.8**	46-99	**81.4**	40-96	**77.8**	27-99	**83**	17-99	**66.4**	42-99	**74.6**
F	70-95	**84.8**	70-99	**92**	88-99	**95.8**	92-99	**94.8**	88-99	**94**	84-99	**88.2**

*Mean was calculated using the lowest values from % ranges for 5 measurement locations at each survey plot. Some sample locations have high and dry spots and low and wet in same location so a range of values are recorded (minimum and maximum).

Table 8. cont'd. Range of Soil Moisture Conditions at the Six Vegetation Plots, 2012-2025.

Veg. Plot	2024				2025			
	Spring (%)		Fall (%)		Spring (%)		Fall (%)	
	Range	Mean*	Range	Mean*	Range	Mean*	Range	Mean*
A	44-99	**86.6**	78-99	**94.2**	33-99	**85.8**	96-99	**98.4**
B	46-99	**77.6**	37-99	**75.6**	42-99	**86**	38-99	**81.6**
C	59-99	**87.2**	44-99	**87.8**	40-99	**77.4**	44-99	**87.8**
D	17-99	**76.6**	16-99	**79.8**	57-99	**87.6**	53-99	**81.8**
E	36-99	**72.6**	66-99	**91.6**	44-99	**74.2**	69-99	**89.8**
F	87-99	**95.8**	87-99	**96**	79-99	**94.8**	88-99	**96.8**

*Mean was calculated using the lowest values from % ranges for 5 measurement locations at each survey plot. Some sample locations have high and dry spots and low and wet in same location so a range of values are recorded (minimum and maximum).

The 2024 soil moisture measurements which show the shallow soil moisture content at the time of the vegetation plot surveys, overall shows typically greater soil moisture content in the Autumn surveys. The exception to this in 2025 was Plot B and D which showed 4% less soil moisture at Plot B and <6% at Plot D in Autumn compared to the Spring readings. Comparison of Autumn 2025 soil moisture to 2013 , indicates greater soil moisture in the majority of all plots (exception being Plot B) in 2025.

Photo Monitoring Stations:

Photo monitoring stations were established in 2012, which provide baseline photos of the Speed River Wetland Complex located to the west of the Roszell pit. Photos were taken at each photo monitoring station facing north, east, south and west, from the center T-bar of the 10x10 m plots. A photo from each of the six vegetation plots in Spring 2025 compared to the 2024 Spring photo is shown in Appendix 5. A photo from each of the six vegetation plots in Autumn 2025 compared to the 2024 Autumn photo is shown in Appendix 6.

4.3 Trout Spawning Surveys

Trout spawning surveys started in 2012 and have been undertaken every year since. A summary of survey dates and weather conditions during searches for trout redds from 2012 to 2025 are shown in Table 9.

Table 9. Summary of Dates and Weather Conditions for Trout Redd Surveys on the Main Creek, and Tributaries #7, 8, and 9 from 2014 to 2025.

Year	Survey Date	Weather Conditions
2014	December 2	Air Temp. = -1^{0}C; Wind = 2-6 km/hr; Percent Cloud = 40-60%; No Precip.; Water Temperature: Main Creek & Trib #7 = 4^{0}C, Trib #8 = 5.5^{0}C & #9 = 5^{0}C
	December 19	Air Temp. = -2^{0}C; Wind = 3 km/hr; Percent Cloud = 30-50%; No Precip.; Water Temperature: Main Creek & Trib #7 = 4^{0}C, Trib #8 & 9 = 6^{0}C
2015	December 3	Air Temp. = 2^{0}C; Wind = 10-20 km/hr; Percent Cloud = 100%; No Precip.; Water Temperature: Main Creek & Trib #8 & 9 = 9^{0}C
	December 4	Air Temp. = 5^{0}C; Wind = 5-10 km/hr; Percent Cloud = 100%; No Precip.; Water Temperature: Main Creek = 7^{0}C, Trib #7 = 8^{0}C
	December 17	Air Temp. = 5^{0}C; Wind = 5-10 km/hr; Percent Cloud = 20-40%; No Precip.; Water Temperature: Main Creek, Trib# 8 & 9 = 8^{0}C, Trib #7 = 10^{0}C
2016	January 28	Air Temp. = -1^{0}C; Wind = 5-10 km/hr; Percent Cloud = 100%; light snowfall.; Water Temperature: Main Creek = 4^{0}C, Trib #7 = 6^{0}C
	December 7	Air Temp. = 1.5^{0}C; Wind = <10 km/hr; Percent Cloud = 40%; no precip..; Water Temperature: Main Creek = 5.5^{0}C
	December 9	Air Temp. = 2^{0}C; Wind = 6-8 km/hr; Percent Cloud = 40%; no precip.; Water Temperature: Main Creek = 5^{0}C, Trib #7 = 8^{0}C; Trib#8 & 9 = 7^{0}C
2017	November 26	Air Temp. = 0^{0}C; Wind = 5-10 km/hr; Percent Cloud = 90%; no precip.; Water Temperature: Main Creek = 5^{0}C,
	November 27	Air Temp. = 2^{0}C; Wind = 3-5 km/hr; Percent Cloud = 40%; no precip.; Water Temperature: Main Creek = 5^{0}C, Trib #7 = 8.8^{0}C,Trib.#8 & 9 = 8.1^{0}C
	December 14	Air Temp. = -12^{0}C; Wind = 0 km/hr; Percent Cloud = 20%; no precip.; Water Temperature: Main Creek =1.2^{0}C, Trib #7 = 8.8^{0}C,Trib.#8 =5.9^{0}C & Trib.#9 = 5.4^{0}C
	December 15	Air Temp. = -7^{0}C; Wind = 1-5 km/hr; Percent Cloud = 90%; light snow; Water Temperature: Main Creek =3.2^{0}C

Table 9 Cont'd. Summary of Dates and Weather Conditions for Trout Redd Surveys on the Main Creek, and Tributaries #7, from 2014 to 2025.

Year	Survey Date	Weather Conditions
2018	December 5	Air Temp. = -3^{0}C; Wind = 0 km/hr; Percent Cloud = <10%; no precip.; Water Temperature: Main Creek = 4.0^{0}C
	December 12	Air Temp. = -2^{0}C; Wind = 0 km/hr; Percent Cloud = 70%; no precip.; Water Temperature: Trib. #7 = 6.6^{0}C
2019	December 13	Air Temp. = 4-7^{0}C; Wind = 0-5 km/hr; Percent Cloud = 50%; no precip.; Water Temperature: Main Creek = 4.5^{0}C; Trib. #7 = 6.6^{0}C
	December 17	Air Temp. = -4^{0}C; Wind = 0-5 km/hr; Percent Cloud = 60%; no precip.; Water Temperature: Main Creek = 3.8^{0}C; Trib. #7 = 6.2^{0}C
2020	December 11	Air Temp. = 2-7^{0}C; Wind = 0-5 km/hr; Percent Cloud = 10%; no precip.; Water Temperature: Main Creek = 4.7^{0}C; Trib. #7 = 7.1^{0}C; Trib. #8 = 12.9^{0}C
	December 16	Air Temp. = -7^{0}C; Wind = 20-35 km/hr; Percent Cloud = 70-90%; no precip.; Water Temperature: Main Creek = 3^{0}C; Trib. #7 = 5.2^{0}C; Trib. #8 = 11.1^{0}C
2021	December 1	Air Temp. = 4^{0}C; Wind = 5-10 km/hr; Percent Cloud = 15%; no precip.; Water Temperature: Main Creek = 4^{0}C; Trib. #7 = 11^{0}C; Trib. #8 = 14^{0}C
	December 21	Air Temp. = 0^{0}C; Wind = 0-5 km/hr; Percent Cloud = <5%; no precip.; Water Temperature: Main Creek = 4.5^{0}C; Trib. #7 = 7.5^{0}C; Trib. #8 = 12^{0}C.
2022	December 14	Air Temp. = -4^{0}C; Wind = 5-15 km/hr; Percent Cloud = 90%; no precip.; Water Temperature: Main Creek = 3.4^{0}C; Trib. #7 = 5^{0}C.
	December 22	Air Temp. = -2^{0}C; Wind = 5-10 km/hr; Percent Cloud = 60%; no precip.; Water Temperature: Main Creek = 3.8^{0}C; Trib. #7 = 6.6^{0}C.
2023 Mon. year	December 15	Air Temp. = 3^{0}C; Wind = 5-20 km/hr; Percent Cloud = 90%; no precip.; Water Temperature: Main Creek = 5^{0}C; Trib. #7 = 7^{0}C.
	January 11, 2024	Air Temp. = -1^{0}C; Wind = 5-20km/hr; Percent Cloud = 90%; no precip.; Water Temperature: Trib. #7 = 7.3^{0}C.
	January 12, 2024	Air Temp. = -1^{0}C; Wind = 5-15km/hr; Percent Cloud = 100%; No precip.; Water Temperature: Main Creek = 2.7^{0}C.
2024	December 12	Air Temp. = -7^{0}C; Wind = 20-40 km/hr; Percent Cloud = 50%; no precip.; Water Temperature: Main Creek = 2.9^{0}C; Trib. #7 = 4.3^{0}C.
	December 29 (Trib.# 8 & 9)	Air Temp. = 9^{0}C; Wind = 5-10 km/hr; Percent Cloud = 90-100%; no precip.; Water Temperature: Trib #8 = 12.5^{0}C; Trib. #9 = 4.6^{0}C.

Table 9 Cont'd. Summary of Dates and Weather Conditions for Trout Redd Surveys on the Main Creek, and Tributary #7, from 2014 to 2025.

Year	Survey Date	Weather Conditions
2025	December 12	Air Temp. = -3^{0}C; Wind = 5-15 km/hr; Percent Cloud = 90%; no precip.; Water Temperature: Main Creek =3.2 ^{0}C; Trib. #7 = 5.2^{0}C.

The locations of the Main Creek and Tributary #7 are all shown on Figure 1. No trout redds were been found in Tributary #8 and #9 during the first 5 survey years, so effort was focused after that on the Main Creek and Tributary #7. In Spring 2024 surveys were conducted within Tributary #8 and #9, which confirmed a lack of suitable spawning habitat for Brook Trout due to substrates and blockages to fish passage. On December 30, 2024 Tributary #8 & 9 were searched again for Brook Trout redds, and no redds were found on either tributary during that survey date. The 2025 trout spawning surveys were focused on the Main Creek and Tributary #7.

The NETR Level 1 & 2 prepared by Stovel & Associates (2005) for the Roszell Pit licence application included electrofishing Tributary #8 and #9. Tributary #9 had no fish captured in it and Tributary #8 had only 1 Brook Trout captured (plus one observed) during the August 7, 2005 electrofishing surveys. The electrofishing of the Main Creek in August 2005 resulted in 4 Brook Trout being captured. Overall the historical electrofishing data suggest a rather small Brook Trout population was present prior to extraction at the Roszell Pit, based on the low capture numbers.

In 2015 spawning surveys were conducted on two separate dates for each of the creeks surveyed. This year had a warm Autumn. With fewer trout redds being found over the two separate surveys for each creek in December 2015, an additional survey was conducted in January 2016. The January 2016 survey was to identify whether any additional trout redds were present in the creeks being surveyed once the temperatures became cooler in case this had triggered Brook Trout spawning. The January 2016 survey confirmed that some additional Brook Trout spawning took place in January when weather conditions became more typical of the season.

Brook Trout redds have been found annually from 2012 to 2025 in both Tributary #7 and the Main Creek channel. The approximate locations of Brook Trout redds are shown on Figure 1. In 2015, fewer than normal trout redds were found in the Main Creek and none were found in Tributary #7, but by January 2016, 7-9 redds were found in total in the Main Creek and 2 redds were present in Tributary #7. Previous years field data sheets have been archived for future reference.

The results of the 2012 and 2013 trout spawning surveys are summarized in Table 10 (considered pre-extraction survey years), and all other years (2014 to 2025) of survey results are provided in Table 11. Table 10 and 11 both list the redd numbers by watercourse for each year. The 2013 represents the first year of the trout spawning surveys when some aggregate extraction had started at the Roszell Pit.

Table 10. Summary of 2012 and 2013, Pre-extraction, Brook Trout Spawning Surveys, Roszell Pit.

	Tributary Name	Station Location	Number of Redds	Total Number of Redds
2012	Main Creek	M-1	2 to 3	8 to 9 redds
		M-2	2	
		M-3	1	
		M-4	3	
	Tributary 7	7-1	2	5 redds
		7-2	2	
		7-3	1	
	Tributary 8 and 9		No redds	0
2013	Main Creek	M-1 (13)	3	19 redds
		M-2 (13)	3	
		M-3 (13)	6	
		M-4 (13)	5	
		M-5 (13)	2	
	Tributary 7	7-1	1	5 redds
		7-2	4	
		7-3	0	
	Tributary 8 & 9	No redds	No redds	0

Table 11. Summary of 2014 to 2025, Extraction years, Brook Trout Spawning Surveys, Roszell Pit.

	Tributary Name	Station Location	Number of Redds	Total Number of Redds
2014	Main Creek	M-1	2 to 3	9-10 redds
		M-1A (14)	1	
		M-2 (14)	2	
		M-3 (14)	4	
	Tributary 7	7-2(14)	2	4 redds
		7-2A (14)	2	
2015	Main Creek	M-1(15)	1	2-3 redds
		M-2(15)	1 to 2	
	Tributary 7	No redds	No redds	0
Jan. 2016	Main Creek	M-1B(16)	1	5-6 redds
		M-1C(16)	3	
		M-5(16)	1 to 2	
	Tributary 7	7-2A(16)	1	2 redds
		7-2B(16)	1	
Dec. 2016	Main Creek	M-16A	1	15-16 redds
		M-16C	1	
		M-16D	3-4	
		M-16E	4	
		M-16F	1	
		M-16G	1	
		M-16H	1	
		M-16I	3	
	Tributary 7	7-1(16)	1	6 redds
		7-2(16)	2	
		7-3(16)	3	
Nov/ Dec. 2017	Main Creek	M-1(17)	1	13 redds
		M-2(17)	1	
		M-3(17)	1	
		M-4(17)	5	
		M-5(17)	1	
		M-6(17)	1	
		M-7(17)	1	
		M-8(17)	1	
		M-9(17)	1	
	Tributary 7	7-1(17)	1	4-5 redds
		7-2(17)	2	
		7-3(17)	1-2	

Table 11 Cont'd. Summary of 2015 to 2025, Extraction years, Brook Trout Spawning Surveys, Roszell Pit.

	Tributary Name	Station Location	Number of Redds	Total Number of Redds
Dec. 2018	**Main Creek**	M-1(18)	3	**13 redds**
		M-2(18)	1	
		M-3(18)	1	
		M-4(18)	7	
		M-5(18)	1	
	Tributary 7	7-1(18)	1	**6-9 redds**
		7-2(18)	1-2	
		7-3(18)	2	
		7-4(18)	1-2	
		7-5(18)	1-2	
Dec. 2019	**Main Creek**	M-1(19)	2-3	**13-14 redds**
		M-1B(19)	1	
		M-2(19)	1	
		M-3(19)	2	
		M-4(19)	3	
		M-5(19)	2	
		M-6(19)	1	
		M-7(19)	1	
	Tributary 7	7-1(19)	1	**9 redds**
		7-1B(19)	2	
		7-1C(19)	1	
		7-2(19)	2	
		7-3(19)	2	
		7-4(19)	1	
Dec. 2020	**Main Creek**	M-1(20)	1	**8-10 redds**
		M-2(20)	1-2	
		M-2B(20)	1-2	
		M-3(20)	2	
		M-4(20)	3	
	Tributary 7	7-1(20)	1	**6-9 redds**
		7-1B(20)	1-2	
		7-2(20)	1-2	
		7-3(20)	1-2	
		7-4(20)	2	
Dec. 2021	**Main Creek**	M-2(21)	3	**11 redds**
		M-2B(21)	3	
		M-3(21)	3	
		M-4(21)	2	
				8 redds
	Tributary 7	7-2(21)	3	
		7-3(21)	4	
		7-4(21)	1	

Dec. 2022	**Main Creek**	M-1(22)	1	**16-20 redds**
		M-2(22)	1-2	
		M-2B(22)	1	
		M-3(22)	3-4	
		M-3A(22)	1	
		M-4(22)	1	
		M-5(22)	1-2	
		M-6(22)	2-3	
		M-7(22)	4	
		M-8(22)	1	
	Tributary 7	7-4(22)	2-3	**6-8 redds**
		7-2(22)	2	
		7-3(22)	1	
		7-4B(22)	1-2	
Dec. 2023 & Jan. 2024	**Main Creek**	M-3(23)	4	**13-14 redds**
		M-4(23)	1	
		M-4(23)* (Jan)	**2**	
		M-5(23)	1	
		M-6(23)	1	
		M-7(23)	1-2	
		M-2b(23)*	**1**	
		M-2a (23)*	**2**	
	Tributary 7	7-2(23)	3	**11 redds**
		7-3(23)	4	
		7-1(23)*	**3**	
		7-4(23)*	**1**	
Dec 2024	**Main Creek**	**M1(24)**	**4**	**18 redds**
		M-2(24)	**1**	
		M-3(24)	**3**	
		M-4(24)	**2**	
		M-5(24)	**1**	
		M-6(24)	**3**	
		M-7(24)	**4**	
	Tributary 7	**7-1(24)**	**1**	**9 redds**
		7-1b(24)	**2**	
		7-4(24)	**1**	
		7-2(24)	**4**	
		7-3(24)	**1**	
2025	**Main Creek**	**M-1a(25)**	**2**	**20 redds**
		M-1b(25)	**4**	
		M-1(25)	**4**	
		M-4(25)	**1**	
		M-2a(25)	**2**	
		M-6(25)	**3**	
		M-7a(25)	**3**	
		M-7(25)	**1**	

	Tributary 7	7-1(25)	2	8 redds
		7-2(25)	4	
		7-3(25)	2	

*** = results from survey completed in January to capture late season redds due to low December spawning numbers and warm stream temperatures.**

The Main Creek has consistently had the most redds present each year compared with Tributary #7. The numbers of redds present in the Main Creek in 2013 was double that of 2012. Previously the year with the highest trout redd count over the 13 years of redd surveys was 2022, with 16-20 redds. The 2025 results from December 12, 2025 were equal to the highest historical count, with 20 redds in the Main Creek in 2025. On the December 12, 2025 survey, the water levels in the Main Creek were noted to be low, at 2-3 inches below top of creek banks, and areas of rock were exposed at the surface that are typically underwater. There was no ice coverage along creek edges.

During the 2020 and 2021 drought years, the lower water levels in the creek and the homeowners on the north side of the Main Creek creating a rock dam across the entire creek, were considered the main factors resulting in slightly lower trout spawning than historically noted. The dam structure (first noticed in 2020) was still in place in 2025 and the slow moving current in that area has resulted in a large area which had been bare cobble historically now being covered in a thick layer of silt. In 2023 road construction occurred along Roszell Road resulting in a new culvert being installed under the road. Prior to the culvert replacement, the plunge pool downstream of Roszell Road was considered to provide significant cover for Brook Trout. The roadside is now sloped with rock, resulting in the culvert emptying out over the rock, with no deep plunge pool present. These changes do represent potential impacts to Brook Trout habitat and movement within the Main Creek.

Despite the changes at the upstream end of the creek below Roszell Road, Brook Trout have continued to spawn in above average numbers in the creek downstream of the above mentioned impacts.

Of the 13 years of surveys, 50% of years have had below average redd counts, including the pre-extraction year of 2012.

The trout redd survey results from December 12, 2025 indicate for a second year in a row Tributary #7 (with 8 redds) had a greater than average yearly count for Tributary #7, which ranges between 6 to 7 redds. The average number of redds is provided as a range, as redds can be located beside each other making a large cleared area within which an estimate of the number of individual redds must be made.

The December 12, 2025 results for Tributary #7 are comparable to years 2018 to 2022 results, which had between 6 and 8 redds maximum, and 2023 remains the year with the highest ever count in Tributary #7 at 11 redds. The lower water levels noted in the tributary on the December 12, 2025 survey may potentially limit the ability of how far trout could move up Tributary #7.

Overall, the 2025 survey results show there is continued strong spawning in both creeks, despite the low water conditions noted during the spawning season.

Latest Available Hydrogeology Information:
In March 2025 Groundwater Science Corp. (GSC) prepared their monitoring report and Appendices which addressed air temperature, surface water temperature, precipitation and water levels relative to the Roszell Pit.

Information from the GSC (March 2025) monitoring report is cited here relative to fisheries and amphibian monitoring at Roszell Pit. This is the most recent available hydrogeology information at this time as the annual report for 2025 is to be prepared for in March 2026.

In 2024 there were no extraction operations at the site.

Winter/spring precipitation volumes were below average from 2018 to 2024. As a result, it appears that seasonal and annual groundwater recharge potential was significantly reduced over the last 7 years (GSC 2025).

The GSC (2025) report also indicated that the ground water system continues to equilibrate to the construction of the ponds and barrier, and seasonal /annual precipitation.

4.4 Salamander Egg Mass Survey

Salamander egg mass surveys were conducted in 2025, making it the 13th year of salamander egg mass surveys conducted within the southwestern wetland on the Roszell Pit property. The salamander egg mass survey dates and weather details for the salamander surveys for all of the years of monitoring are provided in Table 12.

In 2025 a site visit was completed on April 14, 2025 to survey the Roszell Wetland for salamander egg masses.

Table 12. Salamander Egg Mass Survey Details 2013 to 2025.

Survey Date	Survey Details (Weather)
April 30, 2013	12:00 hrs to 15:25 hrs temperature: 19^{o}C; wind: 8 km/hr; water temperature: 15.4^{o}C; cloud <70%; no precipitation, and water pH: 8.0
May 9, 2014	11:20 hrs to 14:09 hrs temperature: 24^{o}C; wind: 6.6 km/hr; water temperature: 18.3^{o}C; cloud 40%; no precipitation, and water pH: 8.4
May 21, 2015	13:57 hrs to 15:21 hrs temperature: 18^{o}C; wind: 3.7 km/hr; water temperature: 16.1^{o}C; cloud 40%; no precipitation, and water pH: 7.8
June 3,	13:55 hrs to 15:32 hrs

2015	temperature: 22^{o}C; wind: 5-10 km/hr; water temperature: 21^{o}C; cloud 60%; no precipitation, and water pH: 7.3
March 30, 2016	12:23 to 14:21 hrs temperature: 8^{o}C; wind: 10-15 km/hr; water temperature: 8.6^{o}C; cloud 40%; no precipitation, and water pH: 7.7
March 28, 2017	13:00 to 14:08 hrs temperature: 10^{o}C; wind: 5-15 km/hr; cloud 60%; no precipitation
April 11, 2017	14:19 to 14:40 hrs temperature: 20^{o}C; wind: <5 km/hr; water temperature: 18.1^{o}C; cloud 30-40%; heavy precipitation, and water pH: 7.1
April 12, 2017	11:40 to 14:00 hrs temperature: 10^{o}C; wind: 5-10 km/hr; water temperature: 11^{o}C; cloud 80-90%; no precipitation, and water pH: 7.5
April 24, 2018	11:20 to 13:09 hrs temperature: 9^{o}C; wind: 0-5 km/hr; water temperature: 12^{o}C; cloud 60%; no precipitation, and water pH: 7.3
April 22, 2019	11:00 to 13:40 hrs temperature: 15^{o}C; wind: <5 km/hr; water temperature: 12^{o}C; cloud 30%; no precipitation, and water pH: 8.4
April 7, 2020	11:30 to 12:45 hrs temperature: 11^{o}C; wind: 5 km/hr; water temperature: 10.8^{o}C; cloud 50%; no precipitation, and water pH: 8.1
April 20, 2021	10:55 to 11:40 temperature: 4^{o}C; wind: 5-15 km/hr; cloud: 60%; cloud 50%; no precipitation; no standing water in wetland.
April 7, 2022	10:45 to 13:05 temperature: 11^{o}C; wind: 3-5 km/hr; water temperature: 10.9^{o}C; cloud 5%; no precipitation, and water pH: 6.4
April 11,2023	09:20 to 12:15 temperature: 13^{o}C; wind: 5-15 km/hr; water temperature: 8.2^{o}C; cloud 15%; no precipitation, and water pH: 7.8
March 27, 2024	10:45 to 12:05 temperature: 6^{o}C; wind: 10-15 km/hr; water temperature: 6.6^{o}C; cloud 60%; no precipitation, and water pH: 8.8
April 10, 2024	10:40 to 13:35 temperature: 14^{o}C; wind: 5-15 km/hr; water temperature: 12.2^{o}C; cloud 10-15%; no precipitation, and water pH: 8.8
April 14, 2025	13:00 to 14:45 temperature: 16^{o}C; wind: 5-15 km/hr; water temperature: 12.5^{o}C; cloud 60%; no precipitation, and water pH: 7.3

To analyze survey results, the wetland has been divided into three different areas based on the wetland's vegetation community types, see Figure 3. Wetland area "A" comprises of Reed Canary Grass and Red-osier Dogwood around the wetland edges

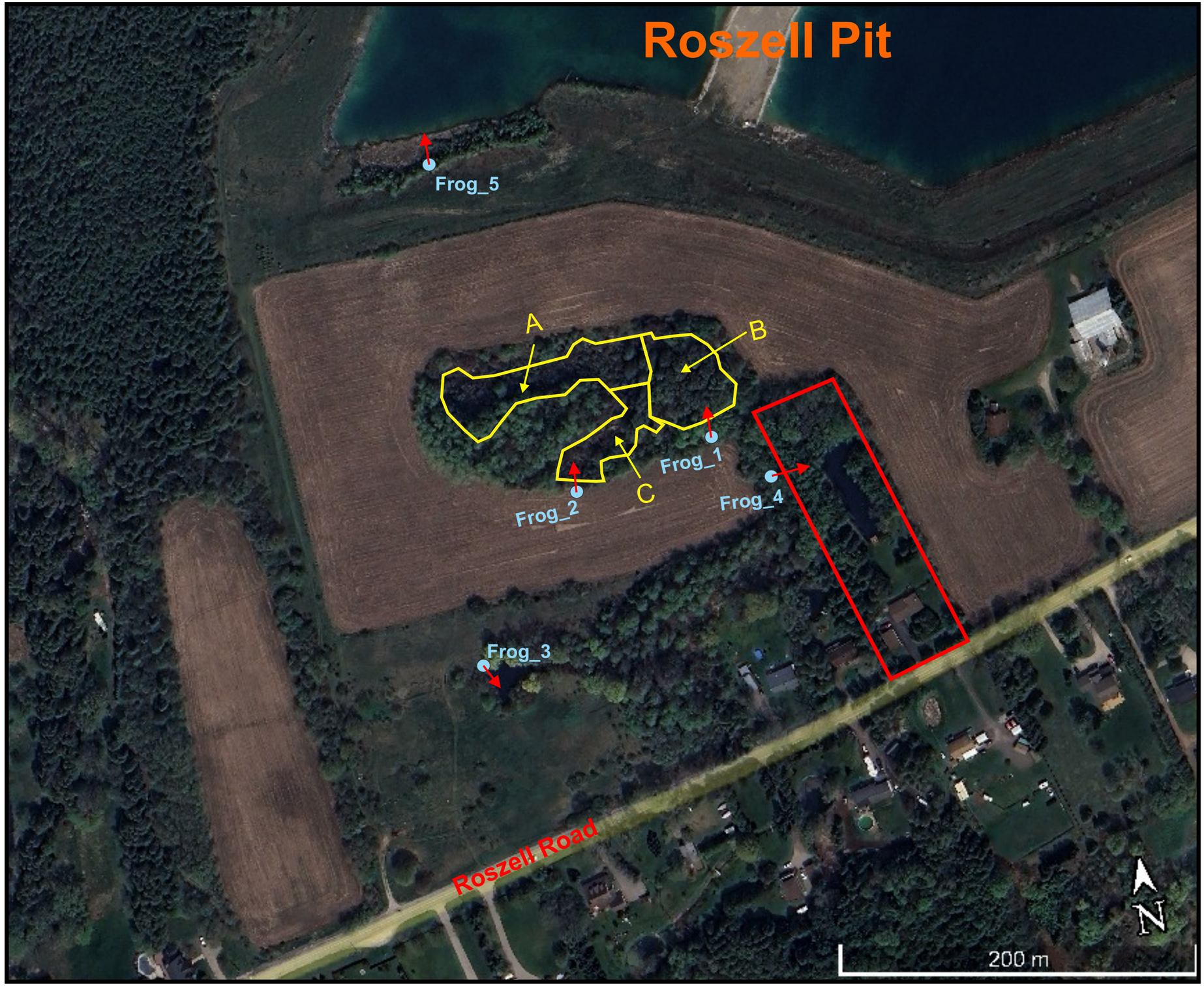


Figure 3. Areas Searched for Salamander Egg Masses, and Amphibian Call Survey Station Locations, Roszell Pit.

LEGEND

A — Area Searched for Salamander Egg Masses, Areas "A to C" Categorized by Habitat Type

Frog_2 — Approximate Amphibian Call Survey Station Location

Approximate Property Boundary of the Jones Property

Direction Amphibian Call Surveyor is Facing for Survey at a Given Station

Base Map Source: Google Earth, 2023

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and willow thicket through the majority of it. Area “B”, shown on Figure 3, exhibits the characteristics of a Silver Maple swamp, very limited emergent vegetation, with leaves and sticks being predominant in the water column. Area “C” comprises the southern wetland lobe which extends in a southwesterly direction.

In 2015 no egg masses were counted, which was assumed to be due to an early spring resulting in egg masses hatching before the survey was conducted.

The 2025 survey once again found Blue-spotted Salamander egg masses present in both Area A and B, and none being found in Area C. This was similar to the findings in 2024 and 2023.

Egg masses in Area A in 2025 were found to be present in the same area as noted in 2024, concentrated in the southern half of the western two-thirds of Area A.
A greater number of egg masses were noted again in the central part of Area A than in most previous years.

Area A of the wetland (which represents the deepest water areas of the wetland) had the greatest numbers of egg masses in 2025 (which is similar to 2024 and 2023). Table 13 shows that most salamander eggs based on the last 13 years of data (both pre and post extraction) are laid in Area A. This trend was confirmed to continue again in 2025.

In area B the majority of the salamander eggs that were found were at the transition area between Silver Maples and the Willow Thicket (western edge of Area B). More were found farther east of that transition area than had been found in most recent years. The number of egg masses recorded in 2025 was the second highest of all years, only behind 2019. From 2020 to 2022 no salamander eggs were even found in Area B.

Area C continued to show no signs of salamander egg laying occurring in that portion of the wetland. This has been the consistent trend since 2019, with only 4 of the 13 years of surveys ever having egg masses found in Area C.

Table 13. Summary of Total Number of Blue-Spotted Salamander Egg Mass Found in 2013 to 2025.

Total Number of Egg Masses													
Wetland Area	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
A	46	147	0	571	1785	1439	2243	277	0	1931	1923	1550	1030
B	9	39	0	32	16	0	170	0	0	0	61	13	76
C	3	4	0	0	22	46	0	0	0	0	0	0	0
Total # Egg Masses	58	190	0	603	1823	1485	2413	277	0	1931	1984	1563	1106

Based on the results from April 14, 2025 salamander breeding was confirmed to have occurred in 2025 and at an average level for the wetland based on all the years of surveys. 2025 results do show a decline in numbers of egg masses being found at the Roszell Wetland for the second year in a row, compared to 2023 (decrease of 44%). The lower than average precipitation in last 2 years resulting in the wetland drying out before salamander larvae can mature, is anticipated as the major contributor to this decline. The now multi-year trend of surface water failing to remain long enough to support a successful reproduction cycle and potential yearly loss of mature adults to breed, are logical causes of the current trend being seen. It is important to note that despite this, the 2025 findings are still much greater than the 2020 and 2021 years when nearly no salamander egg laying was found to have occurred.

The Roszell Wetland was monitored in May and June 2025 (same since 2022) to identify whether conditions would remain that would allow for a successful salamander reproduction cycle in 2025 and to monitor the water levels in the wetland. In 2022 and 2023 it was found that surface water in the wetland dried up due to a lack of precipitation in May and June. In 2024 standing water was gone in all areas between the June 11th and June 20th surveys, with the last small area of water having been in Area A. Overall surface water in 2023 was present for about a week longer than in 2022, but since 2022 the wetland surface water has dried up before salamander larvae can mature and leave the wetland. The 2025 and 2024 data on water levels shows water remaining longer, but there has still not been enough precipitation and snow melt in the area to support surface water long enough to have successful salamander breeding.

Prior to extraction, the Roszell Wetland was confirmed to have dried up before salamander eggs hatched (noted on June 1, 2005). The Roszell Wetland was found to have largely dried up and no salamander egg masses remained according to Stovel and Associates Inc. (2005). This appears to be a long term trend in the wetland, and occurred prior to any aggregate extraction occurring.

4.4 Amphibian Call Surveys

Amphibian call surveys were conducted starting in 2013 at two wetlands, one to the south of the southern extraction limit of the pit (Roszell Wetland) and the other a small wetland to the southwest of the Roszell Wetland (dug pond). Adjacent landowners with a pond/wetland on their property were also contacted in Spring 2013 by CBM staff to see if any would allow for frog call surveys to be undertaken on their property. One landowner, Denise Jones, gave permission to conduct the amphibian surveys on her property (#6512 Roszell Road), see Figure 3 for location. Amphibian call surveys were conducted at all of the same locations from 2013 to 2019. On April 7, 2020 Denise Jones was contacted to obtain permission to undertake the amphibian surveys at her property as in previous years. Denise did not want the surveys done at her property in 2020 (during COVID). Station Frog_4 was therefore moved to the north area of the Jones pond, and frogs were listened for from the Roszell pit lands to the west of the Jones pond. Denise Jones provided permission again for the amphibian surveys on her

property from 2021 to 2024, but was not able to be reached to obtain permission in 2025. The same station location was therefore used as in 2020, see Figure 3.

Amphibian call surveys were conducted on April 17, May 29, and June 23, 2025. Details of the weather conditions and survey dates for each year of amphibian call surveys, from 2013 to 2025, are shown in Table 14.

The results of the 2025 amphibian call surveys for each of the 5 point count stations where data were collected are summarized in Table 16. Monitoring at station Frog_5, shown on Figure 3, started in 2022 when frogs were heard calling along the southern lake edge.

Since 2013 a total of seven different species have been heard/observed during the amphibian call surveys. In 2025 at total of six species were heard/observed over all survey stations (same as 2024, 2020 and 2019), five species heard/observed in 2013, 2014, 2016, 2017 and four species heard/observed in 2015. In 2022 and 2021 a total of 5 species were heard/observed during the amphibian call surveys. In 2023 seven species were heard.

Table 14. Amphibian Call Survey Dates and Weather Conditions, Roszell Pit 2013 to 2025.

Survey #	Survey Date	Time (hrs)	Weather Conditions
2025			
1	**April 17**	**21:10 to 21:52**	**Air Temp. = 12^{0}C; Water Temp. = 9.8^{0}C to 11^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 10%; No Precip.; Water pH = 5.3 to 7.8**
2	**May 29**	**23:00 to 23:45**	**Air Temp. = 15^{0}C; Water Temp. = 12.3^{0}C to 20.9^{0}C; Wind = 1-2 (Beaufort); Percent Cloud = 80-90%; No Precip.; Water pH = 8.9 to 9.0**
3	**June 23**	**21:08 to 22:13**	**Air Temp. = 29^{0}C; Water Temp. = 18.7^{0}C to 19.7^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 10%; No Precip.; Water pH = 9.1 to 9.3**
2024			
1	**April 18**	**20:44 to 21:52**	**Air Temp. = 8^{0}C; Water Temp. = 8.3^{0}C to 10.6^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 10-15%; No Precip.; Water pH = 7.2 to 9.6**
2	**May 23**	**21:32 to 22:30**	**Air Temp. = 20^{0}C; Water Temp. = 20^{0}C to 20.9^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 5%; No Precip.; Water pH = 8.4 to 8.5**
3	**June 26**	**21:42 to 22:39**	**Air Temp. = 22^{0}C; Water Temp. = 20^{0}C to 22^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 30-60%; No Precip.; Water pH = 7.2 to 8.1**
2023			
1	**April 14**	**20:27 to 21:35**	**Air Temp. = 20^{0}C; Water Temp. = 14.2^{0}C to 19.9^{0}C; Wind = 0 (Beaufort); Percent Cloud = 20%; No Precip.; Water pH = 7 to 8.2**
2	**May 19**	**20:51 to 21:36**	**Air Temp. = 19^{0}C; Water Temp. = 16.2^{0}C to 18.1^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 90-100%; No Precip.; Water pH = 7.3 to 8.2**
3	**June 29**	**21:35 to 22:24**	**Air Temp. = 22^{0}C; Water Temp. = 20^{0}C to 22^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 40%; No Precip.; Water pH = 7.2 to 8.1**
2022			
1	**April 8**	**20:40 to 21:11**	**Air Temp. = 5^{0}C; Water Temp. = 7.7^{0}C to 9^{0}C; Wind = 0 - 1 (Beaufort); Percent Cloud = 70- 80%; Light Drizzle; Water pH = 7.3 to 8.2**
2	**May 5**	**20:39 to 21:43**	**Air Temp. = 11^{0}C; Water Temp. = 13.2^{0}C to 15.7^{0}C; Wind = 0 (Beaufort); Percent Cloud = 15% to 20%; No Precip.; Water pH = 8.3 to**

			8.6
3	June 16	21:04 to 22:57	Air Temp. = 28^{0}C; Water Temp. = 23^{0}C to 25^{0}C; Wind = 1 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 7.5 to 8.2
2021			
1	April 9	19:48 to 20:25	Air Temp. = 17^{0}C; Water Temp. = 17.1 ^{0}C; Wind = 1 (Beaufort); Percent Cloud = 15%; No Precip.; Water pH = 7.4
2	May 28	20:40 to 21:36	Air Temp. = 22^{0}C; Water Temp. = 21.3 ^{0}C; Wind = 1-2 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 8.0 to 8.2
3	June 24	21:12 to 21:53	Air Temp. = 24^{0}C; Water Temp. = 21.3 to 23.7 ^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 60%; No Precip.; Water pH = 7.7 to 8.0
2020			
1	April 7	20:15 to 20:48	Air Temp. = 12^{0}C; Water Temp. = 11.3 ^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 7.8
2	May 16	21:10 to 22:07	Air Temp. = 13^{0}C; Water Temp. = 17^{0}C; Wind = 0 (Beaufort); Percent Cloud = 15%; No Precip.; Water pH = 7.8
3	June 16	21:12 to 22:05	Air Temp. = 16^{0}C; Water Temp. = 22.2^{0}C; Wind = 0-1 (Beaufort); Percent Cloud = 30%; No Precip.; Water pH = 7.7
2019			
1	April 24	20:44 to 21:08	Air Temp. = 12^{0}C; Water Temp. = 11.7^{0}C to 12.3; Wind = 0 (Beaufort); Percent Cloud = <5%; No Precip.; Water pH = 6.9 to 7.3
2	May17	21:37 to 21:59	Air Temp. = 12^{0}C; Water Temp. = 15.4^{0}C to 15.8; Wind = 1 (Beaufort); Percent Cloud = 20%; No Precip.; Water pH = 6.9 to 7.4
3	June 6	21:16 to 21:55	Air Temp. = 20^{0}C; Water Temp. = 20.6^{0}C to 20.7; Wind = 1 (Beaufort); Percent Cloud = 20%; No Precip.; Water pH = 6.7 to 7.0
2018			
1	April 26	20:52 to 21:35	Air Temp. = 10.5^{0}C; Water Temp. = 11.5^{0}C to 13.1; Wind = 0 (Beaufort); Percent Cloud = <5%; No Precip.; Water pH = 6.7 to 7.2
2	May 9	21:02 to 21:42	Air Temp. = 19^{0}C; Water Temp. = 19.2^{0}C to 20.0; Wind = 2 (Beaufort); Percent Cloud = 50%; No Precip.; Water pH = 6.8 to 7.2
3	June 11	21:02 to 21:49	Air Temp. = 19^{0}C; Water Temp. = 19^{0}C to 19.9; Wind = 0 (Beaufort); Percent Cloud = 0%; No Precip.; Water pH = 7.3 to 7.4
2017			
1	April 13	20:32 to 20:52	Air Temp. = 10^{0}C; Water Temp. = 7.6^{0}C ; Wind = 0 (Beaufort); Percent Cloud = 20%; No Precip.; Water pH = 7.6 to 7.9
1	April 19	20:08 to 20:25	Air Temp. = 11.5^{0}C; Water Temp. = 12.7^{0}C ; Wind = 1 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 8.4
2	May 23	21:02 to 21:32	Air Temp. = 17^{0}C; Water Temp. = 17.3^{0}C ; Wind = 0 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 7.3 to 8.1
3	June 28	21:21 to 22:08	Air Temp. = 20^{0}C; Water Temp. = 21.1^{0}C ; Wind = 0 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 7.5 to 8.5
2016			
1	Mach 30, 2016	20:00 to 20:33	Air Temp. = 13.7^{0}C; Water Temp. = 7.9^{0}C ; Wind = 1 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 7.5 to 8.2
2	May 25	19:18	Air Temp. = 23.1^{0}C; Water Temp. = 21.8^{0}C ; Wind = 0 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 8.4
2	May 26	21:16 to 21:38	Air Temp. = 22.1^{0}C; Water Temp. = 10.8^{0}C ; Wind =0(Beaufort); Percent Cloud = 50%; No Precip.; Water pH = 7.0 to 8.6
4	June 17	21:35 to 22:16	Air Temp. = 23^{0}C; Water Temp. = 24.2^{0}C ; Wind = 1 (Beaufort); Percent Cloud = 0%; No Precip.; Water pH = 7.7 to 8.3
2015			
1	April 15	20:35 to 21:20	Air Temp. = 11^{0}C; Water Temp. = 10.8^{0}C ; Wind = 1 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 7.7 to 8.5

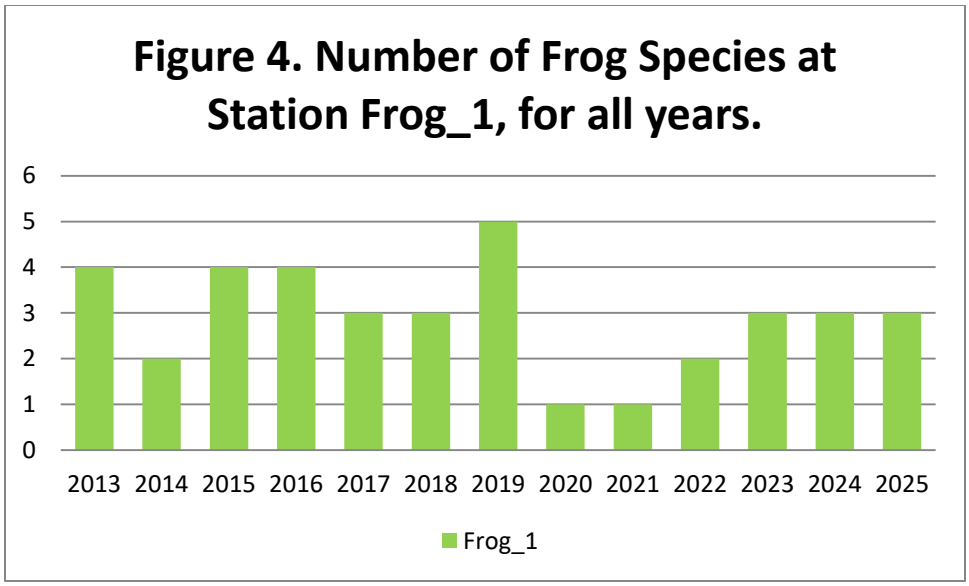
2	**May 6**	**20:42 to 21:31**	**Air Temp. = 20^{0}C; Water Temp. = 15.8^{0}C ; Wind = 0 (Beaufort); Percent Cloud = 80%; No Precip.; Water pH = 7.7 to 8.2**
3	**June 16**	**21:19 to 21:52**	**Air Temp. = 21.6^{0}C; Water Temp. = 18.2^{0}C ; Wind = 1 (Beaufort); Percent Cloud = 0%; No Precip.; Water pH = 6.8 to 8.1**
2014			
1	**April 11, 2014**	**20:05 to 21:05 hrs**	**Air Temp. = 9^{0}C; Water Temp. = 8.8^{0}C ; Wind = 2 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 7.6 to 8.5;**
2	**May 21, 2014**	**21:20 to 22:41 hrs**	**Air Temp. = 9^{0}C; Water Temp. = 8.8^{0}C ; Wind = 2 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 7.6 to 8.5;**
3	**June 26, 2014**	**21:36 to 22:03 hrs**	**Air Temp. = 9^{0}C; Water Temp. = 8.8^{0}C ; Wind = 2 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 7.6 to 8.5**
2013			
1	**April 17, 2013**	**19:40 to 20:35 hrs**	**Air Temp. = 9^{0}C; Water Temp. = 8.8^{0}C ; Wind = 2 (Beaufort); Percent Cloud = 100%; No Precip.; Water pH = 7.6 to 8.5;**
2	**May 6, 2013**	**20:45 to 21:15 hrs**	**Air Temp. = 19^{0}C; Water Temp. = 18.2^{0}C; Wind = 0 km/hr; Percent Cloud = 10%; No Precip.; Water pH =7.6 to 8.5;**
3	**June 24, 2013**	**21:29 to 21:52 hrs**	**Air Temp. = 26.6^{0}C; Water Temp. = 25.7^{0}C; Wind = 0-1; Percent Cloud = 40%; No Precip.; Water pH =7.7 to 8.8**

Frog_1:

Station Frog_1 is located along the southeastern edge of area B. In 2025 Wood Frog was heard at call code 1 and Spring Peeper at call code 2, with both recorded only on the April survey. This meant no change from 2024 findings, but is a decline from 2023 results for Wood Frog and Spring Peeper by one call code level. Grey Tree Frog was recorded at code 1 in 2025 (was code 2 in 2024) on the May survey and no frogs were recorded on the June survey (same in 2024). During the May and June surveys no surface water was present in wetland area “B”.

The 2020 and 2021 survey results at station Frog_1 are still the lowest of all the years to date, based on number of species heard and lower call codes heard, see Figure 4. Results from the most recent 3 years had 3 species recorded, which are comparable to the 2017 and 2018 non-drought years. The average numbers of species recorded at this station based on 12 years of surveys is 3 species. From 2023 on results show a recovery from the lows of 2020 and 2021 and an average of 3 species being recorded at Frog_1 appears to be the new normal (at least during multiple years with limited precipitation).

Spring Peeper has been consistently recorded at this station at varying call code levels over the 13 years of surveys, with the exception of in 2021, when it was not recorded. Wood Frog and Grey Tree Frog are the other two species recorded more consistently at this survey station over the years and both were recorded in 2025 and 2024.

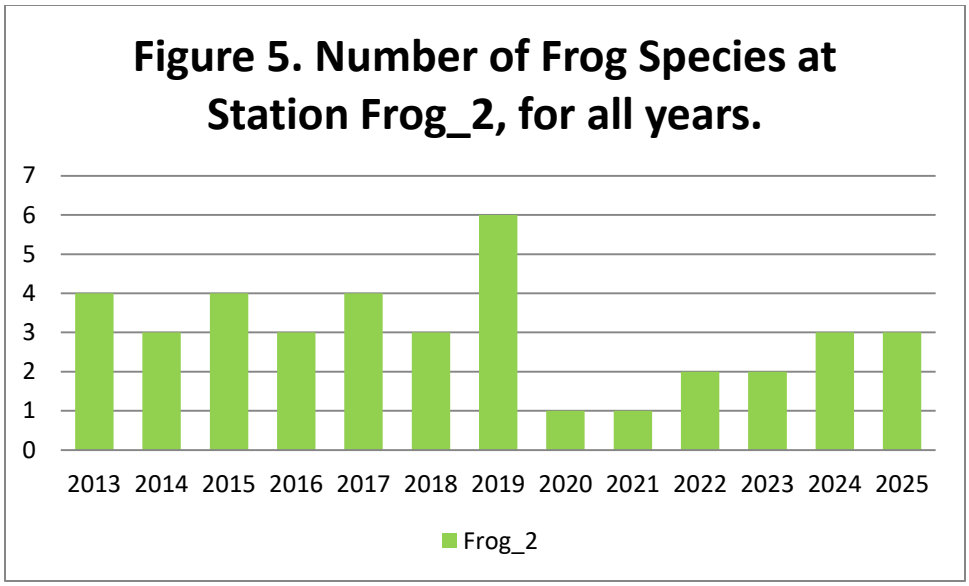


Frog_2:

Frog_2 is located along the southwestern edge of area C of the Roszell Wetland. In 2025 at the Frog_2 survey station, frogs were recorded on each survey visit, with Spring Peeper in April and May, Northern Leopard Frog in May, and Grey Tree Frog recorded in June when no surface water was present in Area C. In 2025, Spring Peeper was recorded at call code 3 (Code 2 in 2024) while Northern Leopard and Grey Tree Frog were recorded at call code 1. No Wood Frogs were heard in 2025, which shows a continued decline since 2023 at code 2, and then code 1 in 2024. The species of frogs recorded still appears to vary between years at Frog_2.

Spring Peepers been heard consistently every year since 2013 at call code 3 at this station, but in 2021 and 2020 none were present, but returned in 2022 at call code 1 and has remained at call code 3 since 2023. The average number of species recorded at this station for the 13 years is 3.5. The 2024 findings are in line with the average for this station and are similar to 2014, 2016 and 2018 which also had 3 species recorded those years.

As Figure 5 shows, 2020 and 2021 (start of the drought period) were the lowest years for numbers of species present breeding and low call codes. Figure 5 shows the number of species at Frog_2 have shown a positive trend of more species being heard from 2022 on.



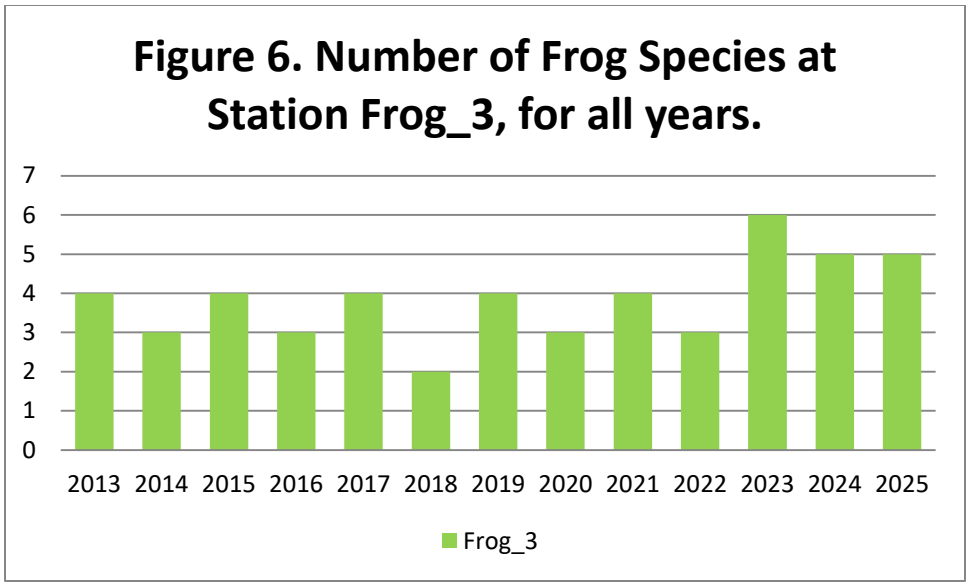
Frog_3:

The Frog_3 station is a dug pond located to the south of the Roszell Wetland where stations Frog_1 and Frog_2 are located. The water levels in the pond at Frog_3 in 2025 were noted to decline from May to June but at a slower rate than noted in 2022-24. This pond and associated wetland, however, maintained surface water at deeper depths and for longer than noted in Area B and C of the Roszell Wetland to the north.

The average number of species recorded at this station based on the 13 years of surveys is 4.5. In 2025, there were 5 species recorded (same as 2024), making the last 3 years of the 13 years of surveys having the greatest number of species. Table 15 shows all five of the species recorded at Frog_3 and their call codes in 2025. The highest call level code recorded for all 5 species was code 1, indicating limited numbers of breeding frogs. Green Frog and Grey Tree Frog were both recorded at call code 2 in 2024 at Frog_3, which is greater than most years for those species. Green Frog and Grey Tree Frog had call codes in 2012 of 1, making 2024 results greater than pre-extraction results.

Spring Peeper had a call code of 1 in 2025 (same as 2024 but down from code 3 in 2023), and 2016 has been the only year with no Spring Peepers recorded. During most years call codes for Spring Peeper have been 1 or 2, including the pre-extraction year (2013) at call code 2 and 2014 at 1, making 2025 within that range. The only other species at Frog_3 that has ever had a call code of 3 was Green Frog in 2015, which hasn't occurred again.

The most recent 3 years has had greater numbers of species being recorded at Frog_3 than the previous 10 years. This suggests that some frogs are using the Frog_3 habitat instead of Frog_1 and Frog_2 locations, presumably due to more permanent surface water and likelihood of breeding success.



Frog_4:

The location of survey station Frog_4 (Jones Property), is shown on Figure 3, with the survey station from 2021 onward, being back at the south end of the Jones' Pond. In 2020 the survey station was changed from its historical location due to no permission being given to enter their property. This was the case in 2025 again as contact with owners was not able to be established. The 2020 location of the survey station is shown on Figure 3 in red.

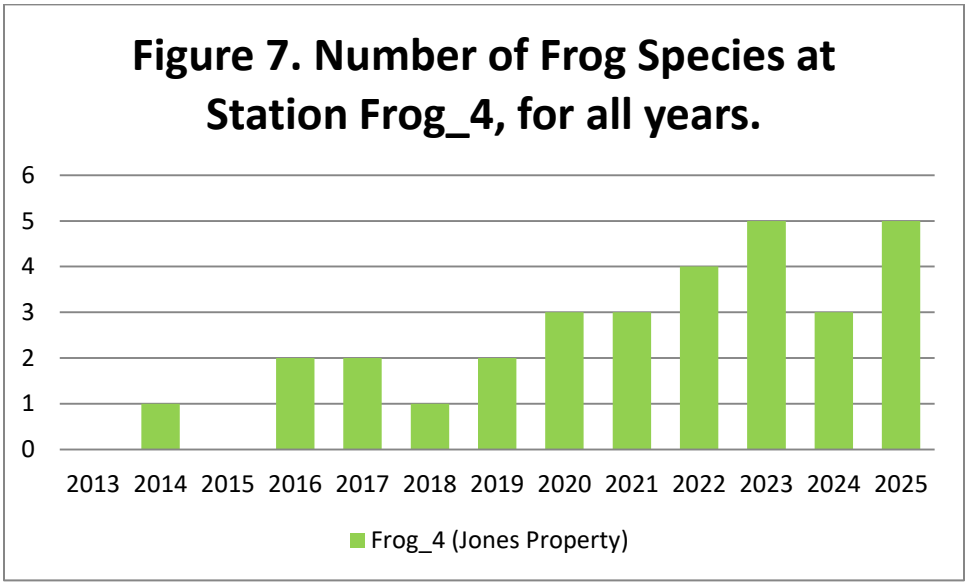
The average number of species recorded at Frog_4 for all 13 years of surveys is 3, and in 2025 slightly above the average was recorded, at 5 species, see Figure 7. The number of species recorded at Frog_4 has an increase from 2018 to which only 1 species was recorded. As Figure 7 shows the 2024 results are comparable to 2023, which also had 5 species recorded, and that the last 6 years have had the greatest numbers of species recorded.

Comparison of 2025 to 2020 survey results at the same alternative station locations show 2 more frog species heard in 2025 than in 2020. The 2025 surveys all species recordered heard at call code 1 indicating limited numbers, while in 2024 all species heard at call code 1 but Grey Tree Frog at code 2. The 2024 surveys had spring peepers at code 3 and Green Frog at code 2. This suggests there is still a variety of species present, however, the number of individuals is limited.

The pre-extraction year of 2013 had no frog species recorded at this station, and the first two years when extraction started had 1 species recorded in 2014, and none again in 2015. The increase of 5 species being recorded at the Frog_4 station compared to pre-extraction results (2012).

The presence of more frog species recorded may be due to frogs having moved locations for breeding since the wetland where Frog_1 and Frog_2 are located has had limited breeding habitat during recent drought years, especially for later season

breeding amphibians. The Jones Pond is only 45-50m away from the Frog_1 and Frog_2 wetland.



Frog _5:
A new survey station, shown on Figure 1, was created during the June 2022 survey as frogs were heard calling from the closest lake of the Aggregate Pit (north of the Roszell Wetland). The Frog_5 station is located at the southern edge of the aggregate pit lake where Willow shrubs and Broad-leaved Cattail have established along the southwest corner of the lake edge.

At Frog _5 in 2025 the surveys resulted in 4 species being recorded with Northern Leopard Frog being heard in 2025, but not 2024, and no Green Frogs in 2025. Spring Peeper was heard at call code 3 (same as 2022 to 2024), Northern Leopard Frog and American Toad at call code 2. While Grey Tree Frog at call code 1. This indicates good numbers of all 3 of the species being present during the breeding season. All species in 2024 were heard at call code 2 or higher.
In 2023 and 2022 a total of 3 species were recorded, with Spring Peeper and Grey Tree Frog recorded both years. In 2023 Green Frog was recorded, and in 2022 the third species was American Toad. Northern Leopard Frog was new species in 2025 to be heard at this station and at code 2.

In 2022 Grey Tree Frog was heard at call code 3, while in 2023 and 2024 this species was recorded at a call code of 2, and in 2025 declined to code 1.

From 2020 onward at Frog_1 and Frog_2 lower call codes or no Grey Tree Frogs were noted, and the 2022 to 2025 data show clear use/presence of the area at Frog_5.
The data still suggests that Grey Tree Frogs may have shifted to using the lake edge habitat for breeding since the recent drought years has resulted in little surface water during the May to June breeding season in the Roszell Wetland to the south.

Table 15. Summary of 2025 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

		Survey Station Number				
Species	**Survey Visit #**	**Frog_1**	**Frog_2**	**Frog_3**	**Frog_4 (Jones Property pond)**	**Frog_5**
Spring Pepper	**1**	2	3	1	1	3
	2	-	1	-	-	1
	3	-	-	-	-	-
Wood Frog	**1**	1	-	-	1	-
	2	-	-	-	-	-
	3	-	-	-	-	-
Green Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	1	1	-
Grey Tree Frog	**1**	-	-	-	-	-
	2	-	-	1	1	-
	3	1	1	-	-	1
Northern Leopard Frog	**1**	-	-	-	-	-
	2	-	1	1	1	1
	3	-	-	-	-	2
Chorus Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
American Toad	**1**	-	-	-	-	-
	2	-	-	1	-	-
	3	-	-	-	-	2
Total # of Species		3	3	5	5	4

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 16. Summary of 2024 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

		Survey Station Number				
Species	**Survey Visit #**	**Frog_1**	**Frog_2**	**Frog_3**	**Frog_4 (Jones Property #6512 Roszell Road)**	**Frog_5**
Spring Pepper	**1**	2	2	1	-	3
	2	-	-	-	-	-
	3	-	-	-	-	-
Wood Frog	**1**	1	1	1	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
Green Frog	**1**	-	-	-	-	-
	2	-	-	-	-	2
	3	-	-	2	1	2
Grey Tree Frog	**1**	-	-	-	-	-
	2	2	1	1	2	2
	3	-	1	2	1	2
Northern Leopard Frog	**1**	-	-	-	-	-
	2	-	-	1	1	-
	3	-	-	-	1	-
Chorus Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
American Toad	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	2
Total # of Species		3	3	5	3	4

LEGEND
Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 17. Summary of 2023 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

		Survey Station Number				
Species	**Survey Visit #**	**Frog_1**	**Frog_2**	**Frog_3**	**Frog_4 (Jones Property #6512 Roszell Road)**	**Frog_5**
Spring Pepper	**1**	3	3	3	3	3
	2	-	-	1	-	1
	3	-	-	-	-	-
Wood Frog	**1**	2	2	2	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
Green Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	1	2	2
Grey Tree Frog	**1**	-	-	-	1	-
	2	-	-	1	-	-
	3	-	-	2	1	2
Northern Leopard Frog	**1**	1	-	2	1	-
	2	-	-	-	-	-
	3	-	-	-	-	-
Chorus Frog	**1**	-	-	-	1	-
	2	-	-	-	-	-
	3	-	-	-	-	-
American Toad	**1**	-	-	-	-	-
	2	-	-	2	-	-
	3	-	-	-	-	-
Total # of Species		3	2	6	5	3

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 18. Summary of 2022 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

		Survey Station Number				
Species	**Survey Visit #**	**Frog_1**	**Frog_2**	**Frog_3**	**Frog_4 (Jones Property #6512 Roszell Road)**	**Frog_5**
Spring Pepper	**1**	-	-	3	-	-
	2	1	1	3	1	3
	3	-	-	-	-	-
Wood Frog	**1**	1	-		-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
Green Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
Grey Tree Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	1	1	3
Northern Leopard Frog	**1**	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	2	1	-
American Toad	**1**	-	-	-	-	-
	2	-	2	-	2	2
	3	-	-	-	-	1
Total # of Species		2	2	3	4	3

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 19. Summary of 2021 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	1	-	-	3	-
	2	-	-	-	-
	3	-	-	-	-
Wood Frog	1	-	-	1	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	1	-	-	-	-
	2	-	-	1	1
	3	-	-	1	1
Grey Tree Frog	1	-	-	-	-
	2	-	-	1	1
	3	1	1	-	1
Northern Leopard Frog	1	-	-	-	-
	2	-	-	-	1
	3	-	-	-	-
American Toad	1	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Total # of Species		1	1	4	3

LEGEND
Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 20. Summary of 2020 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	-	-	2	Not surveyed
	2	-	-	2	2
	3	-	-	-	-
Wood Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-		-	1
Grey Tree Frog	**1**	-	-	-	Not surveyed
	2	-	-	-	-
	3	1	1		-
Northern Leopard Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	1	-
American Toad	**1**	-	-	-	Not surveyed
	2			2	1
	3	-	-	-	-
Total # of Species		1	1	3	3

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 21. Summary of 2019 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	3	3	1	-
	2	2	2	1	-
	3	-	-	-	-
Wood Frog	**1**	2	2	1	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	1	-	1
Grey Tree Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	3	3	1	1
Northern Leopard Frog	**1**	1	1	1	-
	2	-	-	1	-
	3	-	-	-	-
American Toad	**1**	-	-	-	-
	2	3	3	-	-
	3	-	-	-	-
Total # of Species		5	6	4	2

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 22. Summary of 2018 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	3	3	1	-
	2	3	3	2	-
	3	-	-	-	-
Wood Frog	**1**	3	3	-	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	1	1	1
Grey Tree Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Northern Leopard Frog	**1**	1	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Bullfrog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Total # of Species		3	3	2	1

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 23. Summary of 2017 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	3	3	1	-
	2	-	-	-	-
	3	-	-	-	-
Wood Frog	**1**	-	2	-	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	-	-	-	-
	2		-	1	-
	3	1	1	1	2
Grey Tree Frog	**1**	-	-	-	-
	2	3	3	2	-
	3	-	-	-	-
Northern Leopard Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	1	-
Bullfrog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Total # of Species		3	4	4	2

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3 = calls not distinguishable individually, overlapping

Table 24. Summary of 2016 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	3	3	-	-
	2	1	1	-	-
	3	-	-	-	-
Wood Frog	**1**	3	3	1	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	-	-	-	-
	2	1	-	1	-
	3	-	-	1	1
Grey Tree Frog	**1**	-	-	-	-
	2	2	1	-	-
	3	1	1	1	-
Northern Leopard Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Bullfrog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	1
Total # of Species		4	3	3	2

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3= calls not distinguishable individually, overlapping

Table 25. Summary of 2015 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	3	3	2	-
	2	3	3	2	-
	3	-	-	-	-
Wood Frog	**1**	3	3	1	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	1	3	3	-
Grey Tree Frog	**1**	-	-	-	-
	2	-	-	2	-
	3	2	2	1	-
Northern Leopard Frog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Bullfrog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	-
Total # of Species		4	4	4	0

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3= calls not distinguishable individually, overlapping

Table 26. Summary of 2014 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	2	3	1	-
	2	1	1	1	-
	3	-	-	-	-
Wood Frog	**1**	-	1	-	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**		-	-	-
	2	-	-	1	-
	3	-	-	1	-
Grey Tree Frog	**1**	-	-	-	-
	2	3	3	2	-
	3	-	1	-	-
Bullfrog	**1**	-	-	-	-
	2	-	-	-	-
	3	-	-	-	1
Total # of Species		2	3	3	1

LEGEND

Call level codes (MMP):

1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3= calls not distinguishable individually, overlapping

Table 27. Summary of 2013 Amphibian Call Surveys by Species, Call Level Code and Station Number, Roszell Pit, Puslinch.

Species	Survey Visit #	Survey Station Number			
		Frog_1	Frog_2	Frog_3	Frog_4 (Jones Property #6512 Roszell Road)
Spring Pepper	**1**	3	3	-	-
	2	3	3	2	-
	3	-	-	-	-
Wood Frog	**1**	3	3	-	-
	2	-	-	-	-
	3	-	-	-	-
Green Frog	**1**	1	-	-	-
	2	-	-	1	-
	3	1	2	1	-
Grey Tree Frog	**1**	-	-	-	-
	2	-	-	1	-
	3	2	1	-	-
Northern Leopard Frog	**1**	-	-	-	-
	2	-	-	1	-
	3	-	-	-	-
Total # of Species		4	4	4	0

LEGEND
Call level codes (MMP):
1 = calls can be counted; not simultaneous
2 = some simultaneous call; but distinguishable
3= calls not distinguishable individually, overlapping

4.5 Roszell Wetland Water Levels

In 2025, water levels within the Roszell Wetland were monitored for change over the critical May and June period when salamander and frog eggs require surface water in order to facilitate successful breeding.

The following summarizes May to June site visits to the Roszell Wetland, to the south of the exisitng pit, to confirm whether or not any surface water continued to be present within the wetland in 2025. The pond located to the south of the Roszell Wetland, where amphibian monitoring station FRG_3 is located, was also checked during each survey visit in 2025.

The presence of surface water in the Roszell Wetland was recorded in relation to the habitat types of the wetland, as shown on Figure 3 as Areas A, B and C. For consistency, the locations of the DP7 piezometer in Area A of the wetland and at the

steel pipe in the Southwest end of Area C were where water measurements were taken. In Area “B” (Silver Maple Swamp) any areas with standing water were checked and the greatest water depth in the area was recorded. At the pond to the South, water was measured at the north end of the pond at the wooden stake placed in the pond in Spring 2021. The details of surface water depths in centimetres (cm) for 2025 are provided in Table 28, 2024 are provided in Table 29, the 2023 results are shown in Table 30, and 2022 results are in Table 31.

Table 28. Surface Water Levels at Roszell Wetland, 2025.

Location	Water Depth (cm)					
	May 12, 2025	May 23, 2025	May 30, 2025	June 4, 2025	June 12, 2025	June 18, 2025
Area A	12cm	16cm	12cm	4cm	0cm	0cm
Area B	11cm	18.5cm	12cm	0cm	0cm	0cm
Area C	0cm	5cm	0cm	0cm	0cm	0cm
Pond to South at Stake	29cm	22cm	16cm	8cm	0cm	0cm (39cm from Stake)

Table 29. Surface Water Levels at Roszell Wetland, 2024.

Location	Water Depth (cm)					
	May 7, 2024	May 16, 2024	May 23, 2024	May 31, 2024	June 7, 2024	June 20, 2024
Area A	24cm	15cm	11cm	16.5cm	11cm	0cm
Area B	9cm	14cm	6cm	15cm	12cm	0cm
Area C	12cm	0cm	0cm	1.5cm	0cm	0cm
Pond to South at Stake	32cm	16cm	2cm	2cm	0cm (21cm from Stake)	0cm (99cm from stake)

Table 30. Surface Water Levels at Roszell Wetland, 2023.

Location	Water Depth (cm)						
	April 11, 2023	May 3, 2023	May 9, 2023	May 19, 2023	May 25, 2023	June 1, 2023	June 7, 2023
Area A	29cm	21cm	19cm	7cm	3.5cm	0	0
Area B	24cm	17cm	14cm	3cm	0	0	0
Area C	17cm	10cm	10cm	0cm	0	0	0
Pond to South at Stake	61cm	48cm	17.5cm	9.5cm	11cm	0 (20cm out from stake)	0 (68cm out from stake)

Table 31. Surface Water Levels at Roszell Wetland, 2022.

Location	Water Depth (cm)							
	May 5, 2022	May 13, 2022	May 19, 2022	May 29, 2022	June 6, 2022	June 9, 2022	June 16, 2022	June 25, 2022
Area A(at peizometer)	Ranged from 8-14cm	8.5cm	4cm (one depression at 7.5cm max. depth)	0	0	0	0	0
Area B	5cm	0	0	0	0	0	0	0
Area C	0	0	0	0	0	0	0	0
Pond to South at Stake	-	14cm	4cm	0(35 cm out from stake)	0(102 cm out from stake)	0(101 cm from stake)	0 (127 cm from stake)	0 (202 cm from stake)

The 2025 results showed the same pattern noted in 2022 to 2024 within the Roszell Wetland where surface water receeds from Area C first, followed by Area B. Over the last 4 years Area A has continued to contain the most surface water by area and depth for the longest amount of time of all the areas of the wetland. In 2025 no surface water was in Area C on May 12, but returned at 5cm on May 23, only to return to 0cm on May 30, and remained with no surface water from then on.

The water level surveys in 2025 indicate standing water lasting about 1 week longer than was noted in 2023 and 2022, but standing water was found to have lasted approximately a week greater in 2024. In 2025, a large 2 day rain event occurred bertween the May 12 and the May 23 surveys resulting in 4-7.5cm increases in water depths being recorded (surface water even returned to Area C due to that event). After May 23, 2025 rain was limited to short events of limited accumulation. An increase in water levels in the Roszell wetland from a large rainfall event also occurred in 2024, just before the May 31, 2024 survey visit. Similarly, this event created an increase in surface water, extending the presence of surface water in Areas A and B, but not Area C. No turtles were observed in the Roszell Wetland during any of the 2025 survey visits.

Area A continued to have saturated soils on the last survey date (June 18, 2025) while Area B had saturated soils at the edge adjacent to Area A, while soils were damp in the middle of Area B. By June 18, 2025 soils in Area C were saturated in the east half of the polygn and were damp in the western half. The soils in much of the wetland still being saturated on the June 18, 2025 survey dates suggests water is just below the surface still and wetland vegetation would still have their roots in wet soils.

The vegetation in Polygons A, B, and C all showed continued growth throughout the survey dates and showed no signs of decline in health or stress by the June 18th survey. The edge between Polygon A and B continues to show Silver Maple expansion into the wetland with more saplings growing into the willows. The edges of Area A and C also

continue to show some incursion into the wetland by Tremblng Aspen, Manitoba Maple and Silver Maple.

5.0 Discussion

Area “A” of the Roszell Wetland continues to consistently be where the greatest number of salamander egg masses are laid each year. The 2025 egg mass counts show a decline for the second year in a row from the high of 2023, but numbers are still above average for all the years studied. The highest count for salamander egg masses was 2019 at the start of the multi-year drought, counts have been lower in the years since. Our data for the Roszell Wetland has shown that for at least the last three years surface water has dried up completely, prior to salamander larvae becoming mature enough to leave as adults. It should be noted that during a pre-extraction year, this wetland was known to have dried up and salamander egg masses were destroyed by June 1, 2005 (Stovel & Associates Inc. 2005).

Past discussion with GRCA staff (Tony Zammit) has identified that they would not give permit approval for any changes to the wetland, such as creating deeper depressions to hold water longer, and that they consider the wetland to be naturally transitioning into a no standing water habitat (a natural process). Greater snowfall that would yield more Spring melt to supply deep surface water in the wetland and average to greater than average precipitation in Spring into early Summer, are needed to maintain water long enough for Blue-spotted Salamanders to successfully breed.

With a total of 7 frog species were heard at all stations combined, 2025 observations are well within the normal range for the study area when compared with all other years. The stations at the southern edge of the Roszell Wetland (Frog_1 and Frog_2) have shown average numbers of species being present when compared to all years, but the species were heard lower call codes than recent years, but still within historical levels. Frog_3, Frog_4 and Frog_5 stations which represent deeper more permanent water sources for amphibian breeding have all continued to show increases in the numbers of species present at those locations over the last six years of drought conditions. Despite a high number of species heard at these stations, the call level codes were lower, indicating small numbers being present. Overall it appears the limited precipitation in recent years has reduced reproductive success and survivability, and therefore suggests the population is showing declines due to climate impacts (not due to the aggregate operation). The Frog_5 station in 2025 continued to show several frog species are now using the vegetated edge of the pit lake for habitat and breeding.

The Autumn vegetation plots showed some variation in percent cover of some species between 2013 and 2019 at vegetation Plots A and B, believed to be the result of grazing cattle where the vegetation plots are located. In 2021, 2022, and 2023, when there appeared to be reduced cattle activity in the area of Plots A and B has resulted in species percent cover remained mostly similar between years with less change occurring. The 2025 survey results further support this trend of less drastic variation now that cattle do not appear to be allowed in the area of Plots A and B.

The percent cover data from Spring and Autumn 2025 shows the few vegetation plots where the species assessed showed declines, were typically by only one or two percent cover categories. In 2025, it was found that for most plots in Spring and Autumn the indicator species assessed in Appendix 3 and 4 showed increases in percent cover or remained the same despite the hot, dry late summer conditions, when compared to 2024 data and even 2012 or 2013 data. No declines over 4 percent cover categories have been noted or eradication of entire species which comprised large, >50% cover in a subplot have ever been noted (the changes in Plot A and B have been explained at length regarding changes noted in those plots). As we have indicated previously, the micro-habitat assessment of vegetation plots face a wide range of natural variables that can easily and logically explain the limited year to year variations noted in all plots.

It is not unexpected that over a several year period of below normal precipitation that there would be natural changes to percent cover of plants, and especially wetland plants, which require wetter conditions for their success. At the same time, the maturing of trees and shrubs will result in increased water uptake through roots and increasing shade conditions, which are not preferred by all herbaceous plant species. Other natural occurrences which influence the limited amount of change noted within the vegetation plots monitored include new fallen wood debris, extent of rainfall, increasing air temperatures, changes in understory and canopy cover over time which increases the extent of shade, and deer/animal browsing; such changes are considered to be expected.

Tree and shrub data show change at the community level, and 2025 data does not indicate any significant or widespread change from recent years or pre-extraction years. The tree and shrub data at the six vegetation plots suggests there has again been minimal change beyond natural yearly changes, with periodically a few shrubs or trees becoming large enough to count on the transects. Some plots have shown increased dead cedars or Buckthorn sp. but again the scale of this is small with only a few individuals involved. This is also not surprising in dense and shaded cedar swamp where competition for sun and nutrients is difficult and naturally results is some saplings not reaching maturity. The 2025 results for trees and shrubs present on the vegetation plots does not indicate any significant negative changes to the vegetation community from that found in recent years.

There continues to be standing water noted in monitoring plots where standing water had been recorded in previous years and at depths similar to what has been recorded historically at the plots since starting in 2013.

The 2025 trout redd surveys indicate continued Brook Trout breeding in the tributaries to the Speed River adjacent to the Roszell Pit. The Main Creek which had trout redds found in 2012 has continued to have the greatest number of trout redds found every year and 2025 was found to have above average spawning occurrence. Tributary #7 in 2025 also had an above average redd count, with spawning occurring in similar areas to previous years

The 2025 December trout redd surveys indicate Brook Trout spawning is continuing to take place, despite facing several drought years. Based on the redd count numbers there does not appear to be any significant impact on Brook Trout spawning in the coldwater creeks adjacent to the Roszell Pit based on comparison of historical data to the 2025 survey findings and other recent years.

6.0 Recommendations

It is recommended that the FR_5 amphibian monitoring station continue to be monitored in future years in order to identify and assess the use of the south edge of the pit lake for frog breeding. It is also recommended that the pit lake edge around the FR_5 station be searched for frog eggs to confirm successful breeding is occurring. This is suggested to be undertaken between April and June during the other surveys being undertaken.

In 2026 it is recommended that again water levels within the Roszell Wetland be monitored on an approximately weekly basis during the months of May and June. Water levels should be recorded and mapped in the same way as previous years.

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APPENDIX 1.

Example of a Completed

Herbaceous Vegetation Data Form

(for a Sub-plot, 2012):

Roszell Pit

Dance Environmental Inc.

Herbaceous Monitoring Plots

SPECIES LIST

Site:	**Roszell Pit**		
Sampling Plot #:	F	**Subplot #:**	NW
UTM (centre of Plot):			
Date:	Oct. 1/12	**Time:**	**Start**
Surveyor(s):	KSD, KWD		**End**
Weather:		Water Depth:	0

Species	Solitary	<1%	1-5%	6-15%	16-30%	31-50%	51-75%	76-100%	Notes
Canada mayflower		✓							
Moss sp.				✓					
Glossy Buckthorn		✓							seedlings
Sedge sp.		✓							
Eastern White Cedar	✓								seedling
dead wood		✓							
liverwort sp.	✓								

APPENDIX 2.

Completed Tree and Shrub Inventory Data Form,

Example (Revised 2013 Data Form):

Roszell Pit

Dance Environmental Inc.
Tree Monitoring Inventory

Site:	**Roszell Pit** Plot E		
UTM (centre of Plot):			
Date:		**Time: Start**	11:05
Surveyor(s):	KSD	**End**	11:16
Weather:	Temp = 22°; wind = 0-2 km/hr; 100% cloud; light precip off and on		

Condition: To assess condition look for:
- Sores, Soot
- Disease, Fungus
- Rot, or damage to Trunk, Roots
- Dead main branches, small branches/twigs
- Lost/dead foliage

Transect Name: North -south

Shrubs

Species	Condition (good, fair, poor, dead)	Understorey: Tally
No Shrubs at 1m or taller		

Notes:

Transect Name: East-West

Shrubs

Species	Condition (good, fair, poor, dead)	Understorey: Tally
Glossy Buckthorn	Good	6 stems

Notes:

Trees:

tree health and numbers within entire 10x10 plot

all trees >10 dbh

Plot #: E

Layers: 1=canopy 2=sub-canopy

Species	Condition	location	Canopy Layer 1	Canopy Layer 2
E.W. Cedar	Good	NE	1	
		SE	1111	
		SW		
		NW	1111 1	
~1	Fair	NE		
		SE		
		SW	1 (uprooted and on ground) but alive still	
		NW		
Y. Birch	Good	NE	1111	
		SE		
		SW	1	
		NW	1	
Y. Birch	Fair	NE	1	
		SE		
		SW		
		NW	1	
Bl. Ash	Fair	NE		
		SE	1	
		SW		
		NW		
		NE		
		SE		
		SW		
		NW		
		NE		
		SE		
		SW		
		NW		
		NE		
		SE		
		SW		
		NW		
		NE		
		SE		
		SW		
		NW		
		NE		
		SE		
		SW		
		NW		

Notes: (Note all deadfall in the plots!)

APPENDIX 3.

Summary of 2014 to 2025 Spring Herbaceous

Vegetation in each Sub-plot

Appendix 3. Summary of 2013 to 2025 Spring Herbaceous Vegetation in each Sub-plot.

Plot	Sub-plot		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Dominant Taxa Species		Percent Cover for the Taxa											
A	NE	*Glyceria striata* Creeping Buttercup Bitter Dock	31-50% 6-15% -	31-50% 1-5% 1-5%	6-15% 1-5% 1-5%	6-15% <1% solitary	16-30% 1-5% solitary	- 1-5% -	- 1-5% -	- 1-5% -	- <1% -	- <1% 1-5%	- 1-5% -	- 1-5% -	- 1-5% -
	NW	Moss sp. Bulblet Fern *Glyceria striata*	31-50% 16-30% 16-30%	16-30% 1-5% 1-5%	16-30% 6-15% 1-5%	16-30% 6-15% 1-5%	31-50% 31-50% <1%	51-75% 6-15% -	51-75% 6-15% -	51-75% 6-15% -	51-75% 6-15% -	1-5% 16-30% 1-5%	51-75% 16-30% -	51-75% 16-30% -	51-75% 16-30% -
	SW	E. White Cedar-seedling Field Horsetail *Carex schweinitzii*	31-50% 16-30% 6-15%	- 6-15% 1-5%	- 16-30% 1-5%	Solitary 16-30% -	- 31-50% -	- 16-30% -	- 16-30% -	- 6-15% -	- 6-15% -	- 6-15% -	- 1-5% -	- 6-15% -	- 6-15% -
	SE	Moss sp. *Agrostis stolonifera* Watercress	16-30% 16-30% 16-30%	6-15% 6-15% -	16-30% - -	6-15% - 16-30%	16-30% - 6-15%	16-30% - 6-15%	16-30% - 1-5%	6-15% - 1-5%	1-5% - <1%	- - -	6-15% - -	6-15% - -	16-30% - -
B	NE	Field Horsetail *Carex Schweinitzii* *Carex flava*	31-50% 16-30% 6-15%	1-5% 16-30% -	6-15% 16-30% -	16-30% 16-30% -	51-75% 6-15% -	31-50% - 1-5%	31-50% - 1-5%	6-15% - 1-5%	16-30% - 1-5%	1-5% - 1-5%	6-15% - 1-5%	6-15% - 1-5%	6-15% - 1-5%
	NW	E. White Cedar-seedling Moss sp. Bulblet Fern	51-75% 31-50% 16-30%	6-15% 51-75% 6-15%	- 31-50% 6-15%	- 51-75% <1%	- 76-100% 1-5%	<1% 31-50% 1-5%	<1% 51-75% <1%	- 51-75% -	- 31-50% <1%	<1% 31-50% -	<1% 31-50% -	- 31-50% -	- 31-50% -
	SW	Kentucky Bluegrass	51-75%	1-5%	-	<1%	-	-	-	-	-	-	-	-	-
	SE	*Ranunculus ripens* Creeping Charlie Kentucky Bluegrass	6-15% 6-15% 16-30	16-30% <1% 51-75%	76-100% 1-5% 31-50%	51-75% <1% 31-50%	31-50% Solitary 51-75%	51-75% - 1-5%	51-75% - 31-50%	31-50% - 31-50%	31-50% - 51-75%	16-30% - 51-75%	16-30% <1% 51-75%	16-30% <1 51-75%	31-50% <1% 1-5%

Appendix 3. Summary of 2013 to 2025 Spring Herbaceous Vegetation in each Sub-plot Cont'd.

Plot	Sub-plot		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Dominant Taxa Species		Percent Cover for the Taxa											
C	NE	*Carex pedunculata* Bulblet Fern Field Horsetail	16-30% 6-15% 6-15%	16-30% 1-5% 1-5%	6-15% 1-5% 1-5%	6-15% 1-5% 1-5%	16-30% 1-5% 1-5%	16-30% 1-5% 6-15%	16-30% - 1-5%	16-30% 1-5% 1-5%	31-50% <1% 1-5%	31-50% <1% 1-5%	- <1% 1-5%	16-30 1-5% -	16-30% 1-5% 1-5%
	NW	*Carex pedunculata* Field horsetail Can. Mayflower	6-15% 6-15% 6-15%	<1% <1% 1-5%	1-5% <1% 1-5%	1-5% - 1-5%	1-5% 1-5% 1-5%	6-15% <1% 1-5%	1-5% <1% 1-5%	1-5% <1% 1-5%	1-5% - 1-5%	1-5% - 6-15%	6-15% 1-5% 16-30%	6-15% 1-5% 16-30%	6-15% - 6-15%
	SW	Field Horsetail Three-leaved Solomon Seal Bulblet Fern	16-30% 6-15% 6-15%	6-15% - 1-5%	16-30% 1-5% 1-5%	1-5% <1% <1%	1-5% 6-15% 1-5%	- 1-5% 6-15%	1-5% 1-5% 1-5%	1-5% 1-5% 1-5%	<1% 1-5% 1-5%	- 1-5% 1-5%	- - 1-5%	- 1-5% 1-5%	- 6-15% 1-5%
	SE	Field Horsetail Coltsfoot Bulblet Fern	16-30% 6-15% 6-15%	1-5% 1-5% 6-15%	6-15% 6-15% 6-15%	16-30% 1-5% 6-15%	16-30% 1-5% 31-50%	6-15% 1-5% 31-50%	6-15% 1-5% 31-50%	6-15% 1-5% 31-50%	6-15% 1-5% 31-50%	1-5% - 16-30%	1-5% - 6-15%	1-5% - 6-15%	1-5% - 6-15%
D	NE	Bulblet Fern Dwarf Sc. Rush *Carex leptalea*	6-15% 6-15% 1-5%	16-30% 16-30% -	16-30% 16-30% solitary	6-15% 16-30% <1%	31-50% 1-5% -	1-5% 6-15% <1%	6-15% 16-30% -	6-15% 16-30% -	16-30% 6-15% -	6-15% 6-15% -	6-15% 6-15% -	16-30% 16-30% -	16-30% 31-50% -
	NW	Bulblet Fern Field Horsetail Dwarf Sc. Rush	31-50% 1-5% 1-5%	16-30% 1-5% 1-5%	31-50% 1-5% 1-5%	6-15% 1-5% 6-15%	6-15% - 16-30%	31-50% 6-15% 1-5%	16-30% 1-5% 6-15%	16-30% 1-5% 6-15%	31-50% 1-5% 6-15%	16-30% 1-5% 6-15%	16-30% 1-5% 6-15%	16-30% 1-5% 6-15%	31-50% 6-15% 16-30%
	SW	*Carex pedunculata* Bulblet Fern Dwarf Sc. Rush	1-5% 1-5% 1-5%	6-15% 1-5% <1%	1-5% 1-5% <1%	1-5% 1-5% <1%	6-15% 1-5% -	6-15% 1-5% -	16-30% 6-15% 6-15%	16-30% 6-15% 6-15%	- 6-15% 1-5%	- 6-15% 6-15%	- 6-15% 6-15%	6-15% 6-15% 16-30%	16-30% 16-30% 16-30%
	SE	Bulblet Fern Field horsetail Moss sp.	31-50% <1% <1%	16-30% Solitary <1%	31-50% Solitary -	31-50% - 1-5%	51-75% - 1-5%	31-50% - 1-5%	31-50% - 1-5%	16-30% <1% -	16-30% <1% -	16-30% - -	16-30% <1% 1-5%	16-30% <1% 1-5%	31-50% <1% 16-30%

Appendix 3. Summary of 2013 to 2025 Spring Herbaceous Vegetation in each Sub-plot Cont'd.

Plot	Sub-plot		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Dominant Taxa Species		**Percent Cover for the Taxa**											
E	NE	Cinnamon Fern Canada Mayflower Bulblet Fern	6-15% 1-5% <1%	<1% 1-5% -	1-5% <1% <1%	1-5% <1% -	6-15% <1% solitary	6-15% <1% -	6-15% <1% <1%	6-15% <1% <1%	6-15% - <1%	6-15% <1% -	6-15% - -	1-5% <1% -	6-15% - -
	NW	Moss sp. *Agrostis stolinifera* Common Toothwort	51-75% 16-30% 16-30%	76-100% - 16-30%	76-100% - 6-15%	76-100% - 6-15%	31-50% - 6-15%	51-75% - 6-15%	16-30% - 1-5%	76-100% - -	16-30% - 6-15%	16-30% - 6-15%	16-30% - 6-15%	31-50% - <1%	51-75% - 1-5%
	SW	Moss sp. Bulblet Fern Carex pedunculata Yellow Birch.	1-5% 1-5% 1-5% 1-5%	1-5% - 1-5% <1%	1-5% 1-5% 1-5% -	6-15% - <1% solitary	6-15% - 1-5% <1%	6-15% - <1% -	6-15% - 1-5% -	76-100% 6-15% 1-5% -	6-15% - 1-5% -	1-5% - 1-5% -	1-5% - 1-5% -	1-5% - 6-15% -	6-15% - 16-30% -
	SE	*Carex leptalea* Bulblet Fern Glossy Buckthorn	1-5% <1% <1%	- <1% <1%	- <1% <1%	Solitary <1% <1%	- <1% <1%	- 1-5% <1%	- 1-5% <1%	- 1-5% <1%	- 1-5% <1%	- 1-5% 1-5%	- <1% <1%	- 1-5% <1%	- <1% <1%
F	NE	Moss sp. Canada Mayflower Marsh Fern	6-15% 1-5% <1%	16-30% <1% -	16-30% - -	6-15% <1% -	6-15% <1% -	6-15% <1% -	16-30% <1% -	6-15% <1% -	6-15% - -	6-15% - -	6-15% - -	6-15% - -	6-15% - -
	NW	Moss sp. Canada Mayflower Common Buckthorn	6-15% 1-5% <1%	31-50% <1% <1%	16-30% 1-5% <1%	31-50% 1-5% <1%	16-30% <1% solitary	- <1% -	16-30% <1% <1%	6-15% 1-5% -	6-15% - <1%	6-15% <1% <1%	1-5% <1% 1-5%	1-5% - <1%	1-5% <1% <1%
	SW	Moss sp. Dwarf Sc. Rush *Carex leptalea*	31-50% 1-5% 1-5%	31-50% <1% -	31-50% <1% 1-5%	51-75% <1% <1%	16-30% - <1%	16-30% - <1%	16-30% 1-5% 1-5%	16-30% <1% <1%	6-15% <1% -	6-15% <1% -	6-15% <1% -	16-30% <1% <1%	16-30% <1% <1%
	SE	Moss sp. Canada Mayflower Bulblet Fern	1-5% <1% -	- - <1%	1-5% - <1%	<1% - -	- - <1%	1-5% - <1%	1-5% - 1-5%	- - <1%	- - <1%	- - 1-5%	1-5% - -	1-5% - -	- - -

APPENDIX 4.

Summary of 2012 to 2025 Autumn Herbaceous

Vegetation in each Sub-plot

Appendix 4. Summary of 2012 to 2025 Autumn Herbaceous Vegetation in each Sub-plot.

Plot	Sub-plot		2012		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
				Dominant Taxa Species	Percent Cover for the Taxa												
A	NE	***Carex hystericina***	51-75%	**Fowl Mana Grass**	16-30%	1-5%	16-30%	31-50%	16-30%	-	16-30%	6-15%	-	1-5%	-	-	-
		Common Mint	31-50%	***Juncus articulatus***	6-15%	6-15%	1-5%	-	6-15%	6-15%	-	6-15%	6-15%	6-15%	16-30%	16-30%	16-30%
		Poa compressa	6-15%	**E. W. Cedar -seedling**	6-15%	<1%	1-5%	1-5%	1-5%	1-5%	16-30%	51-75%	-	-	-	-	-
	NW	**Moss sp.**	51-75%	**Moss sp.**	31-50%	51-75%	31-50%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%
		Bulblet Fern	6-15%	**Fowl Mana Grass**	16-30%	31-50%	1-5%	<1%	-	-	-	-	1-5%	<1%	-	-	-
		Agrostis sp.	6-15%	**Bulblet Fern**	6-15%	6-15%	16-30%	6-15%	16-30%	1-5%	16-30%	-	<1%	6-15%	6-15%	16-30%	16-30%
	SW	**Coltsfoot**	31-15%	**Coltsfoot**	6-15%	6-15%	16-30%	31-50%	16-30%	31-50%	1-5%	6-15%	6-15%	16-30%	16-30%	16-30%	16-30%
		Carex sp.	6-15%	***Carex schweinitzii***	6-15%	1-5%	-	-	-	-	-	-	-	-	-	-	-
		Bulblet Fern	6-15%	**Bulblet Fern**	6-15%	1-5%	16-30%	16-30%	6-15%	1-5%	16-30%	16-30%	16-30%	16-30%	1-5%	1-5%	1-5%
		Field Horsetail	6-15%	**Field Horsetail**	6-15%	6-15%	31-50%	16-30%	31-50%	16-30%	1-5%	1-5%	-	-	1-5%	1-5%	1-5%
	SE	***Carex sp.***	31-50%	***Bidens connata***	6-15%	-	Solitary	<1%	-	1-5%	-	-	-	-	-	1-5%	-
		Watercress	31-50%	**Watercress**	6-15%	<1%	6-15%	31-50%	6-15%	16-30%	-	1-5%	-	-	-	-	-
		Kentucky Bluegrass	16-30%	**Fowl Manna Grass**	6-15%	6-15%	1-5%	1-5%	6-15%	-	-	-	-	-	-	-	-
B	NE	**Carex *hystericina***	31-50%	***Carex schweinitzii***	16-30%	16-30%	1-5%	6-15%	16-30%	-	1-5%	1-5%	1-5%	-	1-5%	6-15%	6-15%
		Moss sp.	1-5%	**Purple Stemmed Aster**	16-30%	16-30%	16-30%	6-15%	6-15%	1-5%	<1%	1-5%	<1%	1-5%	-	1-5%	-
				Field Horsetail	16-30%	6-15%	16-30%	6-15%	16-30%	1-5%	6-15%	6-15%	16-30%	16-30%	6-15%	6-15%	6-15%
	NW	**Yellow Birch – saplings**	51-75%	**Moss sp.**	51-75%	51-75%	51-75|%	51-75%	76-100%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%	51-75%
				E. W. Cedar -seedling	16-30%	1-5%	1-5%	-	<1%	-	-	-	-	-	-	-	-
		Moss Spp.	51-75%	**Bulblet Fern**	1-5%	1-5%	6-15%	-	-	-	<1%	<1	<1%	-	-	-	-
		Glossy Buckthorn – seedlings	31-50%														
	SW	***Poa compressa***	31-50%	***Agrostis stolonifera***	31-50%	-	-	-	-	-	-	-	-	-	-	-	-
		Tall Buttercup	6-15%	**Tall Buttercup**	6-15%	-	-	-	-	-	-	-	-	-	-	-	-
				Fowl Mana Grass	1-5%	-	-	-	-	-	-	-	-	-	-	-	-
				Pilea fontana	<1%	6-15%	1-5%	<1%	1-5%	-	<1%	-	-	-	-	-	-
				Common Plantain	1-5%	6-15%	6-15%	-	-	1-5%	-	-	-	-	-	-	-
				Spotted Jewelweed	-	1-5%	-	-	-	-	-	-	-	-	-	-	-
	SE	**Tall Buttercup**	76-100%	**Tall Buttercup**	16-30%	31-50%	51-75%	31-50%	76-100%	76-100%	76-100%	16-30%	31-50%	16-30%	-	16-30%	31-50%
		Poa compressa	6-15%	***Agrostis stolonifera***	6-15%	-	-	-	-	-	-	-	-	-	-	-	-
		Carex hystericina	6-15%	***Pilea fontana***	1-5%	Solitary	<1%	<1%	1-5%	1-5%	<1%	-	-	-	-	-	-
				Poa compressa	-	16-30%	6-15%	16-30%	16-30%	6-15%	-	51-75%	-	-	-	-	-

Appendix 4. Summary of 2012 to 2025 Autumn Herbaceous Vegetation in each Sub-plot Cont'd.

Plot	Sub-plot		2012		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
				Dominant Taxa Species		Percent Cover for the Taxa											
C	NE	***Carex sp.***	51-75%	***Carex flava***	16-30%	31-50%	16-30%	-	-	-	-	-	-	-	-	-	-
		Bulblet Fern	6-15%	**Bulblet Fern**	6-15%	6-15%	1-5%	1-5%	1-5%	1-5%	1-5%	6-15%	1-5%	1-5%	1-5%	6-15%	6-15%
				Field Horsetail	6-15%	1-5%	6-15%	6-15%	16-30%	31-50%	1-5%	-	<1%	-	-	-	<1%
	NW	***Carex sp.***	6-15%	***Carex flava***	6-15%	6-15%	6-15%	-	-	-	-	-	-	-	-	-	-
		Dwarf Scouring Rush	1-5%	**Dwarf Scouring Rush**	1-5%	1-5%	1-5%	6-15%	1-5%	6-15%	1-5%	1-5%	1-5%	6-15%	6-15%	16-30%	16-30%
		Field Horsetail	1-5%	**C. Buckthorn**	1-5%	1-5%	<1%	<1%	-	-	<1%	<1%	<1%	<1%	<1%	1-5%	1-5%
	SW	**Field Horsetail**	6-15%	**Field Horsetail**	31-50%	6-15%	16-30%	6-15%	16-30%	<1%	1-5%	-	-	-	-	-	-
		Moss Sp.	1-5%	**Moss sp.**	6-15%	1-5%	1-5%	1-5%	6-15%	6-15%	16-30%	6-15%	6-15%	6-15%	6-15%	6-15%	16-30%
		Bulblet Fern	6-15%	**Bulblet Fern**	1-5%	1-5%	1-5%	<1%	1-5%	6-15%	6-15%	6-15%	1-5%	1-5%	6-15%	6-15%	1-5%
		Rough-leaved Goldenrod	1-5%	***Carex flava***	1-5%	6-15%	<1%	<1%	-	-	-	-	-	-	-	-	-
	SE	**Field Horsetail**	31-50%	**Field Horsetail**	16-30%	Solitary	1-5%	1-5%	16-30%	6-15%	6-15%	1-5%	1-5%	1-5%	<1%	-	-
		Coltsfoot	6-15%	**Coltsfoot**	6-15%	6-15%	6-15%	1-5%	1-5%	6-15%	16-30%	16-30%	-	-	-	-	-
		Bulblet Fern	1-5%	**Bulblet Fern**	1-5%	6-15%	6-15%	6-15%	16-30%	31-50%	16-30%	16-30%	6-15%	16-30%	16-30%	1-5%	1-5%
D	NE	**Dwarf Scouring Rush**	51-75%	**Dwarf Scouring Rush**	31-50%	16-30%	31-50%	51-75%	51-75%	31-50%	6-15%	16-30%	31-50%	31-50%	31-50%	31-50%	31-50%
		Bulblet Fern	16-31%	**Bulblet Fern**	6-15%	6-15%	16-30%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	16-30%	31-50%	31-50%
	NW	**Bulblet Fern**	31-50%	**Bulblet Fern**	31-50%	31-50%	16-30%	31-50%	31-50%	51-75%	51-75%	51-75%	51-75%	31-50%	31-50%	31-50%	31-50%
		Field Horsetail	1-5%	**Field Horsetail**	6-15%	1-5%	6-15%	6-15%	6-15%	6-15%	1-5%	1-5%	<1%	<1%	1-5%	1-5%	6-15%
		Dwarf Scouring Rush	1-5%	**Dwarf Scouring Rush**	1-5%	6-15%	6-15%	16-30%	1-5%	<1%	6-15%	6-15%	6-15%	6-15%	16-30%	31-50%	31-50%
	SW	***Carex sp.***	16-30%	***Carex pedunculata***	6-15%	6-15%	6-15%	16-30%	6-15%	6-15%	6-15%	16-30%	16-30%	16-30%	16-30%	16-30%	16-30%
		Bulblet Fern	1-5%	**Bulblet Fern**	1-5%	6-15%	1-5%	6-15%	1-5%	16-30%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	16-30%
				Dwarf Sc. Rush	1-5%	1-5%	1-5%	<1%	1-5%	1-5%	1-5%	1-5%	1-5%	6-15%	6-15%	16-30%	16-30%
	SE	**Bulblet Fern**	16-30%	**Bulblet Fern**	31-50%	31-50%	16-30%	31-50%	31-50%	31-50%	31-50%	16-30%	16-30%	16-30%	16-30%	16-30%	16-30%
				Glossy Buckthorn	Solitary	Solitary	-	-	-	-	-	-	-	-	<1%	<1%	-
				Moss sp.		1-5%	1-5%	1-5%	-	<1%	-	<1%	-	-	16-30%	16-30%	6-15%

Appendix 4. Summary of 2012 to 2025 Autumn Herbaceous Vegetation in each Sub-plot Cont'd.

Plot	Sub-plot		2012	Dominant Taxa Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
					Percent Cover for the Taxa												
E	NE	**Cinnamon Fern**	<1%	**Cinnamon Fern**	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	6-15%	16-30%
		Moss sp.	<1%	**Moss sp.**	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	6-15%	6-15%	6-15%
		Marsh Fern	<1%	**Bulblet Fern**	Solitary	-	-	-	-	1-5%	<1%	-	<1%	-	<1%	1-5%	-
	NW	**Grass sp.**	76-100%	**Moss sp.**	76-100%	76-100%	76-100%	76-100%	76-100%	76-100%	16-30%	16-30%	31-50%	31-50%	31-50%	31-50%	51-75%
		Moss sp.	51-75%	***Agrostis stolinifera***	16-30%	6-15%	-	1-5%	1-5%	6-15%	-	-	6-15%	6-15%	16-30%	31-50%	31-50%
		Field Horsetail	6-15%	**Dwarf Raspberry**	1-5%	1-5%	1-5%	solitary	1-5%	<1%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%
	SW	**Moss sp.**	1-5%	**Moss sp.**	1-5%	1-5%	6-15%	1-5%	16-30%	6-15%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	6-15%
		Marsh Fern	<1%	**Bulblet Fern**	1-5%	<1%	Solitary	-	-	-	-	-	-	-	<1%	1-5%	-
		Carex sp.	<1%	***Carex pedunculata***	1-5%	1-5%	-	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	6-15%	6-15%	6-15%
		Glossy Buckthorn	<1%	**Glossy Buckthorn**	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%	1-5%
	SE	**Moss Sp.**	6-15%	**Moss sp.**	16-30%	16-30%	16-30%	16-30%	16-30%	16-30%	6-15%	6-15%	6-15%	16-30%	16-30%	6-15%	16-30%
		Bulblet Fern	<1%	**Bulblet Fern**	1-5%	<1%	<1%	<1%	-	1-5%	<1%	-	<1%	1-5%	1-5%	-	-
		Buckthorn Sp.	<1%	**Glossy Buckthorn**	<1%	<1%	<1%	<1%	<1%	1-5%	1-5%	1-5%	-	1-5%	1-5%	1-5%	1-5%
F	NE	**Moss sp.**	1-5%	**Moss sp.**	6-15%	6-15%	6-15%	16-30%	6-15%	16-30%	6-15%	6-15%	6-15%	6-15%	6-15%	16-30%	16-30%
		Bulblet Fern	<1%	**Marsh Fern**	1-5%	-	-	-	1-5%	1-5%	-	-	-	-	-	-	-
				Glossy Buckthorn	<1%	<1%	<1%	solitary	-	<1%	-	-	-	<1%	-	-	-
	NW	**Moss Sp.**	6-15%	**Moss sp.**	16-30%	31-50%	16-30%	16-30%	16-30%	6-15%	16-30%	16-30%	16-30%	6-15%	6-15%	1-5%	1-5%
		Can. Mayflower	<1%	**Glossy Buckthorn**	1-5%	1-5%	1-5%	<1%	-	<1%	1-5%	1-5%	<1%	<1%	1-5%	1-5%	1-5%
		Carex sp.	<1%	**Canada Mayflower**	<1%	<1%	1-5%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	-	-
	SW	**Dwarf Scouring Rush**	31-50%	**Moss sp.**	31-50%	31-50%	31-50%	31-50%	16-30%	6-15%	1-5%	6-15%	6-15%	16-30%	6-15%	6-15%	6-15%
		Moss Sp.	31-50%	**Dwarf Sc. Rush**	1-5%	<1%	1-5%	1-5%	<1%	1-5%	1-5%	1-5%	<1%	<1%	<1%	1-5%	1-5%
				Glossy Buckthorn	1-5%	<1%	<1%	1-5%	<1%	-	1-5%	1-5%	<1%	<1%	-	-	-
				Showy Ladyslipper	-	1-5%	1-5%	1-5%	Solitary	-	-	-	-	-	-	-	-
	SE	**Moss Sp.**	<1%	**Glossy Buckthorn**	1-5%	1-5%	Solitary	-	-	1-5%	<1%	<1%	<1%	<1%	-	-	-
		Glossy Buckthorn	<1%	**Bulblet Fern**	<1%	<1%	<1%	<1%	-	<1%	-	<1%	<1%	<1%	-	-	<1%

APPENDIX 5.

Photos of Spring Vegetation Monitoring
Plots A-F,
2024 & 2025

Spring 2025

Vegetation Plot A: Photos facing North from Steel T-bar.



Left photo: 2024



Right photo: 2025

Vegetation Plot B: Photos facing East from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

Vegetation Plot C: Photos facing South from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

Vegetation Plot D: Photos facing East from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

Vegetation Plot E: Photos facing East from Steel T-bar.





Left Photo: 2024 Right Photo: 2025

Vegetation Plot F: Photos facing South from Steel T-bar.





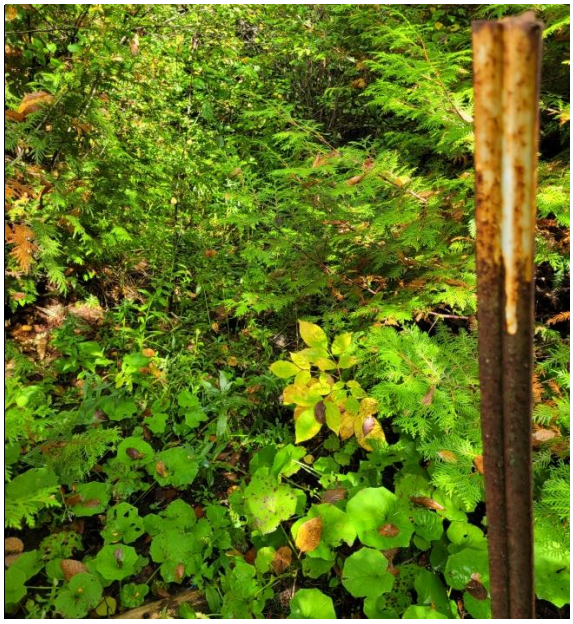
Left Photo: 2024 Right Photo: 2025

APPENDIX 6.

Photos of Autumn Vegetation Monitoring
Plots A-F,
2024 & 2025

Fall 2025

Vegetation Plot A: Photos facing North from Steel T-bar.

Left Photo: 2024 Right Photo: 2025

Vegetation Plot B: Photos facing East from Steel T-bar.




Left Photo: 2024 Right Photo: 2025

Vegetation Plot C: Photos facing East from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

Vegetation Plot D: Photos facing East from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

Vegetation Plot E: Photos facing East from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

Vegetation Plot F: Photos facing East from Steel T-bar.



Left Photo: 2024



Right Photo: 2025

APPENDIX 7.

C.V.s
of
Report Authors.

K.W. Dance, M.Sc.

K.S. Dance, M.E.S.

DANCE ENVIRONMENTAL INC.

KEVIN DANCE, M.E.S.
TERRESTRIAL BIOLOGIST
AND PARTNER

EDUCATION

- M.E.S., Masters of Environment and Resource Studies, 2011; University of Waterloo.
  Thesis Title: "Raptor Mortality and Behavior at Wind Turbines Along the North Shore of Lake Erie During Autumn Migration 2006-2007"
- B.E.S., Honours Bachelor of Environment and Resource Studies with Parks Option, 2006; University of Waterloo.

CERTIFICATIONS & PROFESSIONAL ASSOCIATIONS

Workshops/Certifications:

- Wildlife Acoustics: Kaleidoscope In-depth Seminar for Bat Research. Royal Ontario Museum, Toronto, Ontario. March 29, 2019. Instructor: Ian Agranat (creator of Kaleidoscope Pro).
- Wildlife Acoustics: Kaleidoscope In-depth Seminar for Non Bat Research. Royal Ontario Museum, Toronto, Ontario. March 28, 2019. Ian Agranat (creator of Kaleidoscope Pro).
- Ontario Bat Working Group, Spring 2017, Toronto Zoo.
- Bat Survey Solutions LLC. Bat Acoustic Fieldwork and Data Management Workshop. Instructors: Janet D. Tyburec and Joseph M. Szewezak (creator of SonoBat and Professor at Humbolt State University, California). February 2016, Punta Gorda, Florida.
- Wildlife Acoustics: Bat Acoustics Training with Dr. Lori Lausen, February 2015, Miami, Florida
- Butternut Health Assessment Workshop, BHA #486, July 16, 2014, re-certified in 2019.
- Dragonfly and Damselfly Identification Workshop, 2013, Guelph Arboretum.
- OMNR, Ontario Wetland Evaluation System, Northern Manual and Southern Manual. North Bay, 2012
- OMNR Ecological Land Classification for Southern Ontario, Lindsay, 2010
- Diploma of Environmental Assessment, University of Waterloo, 2006
- Member, Ontario Field Ornithologists (OFO)
- Member, Waterloo Region Nature
- Member, Canadian Herpetological Society
- Member, The Orianne Society –Reptile and Amphibian Conservation
- Member, North American Society for Bat Research (NASBR)
- Member, Bat Conservation International (BCI)
- Member, Northeast Naturalist
- Member, Canadian Field Naturalist

AREAS OF PROFESSIONAL EXPERIENCE

Kevin Dance has over 10 years of consulting experience on a wide range of projects throughout Ontario. Kevin specializes in inventories, evaluations, research, and impact studies of natural resources. He is experienced in identifying important natural features and evaluating the significance and sensitivity of these features. Kevin regularly works with multidisciplinary study teams focusing on the management of terrestrial and wetland ecosystems.

Terrestrial Vegetation and Wildlife Studies

Kevin has worked on various studies investigating a variety of wildlife habitats, determining wildlife populations including numbers and seasonal trends and monitoring of long-term impacts of

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developments on species. Kevin has conducted a wide range of monitoring surveys and inventories to identify the presence of wildlife on study sites as well as species specific guided surveys for Species at Risk and Species of Conservation Concern including:
Bobolink, Barn Swallow, Bank Swallow, Eastern Meadowlark, American Badger, Milksnake, Blanding's Turtle, Wood Turtle, Jefferson Salamander, Common Nighthawk, Whip-poor-will, Henslow's Sparrow, Short-eared Owl, Least Bittern, and all Endangered *Myotis* bat species.

He has completed numerous detailed vegetation community mapping inventories and conducted vegetation monitoring at permanent sample plots, as well as transects and random sample quadrats to assess short-term and long-term impacts of developments on vegetation. Kevin is trained and experienced in applying the Ecological Land Classification System in projects in Southern Ontario to delineate, describe and map vegetation communities.

Kevin's specific terrestrial expertise includes:

- wildlife and vegetation habitat mapping, evaluations, and research.
- surveys of plants, birds, mammals: including bats, reptiles, amphibians, dragonflies and butterflies.
- identification of rare and sensitive species and habitats.
- bat acoustic monitoring and data analysis for Ontario bat species
- development of monitoring methodologies for Species at Risk
- preparing Overall Benefit Plans and Management Plans for Species at Risk
- obtaining permitting from MNR to conduct Jefferson Salamander trapping surveys, and snake coverboard surveys
- over 15 years of bird identification experience
- identification and analysis of potential wildlife corridors.
- short-term and long-term monitoring techniques for flora and fauna

Wetland Studies

Kevin is certified to conduct Ontario Wetland Evaluations and has worked in habitats throughout Ontario using the Ontario Wetland Evaluation System for Wetlands in Southern and Northern Ontario. Kevin has also participated in numerous studies focusing on the impact of development on wetland ecology and function.

Kevin's specific wetland expertise includes:

- inventories and mapping of wetland flora and fauna.
- wetland evaluations using the Ontario Wetland Evaluation System (OWES).
- wetland boundary delineation, and regularly working with relevant Conservation Authority staff to obtain approval of boundaries
- wetland Environmental Impact Studies (EISs).

Aquatic Studies

Kevin has assisted with numerous long-term fish monitoring programs using electrofishing to sample reaches of streams to assess and monitor development impacts to cold water streams. Kevin has experience collecting fish during electrofishing sampling, fish identification, marking and measuring. He also has experience identifying aquatic and wetland vegetation as well as collection of aquatic habitat data including stream depth, temperature, stream bed composition, flow speed and invertebrate sampling. Kevin has assisted with electrofishing surveys and aquatic habitat assessments within Wellington County and the Region of Waterloo.

Renewable Energy Projects:

Kevin has extensive experience conducting and organizing both pre-construction and post-construction studies at wind farms in Ontario, Manitoba and Alberta. Kevin has been developed monitoring methodologies for mortality searches, scavenger removal trials and searcher efficiency studies. Kevin has been involved in post-construction studies at four large scale wind farms and has conducted pre-construction studies at over a fifteen wind farms throughout Ontario, Manitoba

and Alberta.

Kevin's specific renewable energy expertise includes:

- development of mortality search methodologies and conducting mortality searches, organizing and conducting scavenger removal studies and searcher efficiency trials
- identification of bird and bat fatalities
- developing study methods for pre-construction wind farm studies, including: migration surveys (dawn and dusk), daytime soaring surveys, waterfowl surveys, shorebird surveys, winter raptor and diurnal owl surveys, walking transect surveys, and driving transect surveys.

EMPLOYMENT HISTORY

Terrestrial Biologist and Project Manager
Dance Environmental Inc., Drumbo, Ontario. 2011 to present

Terrestrial and Wetland Biologist
Natural Resource Solutions Inc., Waterloo, Ontario. 2008 to 2011

Environmental Scientist
Stantec Ltd., Guelph, Ontario. 2006 to 2007

Avian Field Technician –Breeding ecology and impacts of urban development on Wood Thrush in the Region of Waterloo. Bird banding crew leader, nest searcher, nest monitoring.
Canadian Wildlife Service and University of Waterloo, Waterloo, Ontario 2003 to 2005

Terrestrial Biologist
Dance Environmental Inc., Drumbo, Ontario 2001 to 2003

PUBLICATIONS, PRESENTATIONS, AWARDS

Dance, K.S. 2019. Finding Bats Based on Their Calls (Pittock Reservoir, Woodstock). Outing for the Woodstock Field Naturalist Club. Outing leader.

Dance, K.S. 2017. Bats in Urban Natural Areas: A case Study of Kitchener Natural Areas. Oral Presentation. Nature in the City Speaker Series, Kitchener Public Library. November 15, 2017.

Dance, K.W., K.S. Dance, & M.B. Dance. 2012. Giant Ragweed (*Ambrosia trifida*) as a Food Source for Autumn Migrants and Winter Birds in the Grand River Basin. Ontario Birds 30(3):148-164.

Dance, K.S. 2012. Manipulation of Caterpillars for Consumption by Eastern Bluebirds. Ontario Birds 30(2):102-108.

Dance, K.W., K.S. Dance. 2012. Wetlands: What are they Good For? Oral Presentation. Princeton Historical Society. Princeton, Ontario. September 24, 2012.

Dance, K.S. 2011. "Raptors and Wind Farms". Oral Presentation. Ruthven Park 2nd Annual For The Birds Festival. September 17, 2011.

Dance, K. S. 2010. On the Wind: A Discussion of Raptors and the Wind Industry. Oral Presentation. Owen Sound Field Naturalist Club (OSFN). September 9, 2010.

Dance, K. S., Dance, K. W. 2010. "Raptors on the Wind". Oral Presentation. Kitchener-Waterloo Field Naturalist Club (KWFN). March 22, 2010.

Dance, K. S., Dance, K. W. 2010. Review of Raptor and Turbine Interaction Literature: the Case of the Erie Shores Wind Farm. Oral Presentation. RARE Charitable Research Reserve, Cambridge, ON. January 23,

2010.

Dance, K. S., R. James, L. Friesen, S. Murphy. 2009. “Raptor Behavior and Mortality (Erie Shores Wind Farm)”. Poster Presentation. Canadian Wind Energy Association Annual Conference & Exhibition. September 20-23, 2009.

Dance, K. S., R. James, L. Friesen, S. Murphy. 2009. “Migrant Raptor Behavior and Mortality (at the Erie Shores Wind Farm)”. Poster Presentation, 3rd place winner. A.D. Latornell Conservation Symposium. Nottawasaga, Ontario.

Address: #807566 Oxford Rd. 29, R.R. #1 Drumbo, ON N0J 1G0
Tel. (519) 463-6156 Email: kevin_dancenv@rogers.com

DANCE ENVIRONMENTAL INC.

KEN DANCE
CONSULTING BIOLOGIST

EDUCATION

- M.Sc., Biology, 1977; University of Waterloo
- B.Sc., Honours Biology, 1975; University of Waterloo

COURSES

- Butternut Health Assessment Workshop & Update – OMNR, 2010 & 2013
- Preparation of E.I.S. Reports – OMNR, 1995
- Bioassessments & Biological Criteria for Warmwater Streams – AFS 1993
- Ontario Wetland Evaluation System, 3rd Edition – OMNR, 1993
- Creating and Using Wetlands – University of Wisconsin, 1992
- Fluvial Geomorphology – University of Guelph and AFS, 1992

PROFESSIONAL EXPERIENCE

1991 to date. Consulting Biologist and President, Dance Environmental Inc.
The firm has completed over 440 assignments.

Mr. Dance has been consulting for 42 years and has gained extensive experience on the following types of studies: ecological inventory, biological monitoring, environmental planning, Species at Risk Overall Benefit Plans, watershed management, no net loss of fish habitat, tree saving plans, vegetation management, wetland Environmental Impact Studies, non-game wildlife and environmental assessments.

He also has experience in biological resource inventory, impact prediction, management option development and comparison, attendance at public information centres and as an expert witness before boards and tribunals.

1988-1991 Senior Biologist, Ecologistics Limited. As Senior Biologist, Ken was responsible for review of all biological projects. He consulted to private and public sector clients on management of fish, vegetation, and wildlife resources.

1985-1988 Associate and Manager of Biological Services, Gartner Lee Limited. Mr. Dance consulted to industrial and government clients.

1982-1985 Senior Biologist and Project Manager, Gartner Lee Limited.

1977-1982 Biologist and Project Manager, Ecologistics Limited.

1975-1976 Research Technician, University of Waterloo. Mr. Dance acted as a research technician on a PLUARG contract study of two streams.

KEN DANCE
CONSULTING BIOLOGIST

PROJECT EXAMPLES

E.I.S. Reports

Undertook inventory, site assessments and reporting for over one thousand sites relating to residential, industrial, aggregate and waste management proposals.

Highways and Roads

Examples of Environmental Assessment and highway construction projects, which Mr. Dance has worked on follow.

- Parkhill Road and Bridge, Cambridge – inspection of in-water construction to minimize erosion and sedimentation and construction of fish pool habitat.
- Gordon Street Bridge, Guelph – inspection of in-water construction and placement of fish habitat rock, 2000-2002.
- Highway 60 at Huntsville – inspection of in-water work during replacement of 4 culverts, including trout habitat; inspection of tree and shrub plantings.
- Highway 35 Minden – inspection of stream habitat restoration construction and inspection of tree and shrub plantings.
- Wellington County Roads – fisheries assessments for 3 culvert replacements.

Wastewater Management

- Etobicoke and Mimico Creek Watersheds: Toronto Wet Weather Flow Management Master Plan – ecological consultant addressing fish, wildlife, forests, wetlands and Lake Ontario near shore habitat.
- Thunder Bay Water Pollution Prevention Study – biological consultant addressing fish, wildlife, forests, wetlands and Lake Superior near shore habitat.
- Cincinnati and Cleveland, Ohio – CSO Review Studies: biological consultant addressing existing impacts on aquatic ecosystems and advice regarding solution options.
- Wastewater Treatment Plant Class E.A.s: biological consultant for Ayr, Flesherton, Ingersoll, Keswick, Lambeth, Tavistock and Wellesley plant upgrades/expansions.

Water Supply

Fisheries/biological assessments regarding water taking and/or facility siting for projects in Elmira, Georgetown, Acton, Cambridge, Caledon and Brampton.

Publications

Published chapters in three books. Over forty papers on fish, wildlife, wetland and vegetation management, as well as water quality and fisheries. Articles in publications such as Ontario Birds, Ontario Field Biologist, Newsletter of the Field Botanists of Ontario, Recreation Canada, Landscape Architectural Review and the Water Research Journal of Canada.

07/19

REPORT COR-2026-009

TO:	Mayor and Members of Council
PREPARED BY:	Justine Brotherston, Director of Corporate Services/Municipal Clerk
PRESENTED BY:	Justine Brotherston, Director of Corporate Services/Municipal Clerk
MEETING DATE:	March 25, 2026
SUBJECT:	Proposed Stop Up, Close and Declare Surplus a Portion of Lake Ave Road Allowance

RECOMMENDATION

That Report COR-2026-009 entitled Proposed Stop Up, Close and Declare Surplus a Portion of Lake Ave Road Allowance be received for information; and

That Council authorize staff to proceed to stop up, close and declare surplus Part 1 of the Lake Ave Road allowance as described in R-Plan 61R-23192; and

That Council give three readings to By-law 2026-010 being a by-law to stop up and close and declare surplus part of the Lake Ave Road allowance; and

That Council deem the portion of the road allowance surplus to the needs of the Township with the intention of the disposal of part of the road allowance; and,

That Council give three readings to By-law 2026-011 being a by-law to authorize the entering into Purchase and Sale Agreement for the sale of a portion of an unopened road allowance and to enter into an Encroachment Agreement for 6 Lake Avenue.

Purpose

The purpose of this report is to seek authorization from Council to proceed with stopping up, closing and declaring surplus part of the Lake Ave Road Allowance (hereinafter referred to as the "road allowance") as shown on Schedule "A" to this report and to enter into an Agreement of

Purchase and Sale for the closed portion of the road allowance. Further, staff are seeking Council's direction to enter into an encroachment agreement to address two existing sheds that have been constructed on the Township's Road Allowance.

Background

The Township has received a request from a landowner to purchase a portion of the unopened road allowance that runs adjacent to the private road of Lake Avenue to support a proposed addition to their dwelling. The remainder of the road allowance will remain in the Township's ownership to ensure access is maintained to all of the properties located on Lake Avenue.

Section 34 of the Municipal Act provides that a by-law permanently closing a highway does not take effect until a certified copy of the by-law is registered in the proper land registry office.

Prior to proceeding with the sale of the road allowance, the portion to be sold must be stopped up, permanently closed and declared surplus. The portion of the road allowance will be considered closed once a by-law is passed and is registered on title in the Land Registry Office.

As part of this process the Township is required to advertise the closure of the road allowances on the Township website 10 days prior to the Council meeting where the report and by-law will be on the agenda closing the road allowances. Notice was given on the Township's website on February 20, 2026 satisfying this requirement.

Staff are seeking Council's direction to permanently close the portion of the road allowance and declare it surplus to the Township's needs in accordance with the Township's Sale and Other Disposition of Land Policy adopted through By-law 60/08. Further, staff are seeking Council's authorization to enter into an Agreement of Purchase and Sale Agreement, as well as ancillary documents related to the sale of the road allowances with the Owners of 6 Lake Avenue as outlined in the recommendation of this report. The Purchase and Sale Agreement is conditional upon the property owners entering into an Encroachment Agreement with the Township to ensure that the responsibility with respect to the sheds is retained by the property owner.

Further, staff are seeking Council's direction to enter into an encroachment agreement to address two existing sheds that have been constructed on the Township's Road Allowance. The sheds are located on Part 2 and Part 3 of Schedule "A" to this report.

Financial Implications

Staff are recommending that the road allowance be sold for $13,500 and that the purchaser be required to pay all the Township's costs associated with the sale of the portion of the road allowance.

Applicable Legislation and Requirements

Municipal Act, 2001, as amended

Attachments

Schedule “A” – Reference Plan 61R-23192

Respectfully submitted,	**Reviewed by:**
Justine Brotherston, **Director of Corporate Services/Municipal Clerk**	**Courtenay Hoytfox,** **CAO**

SCHEDULE				
PART	LOT	CONCESSION	PIN	AREA
1	PART OF THE ROAD ALLOWANCE BETWEEN LOTS 5 & 6	1	PART OF 71207–0106 (LT)	415 sq m. (0.10 ac.)
2				14 sq m.
3				49 sq m.

PLAN 61R-23192

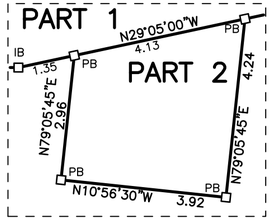
Received and deposited

March 24th, 2026

Leshel Baac

Representative for the Land Registrar for the Land Titles Division of Wellington (No.61)

DETAIL 'A'
(Not To Scale)



LOT 6 CONCESSION 1

PIN 71207 – 0104 (LT)

PART 3 PLAN 61R–2085

SUBJECT TO RIGHT OF WAY AS SET OUT IN INST. No. RO668761

PART 2
PLAN 61R–1782
PIN 71207 – 0102 (LT)

SIB
N10°04'40"W (P1)
N10°10'15"W (P2&Meas)
14.01
(P1,P2&Meas)
N78°11'45"E
48.22 (P1,P2&Meas)
9.48 (P1&Set)
PB (JDB)

PART 1

PIN 71207 – 0103 (LT)

61R–679½

18.29 (P1&Meas)
9.56 (Meas) (9.53 P1)

PART 4 61R–2085

PART 3 61R–679½

WOOD DECK

SSIB
N16°58'15"W (P1,P2&Meas)
37.61 (P1&Meas)
RF 0.1S
IB
7.98
59.39 (P2&Meas)
5.61
PB
8.19
IB

ENCROACHMENT AGREEMENTS BY BYLAW 16/78 & 26/2001, REGISTERED INST. Nos. ROS201764 & LT64702

PART 1
PLAN 61R–1782

N78°11'45"E (P1,P2&Meas)
7.24 (P2&Meas)
7.29 (P1)
RF 0.1S
IB
N85°47'35"E
8.73 (Meas)
(8.76 P1)
8.70
8.70

PART 6

PART 5 PLAN

PART 4
PART 3
PLAN

N72°59'50"E
N72°52'40"E

PART 1

N14°56'25"W
36.36 (P1,P2&Meas)
(P1,P2&Meas) 16.98
SSIB
51.86
15.50 (P1&Set)
IB
IB

(SOP P1,P2)
N78°11'45"E
4.81
RF 0.1S
0.5E

SEE DETAIL 'B'

209.89
PB
N16°47'50"W
20.17

PART 2

N29°05'00"W
4.13
PB
IB
PB
PB
PB
11.50

ORIGINAL ROAD ALLOWANCE BETWEEN LOTS 5 & 6

PIN 71207 – 0106 (LT)

SEE DETAIL 'A'

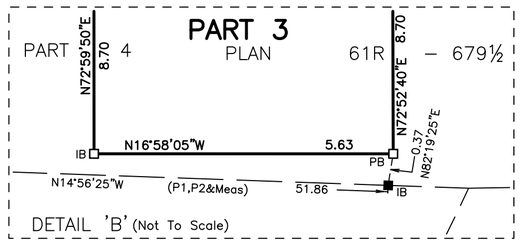
WATERS EDGE AS SHOWN ON PLAN 61R–679½ PUSLINCH LAKE

N63°53'25"W

LOT 5 CONCESSION 1

CC (A)

DETAIL 'B' (Not To Scale)



INTEGRATION DATA

OBSERVED REFERENCE POINTS (ORPs): UTM ZONE 17, NAD83 (CSRS) (2010.0).
COORDINATES TO URBAN ACCURACY PER SECTION 14 (2) OF O.REG 216/10.

POINT ID	EASTING	NORTHING
ORP (A)	559 993.89	4 807 930.18
ORP (B)	560 182.29	4 807 837.84

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE–ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

THE RESULTANT TIE BETWEEN ORP (A) AND ORP (B) IS 209.89 N63°53'25"W

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 13th DAY OF MARCH, 2026.

MAR/18/2026
DATE

RAYMOND J. SIBTHORP
ONTARIO LAND SURVEYOR

THIS PLAN OF SURVEY RELATES TO AOLS PLAN SUBMISSION FORM NUMBER V–124480

PLAN OF SURVEY OF

PART OF THE ROAD ALLOWANCE BETWEEN LOTS 5 & 6, CONCESSION 1

GEOGRAPHIC TOWNSHIP OF PUSLINCH
NOW IN THE

TOWNSHIP OF PUSLINCH

COUNTY OF WELLINGTON

SCALE 1 : 200

5 0 5 10 metres

THE INTENDED PLOT SIZE OF THIS PLAN IS 609mm IN WIDTH BY 355mm IN HEIGHT WHEN PLOTTED AT A SCALE OF 1:200

J.D. BARNES LIMITED

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

NOTES

BEARINGS ARE UTM GRID, AND ARE REFERRED TO THE EAST LIMIT OF PART 1 PLAN 61R–679½ AS BEING N10°10'15"W, UTM ZONE 17, NAD83(CSRS).

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999602.

FOR BEARING COMPARISONS, A ROTATION OF 0°22'40" COUNTER–CLOCKWISE WAS APPLIED TO BEARINGS ON P1.

LEGEND

■	DENOTES	SURVEY MONUMENT FOUND (375 UNLESS SHOWN OTHERWISE)
□	DENOTES	SURVEY MONUMENT SET
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
PB	DENOTES	PLASTIC BAR
IB	DENOTES	IRON BAR
CC	DENOTES	CUT CROSS
WIT	DENOTES	WITNESS
MEAS	DENOTES	MEASURED
SRPR	DENOTES	SURVEYOR'S REAL PROPERTY REPORT
375	DENOTES	BLACK SHOEMAKER ROBINSON & DONALDSON, O.L.S.'s
JDB	DENOTES	J. D. BARNES LIMITED
RF	DENOTES	RAIL FENCE
P1	DENOTES	DEPOSITED PLAN 61R–679½
P2	DENOTES	SRPR BY 375 DATED: NOV 6, 2025 FILE: 25–14–339–00

J.D. BARNES LIMITED
LAND INFORMATION SPECIALISTS
SURVEYING MAPPING GIS
257 WOODLAWN ROAD WEST, UNIT 101, GUELPH, ON N1H 8J1
T: (519) 822-4031 F: (519) 822-1220 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO.:
RPA	RJS	25–14–339–02
		DATED: Mar/18/2026

FILE: G:\25-14-339\01\Drawing\25-14-339-02.dwg

PLOT DATE: 3/18/2026 7:04 AM



Wellington Road 46 Road Study

Township of Puslinch Council Presentation

March 25, 2026

DILLON CONSULTING

The Corporation of the County of Wellington

Agenda

- Introductions
- Study Overview
- Bill 60
- Existing Conditions
- Preliminary Alternatives
- Study Process
- Public & Stakeholder Engagement
- Next Steps



Introductions

Don Kudo
County Engineer

Jeff Axisa
Senior Transportation Planner

Greg Hayes
Planning and Consultation Lead

Background

- County's Road Master Action Plan "Aberfoyle (Wellington Road 46): Road Diet – Strategic Traffic Analysis" – September 2021
    - County Roads Committee and Council passed the following resolution:

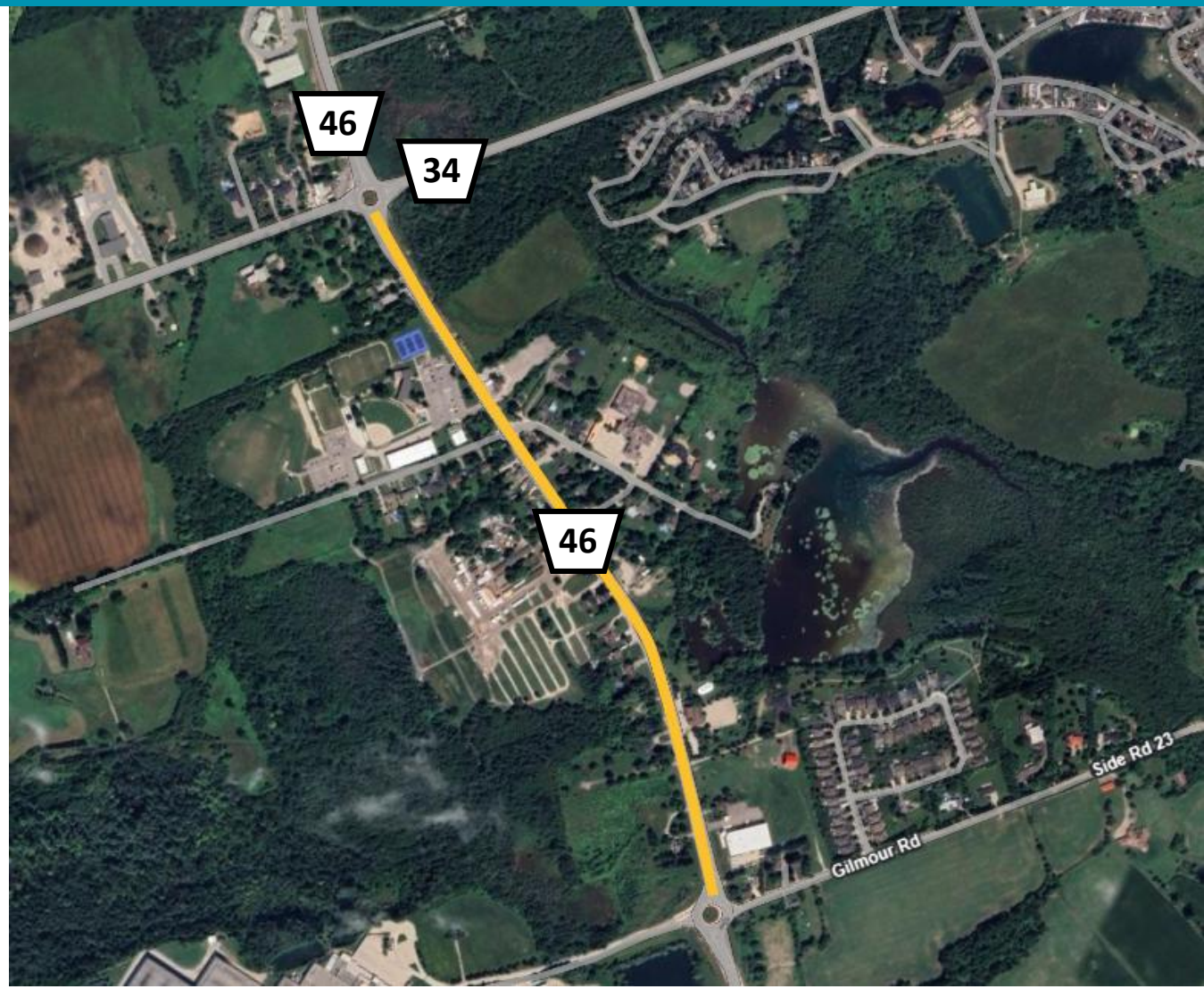
      "That the County take no further action as outlined in the report with respect to a Wellington Road 46 road diet in Aberfoyle until further traffic analysis is completed following the implementation of the Morriston By-Pass or the completion of the midblock exchange on the Hanlon Expressway."

Study Overview

The Study will assess options to reconfigure Wellington Road 46 (Brock Road) between Wellington Road 34 and Gilmour Road.

Township of Puslinch advocates for a “road diet,” considering:

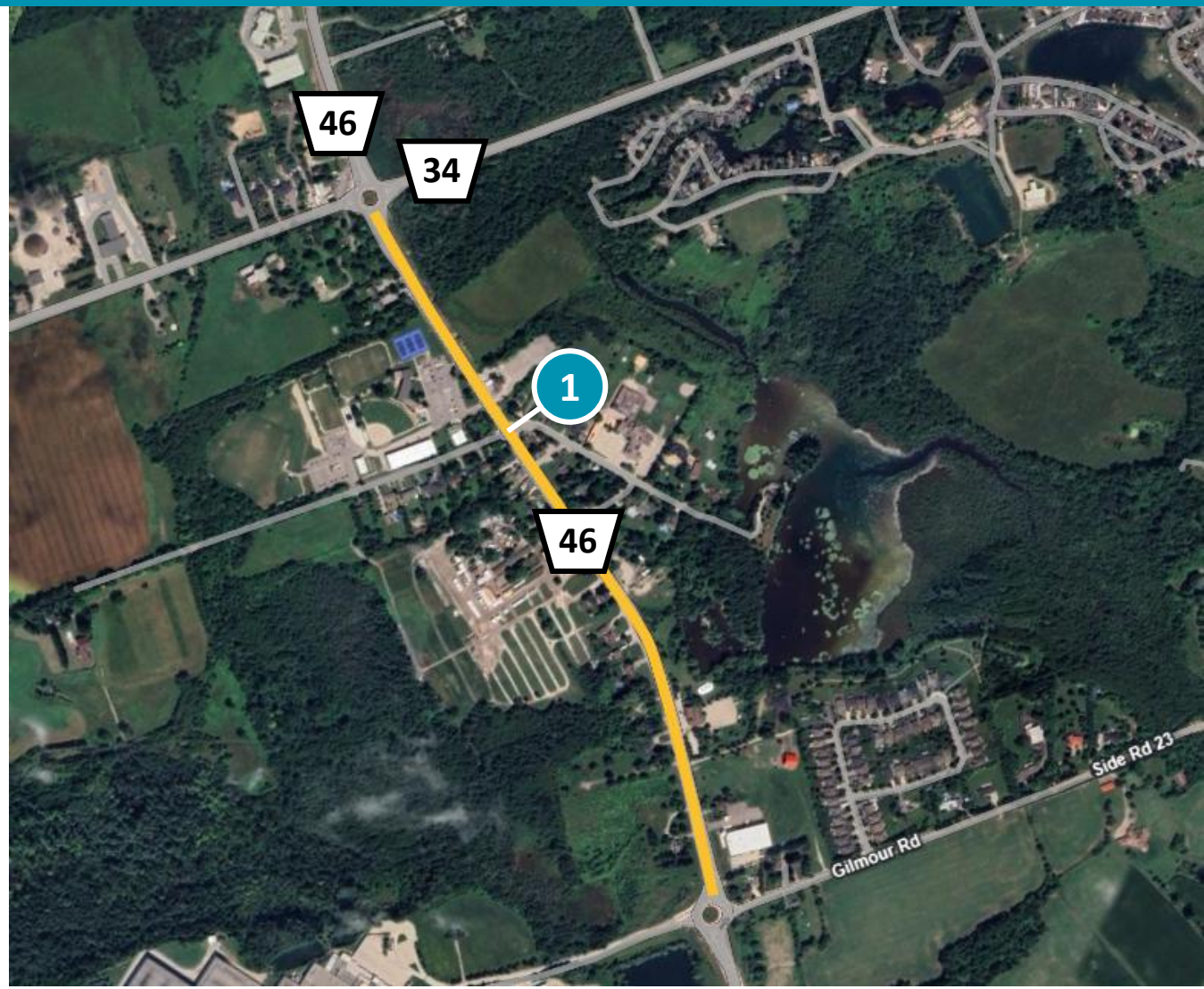
- Existing Community Safety Zone designation
- Concerns around traffic safety from local community and businesses.



Township Recommendations

Township of Puslinch has recommended the following speed mitigation measures:

1. Raised crosswalk at Old Brock Road
2. Convert Brock Road to one lane in either direction with a centre turn lane
3. Add on-street parking
4. Install permanent radar feedback signs
5. Consider the addition of a crosswalk within the project limits.



Bill 60

- Bill 60, the *Fighting Delays, Building Faster Act*, 2025, prohibits the reduction/removal of existing travel lanes (excerpt below from Schedule 5, item 5)
  - Came into force November 27, 2025
  - Future regulations will establish exceptions

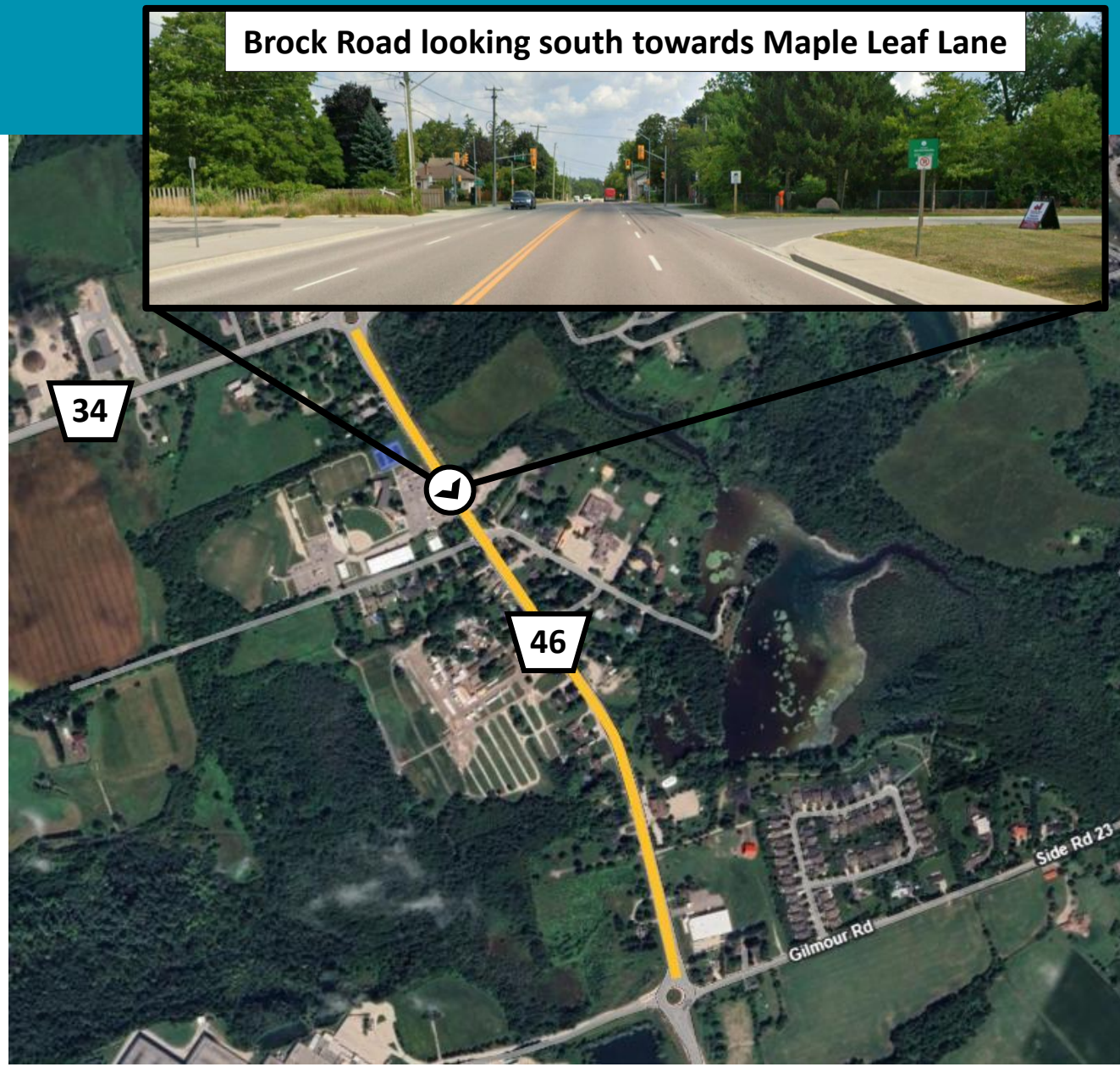
Prohibition re reduction of lanes

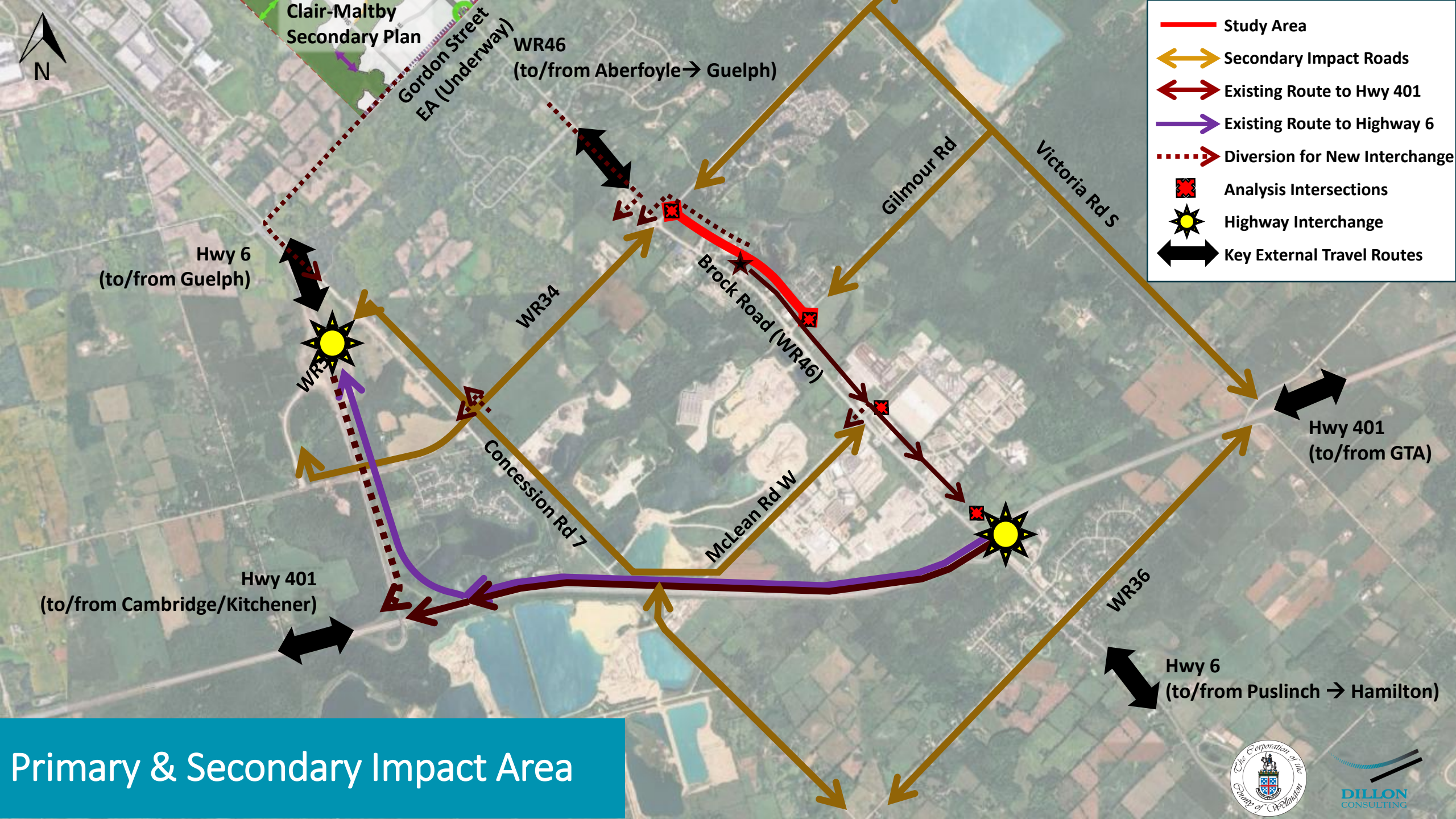
195.3 (1) Except as permitted by the regulations, a municipality shall not, by by-law or otherwise, reduce or permit a reduction in the number of marked lanes available for travel by motor vehicles on a highway or a portion of a highway under the municipality's jurisdiction and control for any of the following purposes:

1) A bicycle lane.
2) Any other prescribed purpose.

Existing Conditions

- Four travel lanes (two per direction)
- Sidewalks (narrow along both sides, discontinuous on east side)
- 50 km/h posted speed
- Roundabouts at Wellington Road 34 and at Gilmour Road
- Traffic signals at Maple Leaf Lane/Old Brock Road with crossing guard
- Section designated as Community Safety Zone
- Speed radar signs
- Oversized speed limit signs
- Automated Speed Enforcement trial location improvements in 2026

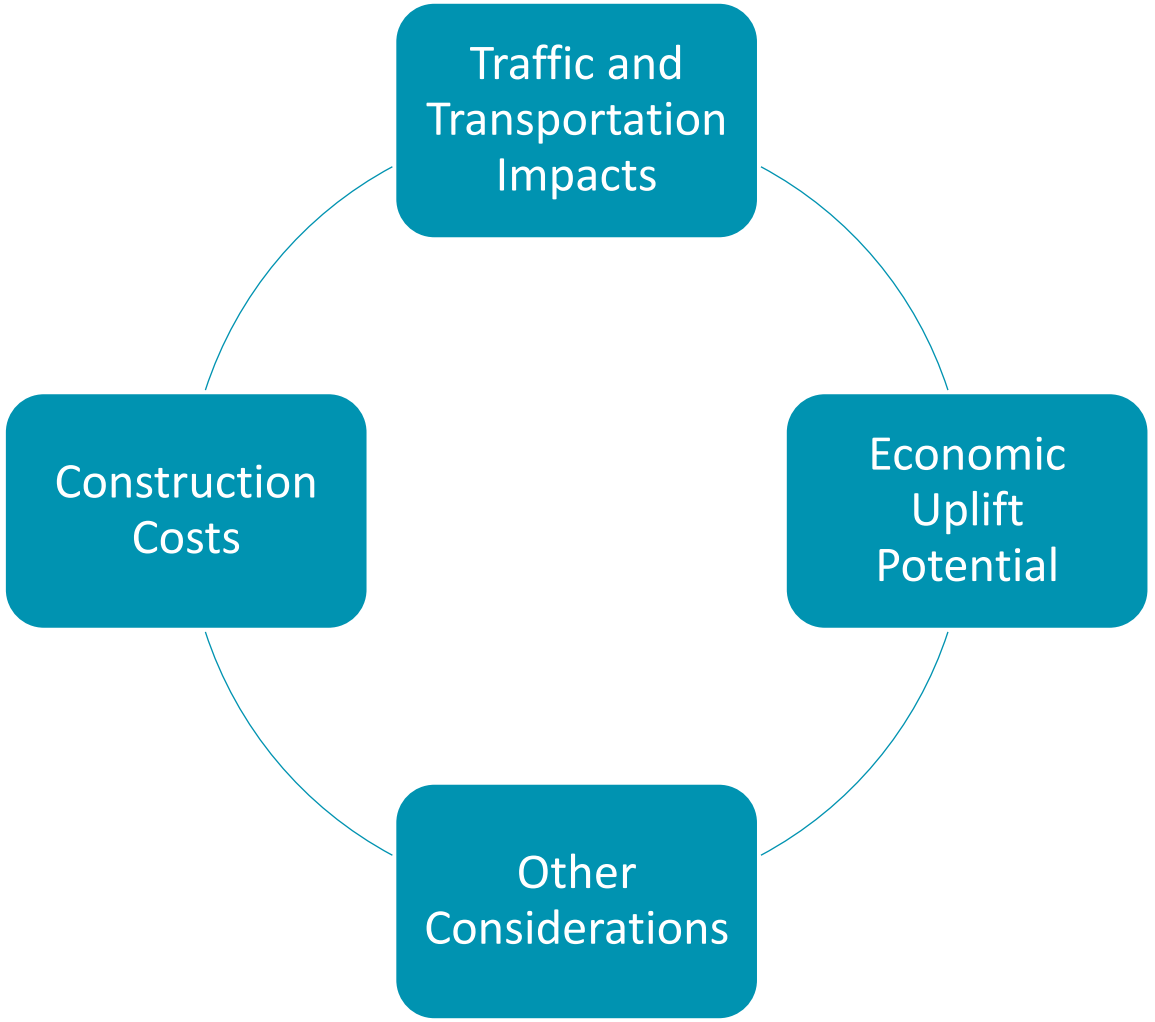




Primary & Secondary Impact Area

Preliminary Alternatives

1. Maintain existing 4 travel lanes (no change)
2. Maintain existing 4 travel lanes and add traffic calming within right-of-way
3. Roadway lane redesignation (road diet: line painting and signage)
4. Roadway reconfiguration (road diet: physical roadway modifications including potential median, sidewalk widening / cycling improvements, traffic calming, bump-outs)



Study Process

Background Review, Scoping, Demand Forecasting	Early 2026
Initial Public and Stakeholder Engagement	Spring 2026
Define, Assess, and Evaluate Alternatives	Summer 2026
Prepare Draft Functional Design Plan	
Second Round of Public and Stakeholder Engagement	Fall 2026
Project Finalization and Reporting	December 2026

We are here

Public & Stakeholder Engagement

Initial Round of Engagement (Spring 2026)

- Introduce the study and collect information on existing problems and opportunities
  - Township Council Presentation #1 (this presentation)
  - Study webpage and online questionnaire launch
  - Technical Advisory Committee (TAC) Meeting #1

Second Round of Engagement (Fall 2026)

- Provide an update on the study, problems/opportunities identified, alternatives considered, and the preferred solution
  - TAC Meeting #2
  - Public Open House
  - Township Council Presentation #2

Next Steps

- April 2026: Launch study webpage and online questionnaire
- May 2026: Review comments and arrange TAC Meeting #1

Thank you!

Questions?

Don Kudo
County Engineer
donk@wellington.ca

Ian Borsuk
Project Manager
iborsuk@dillon.ca

File No. 2501.18 [Township File: E13-PUS- (Puslinch Lake Golf Permit To Take Water)]

March 12, 2026

Township of Puslinch
7404 Wellington Road 34
Puslinch, Ontario N0B 2J0

Attention: Monika Farncombe
Planning and Corporate Services Coordinator
Township of Puslinch

Re: **Hydrogeological Review Comments for PTTW Application (Ref. No. 1000406954)**
Puslinch Lake Golf Course Limited, 6527 Ellis Road, Cambridge (Puslinch), Ontario

Wellington Hydrogeology Ltd. (WHL) is pleased to provide hydrogeological review comments on the above-noted Permit To Take Water (PTTW) Amendment Application with the Ministry of the Environment, Conservation and Parks (MECP) for the Puslinch Lake Golf Course located at 6527 Ellis Road in the Township of Puslinch, Ontario (the site).

1.0 Documents Reviewed

WHL reviewed the following supporting materials in preparation of the comments provided herein:

1. R.J. Burnside & Associates Ltd. (Burnside). 2025. Permit To Take Water Application, Puslinch Lake Golf Course Limited, 6527 Ellis Road, Cambridge, ON N3C 2V4. Project No.: 300038169.0002, dated January 8, 2026.

2.0 Background

Based on the information provided in the applicant's submission and supporting documentation, the applicant indicates the following:

- The site holds an existing (expired) PTTW (No. 6555-CUTKDL) with an expiry of February 28, 2026. The previous PTTW (No. 1814-A6QQU6) was amended following a change of ownership in 2023, with no other changes. Given the expiry date, Burnside has requested permission from the MECP to allow for continued water takings during the PTTW review period.
- The existing (expired) PTTW allows for water takings up to 982,080 L/day from the Irrigation Well and up to 1,022,040 L/day from the Irrigation Pond (dugout pond), not to exceed the maximum daily taking of 1,022,040 L/day for the site, for a maximum of 214 days per year.
- No changes are proposed to the existing approved pumping rates or timing restrictions.
- The applicant is requesting that the PTTW be renewed with a 10-year validity period.

3.0 PTTW Application Technical Review

3.1 Well Installation Details

The Irrigation Well (MECP Well Record 6706546; Attachment 1) was constructed in 1978 as an 85.3 m (280') deep drilled bedrock well with a 152 mm (6") diameter steel casing installed to the top of bedrock at 26.8 m (88'), with an open hole from 26.8 to 85.3 m (88'-280'). Based on the MECP well record installation details indicating a 58.5 m (192') length of open hole, the well is suspected to be a Multiaquifer Well (MAW) with an open borehole extending through multiple fracture zones within the Guelph Formation and Gasport Formation aquifer units.

The Township of Puslinch, which relies entirely on private water supply wells, has reviewed the *Multiaquifer Wells and Transport Pathways Study* (Harden Environmental Services Ltd., 2024). The Township is concerned about multiaquifer wells (MAWs) both within its boundaries and in adjacent areas, particularly in Wellhead Protection Areas (WHPAs) where induced drawdown from municipal or commercial/industrial pumping may occur.

In areas affected by induced drawdown, MAWs that intersect fracture zones spanning two bedrock aquifers could present:

1. Water quality risk to the lower aquifer.
2. Water quantity risk to the upper aquifer.

This risk is elevated given the site well's location within a WHPA-C/D for quality and WHPA-Q1/Q2 for quantity.

Given the above, we recommend that the MECP consider including the following conditions in the PTTW:

a) that the project hydrogeologist undertake an investigation to assess potential vertical flow within the well under both pumping and non-pumping conditions; and

b) that the Clerks of the Township of Puslinch and Wellington Source Water Protection be included on the distribution list for the results of these investigations.

It is further recommended that the MECP review the *Multiaquifer Wells and Transport Pathways Study* (Harden Environmental Services Ltd., 2024) when evaluating the risks associated with multiaquifer wells and assessing the need for, and appropriateness of, any additional investigation in this context.

3.2 Reported Water Takings

Burnside (2026) reported that water taking records show two apparent large exceedances: one from the Irrigation Well on June 21, 2020, and another from the Irrigation Pond on May 24, 2024. Both exceedances were interpreted as typographical errors due to their unusually high magnitudes, which are not consistent with the capabilities of the existing pumping equipment. Aside from these anomalies, daily water takings were generally well below the permitted volumes.

WHL concurs with Burnside's interpretation and has no concerns with the reported average and maximum water takings.

3.3 Permitted Water Takings

Burnside (2026) indicates that water from the Irrigation Well is pumped into the Irrigation Pond reservoir, which is then conveyed through the irrigation water distribution system. As such, water takings from the Irrigation Pond include volumes originally withdrawn from the Irrigation Well. This is reflected in the total daily water taking allowance of 1,022,040 L identified in Table A of the existing PTTW No. 6555-CUTKDL (shown below).

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Irrigation Well	Well Drilled	Golf Course Irrigation	Commercial	682	24	982,080	214	17 558420 4808700
2	Irrigation Pond	Pond Dugout	Golf Course Irrigation	Commercial	2,839	12	1,022,040	214	17 558358 4808933
						Total Taking:	1,022,040		

The proposed PTTW renewal requests no changes to the existing water takings, as shown in the table below (from Burnside, 2026).

Table 2: Proposed Water Taking Schedule

Source	Max. Taken per Minute (L)	Max. Num. of Hrs Taken per Day	Max. Taken per Day (L)	Max. Num. of Days Taken per Year
Irrigation Well	682	24	982,080	214
Irrigation Pond	2,839	12	1,022,040	214

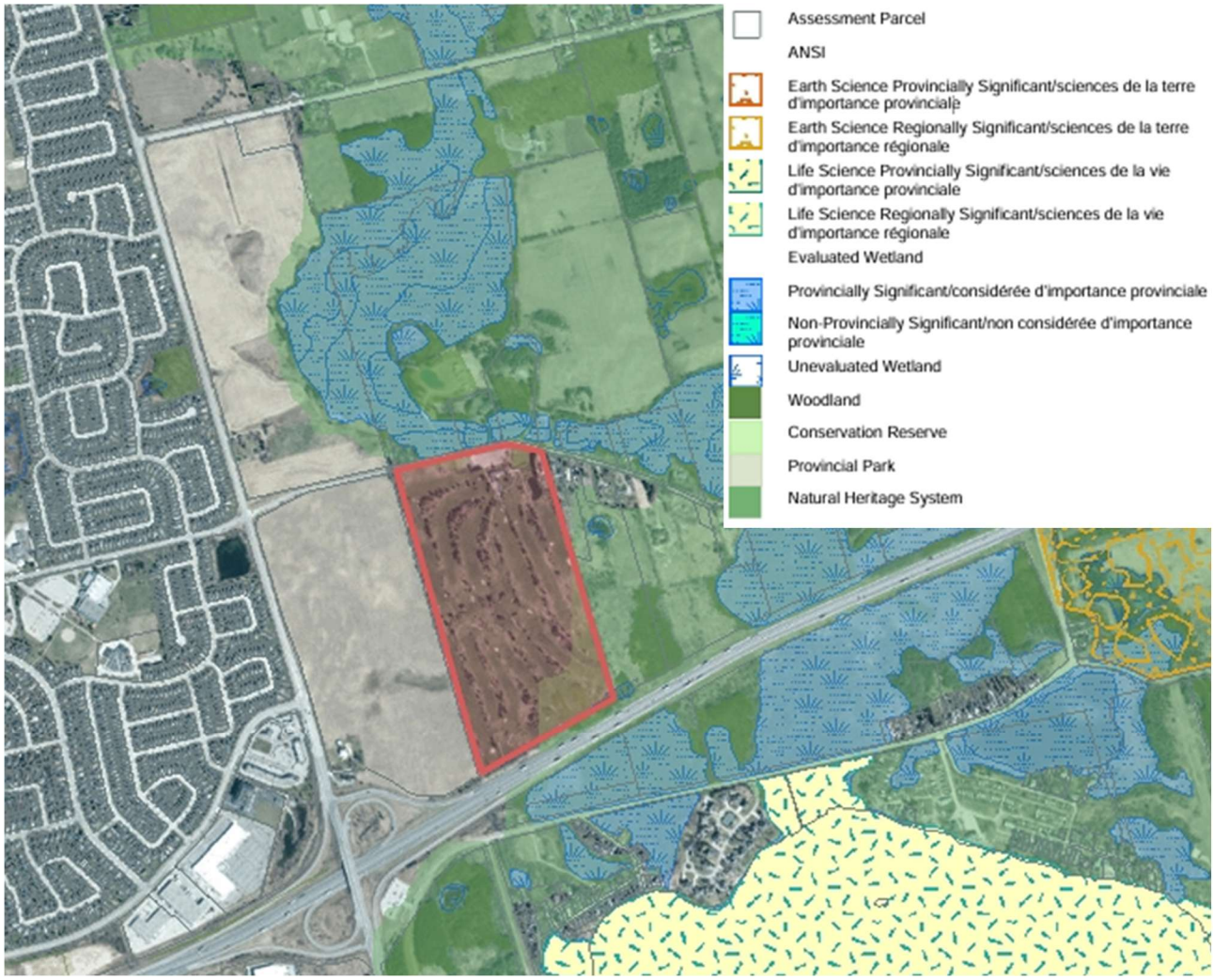
WHL has no concerns with the proposed water takings, which are consistent with the existing permitted rates and volumes. However, we note a recent trend in approvals issued under the MECP PTTW program whereby Table A of the PTTW approval lists additive volumes from multiple sources, without accounting for situations where cumulative limits are not intended to be additive (i.e., where water withdrawn from a well is transferred to a pond and used as part of a single integrated system).

In this case, the well takings are conveyed to the Irrigation Pond and are not independent of the pond withdrawals. Accordingly, we request that the MECP confirm that Table A of the renewed PTTW aligns with the limits established in existing PTTW, and that the cumulative total taking reflects the integrated nature of the system rather than applying an unintended additive calculation.

3.4 Monitoring

The current PTTW does not include any monitoring requirements apart from the standard monitoring of daily water takings and annual reporting to the Water Taking Reporting System.

As shown in the figure below (sourced from MNR Make-a-Map: Natural Heritage Areas, 2026), provincially significant wetland (PSW) features of the Puslinch Lake Irish Creek Wetland Complex are mapped immediately north and south of the site, in addition to the Puslinch Lake Bog and Wetlands Area of Natural and Scientific Interest (ANSI) located within 500 m southeast of the site. A small unevaluated wetland is also mapped on the southeast corner of the site.



The Township of Puslinch has expressed concerns regarding the potential impacts of commercial water takings on local groundwater users, surface water features, and wetlands. It is critical to monitor these resources to establish baseline trends and detect any adverse effects over time. Accordingly, we request that the PTTW amendment include monitoring conditions, such as the following:

1. Continuous groundwater level monitoring in the irrigation well (year-round).

2. Annual water quality sampling from the irrigation well for analysis of general chemistry, select metals, and nutrients.
3. Surface water level and shallow vertical gradient monitoring within the wetland at the southeast corner of the site (monthly or continuous, seasonal during the permit validity period).
4. Preparation of an annual or biennial monitoring letter summarizing results, with a copy provided to the Clerk of the Township of Puslinch.

3.5 Cumulative Impact Assessment

The Township of Puslinch relies entirely on private water supply wells and is uniquely situated among Wellhead Protection Areas (WHPAs) associated with municipal wells in the Region of Waterloo (Cambridge WHPAs), City of Guelph, and City of Hamilton (Freelton WHPAs). In addition, the Township contains several large water takers, including aggregate operations, commercial and industrial water users, and a large water bottling facility (White Wolf). As a result, groundwater resources within and surrounding the Township are subject to multiple existing and proposed water demands.

The Township also contains several large Provincially Significant Wetland (PSW) complexes, including the Puslinch Lake–Irish Creek Wetland Complex and the Mill Creek Wetland Complex, which support important surface water features and ecological functions, as well as habitat for fish, amphibians, birds, and other wildlife species. These wetlands and associated watercourses may be sensitive to changes in groundwater levels and surface water flows.

Given the concentration of large water takings and the presence of sensitive groundwater and surface water features, the Township recommends that the Ministry of the Environment, Conservation and Parks (MECP) consider requiring a cumulative impact assessment of major water takers within and surrounding the Township. Such an assessment should include the commercial water taking proposed in the PTTW amendment application for the site, and ensure that the golf course and other significant commercial water users (i.e., PTTW holders) participate in the evaluation. A cumulative assessment would help ensure that potential long-term impacts to groundwater resources, surface water systems, and associated ecological features are properly understood and managed.

3.6 Permit Validity Period

The applicant is requesting that the amended permit be issued with a 10-year validity period.

Provided that the comments provided herein are addressed, WHL supports issuance of the PTTW amendment for a 10-year term.

4.0 Summary of Recommendations

The following summarizes the recommendations provided in this review.

1. **Multiaquifer Well Investigation**: That the MECP consider requiring an investigation to assess potential vertical flow within the well under pumping and non-pumping conditions. The Clerk of the Township of Puslinch and Wellington Source Water Protection should be included on the distribution list for the results. The MECP is also encouraged to review the *Multiaquifer Wells and Transport Pathways Study* (Harden Environmental Services Ltd., 2024).

2. **Permitted Water Takings**: WHL has no concerns with the reported historical water takings or the proposed renewal volumes. However, it is requested that the MECP confirm that Table A of the renewed PTTW reflects the integrated nature of the irrigation system, where water pumped from the well is conveyed to the irrigation pond, and that cumulative volumes are not interpreted as unintended additive limits.

3. **Monitoring**: Given the proximity of other groundwater users and Provincially Significant Wetlands, it is recommended that the PTTW include monitoring conditions such as:
    a. Continuous groundwater level monitoring in the irrigation well (year-round);
    b. Annual water quality sampling from the irrigation well;
    c. Surface water level and shallow vertical gradient monitoring in the wetland at the southeast corner of the site; and
    d. Preparation of an annual or biennial monitoring letter summarizing results, with a copy provided to the Clerk of the Township of Puslinch.

4. **Cumulative Impacts**: Given the number of large water takers and sensitive groundwater and wetland features within the Township, the MECP should consider requiring a cumulative impact assessment of major water takers within and surrounding Puslinch, including the proposed taking and other significant PTTW holders.

Provided that these recommendations are addressed, WHL supports issuance of the PTTW amendment for a ten-year term.

5.0 Closure

We appreciate the opportunity to provide these comments. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

WELLINGTON HYDROGEOLOGY LTD.



Angela Mason, M.Sc., P.Geo., QP_{ESA}
Senior Hydrogeologist and CEO
Cell: 519-831-9696
Email: amason@wellingtonhydrogeology.com

Attachments:

1 – MECP Water Well Record (Irrigation Well)

PUSLINCH LAKE IRRIGATION WELL

Ministry of the Environment

Ontario

The Ontario Water Resources Act

40 F/84

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

(11) 6706546 | MUNICIP 67012 | CON CON | 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
Wellington	Puslinch	2	002

[redacted] | ADDRESS RR 22 Cambridge | DATE COMPLETED DAY 26 MO ~~Oct~~ YR 77

(21) UTM 17 558420 4808700 | NORTHING | EAST | ELEVATION 1010 | 4 | 23 | BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Top soil			0	1
	Brown sandy clay			1	22
	grey clay			22	40
	dirty sand + gravel			40	64
	grey clay + stones			64	88
	Brown + grey limestone			88	280

(31) 0001 02 | 0022 62 805 | 0040 205 | 0064 28 11 67 | 0088 205 12 | 0280 615

(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0092 ~~97 280~~	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

(51) CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 ~~5 7/8~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ [redacted]	.204	0	0088
06 ~~4~~			48	~~280~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0280
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

(61) PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

PUMPING TEST

(71) PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER | PUMPING RATE: 0100 GPM | DURATION OF PUMPING: 03 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
008' FEET	FEET		FEET	FEET	FEET	FEET

IF FLOWING GIVE RATE: GPM | PUMP INTAKE SET AT: 150 FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 150 FEET | RECOMMENDED PUMPING RATE: 0100 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

Dallan #24 hwy out of Guelph towards Hespeler turn Rt at Rd go down to last Rd before 401 overpass turn Rt, follow Rd about 1 mile golf course on left and well is on county Rd.



DRILLERS REMARKS:

FINAL STATUS OF WELL (54)	1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED
WATER USE (55-56) 05	1 ☐ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; ☒ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED
METHOD OF DRILLING (57) 2	1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Paul Taylor Water Wells | LICENCE NUMBER: 5469

ADDRESS: RR 2 Breslau

NAME OF DRILLER OR BORER: [redacted] | LICENCE NUMBER: 5469

SIGNATURE OF CONTRACTOR: Paul Taylor | SUBMISSION DATE: DAY ____ MO ____ YR ____

OFFICE USE ONLY

DATA SOURCE (58): 1 | CONTRACTOR (59-62): 5469 | DATE RECEIVED (63-68): 78 11 27

DATE OF INSPECTION: Oct 20/78 | INSPECTOR: EJ

REMARKS: CSS.S8

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506-4-77

03/16/2026

Memorandum

To: Justine Brotherston, Director of Corporate Services/Municipal Clerk, Township of Puslinch
CC: Courtenay Hoytfox, CAO, Township of Puslinch

From: Keira Martinson, Source Protection Coordinator, Wellington Source Water Protection
Reviewed by: Kyle Davis, Risk Management Official, Township of Puslinch

RE: Ministry Reference Number 1000406954, Permit to Take Water, ERO #026-0162 - Puslinch Lake Golf Course Limited, 6527 Ellis Road, Puslinch

General

The following comments are related to the above referenced Permit to Take Water (PTTW) application (Ministry reference number 1000406954). This is an application to renew an existing PTTW (6555-CUTKDL) for 10 years. Water will be taken from one (1) pond and (1) well for golf course irrigation.

Several documents were used in this review, including:

- Permit to Take Water Application Report, prepared by R.J. Burnside & Associates Limited, dated January 2026;
- ERO Posting #026-0162, and;
- Vulnerable Area Mapping, provided to Wellington County by the Grand River Conservation Authority.

These comments are provided in regards to the *Clean Water Act*, Grand River Source Protection Plan and source water protection implementation by Wellington Source Water Protection, a partnership of the Wellington County municipalities. These comments should not be construed as a hydrogeological, engineering, ecological or technical review of the application. These comments are strictly provided in regards to our municipality's role in implementing the *Clean Water Act* and municipal source water protection.

Summary of Source Protection Vulnerable Areas and Drinking Water Threats

The subject property is located in:

a) Wellhead Protection Area B for quality (WHPA-B, 2 year time of travel)
b) Wellhead Protection Area C for quality (WHPA-C, 5 year time of travel)
c) Wellhead Protection Area D for quality (WHPA-D, 25 year time of travel)

d) Issue Contributing Area (ICA) for chloride; and
e) a Significant Groundwater Recharge Area (SGRA)

Attachments show the relevant mapping. Please note the subject property is not located in a Highly Vulnerable Aquifer (HVA), or a Wellhead Protection Area for Quantity.

1. Due to the site's location within water quality WHPAs and an ICA for Chloride, the following Significant Drinking Water Threat policies from the Grand River Source Protection Plan apply to this site:
    - WC-CW-12.2 - Risk Management Plan for the Application of Road Salt
    - WC-CW-13.2.2 - Risk Management Plan for the Handling and Storage of Road Salt
    - WC-CW-14.5 - Risk Management Plan for the Storage of Snow
    - WC-CW-16.3 - Risk Management Plan for the Handling and Storage of Dense Non-Aqueous Phase Liquids

    A Risk Management Plan addressing the above policies is in place for this site and has been in effect since September 4th, 2024.

2. For the Ministry's awareness, there are expected policy changes in proximity to the site lands which may relate to future water-taking considerations. Policy updates include:
    a. Implementation of Grand River Source Protection Plan Policy WC-MC-22.1 (see Comment 3 below);
    b. Updated Wellhead Protection Areas for quantity are anticipated within proximity to the subject location from neighbouring municipal systems.

3. Although significant drinking water threat polices related to water quantity do not currently apply to this site, approved policy WC-MC-22.1 in the Wellington County Chapter of the Grand River Source Protection Plan may apply in the future if updated Wellhead Protection Areas for quantity are established near the subject location.

    This approved policy is now in the pre-consultation phase for the Guelph, Guelph/Eramosa WHPA-Q which includes circulation to Municipalities and the Ministry. For reference, please see the PTTW policy wording WC-MC-22.1 in Appendix A.

4. Further to direction from the Township of Puslinch Council on June 16, 2021, staff are recommending that the Ministry consider the addition of low water response conditions to all Permits to Take Water within the Township, where appropriate. This recommendation is in light of the number of permits within the Township or in

neighboring municipalities, including municipal Permits to Take Water. It is recognized that the Ministry will consider site specific situations for each Permit to determine whether low water response conditions are or are not appropriate. In general, our recommendation is to implement a condition or conditions in the Permit to Take Water that require the permit holder to reduce water taking in line with any Low Water Response declarations from the applicable Conservation Authority. It is our recommendation that for the reduction to be meaningful, the condition(s) should specify that the reduction not start from the maximum permitted value as most water takers do not reach their maximum permitted taking amount. Instead, it is recommended that the Ministry determine an appropriate threshold for the reduction in water taking to start from (i.e. monthly average, 5 year average of that particular month, past three month average etc.).

5. WSWP notes the recommendations provided in the *Hydrogeological Review Comments for PTTW Application (Ref. No. 1000406954)*, completed by Wellington Hydrogeology Ltd dated March 12, 2026, and encourages the Ministry to review the recommendations.

It is requested that the Ministry consider the above recommendations while reviewing this PTTW application and add terms and conditions, as appropriate.

Sincerely,

[redacted] Mar 16, 2026

Keira Martinson, Source Protection Coordinator
519-846-9691 ext 283
kmartinson@centrewellington.ca

[redacted] Mar 16, 2026

Kyle Davis, Risk Management Official
519-846-9691 ext 362
kdavis@centrewellington.ca

Attachments – Appendix A: Policy WC-MC-22.1
Vulnerable Area Maps

Appendix A: Policy WC-MC-22.1

To ensure that any Existing Consumptive Water Taking in a WHPA-Q ceases to be a significant drinking water threat, where this activity is a significant drinking water threat, the MECP shall review and, where necessary, amend existing PTTWs and/or Drinking Water Works Permits to ensure that the Municipal Supply will not be adversely impacted, taking into consideration:

1. Tier 3 Study results and recommendations;
2. water supply requirements for planned growth and prolonged drought outlined in Water Supply Master Plans;
3. and available data, reports and/or recommendations from monitoring programs established pursuant to policies in the County of Wellington Chapter of the Grand River Source Protection Plan.

The MECP, where appropriate, shall consider establishing conditions in PTTWs and Drinking Water Works Permits to achieve this objective including but not limited to conditions which require:

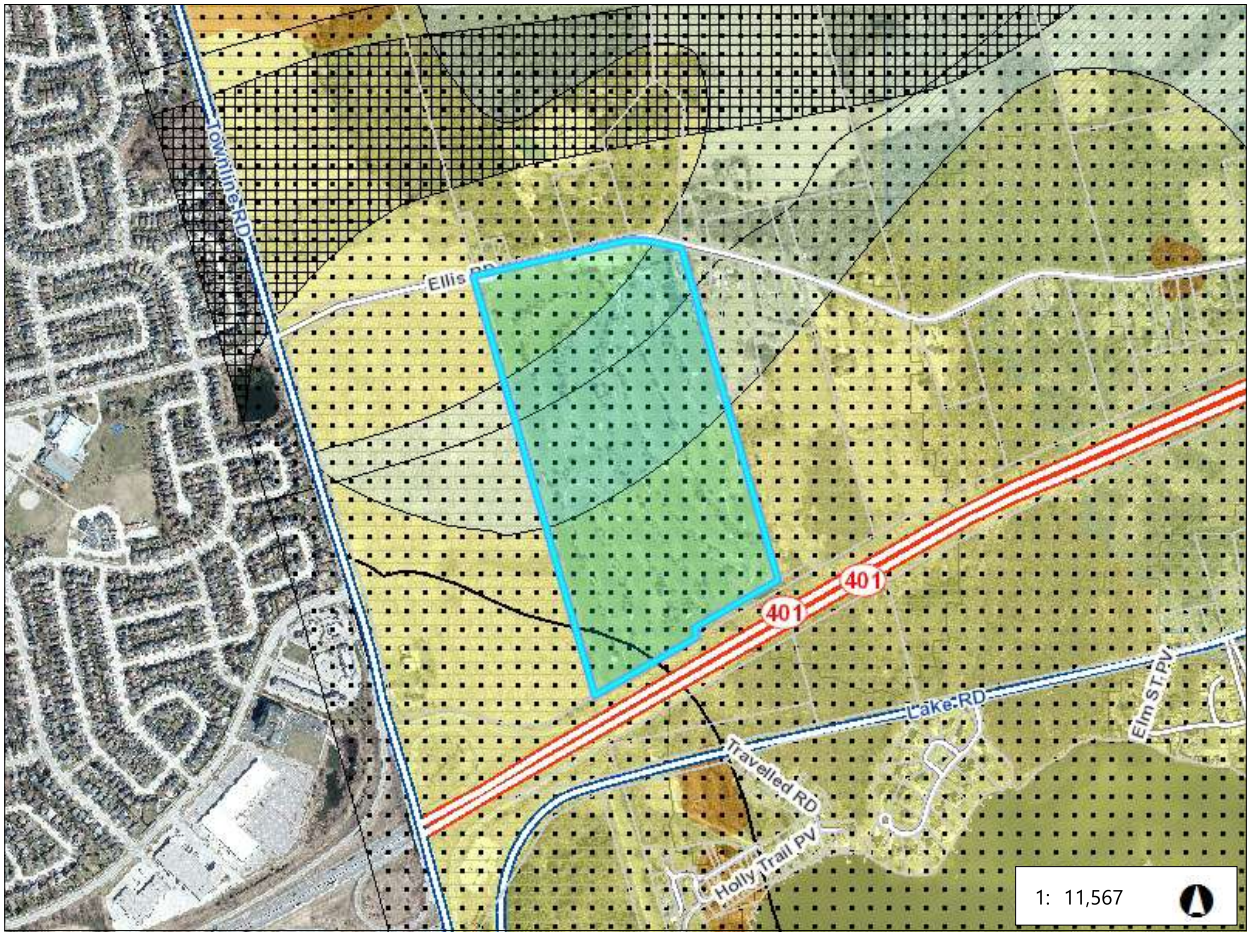
a. groundwater and surface water monitoring related to municipal drinking water supplies;
b. assessment of demand management: water needs assessment (review of permitted maximum takings) and water efficiency measures;
c. a phased approach to assess impacts;
d. information sharing with the MECP, Municipalities and conservation authorities including a condition of approval for permit holders to provide Municipalities and conservation authorities technical reports and monitoring data gathered pursuant to a condition of the PTTW (as per bullet a.) above);
e. measures to increase the optimization of the Municipal Supply where appropriate; and
f. drought management planning for drought sensitive wells/systems.

The MECP shall circulate Environmental Registry notices for amended PTTWs and Drinking Water Works Permits to the County, Municipalities and GRCA and have due regard for comments from the County, Municipalities, and GRCA, regarding amended PTTWs and Drinking Water Works Permits and new or revised conditions of approvals related thereto.

For expanded municipal takings that could improve the assigned risk level for the Centre Wellington WHPA-Q, the MECP shall:

i. ensure pre-consultation, engagement and information sharing with the County, any relevant Municipalities, and the GRCA; and
ii. include use of the Tier 3 Model, Tier 3 Study results and recommendations, and Water Supply Master Plan results and recommendations to ensure the provision and distribution of Municipal Supply to support County population and growth forecasts.

6527 Ellis Road, Puslinch





Legend

- Parcels
- Roads
  - Local Road
  - County Road
  - Highway
- Well Locations
  - Existing
  - Proposed
- Issue Contributing Area
  - Chloride
  - Nitrate
  - Sodium
  - TCE
- Wellhead Protection Area
  - A
  - B
  - C
  - D
- Vulnerability Score
  - 10
  - 8, D; 8; 8, C
  - 2, 4, 6 (A, B or C)
  - 2,4,6, D; 2,4, D; 2, 4, 6 (D); 4, D; 6,
- HVA
- SGRA
- RoadsLookup

0.6 0 0.29 0.6 Kilometers

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
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WGS_1984_Web_Mercator_Auxiliary_Sphere

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THIS IS NOT SURVEY DATA. Parcels - Teranet 2002, Wellington County 2022

Notes

PTTW_Comments_6527EllisRd_03.16.2026

Final Audit Report 2026-03-16

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HARDEN ENVIRONMENTAL SERVICES LIMITED

Multiaquifer Wells and Transport Pathways Study

Wellhead Protection Areas
Wellington County, Ontario

Prepared For:
Wellington Source Water Protection
7444 Wellington Road 21
Elora, Ontario N0B 1S0

December 6, 2024

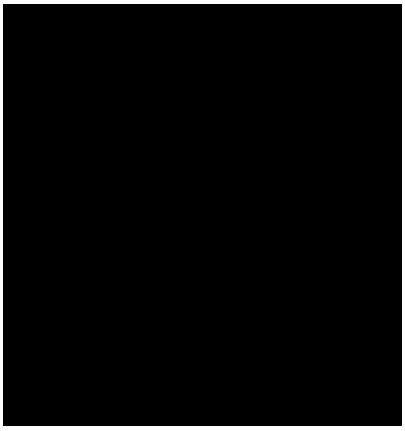
Harden File No. 2366

Record of Revisions

Revision	Date	Description of Changes
-	August 14, 2024	Final Report Submission
1	December 6, 2024	Minor edits per Client Review

Report Prepared By:





Angela M. Mason, M.Sc., P.Geo., QP_{ESA}
Senior Hydrogeologist

Report Reviewed By:





Stan Denhoed, P.Eng., M.Sc.
President and Senior Hydrogeologist

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Appendix A Multiaquifer Wells Identified within Wellington County WHPAs

Statement of Limitations

Harden Environmental Services Ltd. (HARDEN) conducted the work associated with this report in accordance with the scope of services, time and budget limitations imposed for this work. The work has been conducted according to reasonable and generally accepted local standards for an environmental consultant at the time of the work. No other warranty or representation, expressed or implied, is included or intended in this report.

It should be noted that subsurface conditions might vary at locations and depths other than those locations where borings, surveys or explorations were made by HARDEN or others. Other contaminants, not tested for in this work, may also potentially be present on the Site. Even with exhaustive investigation, it is not possible to warranty the Site will be free of other contaminants. Should conditions, not observed during the work, become apparent, HARDEN should be immediately notified to assess the situation and conduct additional work, where required. The findings of this report are based on conditions as they were observed at the time of the work. No assurance is made regarding changes in conditions subsequent to the time of the work.

Regulatory statutes are subject to interpretation. These statutes and their interpretation may change over time, thus these issues should be reviewed with appropriate legal counsel. HARDEN relied on information provided by others in this report. HARDEN cannot guarantee the accuracy, completeness and reliability of the information provided by others, although HARDEN staff attempted to seek clarification on information provided and verifies authenticity, where practical. The report and its attachments were prepared for and made available for the use of the client, their agents and Wellington Source Water Protection. HARDEN will not be responsible for any use or interpretation of the information contained in this report by any other party without the prior expressed written consent of HARDEN.

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Grand River Conservation Authority Data Disclaimers: “Produced using information under Licence with the Grand River Conservation Authority. Copyright © Grand River Conservation Authority, 2024.” and “Intellectual Property from GRCA: Centre Wellington Tier 3 geological surfaces created during the development of numerical groundwater flow model used in Source Protection studies and Wellington County Source Protection Shapefiles.”

City of Guelph Data Disclaimer: “City of Guelph Raster GIS files of hydrogeological surfaces contained within the City’s Groundwater Model.”

1.0 Introduction

Harden Environmental Services Ltd. (Harden) was commissioned by Wellington Source Water Protection, through funding provided by the Province of Ontario, to identify multiaquifer wells (MAW) and well clusters (transport pathways) within wellhead protection areas (WHPAs) in Wellington County. The study area is shown on Figure 1.

Although water wells are already identified as possible transport pathways in WHPAs, a detailed study of bedrock wells and their potential to transfer water either intra aquifer (within a specific geological formation) or inter aquifer (between two separate geological formations) has not been undertaken. This study is poignant given that all municipal water supplies in Wellington County rely on groundwater sources for drinking water.

This study identifies bedrock wells that penetrate more than one rock unit, including one or more rock units targeted by municipalities for their water supply (municipal aquifer). These wells provide opportunity for the rapid movement of groundwater and contaminants within the well from the other rock units into the municipal aquifer. The depressurization of the municipal aquifer by water taking for the municipality will increase this effect in the area of influence of the municipal well. This study also identifies clusters of wells (bedrock and overburden) that were drilled prior to 1990, when the sealing of the well annulus was not required under an Ontario regulation.

MAW are wells that are installed with an open wellbore in a bedrock aquifer or screened across two or more aquifer units in the overburden. A conceptual MAW is shown on Figure 2 including descriptions of various water well components. MAW provide a connection across multiple water-bearing strata that have different water levels and hydraulic properties, which could otherwise be considered isolated aquifer systems physically separated by an aquitard unit. MAW are an anthropogenic alteration to the aquitard which can allow passive transport of groundwater and potential contaminants between aquifer systems, which may move either upward or downward depending on aquifer properties and other nearby groundwater users.

Within the area of influence of pumping wells taking large volumes of water from deep aquifer systems, the induced hydraulic gradient can allow significant movement of groundwater between aquifers through MAW. Under this induced gradient in a multi aquifer situation, MAW represent a water quality threat to the lower aquifer and a water quantity threat to the upper aquifer. MAW, outside of the area of pumping influence, are not interpreted to represent the same risk due to the absence of the constant induced gradient surrounding pumping wells (e.g., municipal supply wells, private water bottling facilities, etc.); the volume of movement would be negligible or caused only during pumping of the household pump and captured by the pump.

1.1 Background

There are fourteen municipal well systems in Wellington County, and in addition, WHPAs from the Region of Halton, City of Hamilton, City of Guelph and Region of Waterloo extend into the County. Each of these systems have permitted water takings under Ontario Regulation 387/04.

A municipal well system, either as a single well or multiple wells, removes significant quantities of groundwater from the aquifer(s), which induces groundwater flow to the well and creates an area of influence around the well or well field.

The dolostone/limestone aquifers in Wellington County have an approximate porosity of 6%, or less. Porosity is the open space between individual grains (minerals) that make up the rock body and in general, these open spaces are not sufficiently connected to allow for the movement of significant quantities of groundwater. Chemical dissolution of fractures, bedding plane weaknesses and tectonic forces occurring over millions of years after rock formation, have however, created pathways through the solid rock, not only interconnecting the natural porosity, but also the individual fracture or interconnected fractures to become the major pathways of water movement through the rock body. Therefore, when a municipal well begins to remove water from the aquifer (by reducing hydrostatic pressure inside the well), water under greater hydrostatic pressure in the surrounding aquifer flows towards the well. The fractures in the bedrock aquifers in Wellington County can be well-connected and as water is drawn into each municipal well, groundwater flows through a lengthy and complex network of fractures. All conditions being equal, groundwater flow towards a well preferentially occurs from where the hydrostatic pressure is greatest. This often results in elongated ovoid shaped WHPAs which extend from the well towards where the water column has the greatest thickness above the point of water taking (pump setting).

In a fractured bedrock setting, fractures neither occur equally throughout the rock body nor have the same transmissivity. It is thus possible to have areas of preferential flow within an aquifer that deliver a greater quantity of water to a well. An example is the “production” zone in the Gasport Aquifer beneath the City of Guelph and the Township of Puslinch. There is a recognized section of this geological formation that has greater persistence of open fractures allowing for higher quantities of water delivery to wells.

It is also well-documented that individual geological formations or sections of a geological formation can have limited fractures. The Vinemount Member of the Eramosa Formation, for example, is recognized as being an effective barrier for vertical groundwater flow in the City of Guelph, Township of Guelph Eramosa and Township of Puslinch. This aquitard limits the flow of water to municipal wells; however, it also limits the potential migration of contaminants from a shallow aquifer system to a deeper aquifer system. The geological contact between the Guelph Aquifer and the Eramosa Formation aquitard is shown on Figure 4.

Aquitards can also occur within an aquifer. For example, an unfractured section of the Guelph Formation was penetrated by a private well in the Township of Puslinch and intersected a large open

fracture below. This resulted in a flowing artesian well near the intersection of Wellington County Road 34 and the Hanlon Expressway. This unfractured rock body prevented water from being released, until the open well bore provided a pathway. There are many other examples where wellbores penetrate natural barriers to groundwater flow that are readily recognized, such as the Middlebrook Well in Centre Wellington, another flowing artesian well. In these cases, the well can be readily identified, decommissioned or controlled.

While flowing artesian conditions are easily recognized, subsurface intraflow within an aquifer or interflow between separate aquifers (i.e., through a MAW) is not as easily recognized when a well is drilled. The introduction of drilled wells within the area of influence of a municipal well can short-circuit the natural pathway of groundwater flow in a rock body or between multiple rock units by interconnecting the horizontal fractures. This essentially allows for unlimited flow between two or more previously unconnected fracture systems.

This may be an advantage to a municipal well as the MAW provides an opportunity for a greater volume of water to travel with greater ease to the well. However, it also presents a disadvantage where the water quality of water travelling through the MAW is of poor quality or contaminated anthropogenically.

The identification of MAW is thus important, not only for the protection of municipal groundwater supplies but also for the preservation of water quality in deeper aquifers. The role of the municipal well systems and large permitted groundwater takers in the inter- and intra-aquifer movement of groundwater must also be recognized. In the absence of the induced gradient, the intra and inter aquifer movement of water would not be the same. Proactively identifying MAW within areas of existing prolonged aquifer drawdown may provide an opportunity to protect against the potential future threat of contaminant migration into deeper aquifer systems.

2.0 Methodology

The Clean Water Act, 2006, included the establishment of the Drinking Water Source Protection Program by The Province of Ontario. The purpose of this program was to define, in part, the locations where water originating as rainfall and infiltrating into the porous ground or originating as a surface water and infiltrating through the base of the river, stream, pond or lake eventually made its way to a municipal well. The Source Water Protection program has also influenced land development policies that are now used in Wellington County.

WHPAs are one of four main types of vulnerable areas identified in the Clean Water Act, 2006. Given that municipal land use planning precluded Source Water Protection planning, the WHPAs include areas occupied by residential, industrial, institutional and rural land uses. In an ideal setting, the municipal wells would be located away from potential contaminant sources, including both obvious sources of contamination (e.g., landfill sites, salt storage areas) and less obvious (e.g., leaking underground storage tanks or historic contaminant spills). The intention of Source Water Protection

Planning is to identify sources of existing contamination and limit the potential for future contamination.

Part of the Source Water Protection Program was to identify potential anthropogenic transport pathways. These are areas where natural protection for the aquifers has been diminished, compromised or eliminated, thereby allowing for rapid movement of contaminants from the ground surface to the drinking water sources. These can include excavations, foundations, geothermal wells, water wells, quarries and pits.

This study focuses on the identification of water wells, registered on the Ministry of the Environment, Conservation and Parks (MECP) Water Well Records (WWR) database (MECP, 2024a), that are potential transport pathways.

2.1 Study Area

The study area, for both the MAW and transport pathways, includes all wellhead protection areas (WHPA) within Wellington County (study area; Figure 1).

The study area is limited to WHPA-A, B, C and D areas within Wellington County, including various subwatersheds [Upper Grand River, Lower Grand River, Bronte Creek (Upper Main Bronte & Mountsberg), Credit River, Saugeen River] and spanning six source protection areas (Grand River, Credit Valley, Maitland Valley, Saugeen Valley, Hamilton and Halton).

The study area includes the following WHPAs:

- Guelph Eramosa Township WHPAs
  - Hamilton Drive Supply Wells
  - Rockwood Supply Wells
- Town of Erin WHPAs
  - Erin Supply Wells
  - Bel-Erin Supply Wells
  - Hillsburgh Supply Wells
- Township of Centre Wellington Supply Wells
  - Elora Supply Wells
  - Fergus Supply Wells
- Township of Mapleton WHPAs
  - Drayton Supply Wells
  - Moorefield Supply Wells
- Township of Wellington North WHPAs

  - Arthur Supply Wells
  - Mount Forest Supply Wells
- Town of Minto WHPAs
  - Harriston Supply Wells
  - Minto Pines Subdivision Supply Well
  - Clifford Supply Wells
  - Palmerston Supply Wells
- City of Guelph WHPAs
  - City of Guelph Supply Wells within the City of Guelph, Township of Puslinch and Guelph Eramosa Township
- Region of Waterloo (City of Cambridge)
  - WHPAs extending into the Township of Puslinch
- City of Hamilton
  - Freelton WHPAs extending into the Township of Puslinch
- Halton Region (Township of Halton Hills)
  - Acton Supply Well and WHPAs extending into the Town of Erin
  - Georgetown WHPAs extending into the Town of Erin

2.2 Study Objectives

The objectives of the study included:

1. Identify MAW within the study area, with the primary focus on the Township of Puslinch and Guelph Eramosa Township (GET). Areas in the north part of Wellington County were evaluated, but if the initial assessment determined the absence of deep municipal production wells and/or hydrostratigraphic review does not identify multiple aquifer zones separated by a distinct aquitard, additional analyses were not required.

2. Identify transport pathways (well clusters) based on the Conservation Ontario Guidance Document, particularly clusters of wells constructed before 1990 with a reported margin of error of a well's location of 30 m or less. We understand that this information may assist Wellington Source Water Protection with updates to vulnerability scoring in the study area.

2.3 Assessment Approach

Harden completed the study as a desktop review in two parts for the MAW study and the transport pathways study. The MAW study included review of the following records:

- MECP WWR;

- Geological mapping and published works relating to local geology/hydrogeology;
- Geological model layer shapefiles provided through data sharing agreements with Wellington County[1], the Grand River Conservation Authority[2] and the City of Guelph[3];
- Hydrogeological reports including Tier 3 groundwater studies, pumping tests and monitoring reports within WHPAs in the study area (as available and as practicable within the allotted budget); and,
- Other studies relating to local and regional aquifer units, municipal well information and MAW.

2.3.1 Overburden Wells

This study does not identify MAW that are completed in unconsolidated sediments. Identifying MAW within overburden aquifers is not feasible at a regional scale given the current reliability of overburden aquifer surface modeling, and would require a detailed review of hydrostratigraphy within each individual MECP WWR.

Although a water well completed in unconsolidated sediments can intersect multiple aquifers, it is rare that the well is screened within more than one aquifer. The water yield in an overburden well comes only from the screened portion of the well. For normal household wells, this is generally between one and two metres of screen and for a municipal well it can be several metres. Groundwater movement to the well then occurs primarily in the porous media adjacent to the well screen and even if another well penetrates the same unconsolidated aquifer, the well will be sealed to prevent the movement of water along the annulus. Please refer to Figure 2 for components of well construction.

With suitable sealing of the well annulus, movement of water through a well or in the well annulus between unconsolidated aquifers should not occur. Thus, for unconsolidated aquifers, R.R.O. 1990,

[1] County of Wellington Data Disclaimers: "Produced using DRAFT information from the Lake Erie Source Protection Region." and "Copyright Wellington County 2023. All rights reserved. May not be reproduced without permission. This is not survey data."

[2] Grand River Conservation Authority Data Disclaimers: "Produced using information under Licence with the Grand River Conservation Authority. Copyright © Grand River Conservation Authority, 2024." and "Intellectual Property from GRCA: Centre Wellington Tier 3 geological surfaces created during the development of numerical groundwater flow model used in Source Protection studies and Wellington County Source Protection Shapefiles."

[3] City of Guelph Data Disclaimer: "City of Guelph Raster GIS files of hydrogeological surfaces contained within the City's Groundwater Model."

Regulation 903: Wells, under the Ontario Water Resource Act (O. Reg. 903) provides adequate protection for wells drilled through multiple aquifers in an unconsolidated setting.

2.3.2 Bedrock Wells

Bedrock wells are required by O. Reg. 903 to be sealed into the rock to prevent impairment of groundwater and water in the well. Therefore, O. Reg. 903 generally protects water from moving from an unconsolidated aquifer into a bedrock aquifer well. This may not be effective where there is a contact aquifer (i.e., fractured/weathered top of bedrock) that is in direct connection with the overburden.

The yield of a bedrock well, unlike an overburden well, is the sum of water flowing through all fractures encountered by the wellbore. The well construction is terminated when an adequate water supply is determined by the well driller. An adequate water supply for a household well is generally considered to be one greater than 12 litres per minute. In this way, the depth of a bedrock well is not "predetermined" and thus the length of the open wellbore is unknown prior to drilling. This open wellbore is the subject of this study. Household wells are typically drilled with a diameter of 150 mm. Municipal wellbores can be 300 mm in diameter.

Figure 3 depicts a part of the Gasport Aquifer near Rockwood Well No. 3 and shows the distribution of fractures identified in locally drilled wells. In this area it is shown that fractures occur with the greatest frequency between 330 and 350 m above mean sea level (m AMSL) and this area is targeted by local private wells.

It is not uncommon to hear water cascade into a well during a pumping test of a bedrock well. This is the free falling of water from a fracture. The flow of water from the fracture is not limited by the size of the wellbore, but by the openness of the fracture itself. Where induced gradients occur in a wellbore from external water taking, this intra-well movement of water may not be obvious as cascading, but will be an underwater movement within the wellbore. The intra-well movement of water through an open wellbore can be hundreds of gallons per minute.

2.3.3 Transport Pathways (Well Clusters) Approach

In accordance with Part IV and Part VI of the Director's Technical Rules pertaining to transport pathways, the study included a review of available water well data in an effort to identify potential transport pathways and their impact on the vulnerability of municipal drinking water wells in the study area. The study was generally aligned with the Conservation Ontario (2023) Transport Pathways Guidance Document.

Harden completed a desktop mapping/modeling exercise using the MECP WWR database and WHPA-A, B, C and D layers.

For the purposes of this study, clusters of wells were defined as:

1. Clusters of six or more wells within a 100 m radius, with at least one well within the cluster located within any of the WHPA-A, B, C or D zones;

2. Wells constructed prior to the inception of R.R.O. 1990, Regulation 903: Wells (Reg. 903); and,

3. MECP WWR with a reported margin of error of a well's location of 30 m or less.

We note that the Conservation Ontario (2023) Guidance Document contains both the Halton-Hamilton Source Protection Region and Credit Valley Toronto and Region Central Lake Ontario (CTC) Source Protection Region methods, which have differences in assessment methodology relating to well depth and intrinsic vulnerability. For the purposes of this study, the following additional requirements were added to the definition of well clusters:

4. Wells with a depth that is within 3 m of the municipal supply aquifer unit (in accordance with the CTC assessment method). Note that the accuracy of this method is dependent on the availability of geological layer mapping/modeling data.

5. Wells will not be excluded on the basis of aquifer vulnerability (in accordance with the Halton-Hamilton assessment method); i.e., wells within areas that already scored as high vulnerability were not excluded.

The data are presented as figures showing each WHPA with MAW and well cluster locations, and identification of each MECP WWR identified as a MAW or within a cluster. The results are summarized in Sections 6.0 and 7.0.

3.0 Data Sources

3.1 Source Water Protection Data

Source water protection data was obtained from the MECP Source Protection Information Atlas (2024b) for WHPA names, locations and details. WHPA shapefiles for Wellington County were also obtained from the County of Wellington[4] for incorporation into the hydrostratigraphic models and figures prepared as part of this study.

3.2 Hydrostratigraphic Models

Hydrostratigraphic modeling was previously completed as part of Tier 3 models for several of the Source Water Protection areas. The delineation of the contact elevations for the various aquifer and

[4] County of Wellington Data Disclaimers: "Produced using DRAFT information from the Lake Erie Source Protection Region." and "Copyright Wellington County 2023. All rights reserved. May not be reproduced without permission. This is not survey data."

aquitard formations in this study was provided by the GRCA Tier 3 Model for Centre Wellington[5] and the City of Guelph[6] Tier 3 Model. The contacts from each model were picked as summarized in the following table. Although the two models were prepared for different areas in Wellington County/City of Guelph, there was some overlap. In these areas, surfaces from the City of Guelph Model were used rather than the GRCA model. The two models included the same geological stratigraphy, however, as shown on Table 1, the same surface was identified as the top of the geological formation in the City of Guelph Model and the bottom of the geological unit in the GRCA model.

Table 1: Tier 3 Model Units

Geological Unit	Groundwater Model	Model Layer
Guelph	GRCA	Bottom of Guelph Formation
Guelph	City of Guelph	Top of Reformatory Quarry
Goat Island	GRCA	Bottom of Vinemount Member
Goat Island	Guelph	Top of Goat Island Formation
Cabot Head	GRCA	Bottom of Gasport Formation
Cabot Head	Guelph	Top of Cabot Head Formation

There was little overlap between the model boundaries, but where this occurred, the surface elevation created by the City of Guelph model was used.

The majority of WHPAs occur within the GRCA/City of Guelph model boundaries. For areas outside of the GRCA and City of Guelph model boundaries, geological picks were made from consultant reports or a review of individual MECP WWR.

The top of rock layer across the study area was obtained from the Ontario Geological Survey (OGS) which is based on the top of rock value reported in the MECP WWR database.

The geological picks from the models were converted to individual points with an elevation and northing and easting to create a three-dimensional geological surface for each geological unit using the Viewlog™ software. Raster based surfaces were created through a Viewlog™ kriging process with the following option settings:

[5] Grand River Conservation Authority Data Disclaimers: “Produced using information under Licence with the Grand River Conservation Authority. Copyright © Grand River Conservation Authority, 2024.” and “Intellectual Property from GRCA: Centre Wellington Tier 3 geological surfaces created during the development of numerical groundwater flow model used in Source Protection studies and Wellington County Source Protection Shapefiles.”

[6] City of Guelph Data Disclaimer: “City of Guelph Raster GIS files of hydrogeological surfaces contained within the City’s Groundwater Model.”

METHOD:	Full Kriging
VARIOGRAM TYPE:	Linear
KRIGING ORDER:	0
SLOPE:	0

The geological surfaces in Viewlog™ were created on a 10 m x 10 m grid throughout Wellington County.

3.3 Water Well Records Database

The MECP (2024a) WWR database was used in this study.

Countywide, there are a total of 21,408 registered water wells of which 14,308 are bedrock wells. The distribution of these wells is shown on Figure 5.

The fine details of well casing depth and aquifer descriptions were not reviewed as part of this study, and it was assumed that all identified MAW are constructed as open bedrock wells from the top of bedrock to the bottom of the well.

3.4 Data Gaps and Limitations

- This study was completed as a desktop review using available MECP and OGS data, geological models provided by the City of Guelph and GRCA, and WHPA shapefiles from Wellington County. The accuracy of the analyses may be limited by the following: Data accuracy and spatial distribution was variable across data sources and required manual manipulation using various data picks from different sources to compile a continuous dataset for Wellington County.
- The fine details of MECP WWR such as well casing depth and aquifer descriptions are not fully digitized. As such, filtering the database for deep bedrock wells open across multiple aquifers versus cased into the lower bedrock is not yet possible digitally and would require review of individual MECP WWR, which was not completed as part of this study.
- WHPAs were based on shapefiles provided by Wellington County in 2024. It is noted that WHPAs may change over time as water taking needs evolve and new data becomes available.

4.0 Municipal Wells

4.1 Municipal Well Systems in Wellington County

The urban centers include Rockwood, Erin, Hillsburgh, Elora/Salem, Fergus, Clifford, Mount Forest, Harriston, Palmerston, Drayton, Moorefield, Arthur. By definition, the urban centers coincide with municipal water systems. According to the Phase 1 MCR Report (Watson & Associates Economists Ltd., 2022) the population of the urban centers was 46,900 and that of the rural areas was 53,800.

Water supply for each of these urban centers comes from groundwater with some water supply wells decades old. The twelve urban centers in Wellington County are identified on Figure 1.

4.2 Wellington County Aquifers

An aquifer is a saturated, permeable, geologic unit that can transmit and store significant quantities of water under ordinary hydraulic gradients, and yield water to wells and springs in economically usable amounts (Freeze and Cherry, 1979). By this definition and following Carter et.al. (2022), the hydrostratigraphic units in Wellington County are outlined in the following table.

Table 2: Wellington County Hydrostratigraphic Units

Former Name	Formation Name	Member	Hydrostratigraphic Unit Type
Onondaga Formation			Aquifer
Bois Blanc Formation			Aquifer
Bass Island Formation			Aquitard
Salina Formation			Aquifer/Aquitard
Guelph Formation (Guelph Member)	Guelph Formation	Hanlon Formation	Aquifer
		Wellington Member	Aquifer
Guelph Formation (Eramosa Member)	Eramosa Formation	Stone Road Member	Aquifer/Aquitard*
		Vinemount Member	Aquitard*
		Reformatory Quarry Member	Aquifer
	Goat Island Formation	Ancaster Member	Aquifer
Amabel (unsubdivided)		Niagara Falls Member	Aquifer
	Gasport Formation	Gothic Hill Member	Aquifer
	Lions Head		Aquitard
	Irondequoit		Aquitard
Reynales Formation	Rockway		Aquitard
	Merritton		Aquitard
Cabot Head Formation	Cabot Head Formation		Aquitard

*Aquifers where karstic at near surface

The surficial distribution of the geological formations are shown on Figure 5. Vinemount and Reformatory Quarry members of the Eramosa formation are relatively thin geological units that occur at the Goat Island/Guelph Formation contact. All geological formations in this area are dipping 3 to 6 m/km to the southwest as shown on the cross section (Figure 6).

A contact aquifer is often identified within the upper five metres of the bedrock where millennia of weathering and glacial activity often creates a zone of greater fracturing or solution enhanced

openings. Karst is also identified in Wellington County, not only where the bedrock is presently exposed at the ground surface, but also at depth originating closer to the time of bedrock formation.

The Vinemount Member and Reformatory Quarry Member of the Eramosa Formation do not always present as an aquitard and are known to be absent in certain parts of Wellington County. We have assumed for the purposes of this study that the Eramosa Formation occurs throughout the study area.

5.0 Municipal Well Source Aquifers and Multiaquifer Well Risk

The majority of municipal supply wells in Wellington County are installed in bedrock aquifer units. The source aquifer units for each municipal WHPA are interpreted as follows:

- City of Guelph: All WHPAs are interpreted as water takings from the Gasport Fm, with an induced downward gradient between the Gasport Fm and the upper Guelph Fm. The entire WHPA-D is interpreted as a MAW risk area.
- Hamilton Drive (Guelph Eramosa Township): Just north of the City of Guelph, the two Hamilton Drive supply wells are installed within the Guelph Fm to Gasport Fm. With the potential for an induced downward gradient between the Gasport Fm and the upper Guelph Fm., the Hamilton Drive WHPA-D areas are interpreted as MAW risk areas.
- Rockwood (Guelph Eramosa Township): The Rockwood supply wells are installed within the Gasport Fm, with the upper Guelph Fm absent in most of the area with no potential for induced drawdown. However, the western lobe of the WHPA-D extends into an area of thin Guelph Fm overlying the Gasport Fm. MAW within the WHPA-D in this area may therefore potentially be subjected to an induced downward gradient from the Rockwood supply wells.
- Erin (Town of Erin): The three Erin supply wells are installed within the Gasport Fm, with the upper Guelph Fm absent in the area. As such, no MAW risk is interpreted in the Erin WHPAs.
- Hillsburgh (Town of Erin): The two Hillsburgh supply wells are installed within the Gasport Fm, with the upper Guelph Fm absent or interpreted as very thin in the area. As such, no MAW risk is interpreted in the Hillsburgh WHPAs.
- Elora and Fergus (Township of Centre Wellington): The Elora and Fergus supply wells are installed between the Guelph Fm to the Goat Island Fm and Gasport Fm. The Vinemount Member of the Eramosa Formation is also generally absent from the area. All WHPAs are interpreted as potential induced downward gradient areas the Gasport Fm and the upper Guelph Fm. The entire WHPA-D is interpreted as a MAW risk area.
- Arthur (Township of Wellington North): The three Arthur supply wells are installed within sand and gravel overburden above the Salina Fm. No MAW risk is interpreted in the Arthur WHPAs.
- Mount Forest (Township of Wellington North): Three of the four Mount Forest supply wells are installed within the Guelph Fm, with the fourth supply well installed in the upper Salina Fm. The

supply wells within the Guelph Fm may create an induced downward gradient between the Salina Fm and lower Guelph Fm. The Mount Forest WHPA-D is interpreted as a MAW risk area.

- Clifford (Town of Minto): Two of the Clifford supply wells are installed within the Salina Fm and one well is installed within sand and gravel overburden. No MAW risk is interpreted in the Clifford WHPAs.
- Minto Pines Subdivision (Town of Minto): A single bedrock well installed in the Salina Fm services the Minto Pines Subdivision. No MAW risk is interpreted in the Minto Pines Subdivision WHPA.
- Harriston (Town of Minto): The three Harriston supply wells are believed to be installed within the Salina Fm. No MAW risk is interpreted in the Harriston WHPAs.
- Palmerston (Town of Minto): The four Palmerston supply wells are installed within the Salina Fm. No MAW risk is interpreted in the Palmerston WHPAs.
- Moorefield (Mapleton Township): The two Moorefield supply wells are installed within the Salina Fm. No MAW risk is interpreted in the Moorefield WHPAs.
- Drayton (Mapleton Township): The two Drayton supply wells are installed within the Salina Fm. No MAW risk is interpreted in the Drayton WHPAs.

The following additional WHPAs originate from water takings outside Wellington County, but have WHPAs that extend into the County:

- Cambridge (Region of Waterloo): The WHPAs from the Cambridge Supply Wells extend across the southwestern boundary of Wellington County. All WHPAs are interpreted as water takings from the Gasport Fm, with an induced downward gradient between the Gasport Fm and the upper Guelph Fm. The entire WHPA-D is interpreted as a MAW risk area.
- Freelton (City of Hamilton): The WHPA from the Freelton Supply Wells extends across the southern boundary of Wellington County. The Freelton wells are installed within the Gasport Fm, with the upper Guelph Fm absent in the area. As such, no MAW risk is interpreted in this WHPA.
- Acton (Halton Region): The WHPAs from the Acton Supply Wells extend across the southeastern boundary of Wellington County. The Acton wells are installed within the Gasport Fm, with the upper Guelph Fm absent in the area. As such, no MAW risk is interpreted in the Acton WHPAs.

The details for each WHPA are summarized in the following table.

Table 3: WHPA Aquifer Details and MAW Risk

WHPA Name	Number of WHPAs (within Wellington)	Municipality	County	Source Protection Area (Region)	Water Supply Aquifer	MAW Risk
Guelph	8	Puslinch	Wellington			Yes

WHPA Name	Number of WHPAs (within Wellington)	Municipality	County	Source Protection Area (Region)	Water Supply Aquifer	MAW Risk
	16	Guelph		Grand River (Lake Erie)	Gasport / Goat Island (Amabel)	
	1	Guelph-Eramosa				
Hamilton Drive	2	Guelph-Eramosa	Wellington	Grand River (Lake Erie)	Guelph / Eramosa (Reformatory Quarry Mbr) (1 well) Guelph / Middle Gasport (1 well)	Yes
Rockwood	4	Guelph-Eramosa	Wellington	Grand River (Lake Erie)	Middle Gasport	Yes
Erin	3	Erin	Wellington	Credit Valley (CTC)	Gasport / Goat Island (Amabel)	No
Hillsburgh	2	Erin	Wellington	Credit Valley (CTC)	Gasport / Goat Island (Amabel)	No
Township of Centre Wellington (Elora)	3	Centre Wellington	Wellington	Grand River (Lake Erie)	Guelph Fm to Gasport Fm, Gothic Hill Mbr (1 well) Guelph Fm to Goat Island Fm, Ancaster Mbr (2 wells)	Yes
Township of Centre Wellington (Fergus)	6	Centre Wellington	Wellington	Grand River (Lake Erie)	Guelph Fm to Gasport Fm, Gothic Hill Mbr (3 wells) Guelph Fm to Goat Island Fm, Ancaster Mbr (2 wells)	Yes
Arthur	3	Wellington North	Wellington	Grand River (Lake Erie)	Sand & Gravel Overburden	No
Mount Forest	4	Wellington North	Wellington	Saugeen Valley (Saugeen, Grey Sauble, Northern Bruce Peninsula)	Salina Fm (1 well) Guelph Fm (3 wells)	Yes

WHPA Name	Number of WHPAs (within Wellington)	Municipality	County	Source Protection Area (Region)	Water Supply Aquifer	MAW Risk
Clifford	3	Minto	Wellington	Saugeen Valley (Saugeen, Grey Sauble, Northern Bruce Peninsula)	Sand & Gravel Overburden (1 well) Salina Fm (2 wells)	No
Minto Pines Subdivision	1	Minto	Wellington	Saugeen Valley (Saugeen, Grey Sauble, Northern Bruce Peninsula)	Salina Fm	No
Harriston	3	Minto	Wellington	Maitland Valley (Ausable Bayfield Maitland Valley)	Salina Fm	No
Palmerston	4	Minto	Wellington	Maitland Valley (Ausable Bayfield Maitland Valley)	Salina Fm	No
Moorefield	2	Mapleton	Wellington	Grand River (Lake Erie)	Salina Fm	No
Drayton	2	Mapleton	Wellington	Grand River (Lake Erie)	Salina Fm	No
Freelton	2	Hamilton	Hamilton	Halton Region (Hamilton-Halton)	Gasport / Goat Island (Amabel)	No
Cambridge	8	Cambridge	Waterloo	Grand River (Lake Erie)	Gasport / Goat Island (Amabel)	Yes

WHPA Name	Number of WHPAs (within Wellington)	Municipality	County	Source Protection Area (Region)	Water Supply Aquifer	MAW Risk
Acton	3	Halton Hills	Halton	Credit Valley (CTC)	Gasport / Goat Island (Amabel)	No

In summary, based on the interpreted source aquifers for each municipal WHPA, the following WHPA-D areas are interpreted as having an actual or potential induced downward gradient, and would therefore be considered MAW risk areas:

- City of Guelph
- Hamilton Drive (Guelph Eramosa Township)
- Rockwood (Guelph Eramosa Township)
- Elora and Fergus (Township of Centre Wellington)
- Mount Forest (Township of Wellington North)
- Cambridge (Region of Waterloo)

6.0 Multiaquifer Well Study Results

Based on our review of MECP WWR (2024a), over 14,300 bedrock supply wells currently exist in Wellington County. The distribution of potential MAW within the study area is shown on Figures 7 and 8, as interpreted based on the assessment approach described in Section 2 using available geological model data and MECP WWR.

The distribution of MAW within each WHPA that was identified to have MAW risk is shown on Figures 9 through 14, with details of each identified MECP WWR provided in Appendix A. A total of 758 wells within Wellington County WHPAs were interpreted as potential MAWs, as summarized in the following table. Note that potential MAW identified outside WHPAs were not counted as part of this study.

Table 4: Wellington County Multiaquifer Wells

WHPA	MAW Aquifers	Number of MECP WWR Identified as MAW
Hamilton Drive (Guelph Eramosa Township)	Guelph Fm to Gasport/Goat Island Fm	0
Rockwood (Guelph Eramosa Township)	Guelph Fm to Gasport/Goat Island Fm (west side of WHPA only)	14
Elora and Fergus (Township of Centre Wellington)	Guelph Fm to Gasport/Goat Island Fm	76

WHPA	MAW Aquifers	Number of MECP WWR Identified as MAW
Mount Forest (Township of Wellington North)	Salina Fm to Guelph Fm	5
City of Guelph	Guelph Fm to Gasport/Goat Island Fm	610
Cambridge (Region of Waterloo)	Guelph Fm to Gasport/Goat Island Fm	15
Cambridge & City of Guelph (overlapping WHPAs)	Guelph Fm to Gasport/Goat Island Fm	38
Total potential MAW in Wellington County		758

The identified potential MAW were installed between 1945 and 2021 to depths of up to 230 m.

7.0 Transport Pathways (Well Clusters) Study Results

Well clusters within this study were defined as:

1. Clusters of six or more wells within a 100 m radius, with at least one well within the cluster located within any of the WHPA-A, B, C or D zones;

2. Wells constructed prior to the inception of R.R.O. 1990, Regulation 903: Wells (Reg. 903);

3. MECP WWR with a reported margin of error of a well's location of 30 m or less;

4. Wells with a depth that is within 3 m of the municipal supply aquifer unit (in accordance with the CTC assessment method); and

5. Wells were not excluded on the basis of aquifer vulnerability (in accordance with the Halton-Hamilton assessment method).

The clusters were identified by comparing the location of each pre-1990 well to the location of all other pre-1990 wells in the database that meet the above criteria. A total of eleven well clusters were identified in Wellington County using the above criteria. There are three clusters in Center Wellington within the Elora 1 municipal well WHPA, four clusters in Guelph-Eramosa within the Emma Well WHPA and four clusters in the Town of Erin within the Bel-Erin WHPA. The clusters were determined with an algorithm that calculated the distance between each well and its nearby wells and new cluster was identified when five or more nearby wells were within one hundred metres. This led to duplication and each community cluster does contain one or more wells from another nearby cluster, but also contains at least one unique well. There are a total of forty-four wells, all drilled prior to 1990, all with location reliability of 30 metres or less and are completed within three metres of the municipal aquifer. Each MECP WWR within the well cluster is listed in the following table and shown on Figures 15, 16 and 17.

Table 5: Wellington County Well Cluster Records

Municipal Well	Cluster	Well ID	Northing	Easting
Elora 1	CW1	6709734	4838398	544974
		6709830	4838334	544983
		6709795	4838430	544915
		6709921	4838452	544933
		6709873	4838432	545047
		6709922	4838308	544948
	CW2	6709794	4838386	544866
		6709801	4838355	544842
		6710165	4838391	544804
		6709795	4838430	544915
		6709872	4838448	544833
		6709800	4838336	544813
		6709921	4838452	544933
	CW3	6709801	4838355	544842
		6709800	4838336	544813
		6709794	4838386	544866
		6710165	4838391	544804
		6709799	4838315	544795
		6709872	4838448	544833
Bel Erin	E1	6709901	4845620	576225
		6709609	4845593	576179
		6709968	4845682	576225
		6709608	4845614	576136
		6709599	4845708	576201
		6709601	4845657	576139
	E3	6709600	4845797	576067
		6709112	4845775	576062
		6709598	4845824	576080
		6709403	4845787	576023
		6709596	4845808	576131
		6709591	4845860	576132
		6709597	4845775	576161
	E5	6709597	4845775	576161
		6709596	4845808	576131
		6709599	4845708	576201
		6709402	4845823	576233
		6709591	4845860	576132

Municipal Well	Cluster	Well ID	Northing	Easting
		6709598	4845824	576080
		6709600	4845797	576067
		6709112	4845775	576062
	E7	6709591	4845860	576132
		6709596	4845808	576131
		6709598	4845824	576080
		6708391	4845934	576148
		6708392	4845939	576167
		6709597	4845775	576161
		6709600	4845797	576067
Emma (Guelph)	G1	6709919	4825484	557517
		6708418	4825480	557515
		6709253	4825471	557530
		6708730	4825467	557499
		6709870	4825440	557513
		6709350	4825471	557474
		6708775	4825546	557490
		6708442	4825446	557453
		6708777	4825499	557606
		6708778	4825393	557499
		6708776	4825389	557486
	G2	6709870	4825440	557513
		6708730	4825467	557499
		6709253	4825471	557530
		6708418	4825480	557515
		6709919	4825484	557517
		6708778	4825393	557499
		6709350	4825471	557474
		6708776	4825389	557486
		6708442	4825446	557453
		6708774	4825357	557538
	G7	6708775	4825546	557490
		6708563	4825583	557502
		6709919	4825484	557517
		6708418	4825480	557515
		6709350	4825471	557474
		6708730	4825467	557499
		6709253	4825471	557530
	G8	6708774	4825357	557538

Municipal Well	Cluster	Well ID	Northing	Easting
		6708778	4825393	557499
		6708776	4825389	557486
		6709870	4825440	557513
		6708731	4825383	557627
		6707902	4825374	557636

No other well clusters were identified within Wellington County WHPAs based on the cluster definition outlined above.

8.0 Discussion

There is significant potential for inter-aquifer movement of groundwater via open wellbores in Wellington County. The areas of low hydraulic potential within one or more bedrock aquifers created by municipal water taking will induce flow through the open wellbores from one fracture system to another. This may transmit contaminants from an otherwise poorly connected fracture system directly into the municipal aquifer. Of greatest concern is the movement of anthropogenic sourced contamination from shallow systems to deeper aquifers. Similarly, the induced drawdown in lower aquifer systems by municipal wells may slowly dewater the upper aquifers through open wellbores.

This study has identified 758 MAWs that occur within WHPAs in Wellington County. These WHPAs are defined by travel times through the aquifer as determined from an equivalent porous media groundwater model. However, in reality, individual fractures are mainly responsible for the delivery of groundwater to the municipal wells and the introduction of a MAW introduces an opportunity to significantly decrease the travel time by interconnecting numerous fractures.

There are an additional 899 MAWs that occur in Wellington County that may be within the area of influence of a municipal well or other major water taker.

In addition, there are over 14,000 wells in Wellington County that penetrate the bedrock aquifers. Individually, any one of these wells with an open wellbore has the potential to transport a significant quantity of water and/or contaminants from one portion of the aquifer to another.

9.0 Conclusions

The following conclusions are made based on the completion of this study:

- Based on the municipal well installation and modelled aquifer contacts, the WHPAs for the following wells were considered areas of induced drawdown into lower aquifers (i.e., potential for MAW risk): City of Guelph, Hamilton Drive, City of Cambridge, Rockwood, Mount Forest and Township of Centre Wellington (Fergus and Elora). All other WHPAs in Wellington County were interpreted as having no MAW risk.

- A total of 758 MECP WWR were identified as potential MAW within Wellington County WHPAs identified as having MAW risk. The identified MAW were within the WHPAs for the City of Guelph, City of Cambridge, Rockwood, Mount Forest and Township of Centre Wellington (Fergus and Elora).
- A total of eleven well clusters were identified within Wellington County WHPAs. Well clusters are interpreted as a transport pathway based on the Conservation Ontario (2023) Guidance Document.

10.0 Recommendations

This study has identified wells with open wellbores that can facilitate the movement of groundwater and potentially contaminants into lower aquifer systems. We recommend the following actions.

1. Create development standards for wells:

    a. We recommend that municipalities develop municipal standards for well construction in their communities. This study can be used as a guideline for establishing minimum casing lengths to prevent MAW.

    b. We recommend that the Province provide additional guidance, either within O. Reg 903 or best management materials, that details the necessity for casing wells to the target aquifer.

2. Complete additional MAW analysis:

    a. We recommend that further study be completed to identify areas with significant hydraulic gradients across aquitards to understand the scope of the impact that MAW, under induced downward gradient from municipal pumping wells, may be having on groundwater quality across Wellington County.

    b. We recommend that a risk analysis be completed to further screen the identified MAW wells that require immediate action. The risk analysis could include data collected by Public Health, and the best management practices work completed by CTC and other conservation authorities.

    c. We recommend that the current study be used to assess the potential impact of MAW on municipal technical projects such as well exploration studies and WHPA modelling work.

3. Existing well modification, abandonment or retrofit:

    a. We recommend that a collaboration between municipalities, conservation authorities, the Province, and local well drillers be undertaken to develop strategies for

modification, retrofit, or abandonment of existing wells that represent a MAW risk to limit the potential movement of contaminants within areas of induced downward gradient by municipal pumping wells.

b. We recommend that one of these strategies is a risk analysis that can be used to prioritize Rural Water Quality Program incentive projects for retrofitting existing wells identified as requiring immediate action. Municipalities should consider outreach to the affected MAW owners located within areas of induced downward gradient by municipal pumping wells.

11.0 References

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Figures

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024



Legend

N

Bedrock Well

Road

County of Wellington

5000 0 5000 Meters

Scale 1:300,000

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Harden Environmental Services Ltd.

Project No: 2366

Date: Mar 2024

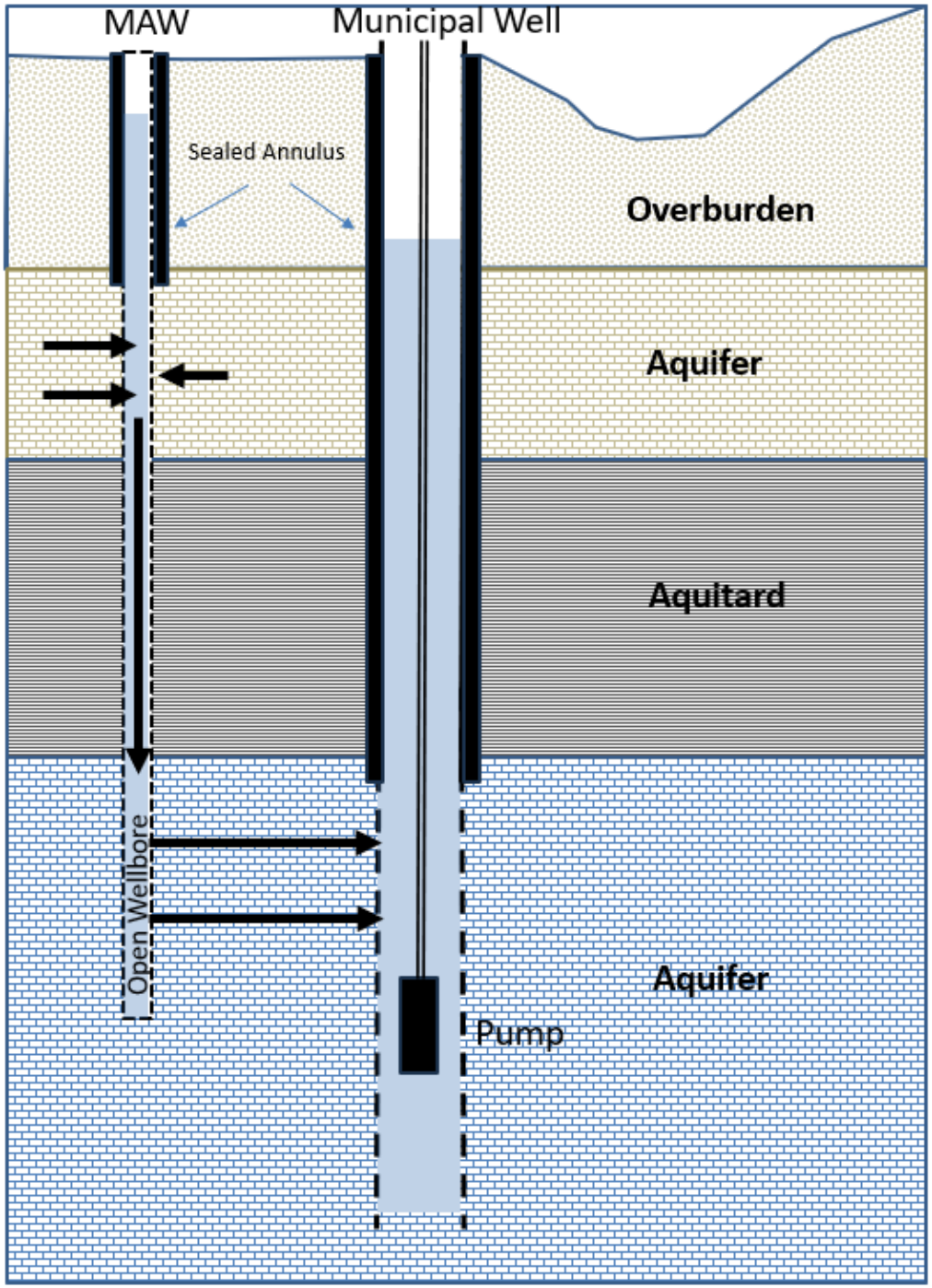
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Multiaquifer Wells and Transport Pathways Study

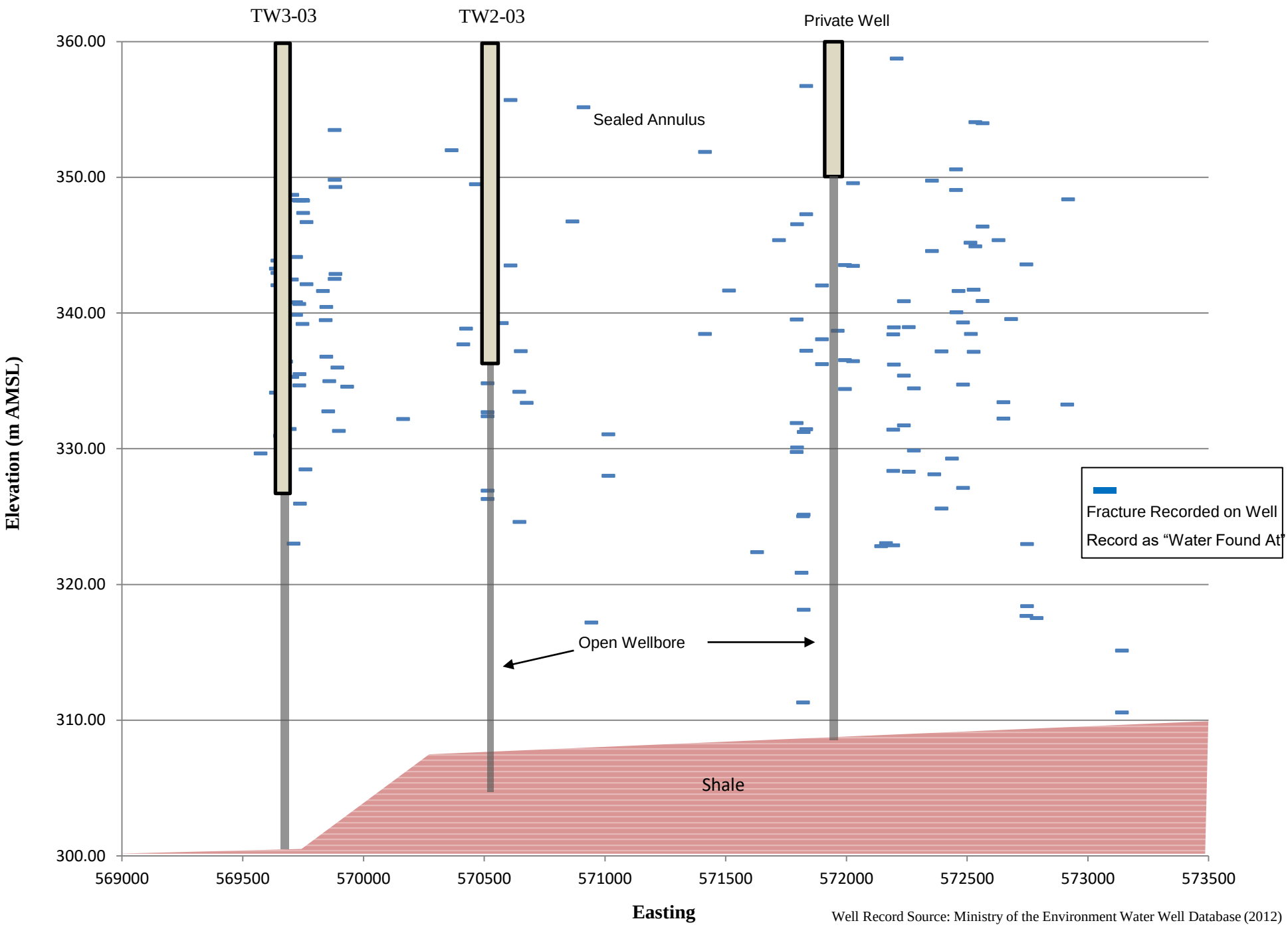
County of Wellington

Figure 1:

Bedrock Wells in Wellington County

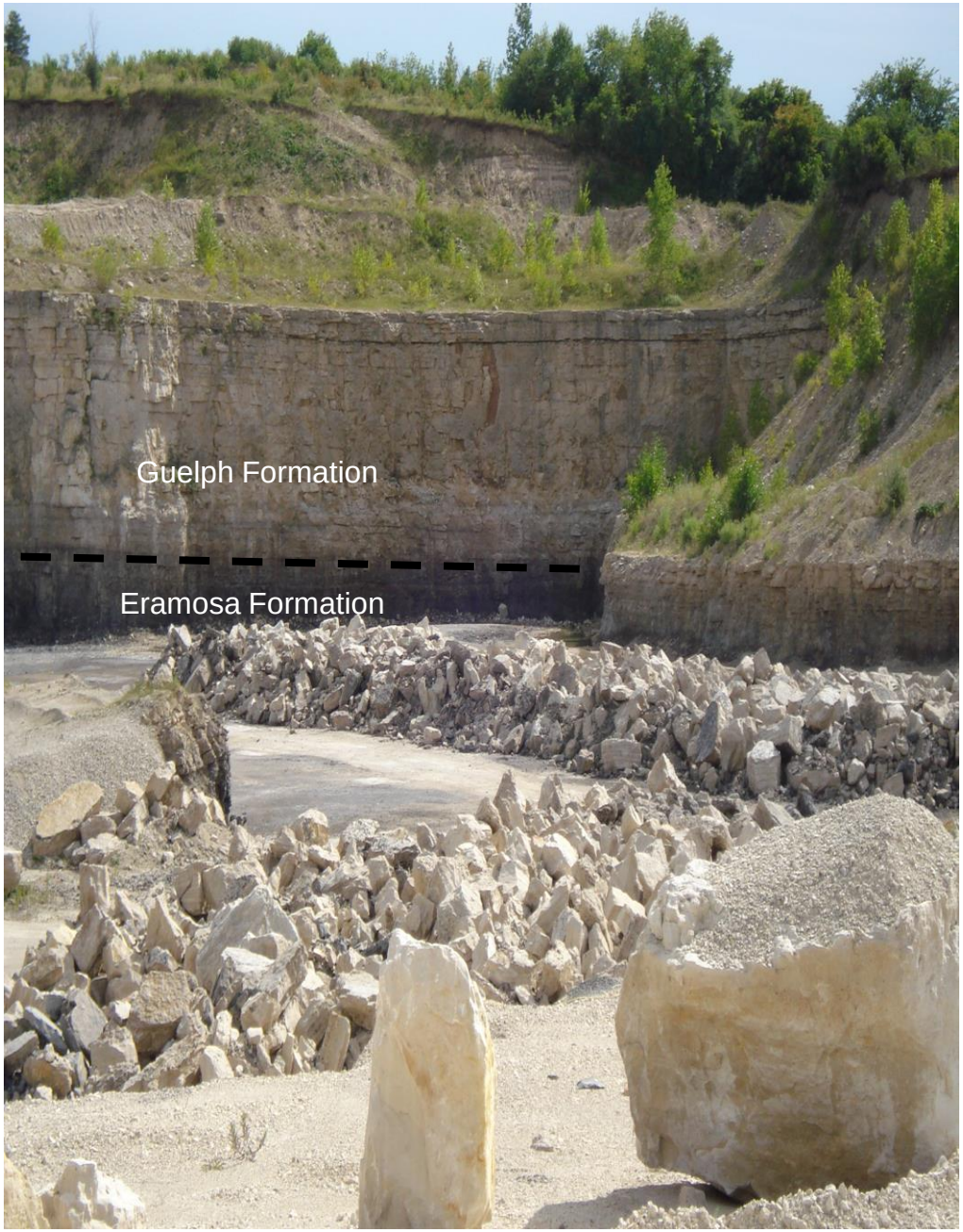


HARDEN Environmental	**Project No:** 2366	Multiaquifer Wells and Transport Pathways Study	**Figure 2: Conceptual Transport Pathway through Multiaquifer Well within Municipal WHPA**
	Date: Mar 2024	County of Wellington	
	Drawn By: AR		

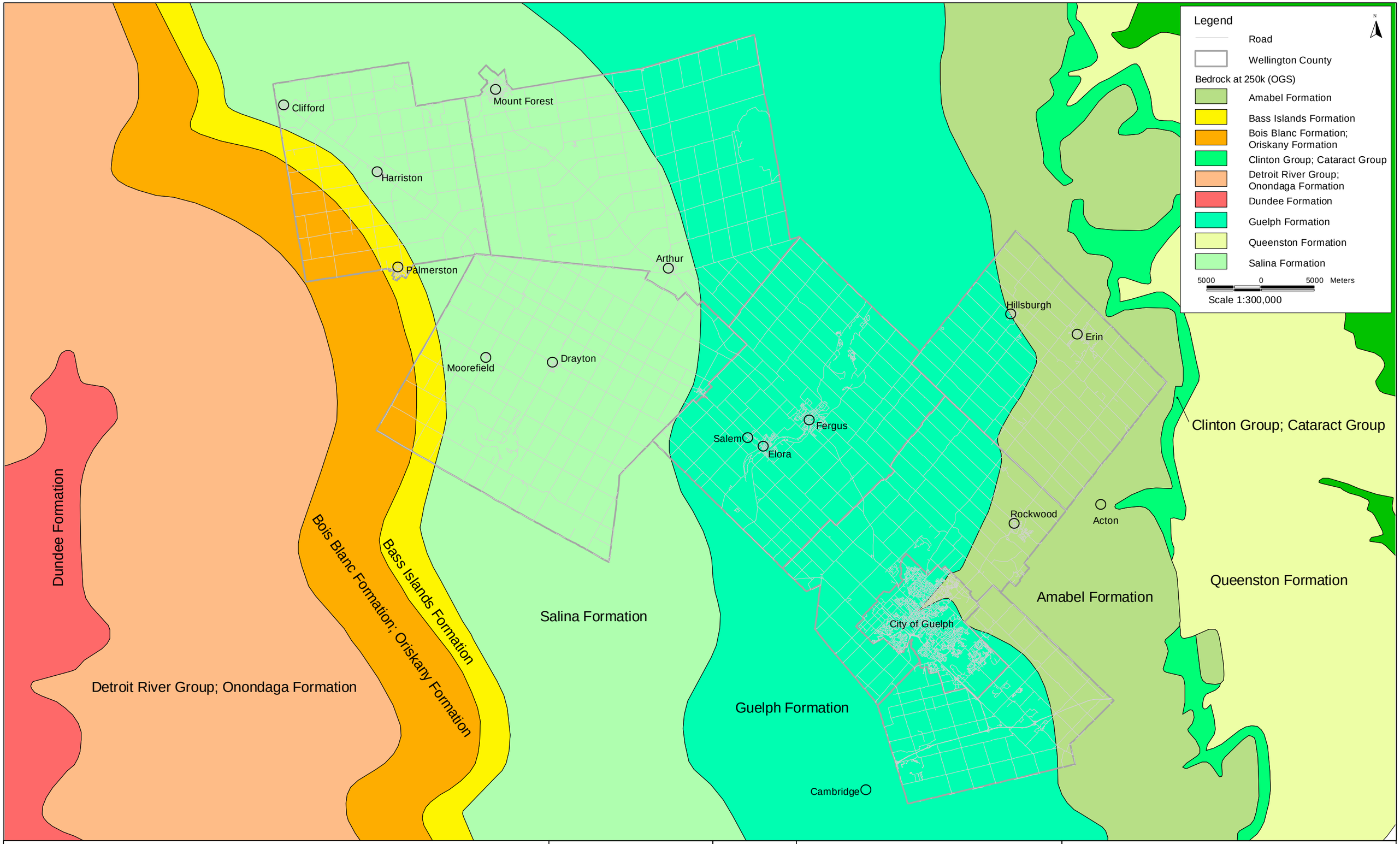


Well Record Source: Ministry of the Environment Water Well Database (2012)

HARDEN Environmental	**Project No:** 2366 **Date:** Mar 2024 **Drawn By:** AR	Multiaquifer Wells and Transport Pathways Study County of Wellington	**Figure 3: Fracture Occurrences, Gasport Aquifer, Rockwood Area**



HARDEN Environmental	**Project No:** 2366	Multiaquifer Wells and Transport Pathways Study	**Figure 4: Guelph Formation and Eramosa Formation Geological Contact**
	Date: Mar 2024	County of Wellington	
	Drawn By: AR		



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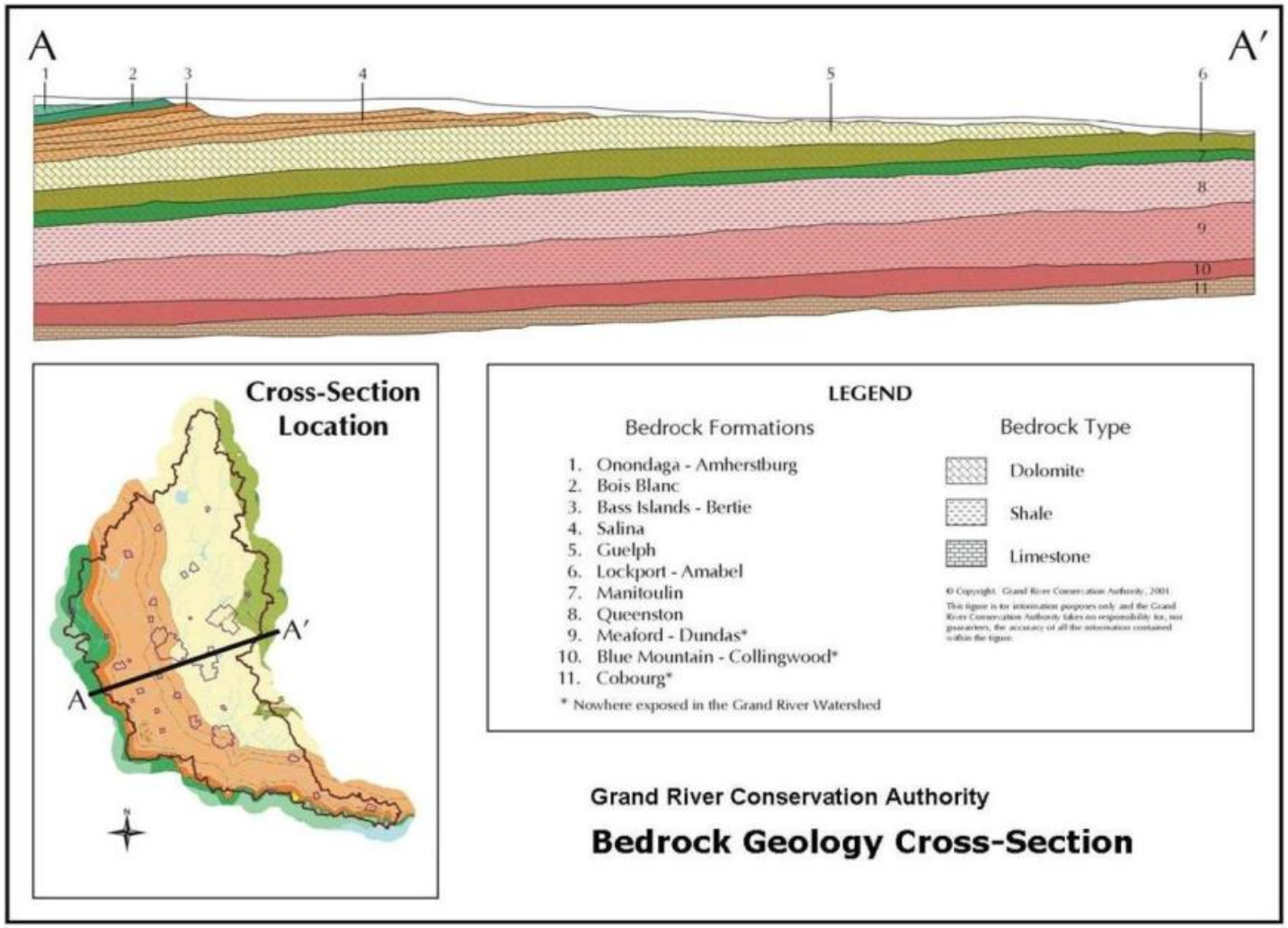
Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 5:

Bedrock Geology

Figure 2.1: Bedrock Cross Sections of the Grand River Watershed

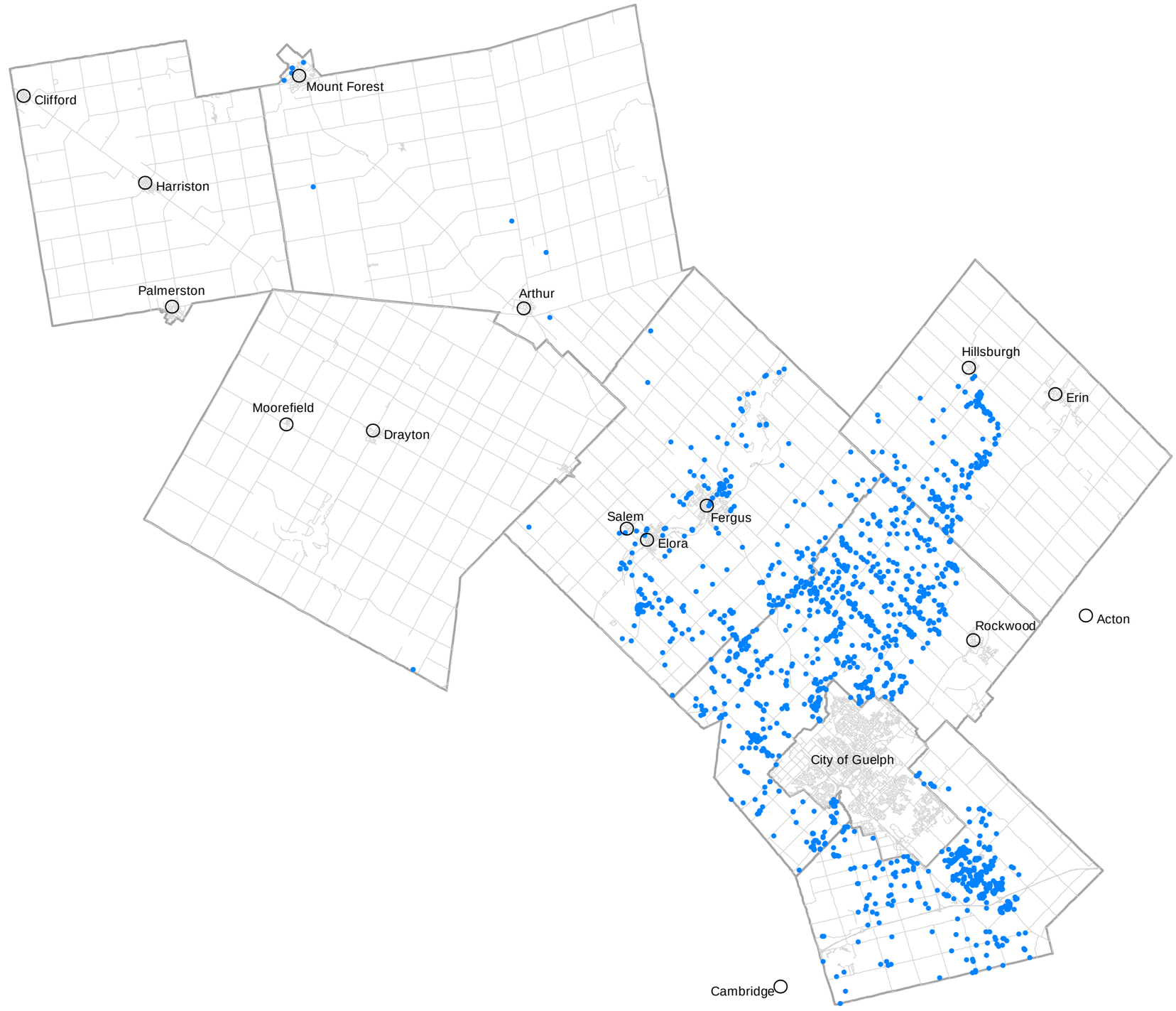


Various Authors, 1967-1993, Paleozoic Geology, Southern Ontario, Ontario Geological Survey. Refer to metadata

Source: Grand River Watershed Characterization report, January 2008, Lake Erie Source Protection Region Technical Team

HARDEN Environmental	**Project No:** 2366	Multiaquifer Wells and Transport Pathways Study	**Figure 6: Regional Geological Cross Section**
	Date: Mar 2024	County of Wellington	
	Drawn By: AR		

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024



Legend

- Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer
- Road
- County of Wellington

5000 0 5000 Meters

Scale 1:300,000

N

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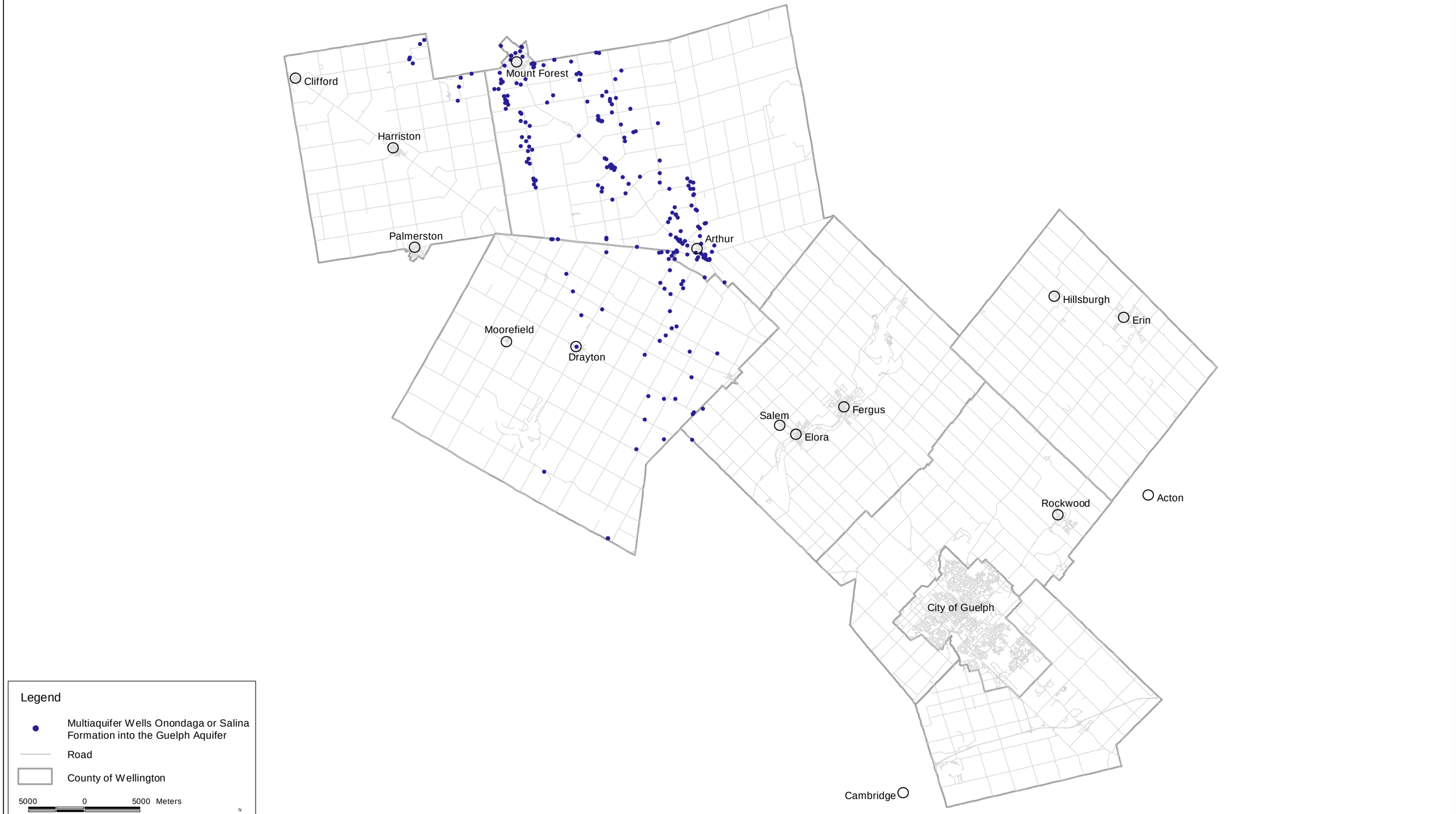
Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 7:

Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024



Legend

- Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer
- Road
- County of Wellington

5000 0 5000 Meters

Scale 1:300,000

N

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Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 8:
Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024

D
C
B
A
F6
F4
F2
F1
F7
F5
Fergus
Salem
E1
Elora
E3
E4

Legend

- Wellhead Protection Area
- Municipal Well
- Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer
- Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer
- Road
- County of Wellington

1000 0 1000 2000 Meters

Scale 1:100,000

N

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Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 9:

Township of Centre Wellington Well Supply

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024

D

C

B

A

Well 1&2

Legend

- Wellhead Protection Area
- Municipal Well
- Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer
- Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer
- Road
- County of Wellington

500 0 500 Meters

Scale 1:30,000

N

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Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 10:

Rockwood Well Supply

C

C

B

C

B

Cambridge

Legend

- Wellhead Protection Area
- Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer
- Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer
- Road
- County of Wellington

1000 0 1000 Meters

Scale 1:70,000

N

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024

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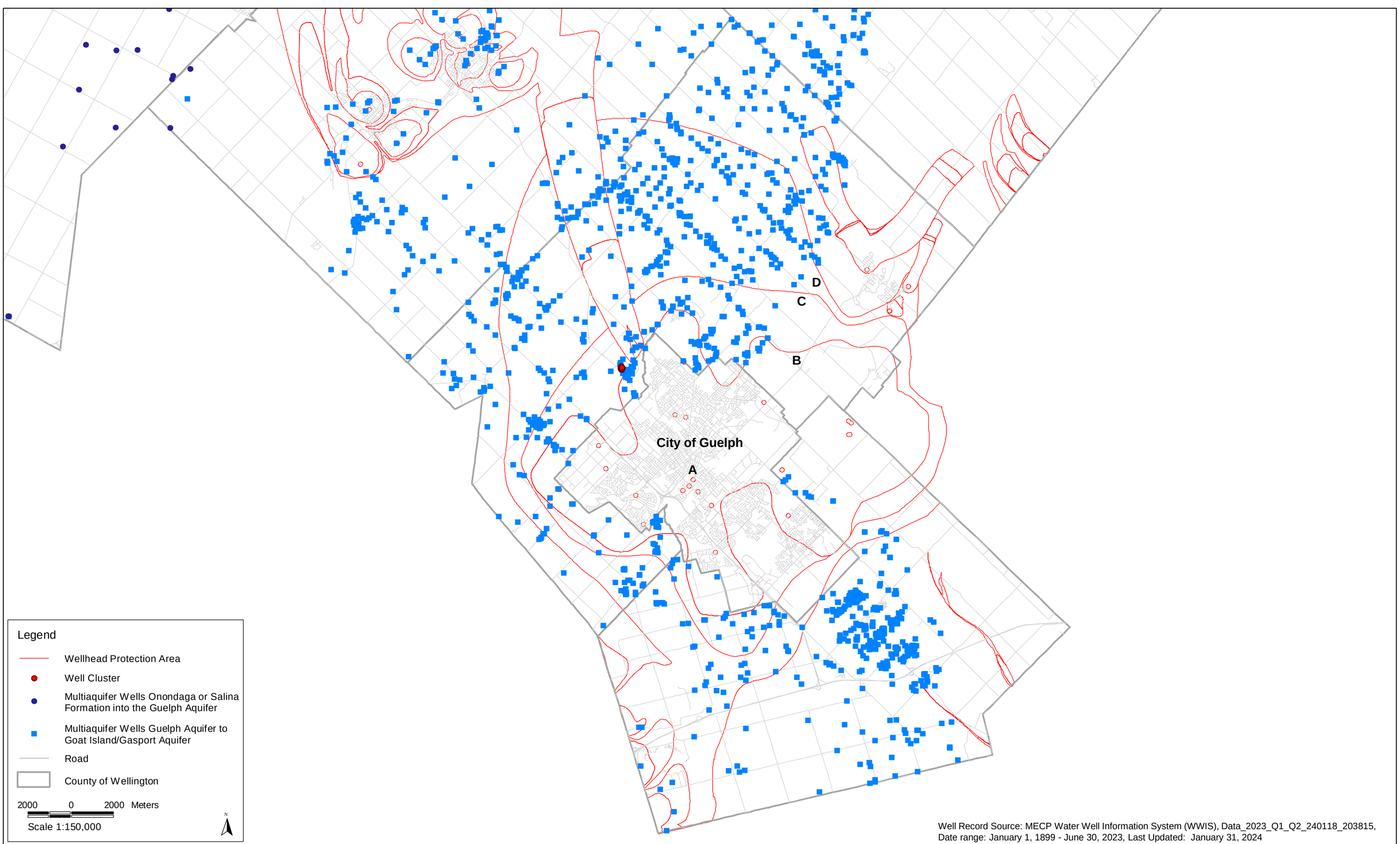
Project No: 2366
Date: Mar 2024
Drawn By: SD

Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 11:

Cambridge Well Supply



Legend

- Wellhead Protection Area
- Well Cluster
- Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer
- Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer
- Road
- County of Wellington

2000 0 2000 Meters

Scale 1:150,000

N

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815,
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Date: Mar 2024
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Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 12:

City of Guelph Well Supply

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815,
Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024

D

C

B

Huntington Estates Well

Cross Creek Well

Hamilton Drive

City of Guelph

Legend

- Wellhead Protection Area
- Multiaquifer Wells Onondaga or Salina Formation into the Guelph Aquifer
- Multiaquifer Wells Guelph Aquifer to Goat Island/Gasport Aquifer
- Road
- County of Wellington

1000 0 1000 Meters

Scale 1:70,000

N

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Intellectual Property from City of Guelph: Raster GIS files of hydrogeological surfaces contained within the City's Groundwater Model.

Harden Environmental Services Ltd.

Project No: 2366
Date: Mar 2024
Drawn By: SD

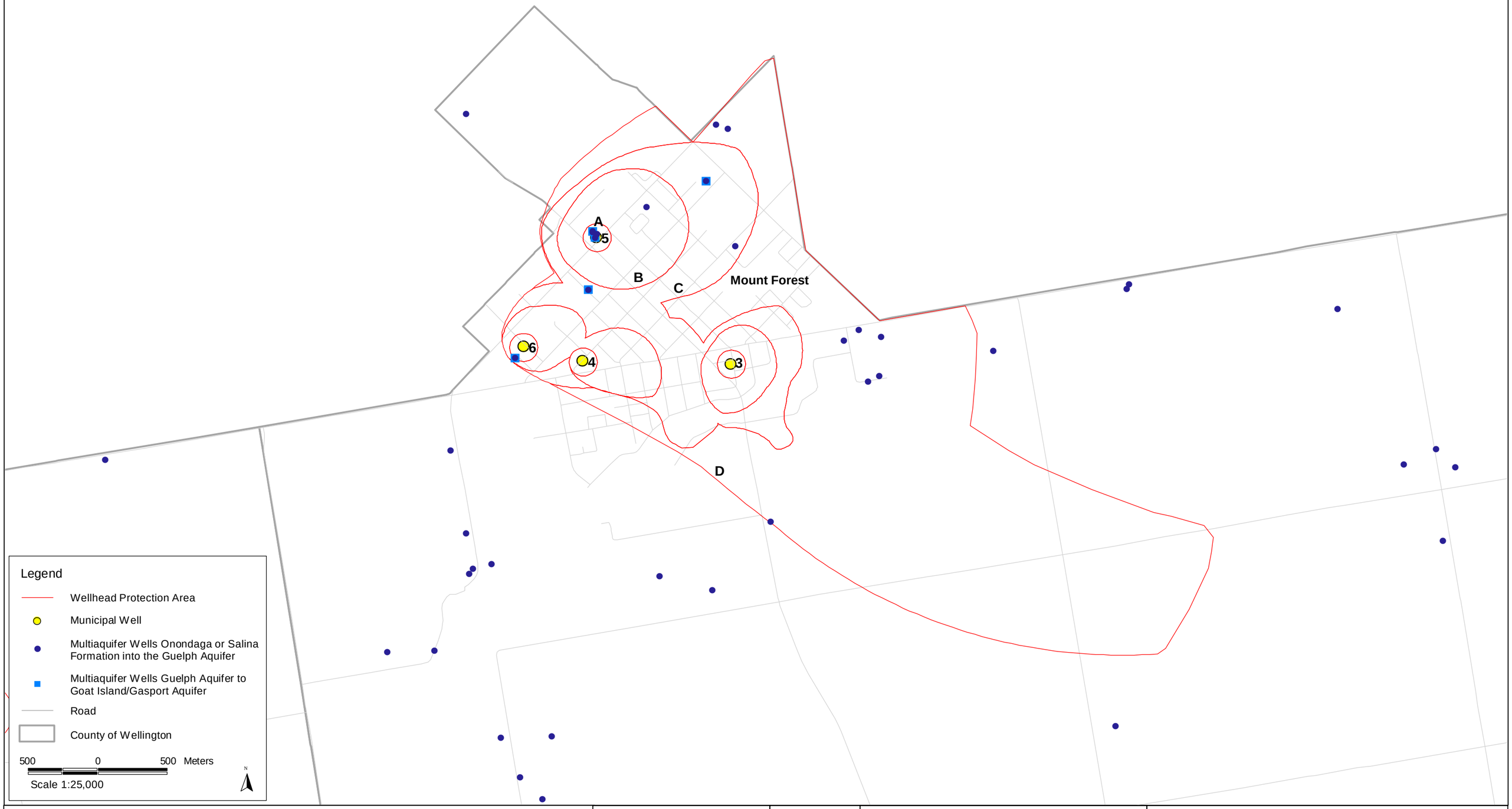
Multiaquifer Wells and Transport Pathways Study

County of Wellington

Figure 13:

Township of Guelph/Eramosa
Hamilton Drive Well Supply

Well Record Source: MECP Water Well Information System (WWIS), Data_2023_Q1_Q2_240118_203815, Date range: January 1, 1899 - June 30, 2023, Last Updated: January 31, 2024



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Harden Environmental Services Ltd.

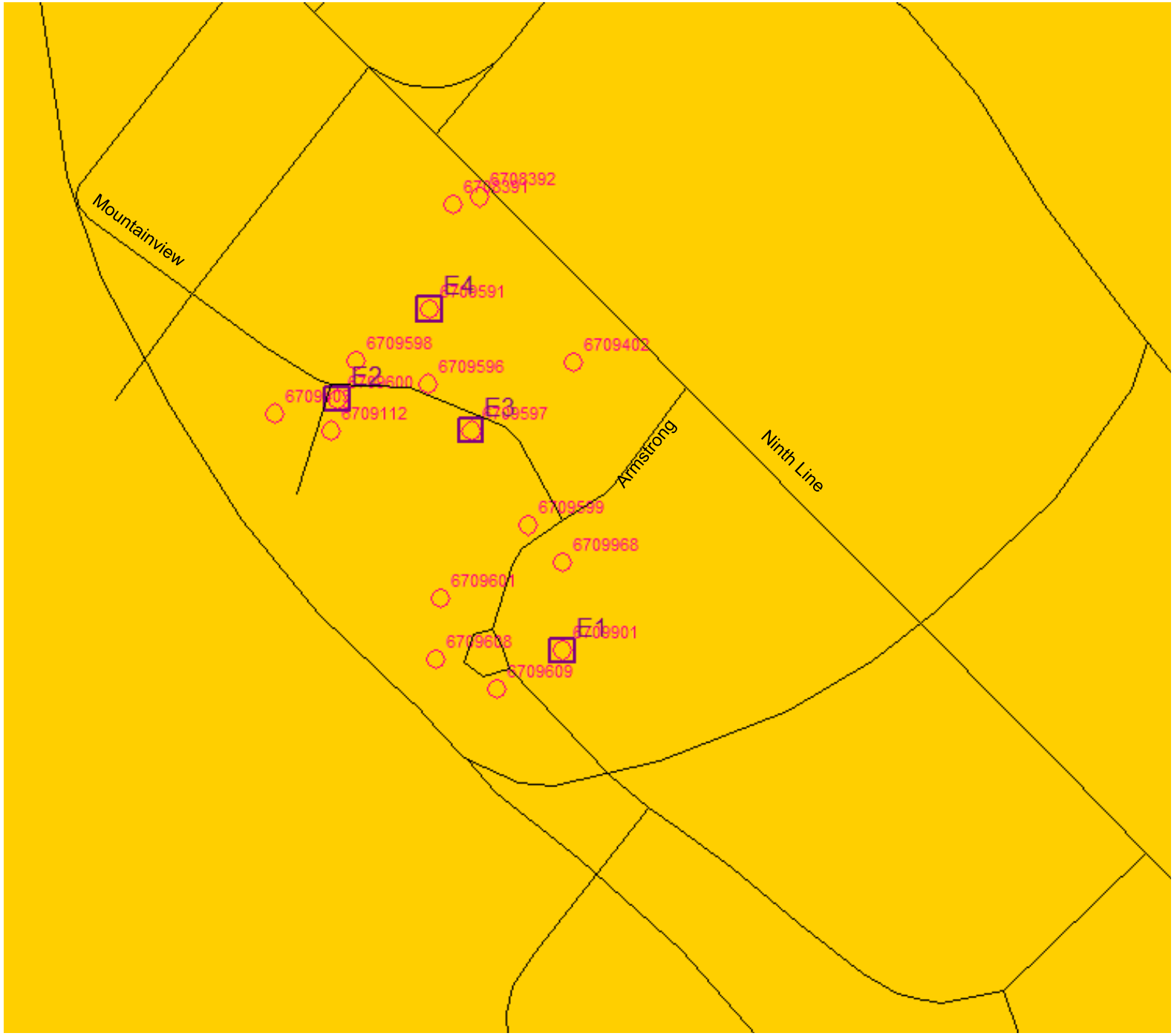
Project No: 2366
Date: Mar 2024
Drawn By: SD

Multiaquifer Wells and Transport Pathways Study

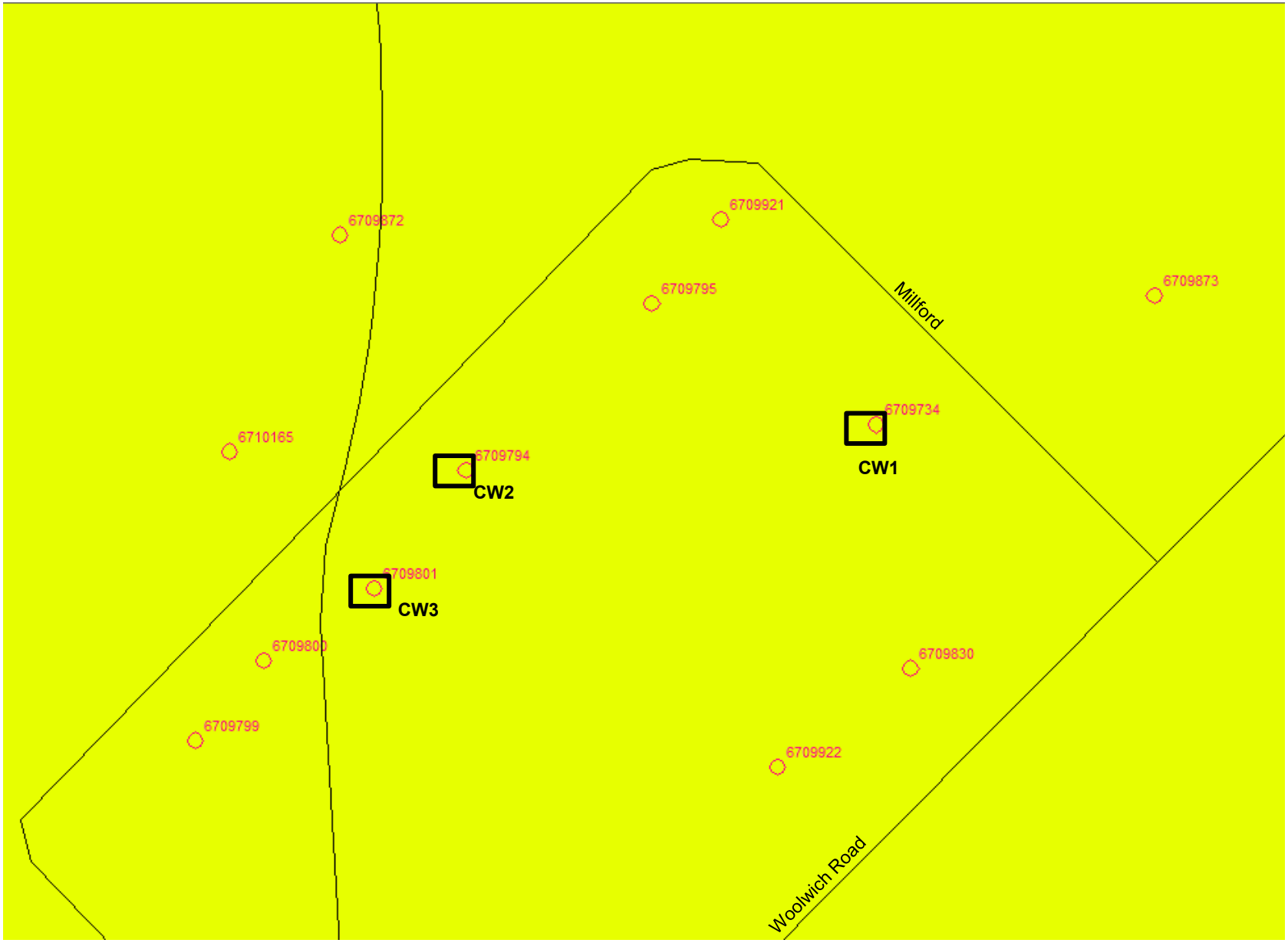
County of Wellington

Figure 14:

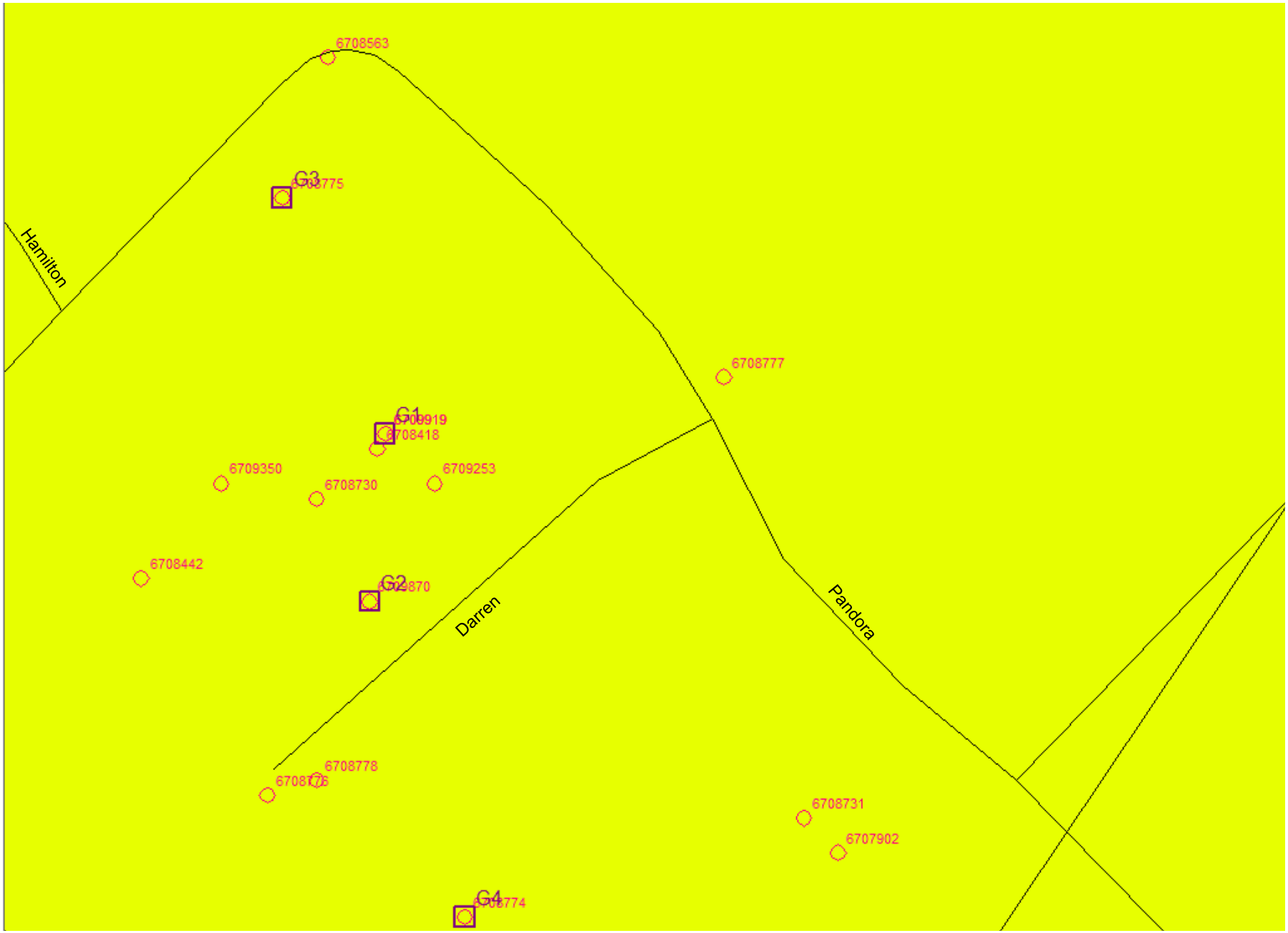
Mount Forest Well Supply



Harden Environmental Services Ltd.	**Project No:** 2366	Multiaquifer Wells and Transport Pathways Study	**Figure 15: Bel-Erin Clusters**
	Date: Aug 2024	County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 2366	Multiaquifer Wells and Transport Pathways Study	**Figure 16: Centre Wellington Clusters (Elora 1)**
	Date: Aug 2024	County of Wellington	
	Drawn By: SD		



Harden Environmental Services Ltd.	**Project No:** 2366	Multiaquifer Wells and Transport Pathways Study	**Figure 17: Emma Well Clusters**
	Date: Aug 2024		
	Drawn By: SD	County of Wellington	

Appendix A

Multiaquifer Wells Identified within Wellington County WHPAs

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6713932	10523064	Cambridge	25 Municipal Wells	B	8/31/01	558,377	4,807,164	73.2	1.5	313.2	281	261	240	margin of error : 10 - 30 m	
6706546	10470622	Cambridge	25 Municipal Wells	C	10/26/77	558,434	4,808,923	85.3	2.4	307.3	281	271	244	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6707041	10471107	Cambridge	25 Municipal Wells	C	8/22/79	559,934	4,805,043	74.7	2.4	306.1	276	251	236	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
7039944	11762260	Cambridge	25 Municipal Wells	C	6/27/06	559,286	4,806,058	126.5		310.2	280	254	238	margin of error : 10 - 30 m	from gps
7040112	11762625	Cambridge	25 Municipal Wells	C	6/06/06	559,589	4,804,174	121.0		304.4	272	248	233	margin of error : 10 - 30 m	from gps
7120897	1002034162	Cambridge	25 Municipal Wells	C	8/25/08	559,846	4,806,374	119.0	6.2	310.7	271	257	239	margin of error : 10 - 30 m	on Water Well Record
7417606	1009030790	Cambridge	25 Municipal Wells	C	4/06/22	558,315	4,808,939	112.8		305.4	282	272	244	margin of error : 30 m - 100 m	on Water Well Record
6711827	10475660	Cambridge	25 Municipal Wells	D	9/21/95	562,185	4,810,539	64.0	10.4	319.6	290	284	263	margin of error : 10 - 30 m	
6713810	10522942	Cambridge	25 Municipal Wells	D	8/21/01	562,344	4,809,905	81.7	16.8	325.6	297	280	261	UTM very unreliable	Lot centroid
6714368	10542213	Cambridge	25 Municipal Wells	D	12/06/02	561,536	4,809,718	56.4	10.7	313.1	283	279	258	Approximate location: margin of error : 1 km - 3 km	Lot centroid
6715728	11558249	Cambridge	25 Municipal Wells	D	3/20/06	561,409	4,811,031	73.2	8.9	317.3	292	286	263	margin of error : 10 - 30 m	on Water Well Record
6716019	11695801	Cambridge	25 Municipal Wells	D	11/21/06	561,871	4,810,631	67.1	13.7	320.0	290	285	262	margin of error : 10 - 30 m	on Water Well Record
7126162	1002557853	Cambridge	25 Municipal Wells	D	6/05/09	560,866	4,810,649	97.5		322.2	294	284	259	margin of error : 10 - 30 m	on Water Well Record
7336473	1007499698	Cambridge	25 Municipal Wells	D	5/21/19	561,358	4,810,856	62.2	4.0	318.7	293	285	262	margin of error : 30 m - 100 m	on Water Well Record
7417607	1009030793	Cambridge	25 Municipal Wells	D	2/23/22	560,857	4,808,508	122.2		316.8	282	270	250	margin of error : 30 m - 100 m	on Water Well Record
6703347	10467489	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	4/23/69	561,994	4,813,073	54.9	3.0	325.6	293	297	274	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703732	10467866	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	8/25/70	563,514	4,813,103	50.9	7.6	329.1	296	296	281	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703867	10467997	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	11/25/70	564,054	4,813,543	57.9	9.1	336.2	299	296	284	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704421	10468529	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	11/17/72	563,154	4,814,143	74.4	32.0	338.9	303	300	283	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705550	10469641	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	6/10/75	563,505	4,813,454	39.0	8.8	295.2	264	298	282	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6712167	10476000	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	12/04/96	563,595	4,814,224	54.9	30.5	339.5	305	301	286	margin of error : 10 - 30 m	
6712931	10476764	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	2/25/99	562,189	4,813,949	67.1	29.0	333.0	303	300	277	margin of error : 10 - 30 m	
6713564	10477397	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	11/14/00	564,078	4,814,538	54.9	15.5	340.6	300	301	289	margin of error : 10 - 30 m	
6714646	10548197	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	10/08/03	564,319	4,814,547	61.0	15.8	339.5	298	300	290	UTM very unreliable	Lot centroid
7116236	1001908509	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	11/09/08	562,617	4,813,694	79.2	26.2	340.0	310	300	280	margin of error : 10 - 30 m	on Water Well Record
7121859	1002415976	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	7/21/08	563,190	4,812,531	105.5	12.9	332.7	301	294	277	margin of error : 10 - 30 m	on Water Well Record
7137880	1002919942	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	8/31/09	561,342	4,813,878	82.0		327.9	300	298	270	margin of error : 30 m - 100 m	on Water Well Record
7216349	1004708735	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	12/04/13	563,316	4,813,351	41.8	1.5	285.5	256	298	281	margin of error : 30 m - 100 m	on Water Well Record
7370853	1008476258	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	8/13/20	561,304	4,813,870	78.3	25.8	327.7	299	298	270	margin of error : 30 m - 100 m	on Water Well Record
7417706	1009030230	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge C Guelph	4/27/22	561,342	4,813,878	86.9		327.9	300	298	270	margin of error : 30 m - 100 m	on Water Well Record
6702371	10466515	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	2/06/62	565,016	4,814,062	70.1	18.3	338.8	303	298	286	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703142	10467284	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	6/19/68	563,174	4,811,863	73.8	29.9	328.7	292	291	273	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703187	10467329	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	7/31/68	564,704	4,814,103	57.9	21.0	343.9	303	296	287	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703262	10467404	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	10/17/68	564,614	4,811,483	57.0	19.8	328.6	296	289	274	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703590	10467725	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	10/24/69	560,804	4,812,643	65.2	9.1	320.9	284	294	265	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703600	10467735	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	1/25/70	564,314	4,813,613	55.8	9.1	340.5	300	295	285	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703900	10468029	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	3/26/71	565,184	4,812,413	59.4	22.9	334.8	297	292	279	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704034	10468156	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	3/29/71	565,094	4,812,673	59.4	22.6	337.9	303	293	280	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704249	10468362	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	6/03/72	564,514	4,814,283	65.2	21.9	350.1	299	297	288	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705967	10470049	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	1/16/76	564,764	4,813,647	61.0	17.1	337.5	298	295	284	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706156	10470236	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	8/09/76	565,814	4,813,543	51.8	11.3	334.6	297	299	284	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706453	10470531	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	7/15/77	565,154	4,812,463	59.4	25.9	335.7	299	293	279	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6708005	10471969	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	8/05/82	564,534	4,814,223	74.4	29.0	349.1	301	296	288	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6711465	10475298	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	8/02/94	562,068	4,811,221	62.5	12.8	319.9	298	288	266	margin of error : 10 - 30 m	from gps
6713118	10476951	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	8/18/99	564,134	4,812,471	62.5	25.6	334.8	300	293	278	UTM very unreliable	Lot centroid
6713754	10522888	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	5/31/01	563,220	4,811,100	80.8	13.4	330.1	297	287	269	margin of error : 10 - 30 m	
6714096	10528631	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	5/16/02	560,869	4,812,656	67.1	17.4	321.8	288	295	266	margin of error : 10 - 30 m	
6715386	11327172	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	6/20/05	564,772	4,813,788	54.9	12.5	336.5	296	296	285	margin of error : 30 m - 100 m	on Water Well Record
7113226	1001837720	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	8/27/08	561,500	4,811,662	60.4	13.6	317.4	299	290	266	margin of error : 10 - 30 m	on Water Well Record
7214834	1004686990	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	10/01/13	563,018	4,811,774	71.9	25.2	330.5	296	290	272	margin of error : 30 m - 100 m	on Water Well Record
7255344	1005854829	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	11/26/15	561,627	4,811,842	68.6	14.7	318.5	296	291	267	margin of error : 30 m - 100 m	on Water Well Record
7312247	1007093285	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	5/23/18	563,312	4,811,449	230.0	64.2	333.6	305	288	271	margin of error : 30 m - 100 m	on Water Well Record
7380288	1008569209	Cambridge & City of Guelph	25 & 21 Municipal Wells	D Cambridge D Guelph	2/03/21	562,984	4,811,224	71.6	26.3	332.9	301	288	269	margin of error : 30 m - 100 m	on Water Well Record
6700836	10464982	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	6/29/45	550,548	4,839,982	76.5	4.9	405.2	404	338	334	margin of error : 100 m - 300 m	Geocoding from address
6704214	10468327	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	3/08/72	549,964	4,840,873	129.5	19.2	426.1	346	336	334	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705562	10469652	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	6/05/75	551,849	4,839,154	100.0	15.2	422.6	408	345	338	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705606	10469696	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	7/25/75	551,814	4,839,073	124.4	16.8	422.6	407	344	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6709834	10473682	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	5/15/89	549,222	4,841,524	122.5	17.7	424.4	399	332	332	margin of error : 10 - 30 m	from gps
6710658	10474502	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	5/15/91	547,129	4,835,855	121.9	6.4	396.7	385	322	317	margin of error : 10 - 30 m	from gps
6715276	11327062	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	6/24/03	550,358	4,839,518	79.5	12.6	405.1	403	337	333	margin of error : 30 m - 100 m	on Water Well Record
6715314	11327100	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	A	3/09/05	548,185	4,839,691	138.7		423.0	403	323	326	margin of error : 30 m - 100 m	on Water Well Record
6702132	10466277	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	12/18/62	544,661	4,835,416	97.5	0.3	374.3	374	305	305	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700132	10464280	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	1/15/48	545,716	4,837,335	129.8	12.5	397.0	393	331	314	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700837	10464983	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	4/01/65	550,284	4,839,414	110.0	14.6	405.7	401	337	333	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706476	10470554	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	5/30/77	544,814	4,836,073	88.4	2.7	378.5	377	315	307	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6708324	10472233	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	10/24/85	544,382	4,835,009	93.9	6.1	371.7	372	300	302	margin of error : 10 - 30 m	from gps
6709874	10473722	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	7/20/89	545,736	4,834,530	79.2	14.3	385.1	357	308	307	margin of error : 10 - 30 m	from gps
6710089	10473936	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	10/25/89	550,855	4,840,213	73.5	29.9	409.4	398	340	336	margin of error : 10 - 30 m	from gps
6710176	10474023	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	12/06/89	548,686	4,839,945	97.8	24.4	420.6	399	326	328	margin of error : 10 - 30 m	from gps
6710243	10474090	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	9/01/89	544,833	4,834,517	96.0	14.3	384.0	354	302	303	margin of error : 10 - 30 m	from gps
6710822	10474663	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	6/06/91	551,356	4,840,277	77.7	9.1	405.7	402	343	337	margin of error : 100 m - 300 m	from gps
6710877	10474718	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	7/08/91	548,839	4,840,204	96.0	25.3	422.2	396	327	329	margin of error : 10 - 30 m	from gps
6710884	10474725	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	11/19/91	545,826	4,837,701	96.0	28.3	408.3	392	330	315	margin of error : 10 - 30 m	from gps

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6711091	10474932	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	12/11/91	550,218	4,840,629	108.2	27.1	424.9	398	337	334	margin of error : 10 - 30 m	from gps
6711365	10475199	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	11/24/93	549,927	4,842,641	117.3	10.7	425.5	400	337	336	margin of error : 10 - 30 m	from gps
6712890	10476723	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	1/20/99	548,886	4,840,258	96.9	36.0	422.3	368	327	330	margin of error : 10 - 30 m	
6713250	10477083	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	11/11/99	548,449	4,839,464	138.7	13.7	417.7	397	325	327	margin of error : 10 - 30 m	
6716005	11695787	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	9/27/06	548,818	4,840,224	101.2	25.6	422.4	389	327	329	margin of error : 10 - 30 m	on Water Well Record
7167450	1003552363	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	7/08/11	551,704	4,840,325	111.0	6.8	407.5	405	344	338	margin of error : 10 - 30 m	on Water Well Record
7168480	1003561271	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	7/28/11	545,886	4,837,768	152.4		408.6	392	330	315	margin of error : 10 - 30 m	on Water Well Record
7168481	1003561273	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	8/18/11	548,913	4,841,861	149.4		423.1	401	331	332	margin of error : 10 - 30 m	on Water Well Record
7169495	1003576322	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	9/23/11	552,084	4,839,360	143.3		421.9	405	346	338	margin of error : 30 m - 100 m	on Water Well Record
7195811	1004242527	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	8/15/12	549,861	4,841,490	150.9		429.3	399	336	334	margin of error : 30 m - 100 m	on Water Well Record
7195813	1004242533	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	7/10/12	547,736	4,840,141	150.9		420.8	398	321	326	margin of error : 30 m - 100 m	on Water Well Record
7195815	1004242539	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	6/20/12	547,461	4,836,261	179.8		405.8	388	325	319	margin of error : 30 m - 100 m	on Water Well Record
7224329	1004955830	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	5/19/14	551,212	4,840,222	77.7	9.1	404.6	402	342	337	margin of error : 30 m - 100 m	on Water Well Record
7327045	1007358387	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	1/11/19	545,132	4,837,646	110.9	12.2	408.1	405	325	312	margin of error : 30 m - 100 m	on Water Well Record
7405014	1008871917	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	10/14/21	550,345	4,839,658	86.4		406.3	406	337	333	margin of error : 30 m - 100 m	on Water Well Record
7405015	1008871920	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	B	10/14/21	550,349	4,839,658	116.0		406.1	406	337	333	margin of error : 30 m - 100 m	on Water Well Record
6702167	10466312	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	6/12/64	544,247	4,835,257	103.6		374.3	374	302	303	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6702898	10467041	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	6/09/65	548,984	4,843,580	89.9		423.7	397	335	334	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6709077	10472950	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	9/25/87	551,342	4,840,824	114.3	19.8	418.7	400	343	338	margin of error : 10 - 30 m	from gps
6709078	10472951	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	9/28/87	551,122	4,840,596	101.2	29.6	415.0	392	342	337	margin of error : 10 - 30 m	from gps
6709079	10472952	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	8/17/87	551,234	4,840,609	89.9	24.4	414.5	395	342	337	margin of error : 10 - 30 m	from gps
6709080	10472953	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	8/11/87	551,174	4,840,652	89.9	28.0	415.9	393	342	337	margin of error : 10 - 30 m	from gps
6709082	10472955	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	8/13/87	551,348	4,840,725	121.9	19.8	415.7	398	343	338	margin of error : 10 - 30 m	from gps
6709083	10472956	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	6/18/87	551,281	4,840,773	126.5	22.9	418.1	397	342	337	margin of error : 10 - 30 m	from gps
6709841	10473689	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	7/04/89	548,967	4,840,317	103.6	29.6	422.0	354	328	330	margin of error : 10 - 30 m	from gps
6710029	10473877	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	10/27/89	551,008	4,840,469	90.8	34.1	414.3	399	341	336	margin of error : 10 - 30 m	from gps
6710780	10474621	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	10/22/91	548,947	4,840,292	93.0	15.2	422.1	348	328	330	margin of error : 10 - 30 m	from gps
6711090	10474931	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	12/06/92	551,035	4,840,672	85.3	29.6	417.2	395	341	337	margin of error : 10 - 30 m	from gps
6711309	10475143	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	9/15/93	548,519	4,837,255	87.2	18.3	404.9	404	333	324	margin of error : 10 - 30 m	from gps
6711530	10475363	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	6/18/94	545,036	4,836,729	134.1		394.6	380	323	310	margin of error : 10 - 30 m	from gps
6711828	10475661	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	9/26/95	551,110	4,841,039	103.6	26.5	424.5	403	342	337	margin of error : 10 - 30 m	
6712467	10476300	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	12/24/97	551,299	4,840,922	85.3	25.9	421.8	399	343	338	margin of error : 10 - 30 m	
6712523	10476356	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	4/06/98	551,252	4,840,843	103.6	25.9	419.2	398	342	337	margin of error : 10 - 30 m	
6712538	10476371	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	5/14/98	551,422	4,841,955	143.6	21.3	424.9	404	344	339	UTM very unreliable	Lot centroid
6712546	10476379	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	5/07/98	551,020	4,840,983	103.6	30.8	422.6	405	341	337	margin of error : 10 - 30 m	
6713939	10523071	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	11/15/01	551,755	4,840,789	93.0	14.3	415.6	402	345	339	margin of error : 10 - 30 m	
6714146	10536354	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	6/18/02	551,508	4,840,122	106.7	6.7	407.2	407	343	338	UTM very unreliable	Lot centroid
6715122	11179758	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	10/14/04	551,773	4,840,790	90.5	13.1	415.6	404	345	339	margin of error : 10 - 30 m	on Water Well Record
7204364	1004402008	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	5/02/13	551,499	4,841,236	112.8	25.3	427.6	401	344	339	margin of error : 30 m - 100 m	on Water Well Record
7219238	1004731811	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	2/28/14	543,924	4,837,491	129.2	9.8	403.8	394	317	308	margin of error : 30 m - 100 m	on Water Well Record
7248373	1005692621	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	8/17/15	544,326	4,837,525	158.5	14.3	410.1	405	319	309	margin of error : 30 m - 100 m	on Water Well Record
7285260	1006381741	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	C	12/13/16	551,523	4,841,180	108.2	26.2	426.4	400	344	339	margin of error : 30 m - 100 m	on Water Well Record
6701780	10465925	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	11/01/48	550,807	4,837,850	128.9	12.2	412.5	404	341	333	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6703788	10467919	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	10/08/70	546,994	4,837,293	76.2	4.0	390.1	390	331	319	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704749	10468856	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	8/11/73	549,044	4,837,753	80.8	13.7	398.4	393	333	327	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704750	10468857	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	8/24/73	549,074	4,837,723	88.4	13.7	398.0	392	333	327	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705544	10469635	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	11/13/74	547,064	4,837,773	99.1	9.1	389.1	389	331	320	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705839	10469923	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	11/25/75	547,164	4,837,823	88.4	5.5	391.5	388	331	320	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706408	10470486	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	5/18/77	551,514	4,843,823	108.5	19.8	432.1	405	345	341	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6712498	10476331	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	3/20/98	550,958	4,837,453	128.0	4.9	409.6	401	342	333	margin of error : 10 - 30 m	
6712574	10476407	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	6/03/98	547,570	4,843,955	103.6	9.1	427.6	403	333	331	UTM very unreliable	Lot centroid
6713016	10476849	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	6/24/99	550,894	4,844,259	94.5	13.7	433.0	401	345	341	UTM very unreliable	Lot centroid
6713606	10477439	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	11/13/00	551,857	4,841,520	92.0	24.7	428.3	404	345	340	UTM very unreliable	Lot centroid
6714561	10548112	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	7/24/03	551,856	4,841,520	103.6	19.2	428.3	404	345	340	UTM very unreliable	Lot centroid
7333368	1007457568	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	5/09/19	549,076	4,837,693	72.2	11.5	397.7	394	333	327	margin of error : 30 m - 100 m	on Water Well Record
7333700	1007465699	Centre Wellington	E1 E3 E4 F1 F2 F4 to F7	D	5/07/19	552,920	4,843,690	107.0	22.0	432.3	405	352	345	margin of error : 30 m - 100 m	on Water Well Record
6701133	10465278	City of Guelph	21 Municipal Wells	A	8/11/66	560,342	4,825,826	59.4	22.9	347.5	337	329	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706180	10470260	City of Guelph	21 Municipal Wells	A	6/25/76	554,574	4,819,923	91.4	0.0	341.5	326	315	300	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706298	10470378	City of Guelph	21 Municipal Wells	A	9/17/76	554,602	4,819,900	64.0		341.0	326	315	299	margin of error : 10 - 30 m	from gps
6701246	10465391	City of Guelph	21 Municipal Wells	B	2/02/54	558,144	4,824,234	46.3	9.1	345.2	330	318	299	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701251	10465396	City of Guelph	21 Municipal Wells	B	1/05/62	557,978	4,825,206	64.6	15.2	344.3	316	326	302	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701252	10465397	City of Guelph	21 Municipal Wells	B	6/26/63	557,710	4,825,049	39.9	4.9	339.4	316	325	301	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701253	10465398	City of Guelph	21 Municipal Wells	B	10/23/67	557,986	4,825,351	56.4	23.2	346.1	314	328	303	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701256	10465401	City of Guelph	21 Municipal Wells	B	10/30/64	557,969	4,825,552	54.9	21.9	350.0	326	329	304	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701257	10465402	City of Guelph	21 Municipal Wells	B	1/09/65	557,811	4,825,429	59.1	12.2	348.7	325	329	303	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701306	10465451	City of Guelph	21 Municipal Wells	B	5/20/55	557,641	4,824,488	61.0	19.5	348.8	320	317	298	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701352	10465497	City of Guelph	21 Municipal Wells	B	11/12/51	554,399	4,821,959	57.3	10.1	346.5	326	320	308	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701401	10465546	City of Guelph	21 Municipal Wells	B	7/12/54	559,113	4,818,156	43.0	7.3	321.1	315	305	283	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701403	10465548	City of Guelph	21 Municipal Wells	B	11/03/61	558,941	4,818,374	42.4	12.2	321.9	309	308	284	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701404	10465549	City of Guelph	21 Municipal Wells	B	1/12/62	558,971	4,818,339	42.7	12.2	321.3	307	307	284	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6702390	10466534	City of Guelph	21 Municipal Wells	B	12/23/65	561,919	4,815,850	65.5	19.8	332.6	305	302	281	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6702718	10466861	City of Guelph	21 Municipal Wells	B	6/11/64	565,974	4,819,728	39.6	9.1	335.5	326	319	296	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6702721	10466864	City of Guelph	21 Municipal Wells	B	11/10/65	565,974	4,819,723	39.6	8.8	335.5	326	319	296	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6702722	10466865	City of Guelph	21 Municipal Wells	B	8/01/51	566,114	4,819,573	41.5	4.9	336.2	326	319	296	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703084	10467226	City of Guelph	21 Municipal Wells	B	3/22/68	559,084	4,818,373	43.6	10.7	317.5	309	306	283	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703144	10467286	City of Guelph	21 Municipal Wells	B	7/08/68	554,364	4,821,923	69.5	11.3	346.5	325	320	307	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700902	10465048	City of Guelph	21 Municipal Wells	B	5/19/67	557,996	4,825,391	57.0	23.5	346.6	315	328	303	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700956	10465102	City of Guelph	21 Municipal Wells	B	5/24/66	555,038	4,821,085	108.5	4.3	343.6	332	320	315	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701112	10465257	City of Guelph	21 Municipal Wells	B	7/12/66	563,989	4,826,623	74.4	0.0	346.2	329	323	317	margin of error : 10 - 30 m	from gps
6701113	10465258	City of Guelph	21 Municipal Wells	B	6/15/66	563,789	4,826,394	37.5	0.3	349.3	347	323	315	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701139	10465284	City of Guelph	21 Municipal Wells	B	5/27/55	560,932	4,825,699	45.4	14.6	353.8	329	329	311	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701150	10465295	City of Guelph	21 Municipal Wells	B	6/11/57	561,042	4,825,598	51.5	11.9	357.8	331	329	310	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701151	10465296	City of Guelph	21 Municipal Wells	B	6/05/58	560,972	4,825,626	45.1	12.2	355.4	332	329	311	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701160	10465305	City of Guelph	21 Municipal Wells	B	10/14/60	561,061	4,825,490	45.7	10.7	354.9	333	329	310	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701195	10465340	City of Guelph	21 Municipal Wells	B	5/10/66	560,950	4,826,671	43.6	16.2	350.1	340	326	317	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701199	10465344	City of Guelph	21 Municipal Wells	B	10/07/65	560,714	4,826,719	32.0	12.2	348.2	345	325	317	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701211	10465356	City of Guelph	21 Municipal Wells	B	9/03/64	559,189	4,827,521	56.1	18.6	355.3	338	334	318	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701212	10465357	City of Guelph	21 Municipal Wells	B	1/19/56	560,275	4,827,975	49.1	18.3	357.9	318	323	320	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6703451	10467592	City of Guelph	21 Municipal Wells	B	8/01/69	556,224	4,817,733	57.9	7.0	332.7	322	320	278	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703587	10467722	City of Guelph	21 Municipal Wells	B	10/31/69	557,834	4,825,373	46.3	13.7	347.4	329	329	302	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703860	10467990	City of Guelph	21 Municipal Wells	B	12/22/70	558,034	4,825,523	60.0	17.1	348.5	324	329	304	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703922	10468050	City of Guelph	21 Municipal Wells	B	3/11/71	557,964	4,825,273	48.8	13.7	344.6	318	327	302	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704155	10468268	City of Guelph	21 Municipal Wells	B	7/05/71	557,979	4,825,453	56.4	21.9	347.8	316	329	303	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704684	10468791	City of Guelph	21 Municipal Wells	B	6/16/73	558,054	4,825,543	54.6	18.3	348.6	327	329	304	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704899	10469003	City of Guelph	21 Municipal Wells	B	12/31/73	559,154	4,818,283	39.0	3.0	316.5	316	304	283	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704947	10469050	City of Guelph	21 Municipal Wells	B	8/24/73	555,216	4,819,224	41.1	4.0	326.0	315	318	288	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705226	10469321	City of Guelph	21 Municipal Wells	B	7/08/74	565,500	4,819,732	40.2	10.7	334.4	320	317	295	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705445	10469538	City of Guelph	21 Municipal Wells	B	1/10/75	554,446	4,821,679	47.5	7.6	344.4	320	320	310	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705456	10469549	City of Guelph	21 Municipal Wells	B	11/20/74	554,754	4,821,723	86.9	18.3	347.0	345	321	313	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705655	10469744	City of Guelph	21 Municipal Wells	B	8/15/75	560,894	4,825,403	59.7	28.0	351.4	336	329	310	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705845	10469929	City of Guelph	21 Municipal Wells	B	12/24/75	559,194	4,818,143	41.1	13.7	318.8	315	304	282	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706232	10470312	City of Guelph	21 Municipal Wells	B	10/27/76	556,914	4,818,483	51.5	4.9	334.3	324	318	283	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706277	10470357	City of Guelph	21 Municipal Wells	B	10/28/76	559,094	4,818,643	48.5		316.1	315	309	284	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706451	10470529	City of Guelph	21 Municipal Wells	B	7/07/77	563,314	4,826,173	45.1	10.7	349.7	332	323	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706585	10470661	City of Guelph	21 Municipal Wells	B	5/28/77	558,064	4,824,323	68.6		348.7	329	318	299	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707014	10471080	City of Guelph	21 Municipal Wells	B	7/18/79	559,014	4,818,423	40.5	9.1	319.4	308	307	284	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707182	10471244	City of Guelph	21 Municipal Wells	B	5/17/79	566,114	4,819,573	77.4	9.4	336.2	326	319	296	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707636	10471673	City of Guelph	21 Municipal Wells	B	7/11/81	566,234	4,819,543	71.6	7.9	336.8	326	319	296	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6708024	10471978	City of Guelph	21 Municipal Wells	B	6/30/83	557,874	4,824,923	43.3	6.1	340.7	324	323	300	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6708325	10472234	City of Guelph	21 Municipal Wells	B	12/05/85	563,238	4,825,732	54.3	13.4	353.2	323	319	309	margin of error : 10 - 30 m	from gps
6708860	10472749	City of Guelph	21 Municipal Wells	B	6/05/87	564,956	4,820,245	54.3	9.8	336.8	317	317	294	margin of error : 10 - 30 m	from gps
6709383	10473236	City of Guelph	21 Municipal Wells	B	7/26/88	565,185	4,820,463	74.7	3.7	332.6	321	317	293	margin of error : 10 - 30 m	from gps
6709747	10473595	City of Guelph	21 Municipal Wells	B	4/26/89	560,994	4,826,670	74.7	16.5	350.7	334	326	317	margin of error : 10 - 30 m	from gps
6710076	10473923	City of Guelph	21 Municipal Wells	B	10/20/89	556,243	4,817,787	59.4	8.5	333.0	321	321	279	margin of error : 10 - 30 m	from gps
6710194	10474041	City of Guelph	21 Municipal Wells	B	1/23/90	558,134	4,825,717	99.1	18.3	350.5	332	330	305	margin of error : 100 m - 300 m	from gps
6710379	10474224	City of Guelph	21 Municipal Wells	B	6/22/90	557,739	4,817,806	50.6	13.7	326.1	315	316	282	UTM very unreliable	Lot centroid
6710610	10474455	City of Guelph	21 Municipal Wells	B	3/26/91	560,590	4,816,352	36.6	0.9	306.2	288	302	277	margin of error : 10 - 30 m	from gps
6711082	10474923	City of Guelph	21 Municipal Wells	B	12/17/92	559,285	4,818,453	50.0		311.1	289	301	283	margin of error : 10 - 30 m	from gps
6711742	10475575	City of Guelph	21 Municipal Wells	B	6/16/95	554,216	4,819,476	54.9	17.4	337.1	320	314	294	margin of error : 10 - 30 m	from gps
6711951	10475784	City of Guelph	21 Municipal Wells	B	10/25/95	558,106	4,824,183	48.8		345.2	327	318	299	margin of error : 10 - 30 m	from gps
6712325	10476158	City of Guelph	21 Municipal Wells	B	8/01/97	557,814	4,825,025	43.0	4.3	340.4	321	325	301	margin of error : 10 - 30 m	from gps
6712693	10476526	City of Guelph	21 Municipal Wells	B	9/10/98	557,832	4,825,272	43.0	15.2	344.4	326	328	302	margin of error : 10 - 30 m	
6712728	10476561	City of Guelph	21 Municipal Wells	B	10/19/98	555,254	4,821,697	73.2	8.8	348.9	344	325	318	UTM very unreliable	Lot centroid
6712962	10476795	City of Guelph	21 Municipal Wells	B	5/20/99	565,065	4,820,338	42.7	9.8	335.4	319	317	293	margin of error : 10 - 30 m	
6713347	10477180	City of Guelph	21 Municipal Wells	B	5/27/00	567,258	4,819,353	55.5	5.5	346.5	320	320	296	UTM very unreliable	Lot centroid
6713366	10477199	City of Guelph	21 Municipal Wells	B	6/14/00	562,327	4,814,170	55.5	10.4	332.7	304	300	278	UTM very unreliable	Lot centroid
6713422	10477255	City of Guelph	21 Municipal Wells	B	5/05/99	567,255	4,819,351	55.5	8.5	346.2	320	320	296	UTM very unreliable	Lot centroid
6713703	10477536	City of Guelph	21 Municipal Wells	B	5/30/01	554,485	4,821,866	70.1	15.2	345.5	327	320	309	margin of error : 10 - 30 m	
6715060	11179697	City of Guelph	21 Municipal Wells	B	3/12/04	558,593	4,826,401	30.8		337.0	335	328	310	margin of error : 10 - 30 m	on Water Well Record
6715178	11179814	City of Guelph	21 Municipal Wells	B	9/08/04	560,864	4,826,591	42.7	21.0	346.1	339	326	316	margin of error : 10 - 30 m	on Water Well Record
6715296	11327082	City of Guelph	21 Municipal Wells	B	3/11/05	555,594	4,823,264	51.8	7.3	344.7	334	327	295	margin of error : 30 m - 100 m	on Water Well Record
7044539	11766882	City of Guelph	21 Municipal Wells	B	4/19/07	563,299	4,826,047	67.1		346.3	329	322	311	margin of error : 10 - 30 m	on Water Well Record
7044540	11766883	City of Guelph	21 Municipal Wells	B	4/19/07	563,299	4,826,047	41.3		346.3	329	322	311	margin of error : 10 - 30 m	on Water Well Record
7121858	1002415973	City of Guelph	21 Municipal Wells	B	7/11/08	560,944	4,826,609	76.2	11.8	347.6	338	326	316	margin of error : 10 - 30 m	on Water Well Record
7165324	1003533986	City of Guelph	21 Municipal Wells	B	6/16/11	560,888	4,825,950	44.2	13.8	345.8	331	329	313	margin of error : 10 - 30 m	on Water Well Record
7172615	1003614310	City of Guelph	21 Municipal Wells	B	8/10/11	559,142	4,818,308	50.6	17.9	316.3	314	304	283	margin of error : 10 - 30 m	on Water Well Record
7218469	1004726231	City of Guelph	21 Municipal Wells	B	1/29/14	557,658	4,825,164	50.6	5.5	339.3	322	327	301	margin of error : 30 m - 100 m	on Water Well Record
7305103	1006981882	City of Guelph	21 Municipal Wells	B	1/23/18	563,847	4,826,274	49.7	5.6	351.9	340	320	314	margin of error : 30 m - 100 m	on Water Well Record
7324954	1007327830	City of Guelph	21 Municipal Wells	B	12/11/18	559,798	4,828,109	66.8	12.0	364.3	331	329	322	margin of error : 30 m - 100 m	on Water Well Record
7405013	1008871914	City of Guelph	21 Municipal Wells	B	11/25/21	555,256	4,819,212	47.2	3.0	326.0	315	319	288	margin of error : 30 m - 100 m	on Water Well Record
7420532	1009069068	City of Guelph	21 Municipal Wells	B	1/08/22	563,863	4,826,410	74.4		348.8	340	322	315	margin of error : 30 m - 100 m	on Water Well Record
6701218	10465363	City of Guelph	21 Municipal Wells	C	5/07/63	559,869	4,828,323	64.6	15.2	368.4	330	329	323	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701262	10465407	City of Guelph	21 Municipal Wells	C	7/30/56	557,454	4,825,716	65.2	12.2	356.8	339	335	303	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701342	10465487	City of Guelph	21 Municipal Wells	C	2/15/53	555,898	4,823,120	91.1	2.4	344.1	333	329	297	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701353	10465498	City of Guelph	21 Municipal Wells	C	12/31/65	554,161	4,822,128	46.0	9.1	350.0	324	320	304	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703085	10467227	City of Guelph	21 Municipal Wells	C	8/01/68	557,464	4,825,723	61.3	18.3	356.9	333	335	303	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6703087	10467229	City of Guelph	21 Municipal Wells	C	7/04/68	557,444	4,825,623	60.4	8.2	354.7	344	334	302	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703264	10467406	City of Guelph	21 Municipal Wells	C	9/24/68	559,114	4,817,043	61.0	12.2	326.3	313	304	281	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700157	10464305	City of Guelph	21 Municipal Wells	C	10/11/63	563,065	4,828,083	44.5	18.3	356.2	329	337	321	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700158	10464306	City of Guelph	21 Municipal Wells	C	4/04/64	562,876	4,828,246	42.4	15.2	362.9	335	338	321	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700160	10464308	City of Guelph	21 Municipal Wells	C	10/14/59	562,453	4,828,671	32.0	9.1	352.2	329	337	323	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700957	10465103	City of Guelph	21 Municipal Wells	C	11/07/63	553,611	4,822,267	59.7	9.8	346.0	306	318	299	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701114	10465259	City of Guelph	21 Municipal Wells	C	6/22/66	564,223	4,826,882	36.6	0.9	344.8	337	319	318	margin of error : 10 - 30 m	from gps
6701126	10465271	City of Guelph	21 Municipal Wells	C	8/29/66	563,232	4,826,094	57.9	1.2	346.1	333	324	311	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701127	10465272	City of Guelph	21 Municipal Wells	C	12/05/66	563,212	4,826,098	67.4	1.2	345.8	331	324	311	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701190	10465335	City of Guelph	21 Municipal Wells	C	6/01/49	561,099	4,826,530	29.9	3.0	345.2	335	327	316	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701191	10465336	City of Guelph	21 Municipal Wells	C	1/13/64	561,631	4,827,055	62.2	14.6	357.3	332	329	318	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701201	10465346	City of Guelph	21 Municipal Wells	C	3/19/64	561,353	4,826,899	39.6	15.2	353.5	335	327	317	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701210	10465355	City of Guelph	21 Municipal Wells	C	8/17/61	558,914	4,827,239	34.1	7.6	346.0	332	334	316	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703306	10467448	City of Guelph	21 Municipal Wells	C	1/16/69	561,294	4,826,823	54.9	15.8	353.0	335	327	317	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703310	10467452	City of Guelph	21 Municipal Wells	C	1/30/69	555,774	4,825,273	68.0	5.5	344.5	336	333	294	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703339	10467481	City of Guelph	21 Municipal Wells	C	3/06/69	557,014	4,825,343	54.9	12.8	342.6	322	332	299	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703585	10467720	City of Guelph	21 Municipal Wells	C	8/27/69	562,834	4,826,873	42.7	8.5	346.1	325	330	315	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703877	10468007	City of Guelph	21 Municipal Wells	C	1/18/71	561,084	4,826,713	48.2	13.7	354.5	335	326	317	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703884	10468014	City of Guelph	21 Municipal Wells	C	2/11/71	559,154	4,827,483	52.4	16.8	355.7	337	334	318	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703974	10468099	City of Guelph	21 Municipal Wells	C	3/26/71	561,364	4,826,963	57.9	19.2	354.4	333	327	317	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704093	10468211	City of Guelph	21 Municipal Wells	C	11/12/71	557,914	4,826,788	61.6	16.8	357.7	326	334	310	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704307	10468419	City of Guelph	21 Municipal Wells	C	4/10/72	554,214	4,819,123	48.8	15.2	328.3	282	314	289	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704341	10468452	City of Guelph	21 Municipal Wells	C	9/08/72	562,774	4,825,863	49.4	18.3	357.7	309	322	310	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704489	10468597	City of Guelph	21 Municipal Wells	C	11/24/72	557,554	4,825,883	67.1	7.6	352.8	343	335	304	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704498	10468606	City of Guelph	21 Municipal Wells	C	10/18/72	559,184	4,816,963	49.1	7.3	328.1	313	303	281	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704727	10468834	City of Guelph	21 Municipal Wells	C	7/16/73	555,796	4,825,056	68.9	4.6	346.5	334	332	292	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704965	10469068	City of Guelph	21 Municipal Wells	C	11/27/73	563,233	4,827,079	43.0	13.7	356.2	334	331	317	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705001	10469103	City of Guelph	21 Municipal Wells	C	2/22/74	554,114	4,822,143	47.2	15.8	350.2	324	320	304	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705184	10469282	City of Guelph	21 Municipal Wells	C	7/23/74	564,078	4,827,330	38.1	12.2	349.6	338	327	317	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705389	10469483	City of Guelph	21 Municipal Wells	C	10/17/74	558,114	4,826,463	55.5	7.6	341.8	335	331	309	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705390	10469484	City of Guelph	21 Municipal Wells	C	10/05/74	561,614	4,827,273	41.5	16.8	359.3	334	329	318	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705391	10469485	City of Guelph	21 Municipal Wells	C	9/25/74	561,714	4,827,283	43.9	16.8	360.0	330	330	318	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705394	10469488	City of Guelph	21 Municipal Wells	C	12/06/74	557,834	4,827,083	76.8	22.9	366.6	335	335	312	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705558	10469648	City of Guelph	21 Municipal Wells	C	6/16/75	558,163	4,826,422	45.1	12.5	340.9	325	331	309	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705712	10469801	City of Guelph	21 Municipal Wells	C	9/19/75	557,554	4,825,243	39.3	2.1	338.4	326	328	301	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706197	10470277	City of Guelph	21 Municipal Wells	C	7/08/76	561,864	4,826,073	42.7	25.9	347.3	331	326	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706337	10470416	City of Guelph	21 Municipal Wells	C	9/22/76	554,114	4,823,603	69.2	10.1	347.1	327	321	291	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706375	10470453	City of Guelph	21 Municipal Wells	C	4/20/77	562,414	4,828,823	40.2	20.4	353.2	323	337	324	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706445	10470523	City of Guelph	21 Municipal Wells	C	4/12/77	563,164	4,826,123	47.2	9.1	344.9	326	324	311	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706707	10470779	City of Guelph	21 Municipal Wells	C	5/30/78	563,314	4,827,423	50.3	18.6	360.6	337	335	318	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706755	10470826	City of Guelph	21 Municipal Wells	C	8/01/78	560,564	4,828,723	67.1	14.3	360.0	333	326	323	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706780	10470851	City of Guelph	21 Municipal Wells	C	8/18/78	560,314	4,828,523	85.3	22.9	365.3	335	326	323	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706781	10470852	City of Guelph	21 Municipal Wells	C	8/23/78	560,214	4,828,423	64.0	19.5	366.2	333	327	323	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706814	10470885	City of Guelph	21 Municipal Wells	C	10/03/78	554,214	4,823,003	54.9	13.7	343.7	311	317	297	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706820	10470891	City of Guelph	21 Municipal Wells	C	8/26/78	554,114	4,822,203	83.8	17.1	349.0	325	320	303	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6707012	10471078	City of Guelph	21 Municipal Wells	C	7/09/79	561,514	4,825,823	48.8	6.7	354.5	338	327	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707337	10471389	City of Guelph	21 Municipal Wells	C	9/22/80	558,014	4,826,283	72.8	11.0	344.2	334	332	308	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6707338	10471390	City of Guelph	21 Municipal Wells	C	10/17/80	560,079	4,816,656	35.1	5.5	306.7	304	300	279	margin of error : 10 - 30 m	from gps
6707499	10471542	City of Guelph	21 Municipal Wells	C	9/18/81	557,854	4,827,083	58.8	21.3	367.3	341	335	312	margin of error : 30 m - 100 m	on Water Well Record
6707714	10471743	City of Guelph	21 Municipal Wells	C	10/22/82	556,454	4,816,963	59.4	9.1	332.0	326	319	274	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6707916	10471916	City of Guelph	21 Municipal Wells	C	6/11/84	560,094	4,828,663	88.4	9.1	367.8	341	330	325	margin of error : 30 m - 100 m	on Water Well Record
6707917	10471917	City of Guelph	21 Municipal Wells	C	6/11/84	560,774	4,828,023	79.2	61.0	354.9	308	315	316	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6707918	10471918	City of Guelph	21 Municipal Wells	C	6/11/84	560,534	4,828,243	83.8	14.0	358.8	314	320	319	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6708297	10472207	City of Guelph	21 Municipal Wells	C	5/06/85	559,429	4,828,321	51.8	5.8	367.2	346	334	323	margin of error : 10 - 30 m	from gps
6708441	10472347	City of Guelph	21 Municipal Wells	C	5/12/86	562,773	4,826,660	28.7		342.3	328	329	314	margin of error : 10 - 30 m	from gps
6708547	10472442	City of Guelph	21 Municipal Wells	C	9/23/86	554,042	4,822,093	56.4	10.1	350.0	324	319	304	margin of error : 10 - 30 m	from gps
6708873	10472762	City of Guelph	21 Municipal Wells	C	7/24/87	555,895	4,823,153	48.8	4.6	344.5	332	329	297	margin of error : 10 - 30 m	from gps
6709285	10473142	City of Guelph	21 Municipal Wells	C	7/11/88	561,435	4,826,528	64.0	7.0	343.7	336	327	316	margin of error : 10 - 30 m	from gps
6709304	10473161	City of Guelph	21 Municipal Wells	C	6/30/88	559,074	4,817,063	56.1	8.8	325.6	316	304	281	margin of error : 10 - 30 m	from gps
6709934	10473782	City of Guelph	21 Municipal Wells	C	7/30/89	558,541	4,827,162	47.2	10.4	350.0	336	334	315	margin of error : 10 - 30 m	from gps
6709939	10473787	City of Guelph	21 Municipal Wells	C	8/16/89	554,592	4,823,724	62.5	14.3	347.2	328	322	289	margin of error : 10 - 30 m	from gps
6710018	10473866	City of Guelph	21 Municipal Wells	C	4/01/89	561,705	4,827,195	56.7	13.7	358.9	350	330	318	margin of error : 10 - 30 m	from gps
6710019	10473867	City of Guelph	21 Municipal Wells	C	9/09/89	559,834	4,816,465	60.0	10.7	310.9	306	299	278	margin of error : 10 - 30 m	from gps
6710448	10474293	City of Guelph	21 Municipal Wells	C	9/20/90	561,518	4,829,561	42.1	10.7	363.1	336	330	328	margin of error : 100 m - 300 m	from gps
6710573	10474418	City of Guelph	21 Municipal Wells	C	7/07/90	563,101	4,827,953	54.9	15.5	353.8	333	337	320	margin of error : 10 - 30 m	from gps
6710723	10474565	City of Guelph	21 Municipal Wells	C	8/09/91	553,675	4,823,105	73.2	30.5	341.5	322	319	294	margin of error : 10 - 30 m	from gps
6710949	10474790	City of Guelph	21 Municipal Wells	C	6/30/92	553,621	4,822,752	78.6	7.3	344.5	326	318	297	margin of error : 10 - 30 m	from gps
6710950	10474791	City of Guelph	21 Municipal Wells	C	6/29/92	553,621	4,822,752	79.2	7.9	344.5	326	318	297	margin of error : 10 - 30 m	from gps
6710961	10474802	City of Guelph	21 Municipal Wells	C	7/01/92	554,189	4,822,108	80.8	16.8	349.5	323	320	305	margin of error : 10 - 30 m	from gps
6711089	10474930	City of Guelph	21 Municipal Wells	C	11/10/92	561,213	4,829,506	44.2	12.5	367.4	328	329	326	margin of error : 10 - 30 m	from gps
6711194	10475030	City of Guelph	21 Municipal Wells	C	5/20/93	562,673	4,826,698	37.5	0.3	343.8	325	329	314	margin of error : 10 - 30 m	from gps
6711286	10475120	City of Guelph	21 Municipal Wells	C	9/30/93	561,780	4,826,407	25.9	3.0	340.4	331	327	315	margin of error : 10 - 30 m	from gps
6711538	10475371	City of Guelph	21 Municipal Wells	C	10/04/94	563,860	4,827,380	48.8	23.2	352.1	338	332	317	margin of error : 100 m - 300 m	from gps

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6711540	10475373	City of Guelph	21 Municipal Wells	C	9/20/94	553,748	4,823,032	67.1	10.7	342.6	320	319	296	margin of error : 10 - 30 m	from gps
6711826	10475659	City of Guelph	21 Municipal Wells	C	7/06/95	559,041	4,817,007	97.5	10.4	325.5	313	304	281	margin of error : 10 - 30 m	from gps
6711922	10475755	City of Guelph	21 Municipal Wells	C	2/08/96	553,866	4,822,867	79.2	7.9	344.8	324	318	297	margin of error : 10 - 30 m	from gps
6712090	10475923	City of Guelph	21 Municipal Wells	C	8/30/96	553,915	4,822,863	77.1		344.8	325	318	298	margin of error : 10 - 30 m	from gps
6712091	10475924	City of Guelph	21 Municipal Wells	C	8/29/96	553,941	4,822,897	73.2	9.1	344.5	325	318	297	margin of error : 10 - 30 m	from gps
6712116	10475949	City of Guelph	21 Municipal Wells	C	10/28/96	561,836	4,826,003	48.8	28.3	349.7	330	326	312	margin of error : 10 - 30 m	from gps
6712164	10475997	City of Guelph	21 Municipal Wells	C	12/19/96	553,742	4,822,782	82.9	9.1	344.7	323	318	297	margin of error : 10 - 30 m	from gps
6712187	10476020	City of Guelph	21 Municipal Wells	C	2/06/97	553,921	4,822,933	61.0	9.1	344.1	321	318	297	margin of error : 10 - 30 m	from gps
6712207	10476040	City of Guelph	21 Municipal Wells	C	3/13/97	553,708	4,822,740	79.2	8.2	344.8	324	318	297	margin of error : 10 - 30 m	from gps
6712230	10476063	City of Guelph	21 Municipal Wells	C	4/09/97	553,793	4,822,839	79.2	10.4	344.6	324	318	297	margin of error : 10 - 30 m	from gps
6712278	10476111	City of Guelph	21 Municipal Wells	C	6/17/97	553,717	4,822,692	79.2	8.8	345.0	325	318	297	margin of error : 10 - 30 m	from gps
6712379	10476212	City of Guelph	21 Municipal Wells	C	10/09/97	553,875	4,822,823	59.4	8.5	345.3	325	318	297	margin of error : 10 - 30 m	from gps
6712442	10476275	City of Guelph	21 Municipal Wells	C	12/11/97	562,221	4,827,850	45.7		358.4	333	334	321	margin of error : 10 - 30 m	from gps
6712443	10476276	City of Guelph	21 Municipal Wells	C	2/19/97	562,151	4,827,858	76.2	13.1	355.5	330	334	321	margin of error : 10 - 30 m	from gps
6712444	10476277	City of Guelph	21 Municipal Wells	C	11/27/97	562,170	4,827,851	53.3	14.6	356.3	331	334	321	margin of error : 10 - 30 m	from gps
6712503	10476336	City of Guelph	21 Municipal Wells	C	4/13/98	553,762	4,822,743	79.9	6.1	345.1	325	318	297	margin of error : 10 - 30 m	from gps
6712692	10476525	City of Guelph	21 Municipal Wells	C	9/16/98	561,872	4,826,200	31.1	2.7	342.4	328	327	313	margin of error : 10 - 30 m	
6712734	10476567	City of Guelph	21 Municipal Wells	C	10/07/98	559,295	4,817,689	45.1		325.1	321	304	282	margin of error : 10 - 30 m	
6713032	10476865	City of Guelph	21 Municipal Wells	C	7/16/99	553,866	4,822,856	74.7	6.1	344.9	325	318	297	margin of error : 10 - 30 m	
6713158	10476991	City of Guelph	21 Municipal Wells	C	10/25/99	560,433	4,829,524	37.5	2.1	357.3	335	331	329	UTM very unreliable	Lot centroid
6713283	10477116	City of Guelph	21 Municipal Wells	C	3/28/00	562,055	4,829,202	42.7	9.1	357.5	331	335	327	margin of error : 10 - 30 m	
6713615	10477448	City of Guelph	21 Municipal Wells	C	1/09/01	553,671	4,822,748	85.3	6.7	344.5	324	318	297	margin of error : 10 - 30 m	
6713913	10523045	City of Guelph	21 Municipal Wells	C	10/11/01	559,423	4,828,237	48.8	4.9	366.7	344	334	322	margin of error : 10 - 30 m	
6714412	10542257	City of Guelph	21 Municipal Wells	C	3/07/02	558,209	4,826,457	71.9		340.1	328	331	309	Approximate location: margin of error : 1 km - 3 km	Lot centroid
6714576	10548127	City of Guelph	21 Municipal Wells	C	9/09/03	562,917	4,828,236	56.1	19.5	361.6	333	338	321	margin of error : 100 m - 300 m	provided by Well Contractor; method likely gps but uncertain
6714621	10548172	City of Guelph	21 Municipal Wells	C	9/30/03	562,604	4,829,378	57.9	7.9	369.0	343	340	327	UTM very unreliable	Lot centroid
6715186	11179822	City of Guelph	21 Municipal Wells	C	9/08/04	561,499	4,826,452	30.5	4.3	341.8	334	327	315	margin of error : 10 - 30 m	on Water Well Record
6715197	11179833	City of Guelph	21 Municipal Wells	C	9/30/04	562,875	4,828,280	42.7	15.5	363.1	335	338	321	margin of error : 10 - 30 m	on Water Well Record
6715449	11327235	City of Guelph	21 Municipal Wells	C	7/19/05	563,258	4,826,085	61.6	3.7	346.5	332	322	311	margin of error : 30 m - 100 m	on Water Well Record
6715698	11558219	City of Guelph	21 Municipal Wells	C	2/21/06	559,878	4,828,300	73.8	10.4	368.3	330	329	323	margin of error : 10 - 30 m	on Water Well Record
7045258	11767773	City of Guelph	21 Municipal Wells	C	5/23/07	558,556	4,827,138	44.5	10.1	348.5	334	334	314	margin of error : 10 - 30 m	on Water Well Record
7102465	1001535373	City of Guelph	21 Municipal Wells	C	10/22/07	559,334	4,828,550	59.7	19.4	366.4	342	335	324	margin of error : 10 - 30 m	on Water Well Record
7121857	1002415970	City of Guelph	21 Municipal Wells	C	9/29/08	564,582	4,828,346	76.5	11.2	353.8	342	324	311	margin of error : 10 - 30 m	on Water Well Record
7121992	1002416440	City of Guelph	21 Municipal Wells	C	7/09/08	555,102	4,824,032	95.7		341.3	317	325	285	margin of error : 10 - 30 m	on Water Well Record
7159886	1003481286	City of Guelph	21 Municipal Wells	C	12/18/10	553,559	4,822,793	71.9		343.9	324	318	296	margin of error : 10 - 30 m	on Water Well Record
7203163	1004344388	City of Guelph	21 Municipal Wells	C	4/30/13	558,956	4,817,402	54.9	1.5	323.6	317	307	282	margin of error : 30 m - 100 m	on Water Well Record
7210166	1004616557	City of Guelph	21 Municipal Wells	C	9/04/13	555,430	4,825,042	79.2	10.4	345.6	334	332	291	margin of error : 30 m - 100 m	on Water Well Record
7229425	1005161165	City of Guelph	21 Municipal Wells	C	7/21/14	563,358	4,827,331	52.7	18.3	358.7	339	334	318	margin of error : 30 m - 100 m	YPD: Assessment ; OBM/OrothPhoto
7238150	1005311430	City of Guelph	21 Municipal Wells	C	1/27/15	559,162	4,817,175	62.2	13.4	325.2	316	304	282	margin of error : 30 m - 100 m	on Water Well Record
7248070	1005682135	City of Guelph	21 Municipal Wells	C	8/04/15	559,882	4,816,642	50.3	5.9	311.2	307	300	279	margin of error : 30 m - 100 m	on Water Well Record
7253750	1005832094	City of Guelph	21 Municipal Wells	C	11/03/15	563,823	4,827,350	53.3	17.1	352.5	339	332	317	margin of error : 30 m - 100 m	on Water Well Record
7254747	1005843922	City of Guelph	21 Municipal Wells	C	12/04/15	559,915	4,815,769	38.4		304.8	292	296	270	margin of error : 30 m - 100 m	on Water Well Record
7256089	1005869375	City of Guelph	21 Municipal Wells	C	12/09/15	559,057	4,817,346	56.4	5.4	323.0	315	305	282	margin of error : 30 m - 100 m	on Water Well Record
7264374	1006038697	City of Guelph	21 Municipal Wells	C	4/21/16	561,686	4,825,871	56.4	6.5	353.8	335	327	312	margin of error : 30 m - 100 m	on Water Well Record
7274477	1006288045	City of Guelph	21 Municipal Wells	C	10/11/16	561,611	4,829,329	47.9	14.0	368.9	351	331	328	margin of error : 30 m - 100 m	on Water Well Record
7334558	1007478359	City of Guelph	21 Municipal Wells	C	5/09/19	559,761	4,816,293	48.8	8.8	310.1	303	298	277	margin of error : 30 m - 100 m	on Water Well Record
7370845	1008475523	City of Guelph	21 Municipal Wells	C	9/17/20	555,657	4,825,245	62.2	5.5	344.9	337	333	293	margin of error : 30 m - 100 m	on Water Well Record
7385260	1008610707	City of Guelph	21 Municipal Wells	C	4/01/21	562,266	4,814,049	72.8	17.8	333.7	304	300	278	margin of error : 30 m - 100 m	on Water Well Record
7420533	1009069071	City of Guelph	21 Municipal Wells	C	1/08/22	564,234	4,826,874	69.5		345.1	336	319	318	margin of error : 30 m - 100 m	on Water Well Record
6701223	10465368	City of Guelph	21 Municipal Wells	D	9/26/66	557,976	4,828,573	61.0	11.3	361.8	349	342	321	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701224	10465369	City of Guelph	21 Municipal Wells	D	6/10/54	559,579	4,830,325	39.6	15.2	362.9	354	344	335	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701226	10465371	City of Guelph	21 Municipal Wells	D	7/18/67	559,636	4,830,781	19.8	1.5	356.0	355	341	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701229	10465374	City of Guelph	21 Municipal Wells	D	7/25/64	558,624	4,829,898	65.8	11.6	379.8	368	342	331	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701232	10465377	City of Guelph	21 Municipal Wells	D	8/19/67	559,570	4,831,369	38.1	5.5	362.6	354	345	339	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701236	10465381	City of Guelph	21 Municipal Wells	D	10/04/52	558,547	4,832,078	58.8	3.0	367.6	358	350	338	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701327	10465472	City of Guelph	21 Municipal Wells	D	1/16/53	554,332	4,825,353	96.0	1.2	350.9	335	332	292	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6701815	10465960	City of Guelph	21 Municipal Wells	D	1/14/61	554,537	4,832,437	42.7	6.1	378.1	357	343	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701819	10465964	City of Guelph	21 Municipal Wells	D	8/10/67	556,785	4,833,998	47.5	3.7	375.8	358	349	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701827	10465972	City of Guelph	21 Municipal Wells	D	6/29/66	552,716	4,829,579	58.8	9.1	371.6	346	336	315	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701829	10465974	City of Guelph	21 Municipal Wells	D	5/29/67	552,751	4,829,885	54.9	0.0	371.7	359	337	317	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701835	10465980	City of Guelph	21 Municipal Wells	D	10/15/66	557,016	4,833,683	51.8	8.2	378.5	360	348	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6702149	10466294	City of Guelph	21 Municipal Wells	D	11/26/66	552,902	4,829,260	69.2	8.5	368.9	347	339	313	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6702162	10466307	City of Guelph	21 Municipal Wells	D	8/05/66	552,214	4,829,943	65.5	3.4	372.2	350	327	316	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6703060	10467202	City of Guelph	21 Municipal Wells	D	6/22/68	557,954	4,833,113	41.1	8.2	366.7	350	346	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703061	10467203	City of Guelph	21 Municipal Wells	D	8/14/68	557,134	4,833,823	45.7	5.2	375.8	364	349	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703108	10467250	City of Guelph	21 Municipal Wells	D	7/24/68	552,164	4,830,123	61.9	7.6	372.1	351	327	316	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703110	10467252	City of Guelph	21 Municipal Wells	D	8/27/68	552,914	4,829,973	56.4	1.8	371.3	356	341	318	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703161	10467303	City of Guelph	21 Municipal Wells	D	10/04/68	559,314	4,814,683	70.1	25.0	311.3	287	298	266	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703255	10467397	City of Guelph	21 Municipal Wells	D	12/21/68	552,214	4,830,123	62.8	6.4	372.0	348	328	317	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703265	10467407	City of Guelph	21 Municipal Wells	D	9/27/68	556,154	4,828,048	71.3	8.5	361.6	353	350	313	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703268	10467410	City of Guelph	21 Municipal Wells	D	10/05/68	565,224	4,831,483	25.9	5.8	360.1	353	353	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703303	10467445	City of Guelph	21 Municipal Wells	D	1/30/69	552,634	4,829,623	64.0	9.1	372.2	350	335	315	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6700163	10464311	City of Guelph	21 Municipal Wells	D	7/17/62	561,678	4,831,037	35.1	9.8	357.8	332	336	334	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6700164	10464312	City of Guelph	21 Municipal Wells	D	4/02/63	561,769	4,830,983	36.0	8.5	356.4	331	337	334	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700165	10464313	City of Guelph	21 Municipal Wells	D	2/03/62	560,938	4,831,803	38.1	7.6	371.0	349	346	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700166	10464314	City of Guelph	21 Municipal Wells	D	7/20/54	560,516	4,832,103	49.1	7.6	374.8	357	346	340	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700170	10464318	City of Guelph	21 Municipal Wells	D	10/20/61	558,501	4,833,971	53.9	12.2	382.8	367	351	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700171	10464319	City of Guelph	21 Municipal Wells	D	5/26/55	557,512	4,833,901	36.6	8.2	380.9	366	349	345	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700173	10464321	City of Guelph	21 Municipal Wells	D	6/15/65	557,600	4,834,758	44.2	5.8	389.5	365	352	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700175	10464323	City of Guelph	21 Municipal Wells	D	11/23/57	556,651	4,835,676	50.3	9.1	395.8	388	353	348	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700228	10464376	City of Guelph	21 Municipal Wells	D	10/29/63	564,674	4,830,101	45.7	5.5	362.1	356	343	327	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700232	10464380	City of Guelph	21 Municipal Wells	D	4/10/63	563,558	4,829,542	29.6	3.0	355.3	334	340	328	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700240	10464388	City of Guelph	21 Municipal Wells	D	8/13/65	563,366	4,829,980	35.7	13.1	364.5	344	343	329	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700248	10464396	City of Guelph	21 Municipal Wells	D	6/13/66	562,921	4,831,900	37.2	10.7	372.4	357	352	337	margin of error : 10 - 30 m	from gps
6700250	10464398	City of Guelph	21 Municipal Wells	D	10/18/63	559,776	4,832,982	30.2	8.5	369.3	354	352	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700251	10464399	City of Guelph	21 Municipal Wells	D	6/11/55	559,737	4,833,721	33.8	2.4	365.0	355	353	342	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700253	10464401	City of Guelph	21 Municipal Wells	D	5/05/66	557,694	4,835,620	61.0	18.3	397.0	376	353	348	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700256	10464404	City of Guelph	21 Municipal Wells	D	12/05/63	556,803	4,836,075	59.4	13.7	399.0	386	354	349	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700268	10464416	City of Guelph	21 Municipal Wells	D	5/07/56	565,803	4,831,048	48.8	9.1	366.3	350	344	325	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700270	10464418	City of Guelph	21 Municipal Wells	D	9/26/67	564,821	4,830,295	78.6	26.8	369.3	338	343	328	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700271	10464419	City of Guelph	21 Municipal Wells	D	6/14/62	564,175	4,830,846	25.3	4.6	358.6	340	351	335	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700272	10464420	City of Guelph	21 Municipal Wells	D	5/30/64	565,150	4,831,695	36.3	9.1	363.2	359	355	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700274	10464422	City of Guelph	21 Municipal Wells	D	8/11/54	564,419	4,830,614	41.1	12.2	367.2	351	349	334	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700282	10464429	City of Guelph	21 Municipal Wells	D	1/04/64	563,384	4,831,677	44.8	10.7	372.6	361	353	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700283	10464430	City of Guelph	21 Municipal Wells	D	7/14/64	563,804	4,831,734	46.9	6.1	368.2	357	357	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700284	10464431	City of Guelph	21 Municipal Wells	D	7/12/58	564,064	4,832,736	30.8	9.1	370.3	364	357	341	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700285	10464432	City of Guelph	21 Municipal Wells	D	12/13/57	562,781	4,832,355	38.4	12.2	365.6	362	352	339	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700288	10464435	City of Guelph	21 Municipal Wells	D	9/17/63	561,165	4,833,880	43.6	18.3	380.3	347	348	341	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700289	10464436	City of Guelph	21 Municipal Wells	D	6/12/67	560,695	4,835,041	45.7	0.0	390.7	384	351	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700290	10464437	City of Guelph	21 Municipal Wells	D	7/24/63	559,931	4,834,912	23.5	2.4	368.5	368	353	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700292	10464439	City of Guelph	21 Municipal Wells	D	5/27/65	559,748	4,835,081	24.4	3.7	369.6	369	353	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700293	10464440	City of Guelph	21 Municipal Wells	D	5/09/61	560,244	4,836,278	51.2	13.4	387.8	372	355	348	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700385	10464531	City of Guelph	21 Municipal Wells	D	1/07/64	566,198	4,831,140	54.3	10.7	368.8	353	333	326	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700396	10464542	City of Guelph	21 Municipal Wells	D	1/20/56	565,189	4,833,347	30.5	5.2	376.0	370	360	346	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700397	10464543	City of Guelph	21 Municipal Wells	D	8/31/55	564,666	4,834,026	45.1	12.2	381.4	381	360	347	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700400	10464546	City of Guelph	21 Municipal Wells	D	3/10/58	562,377	4,834,702	38.4	9.1	374.2	354	353	344	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700401	10464547	City of Guelph	21 Municipal Wells	D	11/26/53	561,471	4,835,485	42.4	11.6	380.9	360	354	345	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700479	10464625	City of Guelph	21 Municipal Wells	D	6/11/55	565,582	4,833,232	31.4	3.7	376.6	374	361	347	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700961	10465107	City of Guelph	21 Municipal Wells	D	2/23/64	557,894	4,815,702	47.2	15.8	318.7	304	305	276	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700971	10465117	City of Guelph	21 Municipal Wells	D	10/27/59	553,002	4,820,515	46.3	7.3	339.5	323	312	295	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700976	10465122	City of Guelph	21 Municipal Wells	D	9/23/63	557,656	4,815,587	46.3	13.4	317.2	303	305	272	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701013	10465159	City of Guelph	21 Municipal Wells	D	10/21/66	557,724	4,815,080	38.7	5.2	304.9	304	300	268	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703318	10467460	City of Guelph	21 Municipal Wells	D	3/04/69	558,334	4,815,943	48.8	12.8	321.0	306	304	279	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703474	10467612	City of Guelph	21 Municipal Wells	D	12/06/69	559,144	4,835,923	54.9	10.1	396.8	375	354	347	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703506	10467643	City of Guelph	21 Municipal Wells	D	11/05/69	565,444	4,831,363	43.3	4.6	363.4	357	352	335	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703580	10467715	City of Guelph	21 Municipal Wells	D	10/20/69	560,244	4,832,583	32.0	6.1	367.6	355	348	340	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703588	10467723	City of Guelph	21 Municipal Wells	D	10/14/69	558,644	4,830,023	61.0	18.3	382.2	367	342	332	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703610	10467745	City of Guelph	21 Municipal Wells	D	1/30/70	557,814	4,833,173	40.2	7.6	369.8	356	346	341	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703642	10467776	City of Guelph	21 Municipal Wells	D	3/06/70	559,524	4,830,833	24.4	5.5	358.8	359	341	337	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703658	10467792	City of Guelph	21 Municipal Wells	D	5/11/70	554,734	4,832,363	39.6	4.6	373.3	356	341	337	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703675	10467809	City of Guelph	21 Municipal Wells	D	5/20/70	561,694	4,831,023	33.5	3.0	357.6	339	336	334	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703778	10467910	City of Guelph	21 Municipal Wells	D	8/27/70	557,884	4,829,993	57.9	9.1	380.8	370	342	330	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703862	10467992	City of Guelph	21 Municipal Wells	D	12/23/70	564,594	4,830,473	65.2	24.4	378.2	338	347	332	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703914	10468042	City of Guelph	21 Municipal Wells	D	5/03/71	563,984	4,832,773	30.5	7.6	370.4	364	357	341	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703989	10468113	City of Guelph	21 Municipal Wells	D	7/17/71	558,914	4,830,183	56.1	10.7	372.7	364	344	333	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704020	10468142	City of Guelph	21 Municipal Wells	D	9/29/71	557,664	4,815,173	43.3	8.5	308.3	308	301	268	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704107	10468223	City of Guelph	21 Municipal Wells	D	12/07/71	559,114	4,830,393	56.1	1.8	365.1	360	344	335	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704124	10468238	City of Guelph	21 Municipal Wells	D	11/19/71	557,489	4,832,698	39.6	10.7	377.0	354	348	340	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704139	10468252	City of Guelph	21 Municipal Wells	D	1/06/72	557,464	4,835,103	44.8	6.7	391.3	370	352	347	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704154	10468267	City of Guelph	21 Municipal Wells	D	8/04/71	556,514	4,836,143	51.8	8.5	400.4	387	353	349	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704200	10468313	City of Guelph	21 Municipal Wells	D	1/21/72	559,284	4,830,193	61.6	3.7	365.8	360	342	334	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704228	10468341	City of Guelph	21 Municipal Wells	D	4/04/72	552,784	4,827,673	72.2	15.2	368.6	335	335	304	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704251	10468364	City of Guelph	21 Municipal Wells	D	6/14/72	564,864	4,831,923	31.7	2.7	371.3	362	357	340	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704292	10468404	City of Guelph	21 Municipal Wells	D	7/07/72	559,214	4,830,473	46.6	4.6	368.1	344	345	335	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704414	10468523	City of Guelph	21 Municipal Wells	D	10/31/72	564,834	4,832,183	37.2	10.4	376.8	358	357	341	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704488	10468596	City of Guelph	21 Municipal Wells	D	11/24/72	561,814	4,833,273	34.1	2.4	372.4	355	347	341	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704494	10468602	City of Guelph	21 Municipal Wells	D	11/30/72	564,464	4,831,853	32.9	6.7	368.2	357	359	339	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704497	10468605	City of Guelph	21 Municipal Wells	D	11/02/72	562,264	4,830,503	60.0	12.2	373.2	350	341	332	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704613	10468721	City of Guelph	21 Municipal Wells	D	5/14/73	553,551	4,822,979	53.9	2.4	342.1	322	318	295	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704620	10468728	City of Guelph	21 Municipal Wells	D	5/25/73	560,711	4,836,079	35.1	5.8	381.7	372	355	348	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704683	10468790	City of Guelph	21 Municipal Wells	D	7/05/73	552,509	4,829,653	63.1	7.9	372.7	351	333	315	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704722	10468829	City of Guelph	21 Municipal Wells	D	3/05/73	552,564	4,827,773	67.1	13.7	365.7	335	333	304	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705040	10469140	City of Guelph	21 Municipal Wells	D	5/03/74	564,520	4,830,556	62.5	21.6	372.5	339	348	333	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705107	10469206	City of Guelph	21 Municipal Wells	D	5/09/74	558,814	4,832,273	55.8	3.7	364.9	355	348	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705182	10469280	City of Guelph	21 Municipal Wells	D	7/19/74	558,314	4,834,873	75.6	1.8	388.1	382	352	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705187	10469284	City of Guelph	21 Municipal Wells	D	7/05/74	553,193	4,827,348	65.8	5.5	359.2	341	339	303	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6705238	10469333	City of Guelph	21 Municipal Wells	D	8/21/74	563,879	4,832,963	39.3	6.4	370.6	362	356	342	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705239	10469334	City of Guelph	21 Municipal Wells	D	8/12/74	557,614	4,815,223	43.3	10.7	310.9	307	301	268	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705242	10469337	City of Guelph	21 Municipal Wells	D	7/19/74	558,864	4,830,143	60.0	12.2	375.7	366	344	333	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705272	10469367	City of Guelph	21 Municipal Wells	D	9/04/74	554,559	4,833,077	53.3		385.0	359	355	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705293	10469388	City of Guelph	21 Municipal Wells	D	10/02/74	560,244	4,836,358	42.7	11.6	390.3	372	355	348	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705301	10469396	City of Guelph	21 Municipal Wells	D	10/02/74	560,074	4,836,473	58.5	11.0	400.1	374	356	348	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705334	10469428	City of Guelph	21 Municipal Wells	D	10/17/74	560,064	4,834,973	35.7	7.6	375.5	367	352	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705473	10469566	City of Guelph	21 Municipal Wells	D	7/11/74	560,994	4,833,683	50.3	7.9	376.1	355	347	341	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705484	10469577	City of Guelph	21 Municipal Wells	D	1/14/74	561,964	4,835,823	54.9	5.8	381.1	375	355	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705576	10469666	City of Guelph	21 Municipal Wells	D	7/01/75	554,764	4,831,973	41.1	11.0	376.1	363	338	335	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705580	10469670	City of Guelph	21 Municipal Wells	D	5/07/75	558,454	4,816,283	61.0	10.1	326.4	315	306	278	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705611	10469701	City of Guelph	21 Municipal Wells	D	4/14/75	557,734	4,815,123	41.1	5.5	305.9	306	300	268	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705621	10469711	City of Guelph	21 Municipal Wells	D	8/08/74	563,614	4,835,323	65.5	17.4	395.6	368	358	347	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705635	10469724	City of Guelph	21 Municipal Wells	D	8/20/74	562,464	4,834,023	42.7	0.9	366.6	361	353	343	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705644	10469733	City of Guelph	21 Municipal Wells	D	1/12/75	556,889	4,835,887	50.3	7.6	396.4	392	353	348	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705653	10469742	City of Guelph	21 Municipal Wells	D	6/26/75	561,614	4,831,473	40.2	15.2	367.6	333	340	336	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705679	10469768	City of Guelph	21 Municipal Wells	D	7/08/75	559,314	4,833,273	33.5	3.0	365.9	356	352	342	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705704	10469793	City of Guelph	21 Municipal Wells	D	9/04/75	559,733	4,832,927	43.9	12.2	371.1	350	352	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705708	10469797	City of Guelph	21 Municipal Wells	D	9/12/75	559,864	4,834,973	23.2	0.0	367.3	362	353	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705799	10469888	City of Guelph	21 Municipal Wells	D	10/29/75	553,414	4,822,863	71.3	12.2	343.6	325	318	295	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705850	10469934	City of Guelph	21 Municipal Wells	D	12/05/75	564,364	4,830,723	32.0	7.0	362.3	347	350	334	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705924	10470008	City of Guelph	21 Municipal Wells	D	8/05/75	566,264	4,830,673	67.4	12.2	359.4	303	314	318	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705963	10470045	City of Guelph	21 Municipal Wells	D	10/20/75	554,564	4,832,923	68.6	5.5	383.9	350	354	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6705964	10470046	City of Guelph	21 Municipal Wells	D	11/06/75	565,464	4,829,323	70.1	39.6	361.5	304	316	303	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706012	10470094	City of Guelph	21 Municipal Wells	D	5/25/76	552,464	4,829,473	60.4	7.3	371.2	350	332	314	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706030	10470111	City of Guelph	21 Municipal Wells	D	4/29/74	557,214	4,833,973	41.1	3.4	376.2	368	350	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706053	10470134	City of Guelph	21 Municipal Wells	D	8/05/75	552,414	4,827,873	64.0	15.8	361.9	334	331	304	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706105	10470186	City of Guelph	21 Municipal Wells	D	6/16/76	560,593	4,813,731	74.7	38.7	327.5	299	298	266	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706116	10470197	City of Guelph	21 Municipal Wells	D	6/01/76	558,714	4,831,923	30.5	2.1	365.9	363	348	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706132	10470212	City of Guelph	21 Municipal Wells	D	7/09/76	557,414	4,833,423	47.2	13.7	376.2	358	347	344	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706152	10470232	City of Guelph	21 Municipal Wells	D	8/11/76	558,314	4,834,873	76.5	1.8	388.1	382	352	346	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706234	10470314	City of Guelph	21 Municipal Wells	D	9/30/76	552,564	4,829,223	78.3	10.4	369.6	349	334	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706237	10470317	City of Guelph	21 Municipal Wells	D	11/06/76	552,574	4,826,423	71.3	11.3	358.7	334	331	297	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706340	10470419	City of Guelph	21 Municipal Wells	D	10/27/76	557,464	4,833,173	37.8	4.9	374.7	359	346	343	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706374	10470452	City of Guelph	21 Municipal Wells	D	4/18/77	559,314	4,829,783	58.2	5.5	363.8	350	341	331	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706413	10470491	City of Guelph	21 Municipal Wells	D	6/14/77	560,564	4,834,423	39.6	11.0	376.7	360	350	343	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706423	10470501	City of Guelph	21 Municipal Wells	D	6/29/77	561,914	4,830,923	59.4	2.7	357.4	347	338	333	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706424	10470502	City of Guelph	21 Municipal Wells	D	5/24/77	553,714	4,828,473	77.1	1.2	368.4	360	347	310	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706441	10470519	City of Guelph	21 Municipal Wells	D	6/02/77	557,514	4,833,273	33.2	5.5	374.1	361	347	343	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706447	10470525	City of Guelph	21 Municipal Wells	D	6/30/77	553,664	4,825,473	70.1	13.1	358.6	339	333	293	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706484	10470561	City of Guelph	21 Municipal Wells	D	6/15/77	565,914	4,830,573	79.2	14.0	359.2	281	328	313	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706654	10470728	City of Guelph	21 Municipal Wells	D	10/21/77	555,764	4,827,023	47.2	30.5	348.8	342	344	305	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706657	10470731	City of Guelph	21 Municipal Wells	D	11/30/77	565,764	4,829,673	65.5	22.9	364.9	354	320	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706699	10470771	City of Guelph	21 Municipal Wells	D	6/05/78	552,514	4,821,023	64.3	10.1	341.6	316	313	293	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706719	10470791	City of Guelph	21 Municipal Wells	D	4/30/78	561,464	4,831,573	42.1	15.2	375.9	338	341	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706738	10470810	City of Guelph	21 Municipal Wells	D	7/26/78	556,964	4,833,673	45.7	9.4	378.2	357	348	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706751	10470822	City of Guelph	21 Municipal Wells	D	7/25/78	552,614	4,827,773	75.3	20.4	367.3	334	334	304	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706763	10470834	City of Guelph	21 Municipal Wells	D	7/18/78	560,214	4,833,173	50.3	9.1	368.8	361	353	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706785	10470856	City of Guelph	21 Municipal Wells	D	8/30/78	553,414	4,822,943	79.2	9.1	342.8	325	318	295	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706794	10470865	City of Guelph	21 Municipal Wells	D	8/17/78	553,114	4,830,123	61.0	4.6	371.9	355	345	319	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706815	10470886	City of Guelph	21 Municipal Wells	D	9/29/78	561,764	4,834,823	51.8	4.6	378.3	367	353	344	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706863	10470933	City of Guelph	21 Municipal Wells	D	11/06/78	562,794	4,829,703	40.2	8.5	358.6	339	342	328	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6706915	10470985	City of Guelph	21 Municipal Wells	D	8/08/78	559,764	4,831,073	38.1	4.6	364.0	362	341	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706998	10471064	City of Guelph	21 Municipal Wells	D	6/20/79	561,914	4,835,073	72.5	7.6	381.0	368	354	344	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706999	10471065	City of Guelph	21 Municipal Wells	D	5/18/79	558,264	4,832,623	45.4	10.7	371.9	353	348	331	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707015	10471081	City of Guelph	21 Municipal Wells	D	7/10/79	553,764	4,825,373	77.7	18.3	358.6	337	332	293	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707243	10471300	City of Guelph	21 Municipal Wells	D	12/14/79	560,164	4,833,223	31.7	8.8	368.7	363	354	340	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707341	10471393	City of Guelph	21 Municipal Wells	D	10/24/80	559,164	4,831,723	34.7	10.4	365.8	363	347	339	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707395	10471446	City of Guelph	21 Municipal Wells	D	7/01/80	561,114	4,831,523	38.4	4.3	373.9	351	345	337	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707423	10471472	City of Guelph	21 Municipal Wells	D	11/28/80	564,414	4,834,473	61.0	14.3	392.9	378	360	347	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707438	10471486	City of Guelph	21 Municipal Wells	D	4/23/81	563,314	4,833,923	39.9	7.6	376.2	373	354	344	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707448	10471496	City of Guelph	21 Municipal Wells	D	4/16/81	554,369	4,828,560	65.5	0.6	368.6	356	352	312	margin of error : 10 - 30 m	
6707470	10471517	City of Guelph	21 Municipal Wells	D	7/03/81	564,114	4,832,773	61.0	11.6	371.7	366	357	342	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707516	10471555	City of Guelph	21 Municipal Wells	D	10/08/81	557,688	4,815,319	50.0	10.1	310.5	307	302	270	margin of error : 10 - 30 m	from gps
6707524	10471562	City of Guelph	21 Municipal Wells	D	11/06/81	557,707	4,815,039	51.8	6.1	304.3	300	299	267	margin of error : 10 - 30 m	from gps
6707574	10471612	City of Guelph	21 Municipal Wells	D	10/05/81	552,814	4,820,583	70.1	11.6	338.4	323	312	295	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6707597	10471635	City of Guelph	21 Municipal Wells	D	6/15/81	561,434	4,831,290	64.0	15.2	371.6	344	339	336	margin of error : 100 m - 300 m	from gps
6707651	10471688	City of Guelph	21 Municipal Wells	D	6/15/81	561,514	4,831,273	64.0	15.2	367.9	342	339	336	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707713	10471742	City of Guelph	21 Municipal Wells	D	10/29/82	558,764	4,832,273	82.3	9.1	365.7	354	348	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707748	10471767	City of Guelph	21 Municipal Wells	D	6/01/82	562,114	4,834,523	34.7	9.1	375.6	342	353	344	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707888	10471888	City of Guelph	21 Municipal Wells	D	6/18/84	553,087	4,829,485	74.7	5.8	368.5	350	343	315	UTM very unreliable	Lot centroid
6707987	10471955	City of Guelph	21 Municipal Wells	D	12/04/84	563,164	4,829,923	35.4	9.1	362.2	342	342	329	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6708140	10472055	City of Guelph	21 Municipal Wells	D	6/26/84	565,515	4,833,035	50.3	1.8	378.4	373	360	347	margin of error : 100 m - 300 m	from gps

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6708245	10472155	City of Guelph	21 Municipal Wells	D	7/15/85	560,495	4,833,863	49.1		374.3	357	350	342	margin of error : 100 m - 300 m	from gps
6708246	10472156	City of Guelph	21 Municipal Wells	D	7/11/85	564,792	4,832,184	47.2	5.2	376.2	360	357	341	margin of error : 10 - 30 m	
6708257	10472167	City of Guelph	21 Municipal Wells	D	7/05/85	554,652	4,828,811	103.6	2.4	367.5	357	356	314	margin of error : 100 m - 300 m	from gps
6708449	10472354	City of Guelph	21 Municipal Wells	D	5/01/86	552,913	4,830,004	56.4	1.5	371.4	356	341	318	margin of error : 10 - 30 m	from gps
6708499	10472395	City of Guelph	21 Municipal Wells	D	6/17/86	556,775	4,833,977	47.2	5.2	376.2	358	349	346	margin of error : 10 - 30 m	from gps
6708500	10472396	City of Guelph	21 Municipal Wells	D	8/08/86	557,413	4,831,671	61.0	4.6	381.7	373	357	337	margin of error : 10 - 30 m	from gps
6708603	10472495	City of Guelph	21 Municipal Wells	D	8/19/86	564,630	4,834,031	41.8	3.7	381.6	381	360	347	margin of error : 100 m - 300 m	from gps
6708668	10472558	City of Guelph	21 Municipal Wells	D	3/08/87	557,211	4,815,602	62.5	5.5	327.2	312	307	268	margin of error : 10 - 30 m	from gps
6708755	10472645	City of Guelph	21 Municipal Wells	D	4/24/87	553,284	4,827,397	77.4	5.8	359.3	342	339	303	margin of error : 10 - 30 m	from gps
6708796	10472686	City of Guelph	21 Municipal Wells	D	3/24/87	559,085	4,815,171	32.0	9.1	297.8	284	297	270	UTM very unreliable	Lot centroid
6709072	10472945	City of Guelph	21 Municipal Wells	D	11/02/87	563,585	4,834,800	42.7	4.6	376.1	371	357	346	margin of error : 100 m - 300 m	from gps
6709122	10472993	City of Guelph	21 Municipal Wells	D	12/17/87	556,810	4,834,075	61.0	6.1	375.5	357	349	346	margin of error : 10 - 30 m	from gps
6709178	10473044	City of Guelph	21 Municipal Wells	D	8/08/87	559,261	4,831,843	37.2		367.1	358	347	340	margin of error : 100 m - 300 m	from gps
6709252	10473109	City of Guelph	21 Municipal Wells	D	5/05/88	555,830	4,827,578	59.4	10.1	360.6	350	349	309	margin of error : 10 - 30 m	from gps
6709279	10473136	City of Guelph	21 Municipal Wells	D	5/19/88	557,614	4,834,263	91.4	7.3	387.2	364	351	346	margin of error : 100 m - 300 m	from gps
6709299	10473156	City of Guelph	21 Municipal Wells	D	7/18/88	560,650	4,832,062	40.5		374.0	356	347	339	margin of error : 100 m - 300 m	from gps
6709335	10473190	City of Guelph	21 Municipal Wells	D	5/26/88	560,163	4,832,638	41.1	4.6	367.4	352	349	340	margin of error : 100 m - 300 m	from gps
6709399	10473252	City of Guelph	21 Municipal Wells	D	9/16/88	565,256	4,831,853	62.8	13.7	369.3	358	355	341	margin of error : 100 m - 300 m	from gps
6709453	10473303	City of Guelph	21 Municipal Wells	D	11/29/88	560,644	4,832,455	50.6	10.7	375.1	348	343	340	margin of error : 100 m - 300 m	from gps
6709627	10473475	City of Guelph	21 Municipal Wells	D	7/19/88	554,722	4,831,880	48.2	13.1	378.6	362	339	334	margin of error : 100 m - 300 m	from gps
6709637	10473485	City of Guelph	21 Municipal Wells	D	1/27/89	560,403	4,832,454	35.1	5.8	370.9	354	347	340	margin of error : 100 m - 300 m	from gps
6709673	10473521	City of Guelph	21 Municipal Wells	D	9/21/88	564,280	4,833,495	42.1	15.2	380.2	375	358	344	UTM very unreliable	Lot centroid
6709699	10473547	City of Guelph	21 Municipal Wells	D	10/06/88	559,091	4,833,785	45.7	10.4	372.8	362	352	344	margin of error : 100 m - 300 m	from gps
6709779	10473627	City of Guelph	21 Municipal Wells	D	5/05/89	565,184	4,832,659	43.6	17.1	383.1	360	359	344	margin of error : 100 m - 300 m	from gps
6709878	10473726	City of Guelph	21 Municipal Wells	D	7/12/89	563,833	4,830,999	37.8	6.4	366.7	350	352	334	margin of error : 100 m - 300 m	from gps
6709926	10473774	City of Guelph	21 Municipal Wells	D	7/10/89	553,861	4,833,981	60.0	7.6	391.8	379	348	339	margin of error : 10 - 30 m	from gps
6710059	10473906	City of Guelph	21 Municipal Wells	D	10/12/89	563,347	4,835,397	85.6	40.5	397.4	343	358	347	margin of error : 100 m - 300 m	from gps
6710173	10474020	City of Guelph	21 Municipal Wells	D	12/12/89	561,043	4,835,793	49.1	10.7	389.2	371	354	345	margin of error : 100 m - 300 m	from gps
6710174	10474021	City of Guelph	21 Municipal Wells	D	12/11/89	559,052	4,832,899	36.9	6.7	367.3	361	349	340	margin of error : 100 m - 300 m	from gps
6710310	10474155	City of Guelph	21 Municipal Wells	D	5/15/90	560,186	4,832,513	30.8	6.1	367.3	354	348	340	margin of error : 100 m - 300 m	from gps
6710482	10474327	City of Guelph	21 Municipal Wells	D	10/15/90	559,274	4,830,608	48.8	15.8	371.4	366	345	336	margin of error : 10 - 30 m	from gps
6710501	10474346	City of Guelph	21 Municipal Wells	D	11/14/90	562,943	4,830,148	38.7	7.0	364.2	340	344	330	margin of error : 100 m - 300 m	from gps
6710563	10474408	City of Guelph	21 Municipal Wells	D	4/25/90	559,297	4,834,025	50.3	7.0	374.6	363	353	344	margin of error : 100 m - 300 m	from gps
6710627	10474471	City of Guelph	21 Municipal Wells	D	3/08/91	553,962	4,828,278	61.0	4.0	364.0	356	349	310	margin of error : 10 - 30 m	from gps
6710628	10474472	City of Guelph	21 Municipal Wells	D	3/22/91	553,991	4,828,261	61.0	3.0	363.6	356	349	310	margin of error : 10 - 30 m	from gps
6710724	10474566	City of Guelph	21 Municipal Wells	D	7/11/91	554,127	4,824,974	65.5	14.3	354.1	337	330	290	margin of error : 10 - 30 m	from gps
6710816	10474657	City of Guelph	21 Municipal Wells	D	7/03/91	554,695	4,827,583	65.5	5.2	356.4	346	347	307	margin of error : 10 - 30 m	from gps
6710929	10474770	City of Guelph	21 Municipal Wells	D	5/26/92	565,297	4,833,706	36.9	2.7	375.4	370	362	348	margin of error : 100 m - 300 m	from gps
6710996	10474837	City of Guelph	21 Municipal Wells	D	9/24/92	552,991	4,823,341	79.2	16.2	346.2	320	320	292	margin of error : 10 - 30 m	from gps
6711013	10474854	City of Guelph	21 Municipal Wells	D	9/18/92	553,530	4,818,636	76.2	9.1	341.8	321	309	283	margin of error : 10 - 30 m	from gps
6711130	10474966	City of Guelph	21 Municipal Wells	D	7/24/92	553,316	4,822,991	57.3	7.3	343.1	319	318	294	margin of error : 10 - 30 m	from gps
6711134	10474970	City of Guelph	21 Municipal Wells	D	5/25/92	558,137	4,815,151	29.9	2.1	300.7	287	300	272	margin of error : 10 - 30 m	from gps
6711138	10474974	City of Guelph	21 Municipal Wells	D	3/24/93	564,299	4,834,470	62.5	15.2	390.5	374	359	347	margin of error : 100 m - 300 m	from gps
6711158	10474994	City of Guelph	21 Municipal Wells	D	3/30/93	561,779	4,831,212	73.2	0.9	357.5	352	339	335	margin of error : 100 m - 300 m	from gps
6711267	10475101	City of Guelph	21 Municipal Wells	D	8/09/93	559,455	4,835,293	42.7	10.7	380.3	373	353	346	margin of error : 100 m - 300 m	from gps
6711312	10475146	City of Guelph	21 Municipal Wells	D	4/23/93	552,907	4,829,320	55.8	8.2	369.4	349	339	314	margin of error : 10 - 30 m	from gps
6711335	10475169	City of Guelph	21 Municipal Wells	D	9/07/93	564,219	4,834,425	54.6	10.7	387.6	375	358	347	margin of error : 100 m - 300 m	from gps
6711367	10475201	City of Guelph	21 Municipal Wells	D	11/02/93	558,153	4,815,055	36.0	11.9	302.6	292	299	271	margin of error : 10 - 30 m	from gps
6711412	10475246	City of Guelph	21 Municipal Wells	D	4/11/94	564,477	4,834,152	51.2	10.7	385.1	380	360	347	margin of error : 100 m - 300 m	from gps
6711432	10475266	City of Guelph	21 Municipal Wells	D	4/22/94	561,905	4,835,068	70.1	8.5	380.8	367	354	344	margin of error : 100 m - 300 m	from gps
6711470	10475303	City of Guelph	21 Municipal Wells	D	6/30/94	553,937	4,825,261	73.2	15.2	355.1	336	332	292	margin of error : 10 - 30 m	from gps
6711475	10475308	City of Guelph	21 Municipal Wells	D	2/16/94	564,307	4,832,431	49.7	26.2	367.6	362	358	341	margin of error : 100 m - 300 m	from gps
6711539	10475372	City of Guelph	21 Municipal Wells	D	10/03/94	558,706	4,829,963	54.9	19.8	382.7	369	342	331	margin of error : 10 - 30 m	from gps
6711633	10475466	City of Guelph	21 Municipal Wells	D	9/12/94	559,103	4,814,684	48.5	13.7	310.3	293	298	267	margin of error : 10 - 30 m	from gps
6711711	10475544	City of Guelph	21 Municipal Wells	D	5/31/95	562,637	4,834,382	36.6	3.7	370.1	364	354	344	margin of error : 100 m - 300 m	from gps
6711743	10475576	City of Guelph	21 Municipal Wells	D	6/06/95	559,460	4,814,612	48.8	16.8	314.8	288	298	266	margin of error : 10 - 30 m	
6712022	10475855	City of Guelph	21 Municipal Wells	D	7/26/96	558,683	4,832,470	79.2	14.0	371.6	348	348	336	margin of error : 100 m - 300 m	from gps
6712096	10475929	City of Guelph	21 Municipal Wells	D	9/23/96	552,634	4,822,281	52.1	5.5	342.1	320	316	294	margin of error : 10 - 30 m	from gps
6712109	10475942	City of Guelph	21 Municipal Wells	D	10/28/96	557,404	4,832,004	42.7	4.6	380.3	368	363	338	margin of error : 10 - 30 m	
6712125	10475958	City of Guelph	21 Municipal Wells	D	10/29/96	558,689	4,832,459	79.2	13.4	371.3	347	348	336	margin of error : 100 m - 300 m	from gps
6712257	10476090	City of Guelph	21 Municipal Wells	D	6/06/97	552,245	4,828,924	54.9	14.3	363.6	342	329	310	margin of error : 10 - 30 m	
6712324	10476157	City of Guelph	21 Municipal Wells	D	8/08/97	561,436	4,831,243	73.2	15.2	370.7	347	338	336	margin of error : 10 - 30 m	from gps
6712332	10476165	City of Guelph	21 Municipal Wells	D	8/15/97	557,860	4,832,827	36.6	4.9	368.2	347	346	338	UTM very unreliable	Lot centroid
6712349	10476182	City of Guelph	21 Municipal Wells	D	9/19/97	558,344	4,815,969	43.0	15.2	321.1	306	304	279	margin of error : 10 - 30 m	from gps
6712383	10476216	City of Guelph	21 Municipal Wells	D	11/04/97	560,185	4,832,620	48.8	4.0	367.4	352	348	340	margin of error : 10 - 30 m	from gps
6712393	10476226	City of Guelph	21 Municipal Wells	D	10/17/97	565,121	4,834,567	61.0	13.7	384.2	381	362	350	UTM very unreliable	Lot centroid
6712395	10476228	City of Guelph	21 Municipal Wells	D	11/25/97	552,185	4,828,689	73.2	2.4	356.2	339	328	308	margin of error : 10 - 30 m	
6712398	10476231	City of Guelph	21 Municipal Wells	D	11/26/97	552,248	4,828,822	54.9	11.6	361.2	339	329	309	margin of error : 10 - 30 m	
6712408	10476241	City of Guelph	21 Municipal Wells	D	12/16/97	562,960	4,834,751	42.7	0.3	368.5	362	356	345	UTM very unreliable	Lot centroid
6712415	10476248	City of Guelph	21 Municipal Wells	D	7/07/97	559,464	4,834,285	35.1	1.5	375.7	366	352	344	UTM very unreliable	Lot centroid
6712504	10476337	City of Guelph	21 Municipal Wells	D	4/15/98	552,268	4,828,845	61.6	9.8	361.8	339	329	309	margin of error : 10 - 30 m	
6712547	10476380	City of Guelph	21 Municipal Wells	D	5/22/98	558,313	4,836,263	49.4	3.7	392.8	380	355	347	margin of error : 10 - 30 m	
6712598	10476431	City of Guelph	21 Municipal Wells	D	8/10/98	561,726	4,830,241	61.0	18.3	364.1	339	330	329	UTM very unreliable	Lot centroid

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6712671	10476504	City of Guelph	21 Municipal Wells	D	9/08/98	565,441	4,833,161	30.5	2.4	376.6	373	360	347	margin of error : 10 - 30 m	
6713034	10476867	City of Guelph	21 Municipal Wells	D	7/20/99	556,190	4,828,234	49.7	21.9	362.4	356	352	314	UTM very unreliable	Lot centroid
6713037	10476870	City of Guelph	21 Municipal Wells	D	8/17/99	555,412	4,827,746	62.5	19.5	364.0	359	352	309	UTM very unreliable	Lot centroid
6713040	10476873	City of Guelph	21 Municipal Wells	D	8/26/99	552,829	4,829,734	64.0	18.3	371.2	353	339	316	margin of error : 10 - 30 m	
6713072	10476905	City of Guelph	21 Municipal Wells	D	8/03/99	560,390	4,831,531	38.4	14.9	364.6	348	346	338	UTM very unreliable	Lot centroid
6713157	10476990	City of Guelph	21 Municipal Wells	D	10/28/99	554,045	4,824,317	80.2	58.5	340.1	319	326	289	UTM very unreliable	Lot centroid
6713159	10476992	City of Guelph	21 Municipal Wells	D	11/05/99	553,051	4,827,011	68.0	4.0	356.2	339	336	300	margin of error : 10 - 30 m	
6713188	10477021	City of Guelph	21 Municipal Wells	D	8/27/99	561,205	4,835,605	73.8	19.2	389.7	367	354	345	margin of error : 10 - 30 m	
6713195	10477028	City of Guelph	21 Municipal Wells	D	10/29/99	552,169	4,828,839	68.0	9.1	361.5	341	328	309	margin of error : 10 - 30 m	
6713300	10477133	City of Guelph	21 Municipal Wells	D	4/13/00	559,023	4,834,702	43.3	1.8	388.2	379	352	345	UTM very unreliable	Lot centroid
6713314	10477147	City of Guelph	21 Municipal Wells	D	1/18/00	560,699	4,834,020	49.4	9.1	380.1	356	349	342	margin of error : 10 - 30 m	
6713321	10477154	City of Guelph	21 Municipal Wells	D	5/11/00	562,724	4,832,266	30.5	7.6	365.1	362	352	338	margin of error : 10 - 30 m	
6713370	10477203	City of Guelph	21 Municipal Wells	D	6/28/00	568,706	4,817,916	68.6	25.9	347.4	314	320	292	UTM very unreliable	Lot centroid
6713418	10477251	City of Guelph	21 Municipal Wells	D	4/28/99	568,706	4,817,916	55.5	5.2	347.4	314	320	292	UTM very unreliable	Lot centroid
6713441	10477274	City of Guelph	21 Municipal Wells	D	8/25/00	557,775	4,833,591	42.7	13.7	378.9	362	349	344	margin of error : 10 - 30 m	
6713470	10477303	City of Guelph	21 Municipal Wells	D	8/10/00	557,648	4,833,482	45.7	7.6	376.7	362	348	344	margin of error : 10 - 30 m	
6713544	10477377	City of Guelph	21 Municipal Wells	D	10/11/00	557,685	4,835,985	91.4	10.1	392.2	375	354	348	UTM very unreliable	Lot centroid
6713578	10477411	City of Guelph	21 Municipal Wells	D	11/27/00	557,685	4,835,985	111.6		392.2	375	354	348	UTM very unreliable	Lot centroid
6713596	10477429	City of Guelph	21 Municipal Wells	D	11/23/00	557,232	4,836,402	68.6	3.0	398.2	386	354	348	UTM very unreliable	Lot centroid
6713667	10477500	City of Guelph	21 Municipal Wells	D	3/29/01	561,478	4,831,597	47.2	17.7	376.1	339	341	337	margin of error : 10 - 30 m	
6713676	10477509	City of Guelph	21 Municipal Wells	D	5/10/01	565,497	4,833,447	42.7	3.7	374.3	371	361	348	margin of error : 10 - 30 m	
6713791	10522923	City of Guelph	21 Municipal Wells	D	8/11/01	564,421	4,830,250	70.1	16.2	368.1	346	346	331	margin of error : 10 - 30 m	
6713802	10522934	City of Guelph	21 Municipal Wells	D	8/08/01	564,149	4,830,859	32.0	12.8	358.5	340	352	335	margin of error : 10 - 30 m	
6713972	10528507	City of Guelph	21 Municipal Wells	D	11/02/01	562,694	4,830,078	48.8	9.8	367.3	348	344	330	margin of error : 10 - 30 m	
6714038	10528573	City of Guelph	21 Municipal Wells	D	3/01/02	562,431	4,834,249	42.7	3.7	367.9	356	352	343	margin of error : 10 - 30 m	
6714041	10528576	City of Guelph	21 Municipal Wells	D	3/15/02	553,795	4,827,334	67.1	2.4	356.4	344	342	304	margin of error : 10 - 30 m	
6714042	10528577	City of Guelph	21 Municipal Wells	D	2/21/02	558,293	4,832,668	54.9	12.5	372.1	352	348	330	margin of error : 10 - 30 m	
6714045	10528580	City of Guelph	21 Municipal Wells	D	12/19/01	565,064	4,832,739	45.1	7.0	384.1	365	359	344	margin of error : 10 - 30 m	
6714102	10528637	City of Guelph	21 Municipal Wells	D	6/06/02	560,319	4,813,685	67.1	15.5	328.9	292	298	265	UTM very unreliable	Lot centroid
6714337	10536544	City of Guelph	21 Municipal Wells	D	11/29/02	552,601	4,826,406	82.3	19.8	357.8	334	331	297	margin of error : 100 m - 300 m	from gis
6714347	10536554	City of Guelph	21 Municipal Wells	D	12/10/02	557,949	4,833,345	42.7	12.2	374.3	358	348	342	margin of error : 100 m - 300 m	from gis
6714365	10542210	City of Guelph	21 Municipal Wells	D	12/09/02	563,013	4,830,891	56.4	10.7	368.5	350	347	334	Approximate location: margin of error : 1 km - 3 km	Lot centroid
6714685	11100601	City of Guelph	21 Municipal Wells	D	10/30/03	561,625	4,836,030	42.4	4.9	387.4	368	355	346	UTM very unreliable	Lot centroid
6714718	11100633	City of Guelph	21 Municipal Wells	D	10/23/03	558,175	4,833,660	73.2	4.0	384.1	367	349	344	UTM very unreliable	Lot centroid
6714897	11108248	City of Guelph	21 Municipal Wells	D	4/27/04	557,791	4,815,714	48.5	11.3	319.9	305	306	275	margin of error : 100 m - 300 m	on Water Well Record
6714932	11179569	City of Guelph	21 Municipal Wells	D	5/07/04	557,790	4,833,463	43.0	8.2	376.8	361	348	343	margin of error : 10 - 30 m	on Water Well Record
6715071	11179708	City of Guelph	21 Municipal Wells	D	9/01/04	558,582	4,829,924	67.1	11.8	380.0	368	342	331	margin of error : 10 - 30 m	on Water Well Record
6715184	11179820	City of Guelph	21 Municipal Wells	D	9/17/04	553,216	4,823,102	67.7		343.7	320	319	294	margin of error : 10 - 30 m	on Water Well Record
6715338	11327124	City of Guelph	21 Municipal Wells	D	4/06/05	563,000	4,829,466	48.8	1.8	363.3	347	340	327	margin of error : 30 m - 100 m	on Water Well Record
6715354	11327140	City of Guelph	21 Municipal Wells	D	5/16/05	557,175	4,833,925	67.0	9.4	375.1	366	350	346	margin of error : 30 m - 100 m	on Water Well Record
6715379	11327165	City of Guelph	21 Municipal Wells	D	5/05/89	565,190	4,832,673	43.6	17.1	383.1	360	359	344	margin of error : 30 m - 100 m	on Water Well Record
6715422	11327208	City of Guelph	21 Municipal Wells	D	8/22/05	559,681	4,833,515	31.1		364.3	356	354	341	margin of error : 30 m - 100 m	on Water Well Record
6715424	11327210	City of Guelph	21 Municipal Wells	D	7/21/05	559,678	4,833,508	61.9	17.0	364.2	356	354	341	margin of error : 30 m - 100 m	on Water Well Record
6715445	11327231	City of Guelph	21 Municipal Wells	D	7/08/05	558,505	4,815,510	90.0		306.1	296	300	277	margin of error : 30 m - 100 m	on Water Well Record
6715506	11327292	City of Guelph	21 Municipal Wells	D	9/29/05	553,582	4,823,027	79.2	8.8	341.7	321	319	295	margin of error : 30 m - 100 m	on Water Well Record
6715653	11558174	City of Guelph	21 Municipal Wells	D	1/11/06	564,444	4,830,600	36.6	14.3	368.5	353	348	334	margin of error : 10 - 30 m	on Water Well Record
6715850	11558371	City of Guelph	21 Municipal Wells	D	6/28/06	563,164	4,832,407	42.7	15.8	375.1	367	354	339	margin of error : 10 - 30 m	on Water Well Record
6715852	11558373	City of Guelph	21 Municipal Wells	D	6/13/06	562,082	4,830,623	48.8	15.5	372.4	353	338	333	margin of error : 10 - 30 m	on Water Well Record
6715999	11695781	City of Guelph	21 Municipal Wells	D	10/27/06	559,757	4,836,639	74.0	9.1	396.4	382	356	348	margin of error : 10 - 30 m	on Water Well Record
7040806	11763363	City of Guelph	21 Municipal Wells	D	1/09/07	552,755	4,827,724	67.7	44.2	370.1	341	335	304	margin of error : 10 - 30 m	on Water Well Record
7045911	23045911	City of Guelph	21 Municipal Wells	D	5/15/07	561,889	4,835,065	81.3		380.5	367	353	344	margin of error : 10 - 30 m	on Water Well Record
7048286	23048286	City of Guelph	21 Municipal Wells	D	7/30/07	565,195	4,832,926	48.8	5.2	382.3	368	360	345	margin of error : 10 - 30 m	on Water Well Record
7048287	23048287	City of Guelph	21 Municipal Wells	D	7/27/07	565,262	4,832,859	42.7	4.6	382.0	367	360	345	margin of error : 10 - 30 m	on Water Well Record
7051831	23051831	City of Guelph	21 Municipal Wells	D	10/15/07	559,705	4,835,127	27.4	2.7	370.7	371	353	346	margin of error : 10 - 30 m	on Water Well Record
7053283	23053283	City of Guelph	21 Municipal Wells	D	11/20/07	553,624	4,830,660	67.1	11.3	379.9	363	358	324	margin of error : 10 - 30 m	on Water Well Record
7053292	23053292	City of Guelph	21 Municipal Wells	D	10/30/07	553,570	4,829,119	54.9	7.6	365.3	354	348	314	margin of error : 10 - 30 m	on Water Well Record
7102462	1001535364	City of Guelph	21 Municipal Wells	D	10/24/07	559,109	4,830,243	33.6	3.2	366.0	360	344	334	margin of error : 10 - 30 m	on Water Well Record
7105892	1001605465	City of Guelph	21 Municipal Wells	D	5/14/08	557,974	4,831,894	53.9	1.8	375.9	365	362	339	margin of error : 10 - 30 m	on Water Well Record
7113272	1001837858	City of Guelph	21 Municipal Wells	D	6/06/08	559,841	4,835,171	22.9	2.9	368.5	365	353	346	margin of error : 10 - 30 m	on Water Well Record
7121875	1002416024	City of Guelph	21 Municipal Wells	D	8/15/08	563,024	4,835,566	97.2	24.4	404.4	361	358	347	margin of error : 30 m - 100 m	on Water Well Record
7128692	1002705585	City of Guelph	21 Municipal Wells	D	9/10/07	565,950	4,831,291	54.6	12.3	371.2	364	345	329	margin of error : 10 - 30 m	on Water Well Record
7141049	1002946548	City of Guelph	21 Municipal Wells	D	9/01/09	559,364	4,835,572	89.9		387.2	379	354	346	margin of error : 100 m - 300 m	on Water Well Record
7144335	1002970725	City of Guelph	21 Municipal Wells	D	3/19/10	554,036	4,828,173	74.7	2.7	360.9	353	348	309	margin of error : 30 m - 100 m	on Water Well Record
7146642	1003023722	City of Guelph	21 Municipal Wells	D	5/27/10	557,436	4,833,824	44.5	4.3	379.8	366	349	345	margin of error : 30 m - 100 m	on Water Well Record
7148259	1003160523	City of Guelph	21 Municipal Wells	D	6/17/10	569,725	4,817,858	48.8	3.7	341.4	312	317	299	margin of error : 30 m - 100 m	on Water Well Record
7149913	1003290251	City of Guelph	21 Municipal Wells	D	7/30/10	558,359	4,832,747	89.9	10.9	371.7	351	347	333	margin of error : 100 m - 300 m	on Water Well Record
7150837	1003331830	City of Guelph	21 Municipal Wells	D	7/26/10	562,324	4,834,337	37.8	0.5	370.3	351	352	343	margin of error : 30 m - 100 m	on Water Well Record
7153179	1003352394	City of Guelph	21 Municipal Wells	D	9/14/10	559,389	4,814,680	75.0	28.7	312.4	287	298	266	margin of error : 10 - 30 m	on Water Well Record
7161595	1003494896	City of Guelph	21 Municipal Wells	D	6/22/10	558,795	4,833,496	47.9	10.7	372.1	360	351	344	margin of error : 10 - 30 m	on Water Well Record
7164116	1003519358	City of Guelph	21 Municipal Wells	D	5/25/11	559,140	4,814,630	48.8	11.9	311.7	294	298	266	margin of error : 10 - 30 m	on Water Well Record
7166892	1003546843	City of Guelph	21 Municipal Wells	D	7/29/11	554,070	4,833,983	55.5	4.3	390.9	379	350	340	margin of error : 10 - 30 m	on Water Well Record
7171438	1003605129	City of Guelph	21 Municipal Wells	D	10/18/11	563,483	4,829,953	41.8	12.2	364.1	343	343	329	margin of error : 10 - 30 m	on Water Well Record
7172652	1003614384	City of Guelph	21 Municipal Wells	D	11/18/11	559,633	4,831,153	65.5	6.0	360.8	356	341	338	margin of error : 10 - 30 m	on Water Well Record

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
7173141	1003617183	City of Guelph	21 Municipal Wells	D	11/11/11	563,479	4,829,921	36.9	11.5	363.2	342	343	329	margin of error : 30 m - 100 m	on Water Well Record
7176198	1003645381	City of Guelph	21 Municipal Wells	D	1/06/12	563,522	4,830,521	37.8	10.5	367.8	348	348	332	margin of error : 30 m - 100 m	on Water Well Record
7186050	1004141121	City of Guelph	21 Municipal Wells	D	8/03/12	562,232	4,835,293	70.1	0.6	374.9	360	355	345	margin of error : 30 m - 100 m	on Water Well Record
7187158	1004155078	City of Guelph	21 Municipal Wells	D	8/04/12	563,077	4,833,558	33.5	6.0	371.9	369	353	343	margin of error : 30 m - 100 m	on Water Well Record
7190333	1004188784	City of Guelph	21 Municipal Wells	D	7/10/12	554,120	4,828,360	86.6	11.8	366.8	355	350	310	margin of error : 30 m - 100 m	on Water Well Record
7203124	1004342662	City of Guelph	21 Municipal Wells	D	5/08/13	553,027	4,826,759	90.8	5.8	353.9	339	335	299	margin of error : 30 m - 100 m	on Water Well Record
7203165	1004344394	City of Guelph	21 Municipal Wells	D	4/22/13	569,442	4,817,915	54.9	13.7	343.2	314	318	297	margin of error : 30 m - 100 m	on Water Well Record
7206292	1004514150	City of Guelph	21 Municipal Wells	D	7/03/13	564,494	4,832,162	42.7	2.7	369.8	361	358	340	margin of error : 30 m - 100 m	on Water Well Record
7215456	1004698970	City of Guelph	21 Municipal Wells	D	11/26/13	558,531	4,836,361	49.4	7.3	393.0	381	355	347	margin of error : 30 m - 100 m	on Water Well Record
7228267	1005137437	City of Guelph	21 Municipal Wells	D	6/25/14	553,110	4,822,284	61.6	7.2	343.0	315	317	296	margin of error : 30 m - 100 m	on Water Well Record
7228269	1005137453	City of Guelph	21 Municipal Wells	D	6/25/14	555,706	4,826,784	49.4	4.9	350.5	347	342	303	margin of error : 30 m - 100 m	on Water Well Record
7229181	1005158336	City of Guelph	21 Municipal Wells	D	8/18/14	565,086	4,831,804	43.3	11.9	367.2	360	355	340	margin of error : 30 m - 100 m	on Water Well Record
7248477	1005692699	City of Guelph	21 Municipal Wells	D	5/29/15	555,758	4,826,711	50.0	5.8	350.7	348	341	303	margin of error : 30 m - 100 m	on Water Well Record
7249032	1005712036	City of Guelph	21 Municipal Wells	D	8/19/15	569,508	4,817,971	61.0	14.3	344.4	314	318	298	margin of error : 30 m - 100 m	on Water Well Record
7249033	1005712039	City of Guelph	21 Municipal Wells	D	8/12/15	558,701	4,834,221	49.4	5.5	384.3	370	352	345	margin of error : 30 m - 100 m	on Water Well Record
7254211	1005836880	City of Guelph	21 Municipal Wells	D	10/15/15	559,466	4,834,710	42.8	6.7	380.8	374	352	345	margin of error : 30 m - 100 m	on Water Well Record
7254745	1005843916	City of Guelph	21 Municipal Wells	D	12/07/15	558,461	4,815,448	39.9		305.3	294	300	277	margin of error : 30 m - 100 m	on Water Well Record
7254746	1005843919	City of Guelph	21 Municipal Wells	D	12/07/15	558,039	4,815,569	39.6		313.4	301	303	276	margin of error : 30 m - 100 m	on Water Well Record
7256076	1005869195	City of Guelph	21 Municipal Wells	D	11/18/15	559,986	4,834,842	27.4	3.0	369.8	368	352	345	margin of error : 30 m - 100 m	on Water Well Record
7257193	1005877580	City of Guelph	21 Municipal Wells	D	1/06/16	554,054	4,818,079	62.5	0.9	330.8	322	314	279	margin of error : 30 m - 100 m	YPD: Assessment ; OBM/OrothPhoto
7268870	1006209716	City of Guelph	21 Municipal Wells	D	7/27/16	553,399	4,830,522	96.9	15.2	377.0	359	352	322	margin of error : 30 m - 100 m	on Water Well Record
7272265	1006257364	City of Guelph	21 Municipal Wells	D	8/29/16	557,950	4,829,265	43.0	5.2	366.3	355	346	325	margin of error : 30 m - 100 m	on Water Well Record
7272708	1006262523	City of Guelph	21 Municipal Wells	D	8/24/16	555,762	4,826,689	56.4	8.5	350.8	348	341	303	margin of error : 30 m - 100 m	on Water Well Record
7279884	1006346694	City of Guelph	21 Municipal Wells	D	1/24/17	554,010	4,828,138	82.0	2.5	359.9	353	348	309	margin of error : 30 m - 100 m	on Water Well Record
7285248	1006381705	City of Guelph	21 Municipal Wells	D	3/17/17	563,199	4,833,481	49.4	7.0	372.2	369	353	343	margin of error : 30 m - 100 m	on Water Well Record
7285482	1006383267	City of Guelph	21 Municipal Wells	D	3/27/17	553,491	4,823,212	69.8		339.7	316	320	293	margin of error : 30 m - 100 m	on Water Well Record
7297452	1006767237	City of Guelph	21 Municipal Wells	D	9/25/17	557,498	4,815,215	180.0	37.0	314.9	310	302	267	margin of error : 30 m - 100 m	on Water Well Record
7297510	1006768339	City of Guelph	21 Municipal Wells	D	9/27/17	553,999	4,834,007	55.8	7.6	391.4	380	349	340	margin of error : 30 m - 100 m	on Water Well Record
7300263	1006840997	City of Guelph	21 Municipal Wells	D	11/21/17	553,220	4,822,642	65.5	10.3	345.5	320	317	296	margin of error : 30 m - 100 m	on Water Well Record
7309091	1007015941	City of Guelph	21 Municipal Wells	D	4/04/18	558,601	4,832,479	68.0	21.2	374.9	352	348	336	margin of error : 30 m - 100 m	on Water Well Record
7309261	1007018199	City of Guelph	21 Municipal Wells	D	3/16/18	557,596	4,816,208	73.5	13.1	329.3	313	313	278	margin of error : 30 m - 100 m	on Water Well Record
7309262	1007018204	City of Guelph	21 Municipal Wells	D	3/16/16	557,638	4,816,246	78.6	15.0	329.5	314	313	278	margin of error : 30 m - 100 m	on Water Well Record
7309263	1007018207	City of Guelph	21 Municipal Wells	D	3/16/18	557,647	4,816,188	55.5		328.7	312	312	278	margin of error : 30 m - 100 m	on Water Well Record
7312184	1007089267	City of Guelph	21 Municipal Wells	D	4/09/18	552,913	4,826,858	90.8	4.0	355.1	341	335	299	margin of error : 30 m - 100 m	on Water Well Record
7317766	1007271376	City of Guelph	21 Municipal Wells	D	8/10/18	558,071	4,836,896	49.4	7.6	388.1	380	356	348	margin of error : 30 m - 100 m	on Water Well Record
7322876	1007315824	City of Guelph	21 Municipal Wells	D	10/17/18	557,157	4,834,044	73.8	6.4	375.9	365	350	346	margin of error : 30 m - 100 m	on Water Well Record
7326749	1007360157	City of Guelph	21 Municipal Wells	D	12/24/18	560,061	4,836,527	54.9	19.8	401.7	376	356	348	margin of error : 30 m - 100 m	on Water Well Record
7327067	1007358453	City of Guelph	21 Municipal Wells	D	12/05/18	554,181	4,824,850	83.8	14.3	352.6	334	329	290	margin of error : 30 m - 100 m	on Water Well Record
7331293	1007427028	City of Guelph	21 Municipal Wells	D	3/20/19	553,708	4,827,864	54.9	3.4	358.1	347	345	307	margin of error : 30 m - 100 m	on Water Well Record
7344216	1007676002	City of Guelph	21 Municipal Wells	D	9/05/19	560,083	4,835,138	42.7	7.0	377.1	370	353	346	margin of error : 30 m - 100 m	on Water Well Record
7350234	1007820637	City of Guelph	21 Municipal Wells	D	12/15/19	558,126	4,834,631	55.8	4.4	386.6	371	352	346	margin of error : 30 m - 100 m	on Water Well Record
7357958	1008271659	City of Guelph	21 Municipal Wells	D	12/18/19	553,110	4,830,102	60.4	6.1	371.7	355	345	319	margin of error : 30 m - 100 m	on Water Well Record
7370172	1008496316	City of Guelph	21 Municipal Wells	D	00000000	552,301	4,825,253	91.4	9.4	353.1	338	325	292	margin of error : 30 m - 100 m	on Water Well Record
7413454	1008976966	City of Guelph	21 Municipal Wells	D	3/10/22	560,657	4,832,473	35.7	9.4	375.3	349	343	340	margin of error : 30 m - 100 m	on Water Well Record
6708419	10472325	Guelph/Eramosa	Cross Creek & Huntington	A	4/23/86	558,390	4,826,520	71.9	0.3	338.8	337	330	310	margin of error : 10 - 30 m	from gps
6708936	10472816	Guelph/Eramosa	Cross Creek & Huntington	A	9/25/87	558,041	4,825,847	48.8	2.4	354.3	351	331	306	margin of error : 10 - 30 m	from gps
6701215	10465360	Guelph/Eramosa	Cross Creek & Huntington	B	3/28/62	558,181	4,826,929	60.4	13.7	356.4	328	333	312	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703089	10467231	Guelph/Eramosa	Cross Creek & Huntington	B	2/07/68	557,014	4,830,643	73.2	10.7	379.6	371	351	331	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6708061	10472003	Guelph/Eramosa	Cross Creek & Huntington	B	11/21/83	557,154	4,827,503	57.9	18.9	357.3	347	340	312	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6713033	10476866	Guelph/Eramosa	Cross Creek & Huntington	B	8/03/99	557,729	4,826,867	69.5	21.9	359.8	330	335	310	UTM very unreliable	Lot centroid
6714506	10548057	Guelph/Eramosa	Cross Creek & Huntington	B	6/13/03	555,991	4,830,920	87.2	32.3	384.4	365	363	330	UTM very unreliable	Lot centroid
6715193	11179829	Guelph/Eramosa	Cross Creek & Huntington	B	10/19/04	557,626	4,828,309	73.2	6.7	358.2	351	343	319	margin of error : 10 - 30 m	on Water Well Record
7134462	1002834465	Guelph/Eramosa	Cross Creek & Huntington	B	10/21/09	557,218	4,828,768	42.7	6.7	359.1	357	351	320	margin of error : 30 m - 100 m	YPD: Assessment ; OBM/OrothPhoto
6701818	10465963	Guelph/Eramosa	Cross Creek & Huntington	C	6/01/67	556,438	4,833,637	45.7	8.5	385.5	353	347	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6704925	10469029	Guelph/Eramosa	Cross Creek & Huntington	C	9/13/73	556,538	4,831,936	74.7	7.6	379.3	370	362	337	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704978	10469081	Guelph/Eramosa	Cross Creek & Huntington	C	1/21/74	556,150	4,833,412	50.6	6.4	383.2	349	345	343	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705136	10469234	Guelph/Eramosa	Cross Creek & Huntington	C	6/11/74	554,888	4,832,734	50.3	7.6	380.9	354	347	340	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705346	10469440	Guelph/Eramosa	Cross Creek & Huntington	C	11/08/74	554,638	4,834,986	79.2	19.8	396.7	375	349	343	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705457	10469550	Guelph/Eramosa	Cross Creek & Huntington	C	11/12/74	556,417	4,833,364	50.3	6.4	381.8	350	346	344	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705791	10469880	Guelph/Eramosa	Cross Creek & Huntington	C	9/03/75	555,222	4,835,406	76.2	9.1	399.3	384	351	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706015	10470097	Guelph/Eramosa	Cross Creek & Huntington	C	6/12/76	556,514	4,833,723	58.2	9.4	386.3	355	348	345	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706034	10470115	Guelph/Eramosa	Cross Creek & Huntington	C	8/08/75	556,464	4,833,523	54.9	10.1	383.3	352	347	344	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706044	10470125	Guelph/Eramosa	Cross Creek & Huntington	C	5/08/75	555,414	4,832,423	64.0	3.0	380.2	377	347	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706553	10470629	Guelph/Eramosa	Cross Creek & Huntington	C	11/03/77	555,964	4,833,023	45.4	3.7	381.5	349	344	342	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706648	10470722	Guelph/Eramosa	Cross Creek & Huntington	C	8/26/77	555,214	4,832,423	54.9	3.0	378.3	346	343	338	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6707843	10471845	Guelph/Eramosa	Cross Creek & Huntington	C	3/14/83	556,636	4,833,650	79.2	7.6	382.4	354	347	345	margin of error : 10 - 30 m	
6708260	10472170	Guelph/Eramosa	Cross Creek & Huntington	C	8/22/85	556,270	4,833,065	49.7	10.4	382.2	345	345	342	margin of error : 10 - 30 m	from gps
6708302	10472212	Guelph/Eramosa	Cross Creek & Huntington	C	10/30/85	555,856	4,833,004	60.0	3.7	380.9	349	343	342	margin of error : 10 - 30 m	from gps
6708479	10472377	Guelph/Eramosa	Cross Creek & Huntington	C	6/17/86	556,428	4,834,298	47.2	5.2	385.5	364	349	345	margin of error : 10 - 30 m	from gps
6708482	10472380	Guelph/Eramosa	Cross Creek & Huntington	C	5/29/86	555,511	4,832,691	42.7	10.7	382.7	355	346	340	margin of error : 10 - 30 m	from gps
6712350	10476183	Guelph/Eramosa	Cross Creek & Huntington	C	9/18/97	554,779	4,835,186	62.5	4.9	400.7	383	350	343	margin of error : 10 - 30 m	
6712384	10476217	Guelph/Eramosa	Cross Creek & Huntington	C	10/30/97	555,103	4,836,691	54.9	4.0	397.7	376	353	345	UTM very unreliable	Lot centroid
6712454	10476287	Guelph/Eramosa	Cross Creek & Huntington	C	12/24/96	554,487	4,834,497	53.3	6.1	393.2	375	347	342	margin of error : 10 - 30 m	

Appendix A
MECP Water Well Records Interpreted as Potential Multiaquifer Wells

Well ID	Borehole ID	Water Supply	Supply Well (s)	WHPA	Date Completed	Easting	Northing	Well Depth (m)	Static Water Level (m)	Ground Elevation (mAMSL)	Top of Rock (mAMSL)	Bottom of Guelph Formation (mAMSL)	Bottom of Aquitard (mAMSL)	UTM Reliabilty	Location Method
6713251	10477084	Guelph/Eramosa	Cross Creek & Huntington	C	10/14/99	555,694	4,830,610	61.0	10.7	381.3	359	365	328	UTM very unreliable	Lot centroid
6713343	10477176	Guelph/Eramosa	Cross Creek & Huntington	C	5/15/00	555,864	4,832,280	49.7	15.2	375.8	359	354	338	UTM very unreliable	Lot centroid
6714031	10528566	Guelph/Eramosa	Cross Creek & Huntington	C	2/13/02	556,809	4,833,227	43.3	11.6	376.1	350	347	344	UTM very unreliable	Lot centroid
6715240	11327026	Guelph/Eramosa	Cross Creek & Huntington	C	1/07/05	555,510	4,832,589	57.9	9.8	382.8	358	349	339	margin of error : 30 m - 100 m	on Water Well Record
6715692	11558213	Guelph/Eramosa	Cross Creek & Huntington	C	2/03/06	555,819	4,833,041	55.5	11.0	380.9	349	343	342	margin of error : 10 - 30 m	on Water Well Record
7102460	1001535358	Guelph/Eramosa	Cross Creek & Huntington	C	11/01/07	555,187	4,832,908	44.2	9.5	383.8	358	347	341	margin of error : 10 - 30 m	from gps
7161640	1003494986	Guelph/Eramosa	Cross Creek & Huntington	C	8/25/10	555,539	4,834,585	55.5	9.1	397.5	384	349	345	margin of error : 10 - 30 m	on Water Well Record
7407870	1008915237	Guelph/Eramosa	Cross Creek & Huntington	C	12/20/21	555,030	4,832,392	54.6	5.5	375.2	363	341	338	margin of error : 30 m - 100 m	on Water Well Record
6711491	10475324	Guelph/Eramosa	Cross Creek & Huntington	D	6/30/94	555,824	4,838,008	78.3	21.3	420.5	394	355	347	margin of error : 100 m - 300 m	from gps
2515102	10531321	Mount Forest	Mount Forest 3,4,5,6	A	7/04/02	520,732	4,870,428	115.8		416.3	383	333	308	margin of error : 100 m - 300 m	from gis
6703148	10467290	Mount Forest	Mount Forest 3,4,5,6	A	10/21/68	520,714	4,870,473	121.9	11.9	416.0	382	333	308	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6706988	10471054	Mount Forest	Mount Forest 3,4,5,6	A	4/25/79	520,164	4,869,573	121.9	15.5	417.7	378	329	304	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6701750	10465895	Mount Forest	Mount Forest 3,4,5,6	C	12/07/62	521,520	4,870,828	122.2	14.6	420.1	389	338	313	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6714007	10528542	Mount Forest	Mount Forest 3,4,5,6	C	11/17/00	520,683	4,870,058	165.2		419.3	385	332	308	margin of error : 10 - 30 m	
6703213	10467355	Rockwood	Well 1&2	D	3/19/68	566,914	4,833,703	53.3	5.2	394.4	375	364	356	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700478	10464624	Rockwood	Well 1&2	D	4/19/66	566,696	4,833,863	51.5	5.8	394.6	375	364	355	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700491	10464637	Rockwood	Well 1&2	D	10/10/57	566,774	4,834,627	55.2	15.8	399.0	380	363	355	UTM very unreliable	Original Pre1985 UTM Rel Code 9: unknown UTM
6700494	10464640	Rockwood	Well 1&2	D	2/05/64	566,893	4,834,428	61.0	14.6	402.9	384	363	356	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700496	10464642	Rockwood	Well 1&2	D	1/27/64	565,916	4,836,229	60.4	12.2	399.5	385	366	353	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6700524	10464670	Rockwood	Well 1&2	D	6/07/62	567,225	4,835,321	44.8	2.4	388.2	380	361	356	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6703507	10467644	Rockwood	Well 1&2	D	11/06/69	566,234	4,836,323	61.0	7.6	397.8	393	365	355	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6703918	10468046	Rockwood	Well 1&2	D	5/10/71	566,434	4,834,313	53.6	20.4	401.7	371	364	354	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704789	10468896	Rockwood	Well 1&2	D	8/07/73	567,264	4,835,243	44.8	6.1	386.8	379	360	356	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6704859	10468965	Rockwood	Well 1&2	D	10/26/73	567,314	4,835,183	34.7	5.5	386.0	378	360	356	margin of error : 30 m - 100 m	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
6705362	10469456	Rockwood	Well 1&2	D	11/11/74	567,039	4,834,948	43.0	9.1	383.7	372	362	356	margin of error : 100 m - 300 m	Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
6712813	10476646	Rockwood	Well 1&2	D	12/23/98	566,424	4,835,181	43.3	15.2	394.7	383	364	355	UTM very unreliable	Lot centroid
6713489	10477322	Rockwood	Well 1&2	D	9/27/00	567,241	4,835,332	55.5	6.7	388.4	379	360	356	margin of error : 10 - 30 m	
7125763	1002531834	Rockwood	Well 1&2	D	6/17/09	565,901	4,836,253	61.0	10.7	399.0	385	366	353	margin of error : 10 - 30 m	on Water Well Record

Ontario

Ministry of Natural Resources and Forestry

Print Blank Form

Objection Form (August 2023)

Instructions

Instructions for Applicants under the *Aggregate Resources Act*

If there are any outstanding comments with respect to an application for an aggregate licence or an amendment to lower the depth of extraction from above to below the water table, after the applicant's attempt to address them, the applicant shall serve a summary of outstanding comment(s), a summary of the applicant's attempts to address the comment(s), and the applicant's recommendations to address the comment(s), on Part 1 of this form to any person who submitted a comment and has not withdrawn their comment. The applicant shall complete Part 1 of this form and send a copy to ARAapprovals@ontario.ca, or, if email is not available, Aggregates Section, Ministry of Natural Resources and Forestry, 300 Water Street, Peterborough ON K9J 3C7.

The Objection Form shall be served on commenters by courier, registered mail, personal delivery, or, by email if consented to by the commenter. Applicants that provide their email address on Part 1 of this form consent to the commenter returning the completed form by email.

Instructions for Commenters

You have received this form because you submitted a comment to the applicant for an aggregate licence or for an amendment to lower the depth of extraction from above to below the water table and the Ministry of Natural Resources and Forestry during the consultation period and you have not withdrawn your comment. If you wish to file an objection to the application, you are required to complete Part 2 of this form and serve it on the applicant by courier, registered mail, personal delivery, or by email (if the applicant provided their email in Part 1), within 20 days of receiving the form. Send a copy of the completed form to the ministry. If there is not enough space provided, please attach a separate page with additional comments and recommendations. Any previous comments that have been submitted on an application are considered withdrawn if an objection form is not completed and sent within the 20-day deadline to both the applicant and the Ministry.

Please be aware that the Ministry of Natural Resources and Forestry may refer the application and outstanding objections to the Ontario Land Tribunal (OLT) for a decision. As an objector, you will be expected to participate in OLT case management conferences, mediation and/or hearings. Before filing an objection, you should understand the roles, responsibilities and expectations that may be placed on you by the OLT. The OLT may dismiss a proceeding without a hearing if they find the matter to be frivolous, vexatious or commenced in bad faith.

Please review the information on Part 1 and complete Part 2.

Return this Form to **both** the **Applicant** (at the address listed on Part 1) and send a copy to: ARAapprovals@ontario.ca **or if email is not available, Aggregates Section, Ministry of Natural Resources and Forestry, 300 Water Street, Peterborough ON K9J 3C7.**

If you have questions, please contact:
Ministry of Natural Resources and Forestry,
Natural Resources Information and Support Centre (NRISC)
300 Water Street
Peterborough ON K9J 3C7
Toll free: 1-800-667-1940

Fields marked with an asterisk (*) are mandatory.

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Part 1: To be completed by the Applicant

Last Name *	First Name *	Middle Initial
May	Stephen	

Name of Business/Organization/Affiliation
CBM Aggregates, a division of St. Marys Cement Inc

Telephone Number	Mobile Number	Email Address
647-637-6707 ext.		stephen.may@vcimentos.com

Mailing Address of Applicant ☑ Canada ☐ USA

Unit Number	Street Number *	Street Name *	PO Box
	55	Industrial Street	

City/Town/Municipality *	Province *	Postal Code *	Country
Toronto	Ontario	M4G 3W9	Canada

☑ Applicant Physical Address is same as above

Proposed Aggregate Site / Existing Aggregate Site Location *
(e.g. by lot and concession, local municipality, county or regional municipality, geographic township or territorial district)
6947 Concession 2, Puslinch, ON
Lot 18-20, Concession 1, Township of Puslinch, Wellington County

Application for a * ☑ pit ☐ quarry ☐ both ☐ amendment (insert licence number) _____

20-Day Response Period

Start Date (yyyy/mm/dd) *	End Date (yyyy/mm/dd) *
2026/02/24	2026/03/16

Commenter Information

Last Name *	First Name *	Middle Initial
Hoytfox	Courtenay	

Name of Business/Organization/Affiliation
Township of Puslinch

Telephone Number	Mobile Number	Email Address
519-763-1226 ext. 227		choytfox@puslinch.ca

Address ☑ Canada ☐ USA

Unit Number	Street Number *	Street Name *	PO Box
	7404	Wellington Road 34	

City/Town/Municipality *	Province *	Postal Code *	Country
Puslinch	Ontario	N0B 2J0	Canada

Table 1: In the table below, please document the outstanding comment(s), one per row, your attempts to address them, and your recommendations to resolve them.

	A Outstanding Comment(s) *	B Previous Attempt(s) to Address Comment(s) *	C Final Recommendation(s) to Address Comment(s) *
1.	Concern that appropriate designation and zoning are not in place	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	Amendment applications have been submitted to the County and Township to redesignate and rezone the site to permit the pit operation. The applications have been deemed complete by the County and Township. Formal circulation and review of the planning applications is ongoing.

	A Outstanding Comment(s) *	B Previous Attempt(s) to Address Comment(s) *	C Final Recommendation(s) to Address Comment(s) *
2.	Concerns of consideration of application as a pit expansion	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	CBM has renamed the proposed pit to “Aberfoyle South Lake Pit”. The application continues to be assessed as a new pit application under the Aggregate Resources Act.
3.	The effect of the operation of the pit on the natural environment	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	Changes made to site plan to incorporate additional mitigation measures for adjacent wetlands and significant natural features. A combined hydrological and natural environment monitoring plan has been developed which includes trigger thresholds and potential mitigation measures to address any unanticipated adverse impacts that may occur on the natural environment. Specific rehabilitation targets and thresholds for tree planting areas, and an increase in the area of wetlands being created through pit rehabilitation have been incorporated to the site plan.
4.	The effect of the operation of the pit on the nearby residents	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	The proposed pit has been designed to minimize impacts on nearby residents in accordance with applicable standards and regulations. The proposed haul route from the site to the existing Aberfoyle South Pit includes only one house which is located adjacent to existing pit operations. The closest residences to the proposed pit were considered in the noise and visual impact assessments as well as the Dust Best Management Practices Plan. The site will be screened from public view due to the location of the extraction area, setbacks, berms and additional tree and vegetation screenings along Concession 2.
5.	The suitability of the final rehabilitation plans for the site	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	The creation of a pond (26 ha), new wetlands (0.8 ha) and tree planting areas (6.7 ha) is suitable for the area and compatible with surrounding land uses including Mill Creek and nearby wetlands and woodlands.

	A Outstanding Comment(s) *	B Previous Attempt(s) to Address Comment(s) *	C Final Recommendation(s) to Address Comment(s) *
6.	The possible effects on ground and surface water, including the potential impacts on Mill Creek and the associated provincially significant wetland	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	The effects on groundwater are largely confined to the licence area and surrounding CBM owned property. An Enhanced Hydrological Monitoring Plan has been developed in response to comments received to verify that no unanticipated adverse impact occurs to groundwater, including trigger thresholds, and identifying potential corrective actions. The technical studies demonstrate that with the proposed mitigation measures, i.e. setbacks from the natural features and ongoing monitoring, there are no anticipated adverse impacts to Mill Creek. The Department of Fisheries and Oceans (DFO) has been consulted on the application relative to potential impacts to watercourses and fish habitat and have determined that the application is in compliance with the Fisheries Act.
7.	The potential for impacts on adjacent agricultural operations	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	The subject land is an isolated farm parcel that is primarily located within a floodplain. The subject lands are not identified as a prime agricultural area in the County's Official Plan. Truck traffic from the pit will be limited to using a 2 km stretch of Concession 2 which contains existing truck traffic.
8.	The potential for impacts on the proposed haul route, including the provision for road improvements and a mechanism to ensure maintenance of the haul route as a result of gravel truck traffic on the municipal road network	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	As agreed to through the Township's peer reviewer, a geotechnical investigation of Concession 2 and the Mill Creek culvert will be undertaken prior to pit operations in conjunction with the Township's planned improvements to Concession 2. The proposed haul route is limited to travelling east on Concession 2 from the proposed pit approximately 2 km to the processing plant.

	A Outstanding Comment(s) *	B Previous Attempt(s) to Address Comment(s) *	C Final Recommendation(s) to Address Comment(s) *
9.	The determination of the quantity of aggregate on the site	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	Approximately 5.5 million tonnes of sand and gravel resources are found on the site. Testing of on-site sand and gravel resources has been conducted and confirmed that these materials can be used to produce granular products, and coarse and fine aggregates used in hot-mix asphalt paving and concrete production.
10.	A comprehensive rehabilitation plan for licensed pits operated by the applicant (or its sister companies) in the local area	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	The proposed final landform takes into account surrounding land uses as well as approved rehabilitation plans for the other licences. Rehabilitation has occurred and continues to occur on other CBM licences along Concession 2 e.g. surrendered McMillan Pit, rehabilitation at Lanci Pit and McNally Pit, etc. CBM would like to meet with the Township to engage in discussions regarding future landforms and coordinated rehabilitation. This topic had previously been discussed at a high-level and CBM would like to re-engage on these discussions if the Township is open to it.
11.	The applicant's history of compliance with this Act and the regulations	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	CBM remains open to further discussions with the Township regarding compliance at its other licensed sites. Changes have been made directly in response to Township concerns.
12.	Concern for depth of extraction	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	The proposed extraction plan for the site recommends extraction to the base of the resource - where till is expected to be encountered - or to an elevation of no lower 285 masl. This approach optimizes the retrieval of resource along an irregular bottom surface.

A Outstanding Comment(s) *	B Previous Attempt(s) to Address Comment(s) *	C Final Recommendation(s) to Address Comment(s) *
13. Concern for the use of ecology and traffic studies older than 5 years in 2025	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	In response to comments received, additional and updated technical studies were undertaken including a Revised Transportation Impact Study, and assessments of potential impacts to adjacent natural features. Monitoring plans and mitigation measures have been developed to verify no adverse impacts occur to natural features, including trigger thresholds and identifying potential corrective actions; and to protect adjacent natural features.
14. Concern for flooding of site	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	Perimeter grading at a higher elevation of the final pit pond around the boundary of the extraction limit and a tile drain have been proposed to minimize potential flooding concerns. The Ministry of Environment, Conservation and Parks (Groundwater and Surface Water Branches) has reviewed the application and updated materials and has no remaining concerns with the project.
15. Concern of a virtual public meeting	Refer to December 4, 2025 response package and responses through review of Planning Act applications.	A virtual public meeting is permitted under the Aggregate Resources Act. CBM will consider the use of in-person public meetings for future ARA applications in the Township.

Part 2: To be completed by the Commenter

Table 2: In the table below, document any outstanding comment(s) and your recommendations for resolving it. If there is not enough space provided, please attach a separate page with additional comments and recommendations.

A Outstanding Comment(s)	B Recommendation for Addressing Comment
Please see attached letter.	

A Outstanding Comment(s)	B Recommendation for Addressing Comment

Commenters note: If you choose to participate in the *Aggregates Resources Act* notification and consultation process, all personal information you provide may be subject to the *Freedom of Information and Protection of Privacy Act* (FIPPA), whether provided to the Applicant and/or the Ministry of Natural Resources and Forestry at any point during the consultation process. The ministry collects your personal information under the authority of the *Aggregate Resources Act* and maintains it for the purposes of ensuring consultation and other requirements under the Act are met. Under the authority of subsection 11(2) or 13.1 (3) of the *Aggregate Resources Act*, your name and address will form part of the public record and will appear with your objection, unless you request in your submission that your name and address be kept **confidential**. If you have any questions about the collection and use of your personal information, please contact Ministry of Natural Resources and Forestry, Natural Resources Information and Support Centre (NRISC), 300 Water Street, Peterborough ON K9J 3C7. Toll free: 1-800-667-1940.

☐ I hereby request that my name and address be kept confidential.

By signing and returning this form to the applicant and the Ministry of Natural Resources and Forestry, you acknowledge the following.

☑ I understand that, in submitting this form, I will be considered a formal objector to this application for a licence or to this amendment to lower the depth of extraction from above to below the water table. *

☑ I understand that this application may be referred to the OLT and, as an objector, I will be required to participate in case management conferences, mediation and/or hearings held by the OLT. *

☑ I understand that, if this application is heard by the OLT, some of my personal information may become public under the *Tribunal Adjudicative Records Act* (TARA). *

Signature of Objector	Date (yyyy/mm/dd)
2026-03-16 14:59:02 EDT	2026-03-16

Part 2: To be completed by the Commenter

Table 2

	A Outstanding Comment(s)	B Recommendation for Addressing Comment
1.	Concern that appropriate designation and zoning are not in place	Amendment applications (OPA and ZBA) were recently deemed complete but there has been no public meeting scheduled for these applications and a decision on the merits of the applications has not been rendered by the respective councils at this stage. Additional technical review is required by the Township and the County.
2.	Concerns of consideration of application as a pit expansion	The applicant has acknowledged that this is not a pit expansion but rather a new pit application. The Township has no concerns with the proposed name of the pit – Aberfoyle South Lake Pit.
3.	The effect of the operation of the pit on the natural environment	Significant concerns have been expressed by the Township hydrogeologist with respect to impacts on the groundwater table. Additionally, the Township ecologist has identified several technical concerns that remain outstanding regarding potential impacts to the natural environment. These include uncertainty regarding groundwater impacts to Mill Creek and the Provincially Significant Wetland, limitations in the spatial extent of ecological field investigations, uncertainty in wetland and fish habitat impact assessments, potential loss of hydrologic functions associated with headwater drainage features, and insufficient justification for several ecological conclusions. Additional concerns have been noted by the Township ecologist regarding monitoring commitments, mitigation measures and the adequacy of baseline ecological data. Concerns from the Township engineer regarding offsite flooding and the proposed mitigation plan to control flooding have been expressed and remain unresolved.
4.	The effect of the operation of the pit on the nearby residents	Concerns remain with respect to the potential for impacts on the nearby residents. These impacts include negative effects on private lands with treed swamps and associated wildlife habitat. In

		addition, the potential for flooding nearby private lands has been identified as a concern.
5.	The suitability of the final rehabilitation plans for the site	Concerns regarding the suitability of the rehabilitated site (a lake) have been expressed by the Township development review team. Concerns have been raised regarding the long-term mitigation required to minimize flooding on neighbouring property. Concerns have been raised regarding the permanent drawdown of the water table in the area north and northeast of the proposed lake and increase in water table south and southwest of the lake.
6.	The possible effects on ground and surface water, including the potential impacts on Mill Creek and the associated provincially significant wetland	Significant concerns have been expressed by the Township hydrogeologist with respect to impacts on the groundwater table. The Township ecologist has raised concerns regarding the groundwater modelling results and their implications for Mill Creek, tributaries, and the associated Provincially Significant Wetland. Concerns include potential groundwater level changes across different areas of these systems, possible baseflow alterations, lack of field data across the full area of predicted groundwater influence, and uncertainty regarding how wetland hydrologic changes may influence downstream flows and fish habitat. Additional concerns have been noted by the Township ecologist regarding monitoring commitments, mitigation measures and the adequacy of baseline ecological data. Concerns from the Township engineer regarding offsite flooding and the proposed mitigation plan to control flooding have been expressed and remain unresolved.
7.	The potential for impacts on adjacent agricultural operations	Agricultural impacts have not been fully examined through an Agricultural Impact Assessment that conforms to the County of Wellington Official Plan policy 4.6.5 and incorporates relevant analysis and impact assessment as set out in OMFA Publication 861 (AIA Guidelines).
8.	The potential for impacts on the proposed haul route, including the provision for road improvements and a mechanism to ensure maintenance of the haul route as	The Township remains concerned that the proposed haul route will be negatively impacted by the Aberfoyle South Lake Pit. A portion of the proposed haul route is not a truck route, and a geotechnical

	a result of gravel truck traffic on the municipal road network	investigation is required to be completed by the applicant to determine existing pavement and base structure and condition and determine recommendations for required upgrades. In addition, structural testing/inspection of a culvert located along the proposed haul route is to be completed to confirm if it is suitable for the anticipated loads as is, or what upgrades would be necessary to have it meet the future required level of service. A comprehensive structural investigation including soil bearing capacity testing, concrete and rebar testing, and bridge deck inspection, is required. Sightline analysis is required for each proposed access.
9.	The determination of the quantity of aggregate on the site	The Township's development review team remains concerned that the determination of the quantity of aggregate does not coincide with the extraction limits in depth of the proposed pit.
10.	A comprehensive rehabilitation plan for licensed pits operated by the applicant (or its sister companies) in the local area	The Township remains concerned with the status of several existing licenced pits operated by the applicant. Several of these pit licences show little progress with rehabilitation and the rehabilitation plans for these sites are not coordinated. CBM has not requested a meeting with the Township to address these concerns.
11.	The applicant's history of compliance with this Act and the regulations	There are concerns with the anticipated silt load at the receiving Pit (McNally Licence No. 5497 – "McNally") and the noncompliance with the McNally site plans that are anticipated should this (and other proposed pits in the immediate vicinity) be approved. See the covering letter, Schedule "A" for an itemized summary of some of the Township's primary compliance concerns.
12.	Concern for depth of extraction	The Township's development review team remains concerned that the determination of the quantity of aggregate does not coincide with the extraction limits in depth of the proposed pit.
13.	Concern for the use of ecology and traffic studies older than 5 years in 2025	This remains a concern. The Township ecologist notes that several baseline studies have not been updated since being originally completed in 2018 and the supporting technical data may no longer reflect current conditions. Where these

		uncertainties exist, these studies should be updated to ensure the impact assessment is based on current conditions.
14.	Concern for flooding of site	The proposed mitigation plan to control flooding is not satisfactory to the Township. Potential for offsite impacts on the Natural Environment and private lands remains a concern. In particular, the Township ecologist notes that the downstream receiving waterbody and associated tributary system have not been adequately assessed to determine how changes in drainage patterns and flow contributions resulting from the proposed flood mitigation may affect channel stability, hydrology, and associated fish habitat. Additional evaluation is required to demonstrate that the proposed flood mitigation measures will not result in unintended downstream impacts to the aquatic system. Preliminary operational grading plans and associated flood maps need to be provided to better demonstrate how perimeter grading and berms will mitigate flooding. Additional modelling of the proposed tile drain is required to better demonstrate long term impacts of groundwater and surface water both on and offsite. There are also concerns about the long-term operation and maintenance of the tile drain, which need to be addressed.
15.	Concern of a virtual public meeting	Resolved.
16.	Visual Impact concerns	A detailed landscape plan/details has not been provided by the applicant at this time. A scaled cross-section of Concession 2, berm, and remediation plantings should be provided to visually demonstrate the extent of visual impact mitigation
17.	Air quality concerns	No specific air quality study or assessment was completed for the application. Typically, an air quality study would be submitted, and the results of the air quality study would include the detailed Dust BMPP.

March 16, 2026

Canada Building Materials (CBM) Aggregates, a Division of St. Marys Cement Inc. (Canada)
Aggregates Division
55 Industrial Street
Toronto, ON M4G 3W9
Attn: Stephen May, Lands Manager – Western Region
Attn: Andreanne Simard, Director of Lands, Resources and Environment
EMAIL: stephen.may@vcimentos.com; andreanne.simard@vcimentos.com

Ministry of Natural Resources and Forestry
Aggregates Section
300 Water Street
Peterborough, ON K9J 3C7
EMAIL: ARAapprovals@ontario.ca; with a copy to: Jason.mclay2@ontario.ca

(delivered by email)

RE: Objection Letter to Canada Building Materials (CBM) Aggregates, a Division of St. Marys Cement Inc. (Canada) regarding the proposed Aberfoyle South Pit Expansion, Part of Lots 18-20, Concession 1, Township of Puslinch, County of Wellington, *Aggregate Resources Act* Licence Application #626630

Dear Mr. May, Ms. Simard, and Mr. McLay:

The Township of Puslinch ("the Township") maintains its Objection to the Class A Licence application for a proposed Licence at Part of Lots 18-20, Concession 1 in the Township of Puslinch, now proposed to be named the CBM Aberfoyle South Lake Pit. The Township recommends that this matter be referred to the Ontario Land Tribunal unless the Township advises the MNR that the applicant has satisfactorily addressed the issues that remain outstanding of the date of this letter.

This letter is being provided by email in accordance with the direction provided in the Objection Form approved by the Ministry of Natural Resources and Forestry ("Ministry") and in response to the application serving Part 1 on the Township on February 23, 2026. Hard copies will follow by courier. As the comment period has now closed, the Township respectfully requests that the Environmental Registry posting be updated to include the

Township's objection letter and appended comments for the public record. The Township's formal responses on the Objection Form (Part 2, Table 2) are enclosed herewith, together with peer review comments that are available as of this date. As the Township's peer reviewers are also engaged on the parallel *Planning Act* applications, which were only just deemed complete on January 21, 2026, certain updated peer review comments are not available on the truncated timelines required by the ARA approvals process.

In its review (including peer reviews) of the updated documentation provided by the applicant, the Township has identified numerous outstanding concerns with the application. The application in its current form does not have appropriate regard for the matters listed in section 12 of the *Aggregate Resources Act* ("Act"). Primarily the Township's Development Review Team has identified concerns related to the following:

a) The effect of the operation of the pit on the natural environment: In particular, the proposed pit is surrounded by Provincially Significant Wetlands, as well as Mill Creek and tributaries, which are cold water streams. The applicant has not yet demonstrated how impacts (including cumulative impacts) on these systems can be appropriately mitigated;
b) The effect of the operation of the pit on the nearby residents: Water table increases are proposed to be contained by a berm and tile drain, which will require perpetual maintenance to prevent significant flooding events to private property;
c) The suitability of the final rehabilitation plans for the site, including concerns about permanent lowering of the water table in the north-northeast vicinity of Mill Creek, with flooding concerns to the south/west of the site;
d) The possible effects on ground and surface water, including the potential impacts on Mill Creek and the associated provincially significant wetland;
f) The potential for impacts on the proposed haul route, including the provision for road improvements and a mechanism to ensure maintenance of the haul route as a result of gravel truck traffic on the municipal road network;
g) The quality and quantity of aggregate on the site (and the land of justification that enough high-quality aggregate exists to justify the substantial permanent alteration to the water table);
h) The applicant's history of compliance with this Act and the regulations (as further detailed below)~~.~~; and
i) A lack of comprehensive rehabilitation plan for licensed pits operated by the applicant (or its related companies) in the local area.

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PUSLINCH
EST. 1850

The details of how and why the above noted criteria have not been satisfied at this time are outlined in further detail in the enclosed Table 2 response, with fulsome discussion in the peer review reports enclosed herewith and available as of the filing deadline for this objection.

Without limiting the generality of the foregoing, the Township has identified the following concerns, which are briefly summarized below, and should not be construed as in any way limiting the scope of the responses in Table 2 enclosed, and as further detailed in the comprehensive peer review reports that the Township has received from its consultant team:

1. The excavation plan is deeper than the extraction depth as reported in the WSP Aggregate Resource Evaluation;

2. The proposed licensed area is larger than necessary for the extraction, vehicle access/locating and associated mitigation features (berms). In particular, it is unclear why the proposed licensed area extends toward Concession Road 2 in the northwest portion of the proposed licence;

3. Certain data provided by the applicant remains outdated as of 2026 and needs to be updated, including baseline ecological survey data;

4. The significant potential for the site pond to flood and the mitigation method proposed to resolve flooding requires perpetual maintenance. Concerns remain with respect to the proposed tile drain and confirmation is required that the downstream receiving watercourse has been evaluated to ensure it can accommodate the projected increase in flow without resulting in channel instability, excessive erosion, or downstream impacts;

5. The potential for groundwater draw down from the proposed extraction to impact significant wetlands and fish habitat, particularly with respect to Brook Trout;

6. There will be permanent increases to water levels on private property between the proposed Pit and Mill Creek, and permanent decreases in water levels north of Concession 2, the impacts of which have not been adequately addressed;

7. Likewise, the impacts to Mill Creek, the surrounding Provincially Significant Wetland, and associated significant wildlife habitat have not been adequately addressed at this time;

8. The impact of silt load on the receiving pit McNally Licence #5497 (“McNally”) that is proposed to facilitate all processing from the proposed Lake Pit requires further analysis (including capacity analysis for silt at McNally);

9. The Township’s consulting engineer (GEI) has identified the need to do a detailed geotechnical investigation of Concession Road 2, from the entrance of the proposed Lake Pit easterly to the proposed processing (receiving) McNally Pit, including investigation of an existing culvert. GEI requires further information on how truck weights will be determined in the absence of a weigh scale to prevent overloading of the road/pavement and culvert along the haul route;

10. Cumulative impacts of the myriad of pits along and adjacent to Concession Road 2 have not been considered, nor has comprehensive rehabilitation been considered by the applicant as per 4.5.3.2 of the Provincial Planning Statement, 2024 where there is a concentration of aggregate operations;

11. Agricultural impacts have not been fully explored through an Agricultural Impact Assessment that conforms to County of Wellington Official Plan policy 4.6.5 and incorporates relevant analysis and impact assessment as set out in Ontario Ministry of Agriculture and Food (“OMAF”) Publication 861(AIA Guidelines);

12. The Site Plan operational notes should preclude importation of fill other than as necessary for berm construction. The applicant should document the volume of available soil onsite that could be used for berm construction before any excess soil is permitted to be imported. Further, no excess soil should be permitted to be imported to assist in the progressive or final rehabilitation of the pit as the pit is proposed to be returned to a lake with ecological features;

13. In terms of the Act s.12(j) criterion (history of compliance), the Township has identified various ongoing concerns at other CBM pits in the immediate vicinity along Concession Road 2 as well elsewhere in the Township (as detailed in the enclosed

Schedule “A” to this letter). To date, despite raising these concerns with the Ministry, no substantive response has been received as to how the applicant or Ministry is addressing these compliance concerns;

14. The Site Plans contain no proposal for truck weigh scales, leading to concerns about how annual tonnage is calculated and reported to TOARC;

15. The Township remains concerned about the quality and quantity of the aggregate material, as compared to the extraordinary permanent impacts on the natural environment that will result from extraction, as well as the permanent loss of high quality agricultural lands. As presently proposed, the benefits of extraction are significantly outweighed by the negative effects on the environment and surrounding community; and

16. The applicant’s noise study requires further elaboration to explain how impacts will be mitigated.

The Official Plan Amendment and Zoning Bylaw Amendments for the application have not been approved and, more to the point, these related applications have only recently been deemed complete and the *Planning Act* process, including public participation and a statutory Public Meeting, will not be scheduled before the two-year time limit on the ARA process having been concluded.

Effectively, the Township has been placed in a disadvantageous position by the timing of the ARA proposal. At this stage, the Township considers the proposition of a pit at the subject location to be premature and in its current form, does not constitute good planning and is not in the public interest, consequently, it should not be approved at this time.

Please note that the concerns outlined in this letter represent the results of the review completed thus far by the Township’s Development Review Team. It is anticipated that, prior to the hearing, the applicant will present additional studies, including additional field work. The Township reserves the right to identify further concerns, to provide more detail, and to provide additional recommendations for the resolution of any concerns identified as the review of this application continues.

Should you have any questions, please contact the undersigned

Sincerely,

Courtenay Hoytfox
CAO
Township of Puslinch

Cc: Meagan Ferris Manager of Planning and Environment, County of Wellington
Neal DeRuyter, MHBC
SmithValeriote Law Firm LLP, external legal counsel for the Township

Encl.

1. Completed Objection Form
2. Harden Environmental Comments, dated March 3, 2026
3. GEI Comments, dated March 6, 2026
4. Valcoustics Comments, dated March 11, 2026
5. Landmark Environmental Group Limited Comments, dated March 10, 2026
6. Vooren Air Quality Management Services Inc. Comments, dated February 12, 2026
7. Aboud & Associates Inc. Comments, dated March 16, 2026

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SCHEDULE “A”

Ongoing Compliance Issues at other CBM Pits

License 5491 (McNally)

- Site note 9 states there shall be no offsite discharge of water. The processing plant is discharging water to another licence.
- There is an ongoing site plan contravention as the silt pond is not located operationally where identified on the site plan.
- The site license speaks to blending in site note 9, further listing crushing and blending as two separate permissions along with several other operations.
- Site note 9 it further indicates that material from other sites may be used for blending but does not reference crushing or the other permitted uses mentioned earlier. This reinforces that that blending is a stand alone activity that was not intended to permit the importation of raw material from other sites to be crushed/washed, etc.,
- CAR report from 2023 indicates importing of material for processing, contrary to site plan permissions for blending
- No extraction is occurring, but no indication of if/when site closure and final rehabilitation will occur, undermining premise of extraction being an ‘interim’ land use.
- Aerial imagery shows a trench around the primary silt pond. While the Township is supportive of this revision to the site plan and installation, it is understood that the MNR has not yet approved this site plan amendment and is awaiting certain MECP approvals. Notwithstanding this pending amendment, CBM has moved ahead with trench installation.

License 5520 (Aberfoyle)

- The silt ponds are located where ponds are indicated on site plan / operational plans both north and south of HWY 401.
- The operation plan indicates disturbed areas where the ponds are located on north portion of licence. The operational plans show disturbed area south of the 401 where the ponds exist and shows ponds where satellite imagery shows silt ponds.
- Site Plan note 9 identifies blending as a separate permission from crushing and processing.
- Site Plan note 13 indicates off site material may be used for blending or custom products, does not list the similar permissions in site note 9 making crushing and/or washing not permitted.

License 5737 (McMillan)

- Fish hatchery containers located within 30 meters of the pond – not in compliance

License 17600 (Mast)

- Site Notes refer to wash plant. Water will be circulated on site is not be exported to McNally for processing. This site is out of compliance if exporting.
- Site note 16 states material may be brought in for blending only. Liberal use of blending to process aggregate from neighbouring sites
- Importation of fill is permitted to obtain a 3:1 slope only, MNRF has not responded to confirm that no excess soil is being brought in.
- West face remains to be rehabilitated. Deferral premised on 'Big Lake project', which is not a project, but a decades-old high-level proposal that has never been actively pursed.

License 129817 (Mast-Snyder)

- Satellite imagery does not match site plan.
- The site is out of compliance if it does not have a processing plant and all material is being shipped off site, which was not considered when licence was approved.

License 625189 (Roszell)

- The Township has significant concerns with this pit that resulted in extraction activities ceasing for a period of time.
- The concerns raised by the Township Hydrogeologist have not been adequately addressed by the pit operator nor has adequate enforcement action been taken by the MNRF.
- Silt barrier is not working as designed.
- No processing equipment on site, so it is unclear where the 750 000 tonnes are being processed?

Harden Environmental Services Ltd.
4622 Nassagaweya-Puslinch Townline
Moffat, Ontario, L0P 1J0
Phone: (519) 826-0099 Fax: (519) 826-9099

Hydrogeological Assessment

Geochemistry

Phase I / II ESA

Regional Flow Studies

Contaminant Investigations

OLT Hearings

Water Quality Sampling

Groundwater & Surface Water Monitoring

Groundwater Protection Studies

Groundwater Modelling

Groundwater Mapping

Permits to Take Water

Environmental Compliance Approvals

Designated Substance Surveys

Our File: 2340

March 3, 2026

Township of Puslinch
7404 Wellington Road 34
Puslinch, Ontario N0B 2J0

Attention: Monika Farmcombe
Development and Legislative Coordinator

Re: Review of 3rd Submission
CBM Aberfoyle South Expansion, Puslinch, Ontario

Dear Monika,

We continue to have several broad issues with the information provided. Our issues remain as originally stated in italics and we have updated our comments immediately following.

Silt Deposition at Aberfoyle Main Pit (South of Hwy 401)

The proposed operations include aggregate processing at the McNally Pit (License 5497) with deposition of fine-grained material possibly into the Aberfoyle Main Pit (5520). The area designated for silt deposition in the Aberfoyle Main pit also is used for deposition of silt from the Neubauer and Lanci Expansion. CBM has a history of depositing silt in areas not designated for silt ponds at this location. A detailed analysis of ongoing and future sediment deposition needs must be prepared, and the appropriate areas designated for sediment disposal. Potential hydrogeological and ecological impact assessments for the areas designated for silt disposal below the water table must be made, verification monitoring undertaken and mitigation measures identified unless deposition is done in a hydrologically benign manners, such as creating an island within an existing body of water.

We note that attachment #1 was prepared in |January 2024 and this the first time it has been introduced to Harden Environmental. We look forward to evaluating this report along with any major site plan amendment required for the McNally Pit to allow for the proposed changes.

Cumulative Impact of Multiple Aggregate Operations and Major Groundwater Abstractions

A cumulative impact assessment of ongoing aggregate extractive activities in this area of intensive aggregate operations has not been prepared or presented. A cumulative impact assessment including all groundwater abstractions from Permitted water taking, aggregate extraction from below-the-water-table and deposition of sediment below the water table must be included. The cumulative impact assessment must also include a detailed water balance of the cumulative impact of increased evaporation in this area from converting farmland to open bodies of water. Mill Creek should not be assumed to be a hydrologic boundary to the effects of below water table extraction, particularly when up to four metres of drawdown are being predicted.

Considering the proposed Safarik Pit has already prepared a groundwater model to the east of Mill Creek and the Aberfoyle South Pit model includes areas north and west of Mill Creek, we recommend that the models be combined to allow for a wholistic look at below water table extraction in this area. We recommend that the model boundaries be extended southward to where Fletcher and Spencer Creek emerge along the base of the Galt Moraine.

Localized Impact to Private Property

The proposed pit is surrounded by private property as shown on Figure 1. It is clear throughout the reporting that there will be impacts on both groundwater movement and groundwater elevations beyond the applicant's property lines. For example, all groundwater movement from the CBM property will cease between the proposed lake and Mill Creek along a 1600 m stretch of Mill Creek as shown in the particle tracking exercise. Groundwater levels beneath properties north and south of the CBM owned lands will decrease (east half of site) and groundwater levels beneath properties south and west of the CBM lands will increase (west half of site). There is also the potential for annual seasonal overland flow from the proposed lake onto private lands. The concerns of the private landowners must be addressed. A significant portion of both Mill Creek and Tributary 3 that could be impacted are on private property. To our knowledge no assessment has been made on these private lands.

The proposed drain along the west side of the pit may improve the flooding in the neighbouring property, however, this needs verification monitoring. This is also a permanent solution requiring perpetual maintenance. Additional water will be flowing down Tributary #3 from the drain and impacts will have to be assessed both ecologically and engineering (e.g. culvert sizes downstream). There will be a permanent increase in water levels on private property between the proposed pit and Mill Creek (Zones 3 and 4 of PSW mapping). There will be permanent decreases in water levels north of Concession II Road in PSW zones 1 and 5 and between. We rely on the Township's ecology consultants to confirm assess the potential impact on these private properties.

Direct Impacts to Mill Creek Within the Area of Influence of the Pit

There is a significant reach of Mill Creek that will either have reduced or eliminated groundwater discharge from the west and or north shore because of the proposed below water table mining. South and west of where Mill Creek passes beneath Concession 2 Road, approximately 1600 metres of shoreline will have between 92% and 100% of natural groundwater discharge diverted from Mill Creek to the proposed lake. This area of Mill Creek is an important fishery as we have learned through the work commissioned by the Department of Fisheries and Oceans and work done for the Grand River Conservation Authority. The direct impact of this groundwater flow reduction to Mill Creek has not been adequately described, other than in a general way calculated as a percentage of total upstream baseflow reduction.

We are not satisfied with the Attachment #3 as this only addresses the cumulative change in baseflow downstream of the proposed pit. Groundwater flow to Mill Creek through PSW Zones 1 and 2 will cease. This is not quantified in the reports.

Impacts to the Mill Creek Puslinch Provincially Significant Wetland

The reporting provided in Appendix G, Groundwater Model of the Water Report clearly identifies areas where there will be both temporary and permanent groundwater level reductions and groundwater level increases. These extensive areas are not identified in the Natural Heritage Report assessment. There are three main areas where the Natural Heritage Report hydrological assumptions do not correlate to the findings of the Groundwater Model.

1) *The Natural Heritage report states that there will be no groundwater level impact beyond 120 m whereas the Groundwater Model indicates impacts occurring at a distance greater than 720 m.*

2) *The Natural Heritage report states that there will be up to 489 mm/year of additional groundwater discharge to the Mill Creek Puslinch Provincially Significant Wetland south of the proposed lake whereas the model shows that the PSW in Zone 2 will have a significant decrease in groundwater discharge. This is the same area that groundwater flow will be eliminated.*

3) *The Natural Heritage report states that that the rise in water levels in the southwest area will not change water availability to the wetland. The groundwater model predicts a rise of up to 0.9 m in the southwest corner of the site significantly reducing the thickness of the unsaturated zone and greatly increasing the volume of groundwater discharge. There will be a significant increase in water availability in this area that has not been addressed. The final estimated lake level of 302 m AMSL does not represent the highest possible seasonal water level. With ground surface elevations of 302 m AMSL and no mitigation measures shown on the site*

plans, the lake will overflow every year resulting in excess surface flow onto the adjacent private lands.

We are relying Aboud and Associates to comment fully on the wetland impacts. We have created Table 1 based on information provided that was provided to us and this summarizes changes in total hydrological support as well as just groundwater support.

Impacts to On-Site Tributary 3

The surface water catchment area for Tributary 3 will be reduced. There will also be a permanent decline in groundwater levels beneath Tributary 3 leading to a reduction in baseflow. It is estimated that there will be a permanent 52% reduction in baseflow to Tributary 3. A referral to the DFO has been made and we recommend that our detailed comments and those of Aboud and Associates are also sent to the DFO. The groundwater model only simulates a steady state solution calibrated to, presumably, an average condition and drought conditions will result in even lower levels of the water table adjacent to and beneath Tributary 3. It is known that the flow in Tributary 3 varies considerably seasonally, but generally has baseflow throughout the year. The flow in Tributary 3 should be evaluated in a holistic manner including seasonal surface water and groundwater inputs in order to assess long term impacts.

We have made Aboud and Associates aware of the potential changes in hydrological support to Tributary #3 which includes less groundwater discharge in the upper reaches near to Concession Road II, permanent discharge of water from the drain, and in general more water in downstream reaches.

Flood Control

The potential for flood control will be reduced at the site because of the creation of a large single pond. The pond will allow for instantaneous transfer of hydraulic potential from upstream end of the site to downstream edge. The proposed lake level (302 m AMSL) at the downstream edge will already be very close to, if not above the original ground surface. The site plans show a wetland at 301 m AMSL in very close proximity to the proposed lake in the southwest area. The groundwater model is calibrated to an average condition, not a high level or low-level condition. Therefore, assuming similar fluctuations in the pond level as observed at other nearby pit ponds, the water level in the spring of the year, could be 0.5 to 0.75 higher and overflow from the lake will be an annual event under normal conditions, let alone flood conditions. This has implications for adjacent wetland hydrology and private properties.

We refer flood control to GEI Consultants to comment.

Groundwater Model

There are numerous concerns with the applicability, accuracy and total reliance upon results of the groundwater model as indicated in the following section of this report.

For these reasons, it is our opinion that the information provided is not sufficient to be accepted for a complete application.

We have the following specific comments on the technical reports. Given the integration of the natural heritage discipline and hydrogeology, we have provided comments on the natural heritage report where hydrogeology is mentioned.

Our detailed comments are found in the attached response table. It is our recommendation that CBM take the opportunity to create one model for the Aberfoyle South Lake Pit and the Safarik Pit to evaluate cumulative hydrological impacts from all extractive operations along Concession 2 Road.

Closure

We have attached our detailed comments in table form and will provide an excel spreadsheet with the comments upon request.

We appreciate the opportunity to provide these comments. Other comments may arise as additional information about the site is provided. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Respectfully Submitted,

Harden Environmental Services Ltd.

[redacted]



Stan Denhoed, M.Sc., P.Eng.
Senior Hydrogeologist
(519) 826-0099
sdenhoed@hardenv.com

Encl:
Figures 1 to 3
Table 1
Comment Table

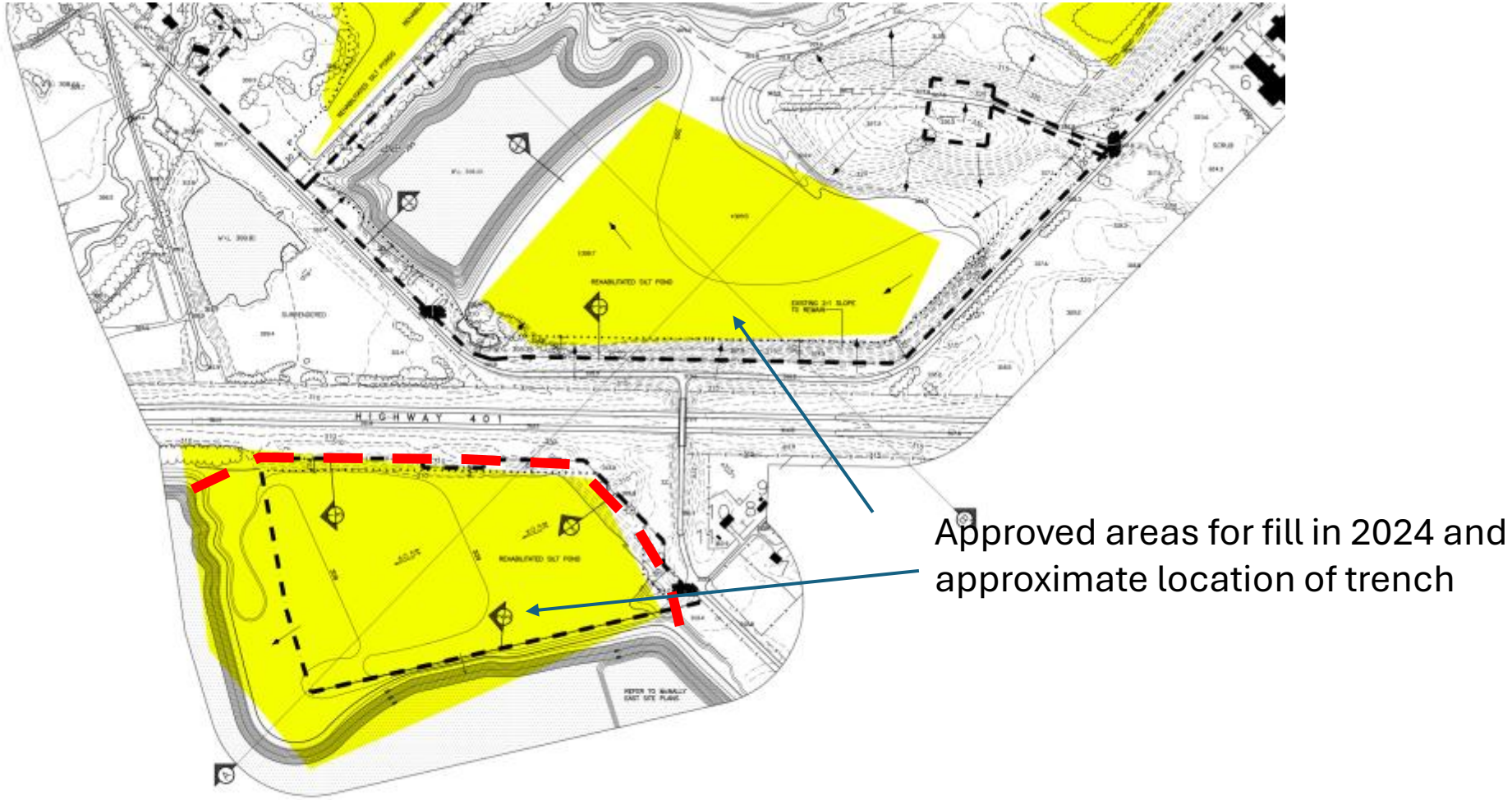
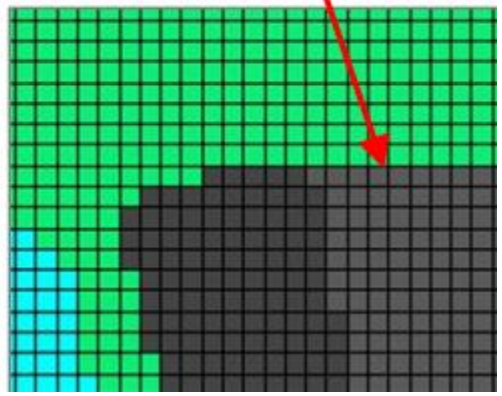

HIGHWAY 401
REHABILITATED SILT POND
EXISTING 2:1 SLOPE TO REMAIN
Approved areas for fill in 2024 and approximate location of trench

Figure 1

Figure 2



McNally Pond Silt Zones



Source:

Potential Effects of Silt Deposition in the McNally Pond on Mill Creek Baseflow

CBM McNally Pit - Aberfoyle Operations

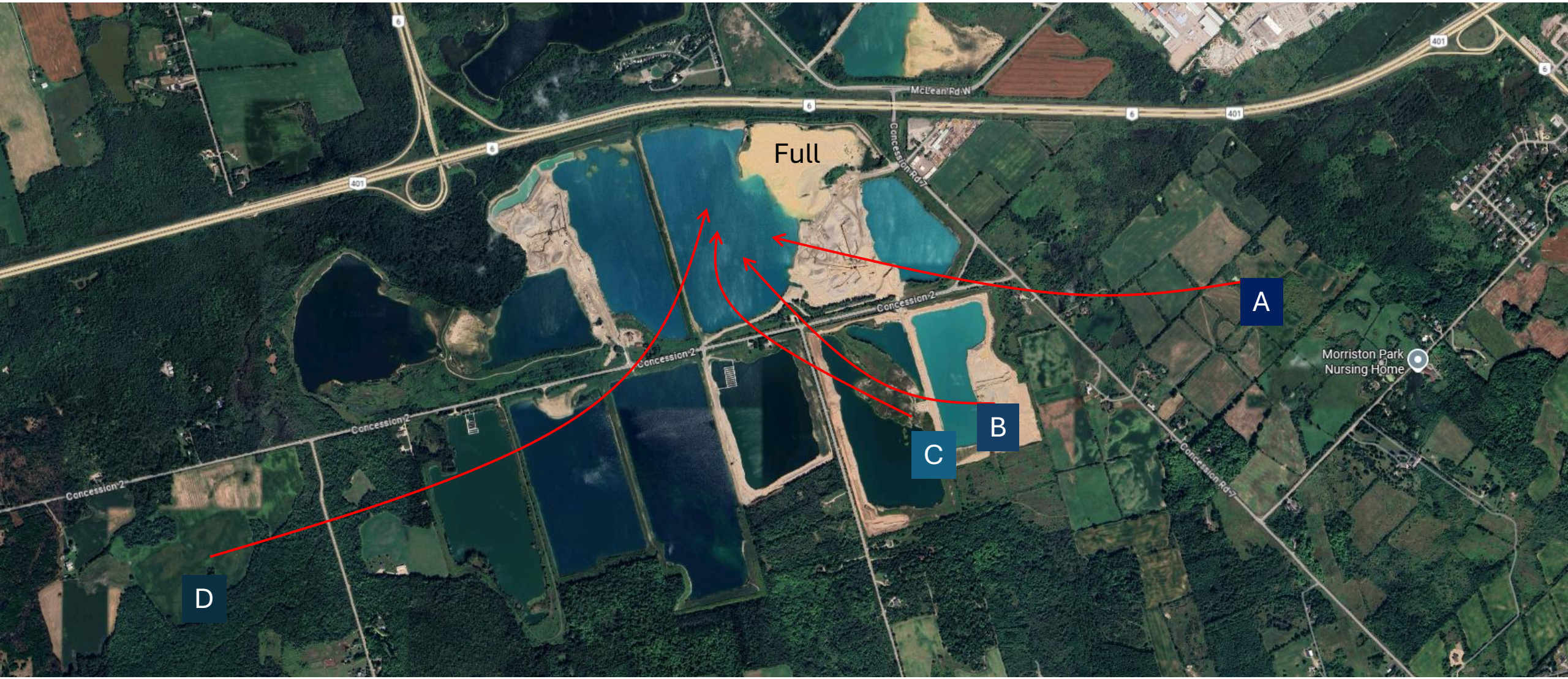

Full
A
B
C
D
Concession 2
Concession 2
Concession 2
Concession Rd 7
Concession Rd 7
McLean Rd W
401
401
Morriston Park
Nursing Home

Figure 3

Zone	Pre Pit Gw Discharge (mm/year)	Pre Pit Surplus (mm/year)	Pre Pit Total Input (mm/year)	Post Pit GW Discharge (mm/year)	Post Pit Surplus (mm/year)	Post Pit Total (mm/year)	% Change in Groundwater Discharge Pre to Post	% Change in Total Contribution Pre to Post
1	164	276	440	65	276	341	-60	-23
2	266	276	542	155	276	431	-42	-20
3	142	276	418	311	276	587	119	40
4	413	276	689	671	276	947	62	37
5	174	276	450	0	276	276	-100	-39
6	768	276	1044	885	276	1161	15	11
7	816	276	1092	1326	276	1602	63	47
	a	b	a + b	c	b	c + b	(c – a) c *100	(c+b)/(a+b)*100
a	Source October 21, 2025 #4 Supplemental							
b	Source: Table 15 Water Report November 2023- Forested Swamp							
c	Source October 21, 2025 #4 Supplemental							

This analysis does not include runoff entering the wetland from adjacent lands. Where no extraction is occurring, this will not change. Where extraction is occurring, any runoff from the extraction area will cease. This may affect zones 2,3,5 and 6 which have lands adjacent to the pit.

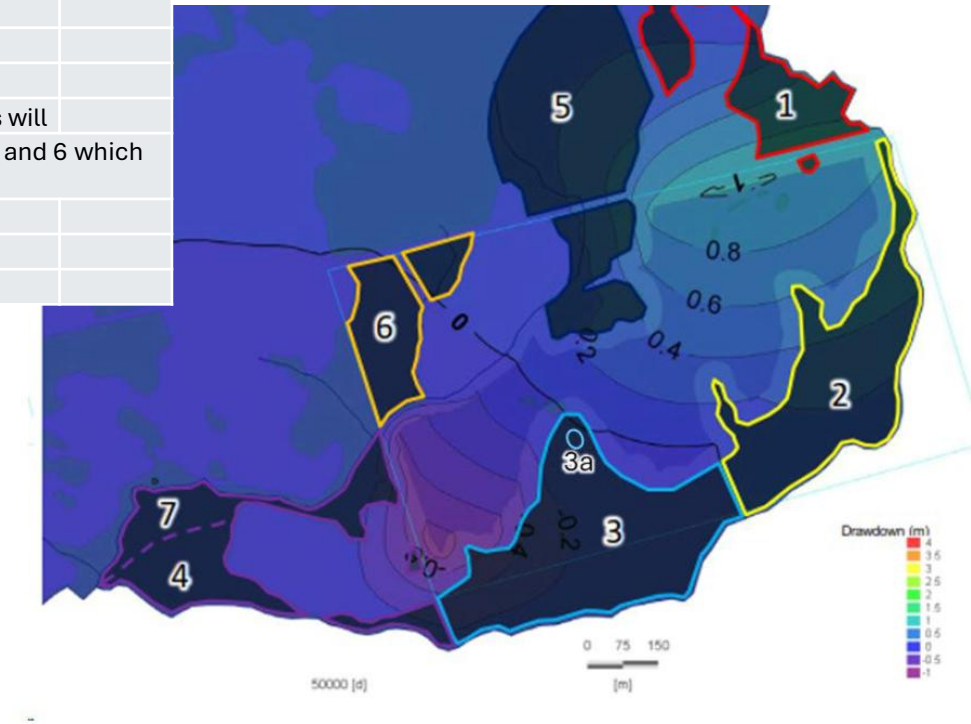


Table 1

Comment	Response March 2026	Issue
2	We disagree. This site, and other aggregate extractions adjacent to Mill Creek represent the greatest potential hydrologic impact to Mill Creek. All other takings from deeper aquifers (including that of the former Blue Triton Well, the increased taking in the Cambridge East Wells and increased taking by the City of Guelph) are farther away, do not take directly from the water table aquifer and yet are also shown to have an indirect to Mill Creek. The creek is shown time and time again to have a healthy population of brook and brown trout, two species sensitive to water quality and quantity. This is particularly true for the reach of the creek adjacent to this site, upgradient of this site (in the halo of the area of influence) and downgradient of this site. The Township is presently in discussions with Wellington County Source Water Protection to convene a water resources group to discuss the overall cumulative impact to Mill Creek from all sources. It is imperative that we understand where the proposed impact to Mill Creek by this extraction fits into that larger cumulative picture.	Cumulative Impact
33	We disagree. This site, and other aggregate extractions adjacent to Mill Creek represent the greatest potential hydrologic impact to Mill Creek. All other takings from deeper aquifers (including that of the former Blue Triton Well, the increased taking in the Cambridge East Wells and increased taking by the City of Guelph) are farther away, do not take directly from the water table aquifer and yet are also shown to have an indirect impact to Mill Creek. The creek is shown time and time again to have a healthy population of brook and brown trout, two species sensitive to water quality and quantity. This is particularly true for the reach of the creek adjacent to this site, upgradient of this site (in the halo of the area of influence) and downgradient of this site. The Township is presently in discussions with Wellington County Source Water Protection to convene a water resources group to discuss the overall cumulative impact to Mill Creek from all sources. It is imperative that we understand where the proposed impact to Mill Creek by this extraction fits into that larger cumulative picture.	Cumulative Impact
52	We are of the opinion that a cumulative impact assessment is necessary to address the multiple below water table extrative operations, the multiple permits to take water in the Aberfoyle area and those of the Region of Waterloo and The City of Guelph. A model representing the south side of Mill Creek was presented in support of the Safarik Pit application. A model for the infilling of the McNally pit was presented in Attachment 1 of this report. WSP has many of the elements required to wholistically look at this area. This pit alone will have permanent local impacts to groundwater flow to Mill Creek let alone during active extraction.	Cumulative Impact
64	See response to Comment 2.	Cumulative Impact
7	We defer to GEI for their input on the flooding issue and defer to GEI to comment.	Flooding
14	We understand that berms will be used to contain flood waters.	Flooding
17	We understand that a sub drain will be used to mitigate flooding of neighbours property. Verification monitoring is necessary. What effect does drain have on proposed final lake level?	Flooding
25	We defer to GEI for their input on the flooding issue.	Flooding
36	We will defer to GEI regarding flood mitigation measures.	Flooding
62	We understand berms will be used to address flooding issue and the drain will address underflow from the lake to the neighbouring property. We defer to GEI on this matter.	Flooding
88	We defer to GEI for discussion on flooding matters.	Flooding
95	For discussion with GEI regarding flood control measures.	Flooding
3	There are three areas of concern in relation to water level changes and adjacent private properties. **Northeast** There is up to a one metre permanent water level change predicted for the northeastern area of the site. This water level change extends off site beneath the neighbouring property to the north. Attachment #4 and our personal observations shows that some of this property is inundated because of beaver dams on Mill Creek. The groundwater model, used to determine off-site water level changes, is a) recognized to be conservative by using a Drain function for Mill Creek (one way groundwater flow to Mill Creek) and b) recognized as not being able to simulate all of the hydrological processes. Therefore as water levels decline in this area, firstly water held in storage will decline followed by decreased runoff as this will be used to compensate for unsaturated soils and thirdly, reversal of groundwater flow from Mill Creek to the wetland area. Perhaps, all of these processes occur simulataneously. All of this complicated by seasonal flooding and beaver activity. Our comment is that the predicted impact occurs on private property north of 2nd Concession Road. This impact was not recognized by the Natural Heritage evaluation in the original submission. **South** The redistribution of groundwater discharge to Mill Creek results in a reduction/loss of groundwater flow in the area of Zone 2 wetland. This has been characterized as a minor change in the hydrology, however has also been characterized as having only a minor contribution of groundwater to the hydrological support. Groundwater presently flowing from north to south through Zone 2 will cease. Presently this north to south flowing groundwater prevents water from Mill Creek from entering the wetland. Will the future wetland be supported by direct precipitation and reverse flow from Mill Creek? Attachement #3 confirms the redistribution but does not discuss actual impact of the redistribution. **SouthWest** The potential flooding of private lands is proposed to be mitigated through the installation of a subsurface drain designed to capture the excess water and divert it northward into Tributary 3. A total of 220m3/day is estimated to be diverted through the drain into Tributary 3. Figure 4 of the October 21, 2005 Groundwater Uplift Report shows the neighbour's house to be almost surrounded by wetlands including those along Tributary 3. Does this affect hydroperiod of the wetlands or affect use of the neighbour's property in any way? What does drain do to the final lake level estimate? Confirmatory monitoring is recommended to validate the model results.	General Water Level Changes
11	There are upward gradients on-site and regionally, Mill Creek is a groundwater discharge zone.	Groundwater Flow System Characterization
12		Groundwater Flow System Characterization
13		Groundwater Flow System Characterization
15	OK	Groundwater Flow System Characterization
20	Respose Noted	Groundwater Flow System Characterization
35	This site is located at the termination of a large groundwater flow system. The wetlands surrounding this site and the cold water fisheries are indications of regional groundwater discharge. Licensing the site to a blanket elevation of 285 m AMSL where Figure 2 clearly shows many areas onsite that do not have resource below 290 m AMSL and where there are geological layers that isoloate lower hydrogeological systems from shallower systems should be offered as much protection as possible. We are fully onboard with maximizing the resource, it is our opinion that greater detail to depth of extraction to minimize impacts and disruption of groundwater flow beneath confining layers should be obtained.	Groundwater Flow System Characterization
38	We disagree that the water level in MW18-05 represents the water table given the difference in chemistry and hydrograph. We maintain that mining through finer grained geological layers may affect the upward gradient at stations such as MW18-05. The depth to the bottom of resource at MW18-05 is approximately 294 mAMSL. There is no need to license to 285 at this location.	Groundwater Flow System Characterization
39	Noted	Groundwater Flow System Characterization

Comment	Response March 2026	Issue
40	We maintain that there are artesian conditions show at MW18-05 and licensing should be limited to the depth of known resource in this area and not a blanket 285 m AMSL.	Groundwater Flow System Characterization
41	This is a sensitive hydrogeological area at the end of a regional groundwater flow system. As such, the greatest impact to hydrologically senstiive areas such as wetlands and cold water streams occurs in this area and demands better definition of hydrogeology such that the model can better simulate potential changes. We are not satisfied with the level of calibration for the groundwater model.	Groundwater Flow System Characterization
54	It is our opinion that the scaling methodology used is subject to influences not accounted for in the scaling method.	Groundwater Flow System Characterization
56	It is unclear what the value of bedrock elevation is at the bullseye around MW18-05.	Groundwater Flow System Characterization
59	This site is located at the termination of a large groundwater flow system. The wetlands surrounding this site and the cold water fisheries are indications of regional groundwater discharge. Licensing the site to a blanket elevation of 285 m AMSL where Figure 2 clearly shows many areas onsite that do not have resource below 290 m AMSL and where there are geological layers that isoloate lower hydrogeological systems from shallower systems should be offered as much protection as possible. We are fully onboard with maximizing the resource, it is our opinion that greater detail to depth of extraction to minimize impacts and disruption of groundwater flow beneath confining layers should be obtained.	Groundwater Flow System Characterization
66	Water Report section 5.7.3 mentions upward gradients with respect to Mill Creek, Tributary #3 and PSW's. It is our opnion that referring to this site as an area of downward hydraulic gradients is not inaccurate given the on-site observations.	Groundwater Flow System Characterization
67	See Response to Comment #35	Groundwater Flow System Characterization
68	See Response to Comment #35	Groundwater Flow System Characterization
69	See Response to Comment #35	Groundwater Flow System Characterization
70	See Response to Comment #35	Groundwater Flow System Characterization
71	Groundwater levels at MW18-05 are different because of the geological make up of the site. These localized layers have not been captured in the model and yet are important to the local groundwater regime feeding water to local wetlands and Mill Creek. There is not sufficient detail in the geological investigation nor the proposed mining plan to allow for appropriate mitigation (through mine depth reduction e.g.) to maintain this local groundwater flow system.	Groundwater Flow System Characterization
72	Nontheless localized artesian conditions are indciated by the water levels in MW18-05 and confirmed by water quality.	Groundwater Flow System Characterization
77	Noting that onsite and near site observations include many instances of upward hydraulic gradient, discharge conditions that are susceptible to change from mining impacts both from equivlelent pumping rate of extraction and physical removal of geological layers.	Groundwater Flow System Characterization
78	Noting that onsite and near site observations include many instances of upward hydraulic gradient, discharge conditions that are susceptible to change from mining impacts both from equivlelent pumping rate of extraction and physical removal of geological layers.	Groundwater Flow System Characterization
79	Noting that onsite and near site observations include many instances of upward hydraulic gradient, discharge conditions that are susceptible to change from mining impacts both from equivlelent pumping rate of extraction and physical removal of geological layers.	Groundwater Flow System Characterization
8	See our Responses to Comments 40-58	Groundwater Model
37	Response noted.	Groundwater Model
42	We concur that a groundwater divide may well exist, but this does mean perpendicular groundwater flow from the divide. Much of the Paris Moraine is a groundwater divide, but flow from the divide is not perpendicular to the crest.	Groundwater Model
43	This site is located at the termination of a large groundwater flow system. The wetlands surrounding this site and the cold water fisheries are indications of regional groundwater discharge. Artesian conditions occur in specific areas within wetlands or Mill Creek according to the hydrogeological constraints, such as till layers. This area has developed specialized flora and fauna, somewhat based on groundwater discharge conditions. The pit will remove,not only sand and gravel, but also silt layers that direct or redirect groundwater flow. This model, as a tool, can provide general impacts, but lacks the detail, needed to address direct impacts to specific areas within Mill Creek or the wetlands.	Groundwater Model
44	Acknowledged.	Groundwater Model
45	As a tool, the model cannot represent conditons such as those observed at SP18-03 or MW18-05, nor the impacts of removal of fine grained layers at the site.	Groundwater Model
46	Detailed hydrogeological investigation of the bedrock beneath the site was not conducted, leaving the model to infer conditons from offsite sources.	Groundwater Model
47	It remains our opinion that the model is not a very accurate representation of water level changes in the surface water features, and includes features that do not exist. We understand from the response that the initial head is defined as the ground suface in the wetlands and drawdown is calculated from that initial head to the model computed heads.	Groundwater Model
48	Acknowledged.	Groundwater Model
49	Acknowledged.	Groundwater Model
51	Response noted.	Groundwater Model
53	Acknowledged, the head loss across the lake was not otherwise mentioned.	Groundwater Model
57	In an hydrogeological regime where centimeters of water level change may make a difference to hydroperiods and volume of groundwater discharge, a discrepancy of one metre is significant. All but one of the predicted values skew below the theoretical regression line for on-site targets, all located in a small ellevation section of the overall calibration. This suggests a localized issue with the model. There is an under prediction of water levels at the site and it is unclear to us how this affects predictions related to final water levels, flooding, baseflow reduction in upgradient areas of Mill Creek etc...	Groundwater Model
58	See Response to Comment 57.	Groundwater Model
61	Noted that final lake level fluctuations will be about 0.3 metres. It is not clear that the proposed drain has been included in the final rehabilition model.	Groundwater Model
63	Detailed hydrogeological investigation of the bedrock beneath the site was not conducted, leaving the model to infer conditons from offsite sources.	Groundwater Model
74	No change in our comment. Figure 14A should be presented with a smaller contour interval, say 0.1 m.	Groundwater Model
4	It is noted that there is no overall reduction in groundwater discharge, however Zone 1,2 and 5 wetlands will have reduced groundwater discharge as will Mill Creek. We were looking for confirmation that biologists were satisfied that this is not problematic for the flora and fauna of the wetlands and Mill Creek.	Reduced Groundwater Discharge to Wetlands/Streams
5	Attachment 4 is a qualitative assessment. Based on values in Attachment 4 and from the Water Report I have prepared Table 1 attached. I have asked Aboud and Associates to weigh in on signficance of groundwater input reductions and overall reductions. Also, where groundwater increases we have asked for Aboud to comment.	Reduced Groundwater Discharge to Wetlands/Streams
6	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced?	Reduced Groundwater Discharge to Wetlands/Streams
9	The natural heritage report does not acknowledge the potential for water level decline beyond the 120 m distance and should be revised to evaluate whether or not the projected impacts from the model are problematic for the wetland. If so, either the pit design must change, mitigation considered or monitoring considered. Attachment #4 provides a qualitative assessment of impacts to the PSW's. The impacts have been described as minor or minimal. Our concerns have been expressed to Aboud and Associate for further comment.	Reduced Groundwater Discharge to Wetlands/Streams
10	The seeps identified by the biologists may be significant for flora and fauna. Do the biologists recognize that these seeps are in the zone of groundwater flow reversals and will this impact on the flora and fauna. Where is this evaluation of the impact of flow reversal stated? Figure 15 in Appendix G of the Water Report clearly shows large section of Mill Creek that will no longer have groundwater discharge.	Reduced Groundwater Discharge to Wetlands/Streams

Comment	Response March 2026	Issue
16	Attachment #3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced?	Reduced Groundwater Discharge to Wetlands/Streams
18	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced?	Reduced Groundwater Discharge to Wetlands/Streams
19	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant overall reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced? Attachment 4 is a qualitative assessment. Based on values in Attachment 4 and from the Water Report I have prepared Table 1 attached. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
21	Attachment 3 does not address individual areas of loss of groundwater discharge. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
22	Attachment 3 does not address individual areas of loss of groundwater discharge. Will discuss with Aboud and Stovel in regard to magnitude and revelance. Not sure agree with assessment that groundwater input is only 9% of flow, what is it during dry months, what is the effect of cool water from groundwater presently? Need to review Monitoring.	Reduced Groundwater Discharge to Wetlands/Streams
23	Attachment 3 does not address individual areas of loss of groundwater discharge. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
24	Good discussion on redistribution. Can the Township be made aware of the DFO comments?	Reduced Groundwater Discharge to Wetlands/Streams
26	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced? Attachment 4 is a qualitative assessment. Based on values in Attachment 4 and from the Water Report I have prepared Table 1 attached. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
28	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced? Attachment 4 is a qualitative assessment. Based on values in Attachment 4 and from the Water Report I have prepared Table 1 attached. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
29	The increases in groundwater discharge to the wetlands is noted and we rely on the NH specialists to comment.	Reduced Groundwater Discharge to Wetlands/Streams
30	We are asking the Natural Heritage report to reflect the predicted impacts from the Water Report.	Reduced Groundwater Discharge to Wetlands/Streams
31	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced? Attachment 4 is a qualitative assessment. Based on values in Attachment 4 and from the Water Report I have prepared Table 1 attached. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
32	Attachment 3 does not assess the loss of flow to Zones 1,2 and 5. We concur that overall there is no signficant reduction in groundwater discharge to Mill Creek or Tributary 3, but what happens in those areas where groundwater flow is greatly reduced? Attachment 4 is a qualitative assessment. Based on values in Attachment 4 and from the Water Report I have prepared Table 1 attached. Aboud and Associates are aware of our concerns.	Reduced Groundwater Discharge to Wetlands/Streams
34	None of the reports including the 2025 attachments acknowledge the expected drawdown beneath the wetlands beyond the 120 m study zone. We do not agree that a qualitative assessment is reasonable approach. It must be made clear that the NH specialists have considered the drawdown beyond 120 m and agree that the impact is acceptble.	Reduced Groundwater Discharge to Wetlands/Streams
50	The baseflow analysis provided in Attachment #3 confirmed that downgradient, there is no overall change but does not address localized reductions in baseflow.	Reduced Groundwater Discharge to Wetlands/Streams
55	The baseflow analysis provided in Attachment #3 confirmed that downgradient, there is no overall change but does not address localized reductions in baseflow.	Reduced Groundwater Discharge to Wetlands/Streams
73	Attachment #3 does not address local reductions in groundwater flow.	Reduced Groundwater Discharge to Wetlands/Streams
75	Three metres or more of drawdown is not insignificant in an area where wetlands and streams rely on groundwater discharge.	Reduced Groundwater Discharge to Wetlands/Streams
76	Year over Year reduction in baseflow to both Mill Creek and Tributary # 3 confirmed.	Reduced Groundwater Discharge to Wetlands/Streams
81	The planning report understates the extent of the water table drawdown.	Reduced Groundwater Discharge to Wetlands/Streams
82	The planning report understates the extent of the water table drawdown.	Reduced Groundwater Discharge to Wetlands/Streams
83	See Response #3. The water level changes are not insignificant and have impacts off-site.	Reduced Groundwater Discharge to Wetlands/Streams
85	The planning report understates the extent of the water table drawdown.	Reduced Groundwater Discharge to Wetlands/Streams
86	The planning report does not include the permanent impacts to the water table, permanent reduction in groundwater flow to reaches of Mill Creek and Tributary #3.	Reduced Groundwater Discharge to Wetlands/Streams
87	The planning report does not include the permanent impacts to the water table, permanent reduction in groundwater flow to reaches of Mill Creek and Tributary #3.	Reduced Groundwater Discharge to Wetlands/Streams
1	This is the first time that Harden was presented with the January 2024 model report. I have attached three figures to facilitate this discussion. Regarding the Harden Letter of February 11, 2024 the letter clearly refers to Schedule E which shows limited siltation infill in the Aberfoyle South pit area south of Hwy 401(Figure 1). This is the area designated Zone A (Figure 2)in the January 2024 WSP report. The image attached shows that Zone A is now completely full of silt and there are four feeder pits proposed to continue to supply silt, designated A through D on the attached Figure 3. The McNally pit will soon be, if not already out of compliance with the agreed to siltation areas from the 2024 OLT (Figure 1). The trench was a suggested mitigation to the noncompliant deposition of silt in Zone A and was not a blanket mitigation for any other infill. The Township expects that amendments to the McNally Pit license will be necessary to allow for continued silt deposition.	Silt at McNally
60	This is the first time that Harden was presented with the January 2024 model report. Regarding the Harden Letter of February 11, 2024 the letter clearly refers to Schedule E which shows limited siltation infill in the Aberfoyle South pit area south of Hwy 401. This is the area designated Zone A in the January 2024 WSP report. The image attached shows that Zone A is now completely full of silt and there are four feeder pits proposed to continue to supply silt, designated A through D on the attached figure. The McNally pit will soon be, if not already out of compliance with the agreed to siltation areas from the 2024 OLT. The trench was a suggested mitigation to the noncompliant deposition of silt in Zone A and was not a blanket mitigation for any other infill. The Township expects that amendments to the McNally Pit license will be necessary to allow for continued silt deposition.	Silt at McNally
80	See our Response #1.	Silt at McNally
27	Show mitigation barrier on site plans (similar to Tikal Pit) and invoke if necessary without need to amend site plans. Contingent on water levels obtained east of Mill Creek. Need to read attachment as to why it is ok to eliminate groundwater flow to Mill Creek from the pit side.	Site Plan
84	Error noted.	Site Plan
89	Site Plan standards change noted, however, the link between site plan elevations from Geo Optic and those surveyed levels has not been provided.	Site Plan
90	Noted	Site Plan

Comment	Response March 2026	Issue
91	Addition of flow arrows noted.	Site Plan
92	Correction noted.	Site Plan
93	Correction noted.	Site Plan
94	Seasonal lake level variability noted.	Site Plan
65	Noted. A limited scope well survey may well be warranted at this stage given the presence of dug wells.	Well Survey

March 6, 2026
GEI Project No. 2402577 – 125006-036

VIA CLOUDPERMIT: Township of Puslinch
Township Application No. D14-CBM

Monika Farncombe
Township of Puslinch
7404 Wellington Road 34
Puslinch, ON N0B 2J0

Re: ZBA 1st Formal Submission
6947 Concession Road 2 (CBM Aberfoyle South Lake Pit)
Puslinch, ON

Dear Ms. Farncombe:

GEI Consultants Canada Ltd. (GEI) have reviewed first formal submission documents for a Zoning By-Law Amendment application in support of a proposed aggregate extraction site on the subject lands located at 6947 Concession Road 2 in the Township of Puslinch. The submission was received from the Township on December 10, 2025, and January 23, 2026. CBM Aggregates refers to the proposed operation as "Aberfoyle South Lake Pit" and has applied for a Class A Licence under the Aggregate Resources Act with the Ministry of Natural Resources.

It is our understanding that the overall property is 85 ha in size, the area to be licensed is 44 ha, and the extraction limit is 27 ha. We understand that aggregate extraction will begin above the water table in the west-central portion of the extraction area and proceed westward towards the western edge. Extraction by dragline will then begin below the water table in the westernmost part of the extraction area and proceed in an easterly direction. Above and below water table extraction will then generally proceed concurrently in an eastward direction until extraction is complete. Raw aggregate will reportedly be temporarily stockpiled onsite to allow pore water to drain back to the emerging pit pond, before transportation offsite for processing. Rehabilitation following the anticipated 6 to 10 year extraction period will result in a permanent pond with naturalized shoreline.

The subject lands currently have four accesses to Concession Road 2. The most western of these accesses would be the operational entrance for pit trucks, and the easternmost access would be a right-turn-only exit for pit trucks. Trucks will travel east along Concession Road 2 to the existing Aberfoyle South Pit (a left turn from Concession Road 2) where processing would occur. We understand that trucks leaving the subject lands will not go to other processing plants or directly to market.

An initial meeting for the proposed pit was held on September 28, 2021, but no formal engineering comments were prepared at that time. The proponent subsequently updated their application, and a pre-consultation meeting was held on July 27, 2023, with comments provided in our review letter dated August 8, 2023. A resubmission was received on November 30, 2023, with comments provided in our review letter dated February 6, 2024.

1. Documents Received

All plans and studies required from an engineering perspective to support the zoning bylaw amendment application have been submitted.

The following documents were received and reviewed by GEI as part of this submission:

- Response to Township and County Comments (Cover Letter), prepared by MHBC, dated December 4, 2025.
- Responses to Comments on Site Plan, prepared by MHBC, dated November 26, 2025.
- Response to Transportation Comments and revised Transportation Impact Study, prepared by TYLin, dated February 5, 2025.
- Responses to GM Blue Plan Review, prepared by WSP, dated October 22, 2025.
- Maximum Predicted Water Table Report, prepared by WSP, dated November 2023.
- BMPP for the Control of Fugitive Dust, prepared by WSP, dated October 2023.
- Water Report Level 1/2, prepared by WSP, dated November 2023.
- Natural Environment and Water Report Terms of Reference Concordance Cross-Check, prepared by WSP, dated January 27, 2025.
- Flood Mapping, prepared by WSP, dated August 12, 2025.
- Supplemental Assessment of Potential Impacts to Baseflow in Mill Creek and Tributary 3, prepared by WSP, dated October 21, 2025.
- Supplemental Assessment of Potential Impacts to Provincially Significant Wetlands, prepared by WSP, dated October 21, 2025.
- Supplemental Assessment and Mitigation of Post-Rehabilitation Groundwater Uplift, prepared by WSP, dated October 21, 2025.
- Headwater Drainage Feature Assessment, prepared by WSP, dated October 22, 2025.
- Site Plan drawings, prepared MHBC, dated November 2025.

The following documents were received as part of this submission and will be reviewed by Township staff and other consultants:

- Land Transfer of Ownership Receipt, dated March 15, 2018.
- Stage 1 and 2 Archaeological Assessment, prepared by WSP, dated August 28, 2023.
- Stage 3 Archaeological Assessment, prepared by WSP (Location 3), dated June 1, 2023.

- Stage 3 Archaeological Assessment, prepared by WSP (Location 5), dated June 1, 2023.
- Agricultural Considerations Review, prepared by MHBC, dated September 8, 2023.
- Natural Environment Report, prepared by WSP, dated November 2023.
- Noise Impact Assessment, prepared by WSP, dated November 2023.
- Planning Report and ARA Summary Statement, prepared by MHBC, dated November 2023.
- Review and Entry into the Ontario Public Register of Archaeological Reports, prepared by Ministry of Citizenship and Multiculturalism, dated November 10, 2023.
- Application to Amend the County Official Plan, dated November 20, 2023.
- Public Consultation Strategy, dated November 20, 2023.
- Drinking Source Water Protection Form, dated November 20, 2023.
- Planning Act Applications Letter, dated November 29, 2023.
- Aggregate Resource Evaluation, prepared by WSP, dated November 2023.
- Hydrological and Ecological Monitoring Plan, prepared by WSP, dated October 21, 2025.
- Responses to Aboud and Associates Inc., prepared by WSP, dated October 22, 2025.
- Responses to GRCA, prepared by WSP, dated October 22, 2025.
- Responses to Harden, prepared by WSP, dated October 22, 2025.
- Responses to Stovel and Associates Inc., prepared by WSP, dated October 22, 2025.
- Responses to Wellington Source Water Protection, prepared by WSP, dated October 22, 2025.
- Response to Valcoustics Canada Ltd., prepared by WSP, dated October 31, 2025.

2. Additional Documents Required

All plans and studies required from an engineering perspective to support the zoning bylaw amendment application have been submitted and additional documents are not required at this time. We are in support of this application being deemed complete.

3. Technical Comments

No.	Matter	Document	Comment
1.	Existing Condition of Concession Road 2 and Culverts	Transportation Impact Study	We have been advised that it is not possible to defer the geotechnical and structural investigations of Concession Road 2 and Bridge Structure 2012 to detailed design as a condition of approval. The nature of required off-site road improvements are required to be identified at the zoning bylaw amendment stage. As such, we ask that to support the zoning bylaw amendment application, a geotechnical investigation of Concession Road 2, from the Aberfoyle South Pit West Access west to the proposed Aberfoyle South Lake Pit access,

No.	Matter	Document	Comment
			be completed to determine existing pavement and base structure and condition, and recommendations for required upgrades to the road in order for it to considered the proposed haul route. Concession Road 2 is considered to be a truck route between Sideroad 25S and Sideroad 20S but is not a truck route west of Sideroad 20S. However, it would be beneficial to investigate the entire haul route and provide necessary upgrade recommendations. This can then facilitate further discussion with the Township. Similarly, we ask that structural testing/inspection of the culvert over Mill Creek, located approximately 120 east of the site on Concession Road 2 (Bridge Structure 2012), be completed to confirm if it is suitable for the anticipated loads as is, or what upgrades would be necessary to have it meet the future required level of service. A comprehensive structural investigation including soil bearing capacity testing, concrete and rebar testing, and bridge deck inspection, is required. Again, the conclusions and recommendations of the structural investigation would facilitate further discussion with the Township about next steps.
2.	Sightline Analysis	Transportation Impact Study	A topographical survey of the Concession Road 2 centreline in several hundred metres each direction (distance to be determined by the analysis) is required to be completed for each entrance/exit to support the sightline analysis.
3.	Road Signage	Site Drawings	Per the TIS and Township's Traffic Consultant, signage is required to restrict trucks from turning left out of the site driveway onto Concession Road 2 and also from continuing westbound on Concession Road 2 beyond the site access. There should also be signage placed at the Sideroad 20S and Sideroad 25S intersections with Concession Road 2, prohibiting trucks from making either an eastbound right turn or a westbound left turn. Please note/show signage on the Operational Site Plan.
4.	Rumble Bars	Site Drawings	The TIS recommends rumble bars be installed at the pit's operational exit to slow down trucks merging onto Concession Road 2. These will also mitigate mud and debris tracking onto Concession Road 2. Please show on the Operational Site Plan.
5.	Oversize Loads	-	Please provide a written procedure outlining how proper weighing of trucks will be implemented using a calibrated scale, to prevent oversize loads of raw aggregate being hauled to the Aberfoyle South Pit, potentially putting the Township Road and culvert structure at risk of accelerated degradation over the long-term.

No.	Matter	Document	Comment
6.	Grading Plans	Site Drawings	Please provide preliminary operational grading plans for each phase of the planned extraction. Currently detailed grading is only provided on the rehabilitation plan, and while we acknowledge that the rehabilitation plan is progressive, it is difficult to review the impacts of the perimeter grading and berms as they are constructed over the operational period.
7.	Flood Potential	Flood Mapping Memo	The Flood Mapping memo concludes that to minimize the potential for flooding, the ground surface around the perimeter of the Site will be graded to a design elevation (up to 304.6m per the Memo), and berms will be installed to ensure flood waters do not move to lower lying areas outside of the extraction area or onto adjacent lands. Flood waters will be permitted to enter the pit at the northeast corner of the site. As noted above, preliminary grading plans for each operational phase should be provided. Based on these plans, please provide additional flood mapping showing how far the floodplain will extend, for each storm event, including the regional storm, during existing conditions, during each phase of operations, and after full rehabilitation, based on proposed grading. The impacts of the flooding on the Site and neighbouring properties during the 6-10 operational period and post-rehabilitation need to be better understood. Do the HEC-RAS cross-sections for Tributary 3 or Mill Creek need to be updated due to alterations to the floodplain? The tables in the Flood Mapping memo provide water surface elevations for a regional storm, but a flood elevation map has not been provided for the regional storm. Please provide this for the next submission. It appears that a regional storm in 1982 has been modelled – please provide details. Is there a reason that Hurricane Hazel was not used?
8.	Proposed Tile Drain	Post-Rehabilitation Groundwater Uplift Memo	The potential flooding of private lands is proposed to be mitigated through the installation of a 350 m long, 200-300 mm diameter, subsurface drain at an invert elevation of approximately 301.25 m, located in the 30 m setback area, and designed to capture excess groundwater water during high water table periods post-rehabilitation, and divert it northward to Tributary 3. It is estimated that a total of 212 m^3/day would be diverted post-rehabilitation through the drain into Tributary 3. We recommend that the drain be added to the groundwater model to better demonstrate the long-term impacts on groundwater and surface water on the Site and neighbouring properties. Per the Township Hydrogeologist, confirmatory monitoring is recommended to validate numerical model results and document impacts. Please show the maintenance setback for the tile drain, taking into account the depth of the drain and a suitable cut

No.	Matter	Document	Comment
			ratio based on soil type. Please discuss long-term operation and maintenance of the drain beyond pit operations. Who will be responsible for monitoring, inspection and repairs in the long term? There is concern that because the drain is located in the 30 m setback area, any failure of the drain requiring replacement would result in significant impacts to vegetation and potentially adjacent wetland. The toe of the tile drain will terminate at Tributary 3 on a rip-rap outfall apron. Please show the rip-rap apron on the Site Drawings and demonstrate that it is sized and designed adequately to prevent erosion. Please assess the impacts of increased flows to Tributary 3 downstream of the drain inlet, including on culvert sizes downstream on neighbouring properties.
9.	Submission Format	Various Memos and Reports	For future submissions, it would be helpful to reviewers if the various technical memos provided with this submission were incorporated into a cohesive report.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

GEI Consultants Canada Ltd.



Andrea Reed, P.Eng.
Project Engineer

VALCOUSTICS
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Sound solutions to acoustical challenges
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March 11, 2026

Township of Puslinch
7404 Wellington Road 34
Puslinch, Ontario
N0B 2J0

Attention: Monika Farncombe
mfarncombe@puslinch.ca

VIA E-MAIL

Re: Peer Review of Response Letter to Noise Impact Study Peer Review
Aberfoyle South Pit Expansion
Puslinch, Ontario
VCL File: 123-0460

Dear Ms. Farncombe:

We have completed our review of a letter regarding "Response to Valcoustics Canada Ltd. Peer Review of the Noise Study Completed in Support of the Aggregate License Application for the Proposed CBM Aberfoyle South Lake Pit", dated October 31, 2025, prepared by WSP Canada Inc. (WSP).

Our comments are outlined herein.

a) WSP should confirm that the movement of aggregate material to the existing Aberfoyle South Pit will not result in additional off-site noise impacts due to increased truck activity.

b) In the Road Traffic Noise Prediction (Attachment 2), what do these items represent?

   a. Road grade mode of 2?

   b. Leq of 0.00 dBA for Highway 401 (4th column on page 19 of the pdf)?

   c. Reference Leq of 63.60 for Highway 401 (15th column on page 19 of the pdf)?

   d. Leq of 54.85 for Highway 401 (16th column on page 19 of the pdf)?

   e. Av?

   f. Hs?

   g. Heff?

   h. Ad?

   i. Af?

j. Ap?

k. Ah?

c) The ORNAMENT road traffic noise prediction model is not recommended for source to receiver distances greater than 500m. How was the calculation to predict Highway 401 traffic noise, with a source to receiver distance of more than 1,000 m done?

d) The response to comment e) refers to commitments intended to reduce equipment noise under the best practices on the Site Plans. Where is this included?

e) The source table in response f) a indicates truck sound power level of 102 dBA. However, response f) a (2) states that a sound power level of 103 dBA was used for the trucks. Review of the sample calculations in Attachment 1 indicate a sound power level of 102 dBA was used for the trucks. Further clarification is needed.

f) Response f) a (7) states that sound power levels of the line source are based on the truck's speed. What speed was used to model the truck movements?

g) One of the recommendations of the noise study is that prior to operations commencing, sound measurements of the equipment to be used on site be undertaken to confirm maximum emission levels are not exceeded. The response to f) a (8) is that the sound power levels in the table are average sound power levels. What are the maximum sound power level limits that the recommended measurements are to be compared against?

Based on our review of the noise study prepared in support of the Aberfoyle South Pit Expansion, there are a few items, as outlined above, that require further clarification.

If there are any questions, please do not hesitate to call.

Yours truly,

VALCOUSTICS CANADA LTD.

Per: [redacted]
John Emeljanow, P.Eng.

JE\
2026-03-11 Peer Review V2.0.docx

LANDMARK
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March 10, 2026

Township of Puslinch,
7404 Wellington Road 34,
Puslinch ON N0B 2J0

Attention: Monika Farmcombe, Development and Legislative Coordinator

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RE: Landscape Architecture Peer Review of CBM Aberfoyle South Lake Pit Expansion
Zoning By-law Application,
Site Address: 6947 Concession Road 2, Puslinch, ON
Our File: LA 1092-26

Dear Monika,

Landmark Environmental Group Ltd (LEGroup) is in receipt of your email of request of January 23, 2026 for peer review comments regarding a Zoning By-law Amendment application for a proposed Aggregate Pit Expansion (extraction) application by CBM Aggregates, located at 6947 Concession Road 2, Puslinch Township. CBM has applied for a Class A License through the Aggregate Resources Act and refers to the application as the Aberfoyle South Lake Pit.

We understand that the extraction area under application is approximately 27.5 ha (67 acres) within the licensed area of 44 ha (110 acres) of the subject site. We also understand that the pit extraction will take place both above and below the ground water table. The Operation Plan includes four (4) phases as illustrated on the Aberfoyle South Lake Pit Plans (ARA Site Plans) prepared by CBM Aggregates and MHBC.

Our services will include review of the landscape features to be installed for progressive rehabilitation of the pit, including buffer/screening, tree shrub replacement species, size and whether the plant material specified are native and indigenous, given its proximity to environmentally sensitive woodlands and wetlands.

We will also comment on the Visual Impact Assessment Report, prepared by MHBC to review sightlines into the extraction area between adjacent residents and public roads adjacent to the site and comment on the proposed mitigation/buffering to reduce the visual impact.

Documents received and reviewed for preparation of our review by Landmark Environmental Group (LEGroup) as part of Mary's this submission:

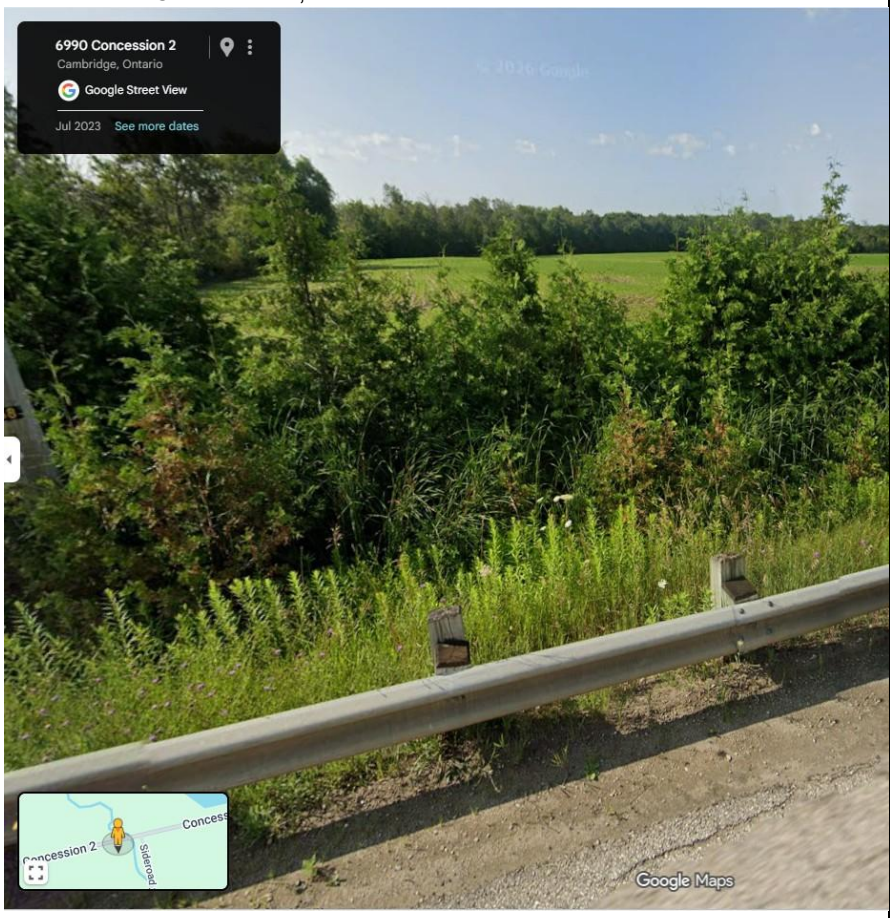
- Planning Report & Aggregate Resources Act (ARA) Summary Statement by CBM Aggregates dated November 2023;
- ARA Plans (Dwg 1-5) by CBN Aggregates, dated November, 2023;
- Noise Impact Assessment by WSP Canada, dated November 2023;
- Natural Environmental Report by WSP Canada, dated November 2023;
- CBM Aggregates Proposed Aberfoyle South Pit Expansion by MHBC, dated November 29, 2023;
- Visual Impact Assessment by MHBC dated March 27, 2024;
- Hydrological/Ecological Monitoring Plan-CBM Aberfoyle South Lake Pit by WSP Canada, dated October 21, 2025;
- Stovel and Associates Inc. (SAI) Review Comments by WSP Canada, dated October 22, 2025;
- Aboud and Associates Inc./Township Comments Review by WSP Canada, dated October 22, 2025;
- Headwater Drainage Feature Assessment-CBM Aberfoyle South Lake Pit by WSP Canada, dated October 22, 2025;
- Valcoustics Peer Review Responses by WSP Canada, dated October 31, 2025;
- ARA Plans w. Agency & Public Redline Comments (Dwg 1-5) by CBN Aggregates, dated November 2025;
- MHBC Response to County/Township Comments on Aberfoyle South Lake Pit Application, dated November 26, 2025;
- Response to Township/County Comments for CBM Aberfoyle South Lake Pit by MHBC, dated December 4, 2025;

Technical comments

The following are the peer reviewer's observations and comments on the proposed landscape features to be installed for progressive rehabilitation of the pit treatment at the subject site and review of the Visual Impact Assessment Report:

Number	Topic	Section	LEGroup Comment
1	ARA Plans November 2025	General	As part of the Aberfoyle Lake Pit Rehabilitation Plan that has been submitted, we note that a dedicated Landscape Plan and Details has not been provided. Pls submit Landscape Plan/Details for review and as set out in comments below.
2	ARA Plans November 2025	Drawing 1 of 5 Existing Features Plan	No Comment

Number	Topic	Section	LEGroup Comment
3	ARA Plans November 2025	Drawing 2 of 5 Operational Plan	○ Show native species, height and calipre sizes, planting density, quantity, layout of plant material in naturalized configuration on Optional Storage Berms (Planting Plan, Plant List, etc) ○ Provide the buffer planting design on the Landscape Plan using native conifer, 1.6m height trees along the Acoustic 'North Berm' in a naturalized configuration to demonstrate effective screening that meet the intent of the Acoustic Report; ○ Provide approved planting details for trees, shrubs, ground cover; ○ Provide Typical Berm Detail enlargement on a Landscape Detail page; ○ Revise Optional Storage Berm on the east side of the Entrance/Exit to Concession Road #2, to provide visual screening for Phase 4 Plan.
4	ARA Plans November 2025	Drawing 3 of 5 Operational Notes	○ F4-Seed mix stated has Kentucky Bluegrass seed in mix, not considered native. Pls consider another mix such as OSC 8225 Native Slope and Hillside or approved equal, applied by hydroseed slurry method; ○ F7-Add Operational Note F regarding tree planting along Concession 2 berm on the Landscape Plan, with an appropriate density of planting; ○ L2a) ii) Provide similar notation on the Landscape Plan regarding the Migratory Birds Convention Act and dates to avoid removal; ○ L2e) v) Provide for a monitoring of plant material installed on the 'North Berm' for guarantee and warrantee purposes. Provide note on the Landscape Plan advising the same; ○ L8 Visual Impact Assessment Report-see No. 7 below.;
5	ARA Plans November 2025	Drawing 4 of 5 Rehabilitation Plan	○ D1a)c) Proposed vegetation for the Nodal Planting Detail requires a wide variety of native plant material, labelled planting plan/plant list, installation details, approximate scaling and dimensioned nodal separation of plantings; ○ D1d) recommends a 1,200 trees per/ha target density to be shown on the Landscape Plan and 70% of the planted species as coniferous. Norway Spruce (*Picea abies*) is non-native, drought intolerant and should not be specified for replanting at this site; ○ D2c) Provide a scaled Nodal Planting Detail such that installers can verify the spacing needed between plantings within the node and distance between nodal areas; ○ D3 Provide details on the types of native non-invasive ground covers; ○ Wetland Area Detail-provide native emergent herbaceous vegetation in accordance with the Detail; ○ Shoreline Area Detail-Consideration of supply and install emergent planting on the Landscape Plan/Details/Plant List, as shown in the Shoreline Area Detail, enhancing pond for fish and amphibians.
6	ARA Plans November 2025	Drawing 5 of 5 Cross Sections Plan	○ Provide a schematic detail, showing the Progressive Rehabilitation Plan sequence for a typical Phase.
7	Visual Impact Assessment Report	Sections 1.0, 2.0, 3.0, 4.0, 5.0 & 6.0	○ 3.0 Visual assessment completed by MHBC during leaf-off condition to inventory/analysis of visual and landscape character of the subject site and identification of areas of visual impact; ○ The Visual Impact Assessment included the Identification of public views and adjacent residence views that will impact views due to the extraction activities; ○ 4.0 Views into the site were described in the Report, due to the partially open nature of the frontage of the subject site; ○ 4.3 Visual impacts took into account only views of adjacent residence and private driveways and not from all possible public views along Concession Road 2; ○ Mitigation measures to be considered include berm and native coniferous tree planting and ground cover, where required;

Number	Topic	Section	LEGroup Comment
			○ Visual characterization appears to be slight elevated at Concession 2 but otherwise, with generally open views from the Concession to the proposed extraction areas; ○ 5.1 no photos were taken at the Concession 2/Sideroad 20 South just west of the intersection, (see Google Streetmap photo below) that shows leaf-on visual from Concession Rd 2 (where there is no residence driveways) toward the subject site, which shows an open visual from the roads. This location is close to the operational entrance, which shows an Optional Storage Berm. It is recommended that this Optional Storage Berm be revised to a 4.0m Acoustic Berm with planting on the Landscape Plans. This location is the extraction at Phase 4 and would be closest to the Concession 2;  ○ The Report concludes that although there is high to medium potential views to the extraction site, (mostly view potential from driveways at residences adjacent to the site), from the residences, there is an overall low visual impact; ○ Report should provide a scaled cross-section of Concession 2, berm and remediation planting of the proposed Landscape Plan for review to visually demonstrate extent of mitigation.
8	MHBC Response to County/ Township comments	SAI ARA Site Plan Comment #9	○ 9. Agree with comments that a schematics and vegetation plan that visually buffers and provides aesthetic appeal to the entrance area could be considered which can be implemented into the Site Plan/Landscape Plan to the County's and Township's satisfaction;

If there are any additional queries regarding our comments, please feel free to contact our office.

Regards,



Jim Hosick MSc(Pl), OALA, RPP
Principal-Landscape Architect
ISA Certified Arborist ON-1098A
Registered Professional Forester #2673 (Provisional)
Registered Consulting Arborist (RCA) #783
Landmark Environmental Group Ltd.

Vooren Air Quality Management Services Inc.

February 12, 2026

Monika Farncombe
Planning and Corporate Services Coordinator

Township of Puslinch
7404 Wellington Rd. 34,
Puslinch, ON, N0B 2J0

Dear Monika

Re: Air Quality Peer Review
Rezoning Application for CBM Aggregates, Division of St. Marys Cement Inc.
Proposed Aberfoyle South Pit Expansion

The Township of Puslinch received an application to permit aggregate extraction under the Township of Puslinch (the "Township") Zoning By-law and the County of Wellington Official Plan. The application pertains to lands located at 6946 Concession Road 2, Part of Lots 18, 19 and 20, Concession 1 in the Township of Puslinch (the "Site"). We ("VAQMS") were retained to undertake peer review of the air quality aspects of the application. The application was filed by CBM Aggregates ("CBM"), Division of St. Marys Cement Inc. for the Proposed Aberfoyle South Pit Expansion.

The VAQMS Peer Review considered the following reports and correspondence provided as part of the submission:

1. Best Management Practices Plan for the Control of Fugitive Dust at Aberfoyle South Pit Expansion, prepared by WSP Canada Inc., dated October 2023 ("Dust BMPP");

2. Noise Impact Assessment for Aberfoyle South Pit Expansion, prepared by WSP Canada Inc., dated November 2023 ("Noise Report");

3. Response to Valcoustics Canada Ltd., Peer Review of the Noise Study Completed in Support of the Aggregate Licence Application for the Proposed CBM Aberfoyle South Lake Pit, prepared by WSP Canda Inc., dated October 31, 2025 ("Noise Comments");

4. Planning Report & Aggregate Resources Act Summary Statement, CBM Aggregates, a Division of St. Marys Cement Inc. (Canada), Proposed Aberfoyle South Pit Expansion, by MacNaughton Hermsen Britton Clarkson Planning Limited (MHBC), dated November 2023 ("Planning Summary Statement");

5. Responses to Township of Puslinch and County of Wellington Comments on Aberfoyle South Pit Application, prepared by MHBC Planning, Urban Design & Landscape Architecture, dated November 26, 2025 ("MHBC Response Comments"); and,

6. Site Plans for Aberfoyle South Lake Pit, by MHBC Planning, Urban Design & Landscape Architecture, dated for application submission, November 2025 ("Site Plans").

The critical air quality aspects of the proposed pit are:

1. No material processing at the site. Processing, including screening and crushing, are often very significant sources of dust emissions requiring significant dust mitigation. No processing is proposed for the site.
2. 95% of the extraction is underwater. Excavating and handling of dry materials is often a major source of dust emissions. Given the wet nature of the materials being excavated at the proposed site, the dust emissions from handling the aggregate will be insignificant.
3. Limited equipment on site. The proposed operation includes two loaders and an excavator/backhoe. Up to 14 trucks per hour are anticipated at the site. The loading, moving and truck traffic can be a source of dust emissions. The major sources of dust that could occur from the equipment would be loading of dry materials and dust emissions from the on-site haul routes. The application proposes to control these specific dust emissions through the Dust BMPP.
4. Control of possible track out. The Site Plans show a 20 m paved entrance to the pit. The paved entrance will help minimize track out of mud and silt to the Concession 2 Road, but the paved section must also be maintained to avoid dust emissions from materials deposited on the paved entrance section.

No specific air quality study or assessment was completed for the application. Neither the Township of Puslinch or the County of Wellington have a specific requirement to provide an air quality study as part of an Aggregate Resources Act submission. Even without specific submission requirements, typically, an air quality study would be submitted, and the results of the air quality study would include the detailed Dust BMPP.

The only reference to air quality impacts is found in the Planning Summary Statement, indicating that "*subject to the implementation of the proposed mitigation measures regarding water quality, noise, dust and traffic, there are no anticipated impacts to the agricultural system*". No further discussion is provided on potential air quality impacts to neighbouring residents. Though we find the lack of an air quality study unusual, our experience does let us conclude that with a properly executed Dust BMPP, the air quality impacts of the proposed operation should be minimal.

Our review of the application documents found the following:

1. The Dust BMPP is dated October 2023 and is based on the November 2023 Site Plans. Through discussions and comments, CBM updated their site plans (November 2025) to include a 20 m paved entrance to the site from Concession 2 Road. The Dust BMPP does not include the paved entrance as a source of fugitive dust emissions in Table 2 (page 5), Table 4 (page 7), Table 6 (page 8) or Appendix A (Risk Ranking). Table 3 (page 6) does mention mitigation for paved roadways, but the significance is not discussed nor are further details provided. The paved entrance will be subject to track-out of mud and silt from the site and if not well cleaned and maintained can become a major dust source. **The Dust BMPP must be updated to provide a**

better discussion concerning paved roads and best practices mitigation for the on-site paved entrance road. **The Dust BMPP update should also include appropriate tracking logs for mitigation activities on the paved entrance.**

2. Even with the inclusion of a paved entrance, track-out of silt and mud can still occur to Concession 2 Road. The current BMPP does not consider cleaning or managing potential track-out from the site. In the MHBC Response Comments (response to GM BluePlan Engineering. Comment 5), MHBC indicates, in response to road cleaning that "*Details related to the maintenance of Concession 2 would need to occur directly with the Township*". The Township By-Law 2023-058, "A By-law To Regulate Road Activity", clearly requires the site operator to maintain any haul route (Clause 18 in the By-Law). The By-Law requires the applicant to obtain a Haul Route Permit to ensure the roads are maintained as required. **The Dust BMPP must be updated to include the required mitigation for Concession 2 Road, including at a minimum, the requirements stipulated by By-Law 2023-058.**

3. The proposed site operations will not be subject to Ministry of the Environment, Conservation and Parks ("MECP") permissions. With no major material processing on site, the proposed operations would not require any air quality permits from MECP. The Dust BMPP will therefore only be enforced through the Ministry of Natural Resources Aggregate licence. As is typical, the full details of the Dust BMPP are not included on the Site Plans. The Dust BMPP is referenced on Drawing 3 of 5, Site Plan Notes, L Report Recommendations, Item 7 as *"Dust: "Best Management Practices Plan for the Control of Fugitive Dust at Aberfoyle South Pit Expansion" October 2023 (Source: WSP) The purpose of this plan is to document the Best Management Practices for the control of fugitive dust emissions from activities taking place at the pit. The licensee shall follow these Best Management Practices including preventative procedures and reactive control measures e.g. sweeping and/or watering to reduce vehicle track-out at paved pit entrance, limiting on-site vehicle speeds, reduce material handling during high wind conditions, etc. An inspection of the conformity with the BMPs will be documented monthly and a watering log must be maintained to record dust control activity. <u>The BMPP shall be reviewed periodically and updated if required</u>."* (underline added for emphasis). We note the Site Plan notes have now included some proposed mitigation for the paved entrance, not included in the Dust BMPP, but offers no further details. The Site Plan note and the Dust BMPP (under "Version Control") allow for a periodic review and update of the Dust BMPP if required. In stating that the Dust BMPP can be revised, enforcement by MNR would require MNR to review and inspect against any future unapproved Dust BMPP. **We recommend that any periodic review and update to the Dust BMPP should require the new Dust BMPP to be filed with MNR (ideally as a Site Plan amendment) to ensure that the Site Plans and MNR enforcement follow the most recent Dust BMPP**.

4. The Dust BMPP (page 7) states "*Hours of operation will be restricted during any period in which a wind warning for the area has been issued by Environment and Climate Change Canada and during any time where weather, traffic and unusual events would compromise the ability of Site alteration activities to be conducted in a safe and environmentally sound manner with due consideration of the public*." While this is an appropriate action, there is no specific detail on

how this will be managed at the site. Environment Canada issues Yellow, Orange or Red Wind alerts. **The Dust BMPP must updated to be specific with regards to actions that are to be taken at the site for each level of Environment Canada wind alert and indicate who takes on-site responsibility for the changes in on-site operations and activities.**

5. The Dust BMPP provides a procedure for monthly inspections and maintaining a log of when unpaved roads are watered (Section 4.3 page 8 and Appendix E). It is only in the monthly dust inspection form that the question is asked "*is visible dust observed from any section of roadway*?". A monthly observation of a dust plume from on-site traffic is totally inadequate. Watering the unpaved areas must occur when dust plumes are noticeable behind the trucks. It is important to apply water immediately to mitigate emissions. The frequency and extent of watering must be determined by visible plumes extending from the trucks and not done on an arbitrary watering schedule.

   Watering for mitigation is listed in Table 3 (page 6) of the Dust BMPP but lacks necessary detail. The procedure indicates applying at least 1 litre/m2 of water after 24 hours of dryness. No frequency is provided nor is "dryness" defined. **The Dust BMPP must be updated to include the use of visible dust plumes from haul traffic and operations as a trigger for mitigation. The procedure for using visible dust plumes and triggering mitigation must also be included in the responsibilities section (Section 3.0 page 3) and the training section (Section 4.2.1 page 8) of the Dust BMPP**.

6. The Dust BMPP does not address dust emission management for soil removal, placement during rehabilitation and surface stripping. Soils are very high silt content resulting in very high dust emission potential when dry; especially in hot, dry summer months. **The Dust BMPP should be updated incorporate an appropriate mitigation strategy to address soil handling.** The strategy would build on the recommendations for visible dust plume management stated in Comment 5 above or recommend limiting soil handling during wetter months.

7. No details are provided, in either the Dust BMPP or the Site Plans, if CMP intends to have a dedicated water truck on site. The watering log provided in Appendix D implies that a contractor will be used. **We recommend that given the immediate requirement of watering when dust plumes are noticeable on-site, CMP maintain an on-site watering truck and operator.**

   Similar considerations for timing of mitigation will need to be developed for the paved entrance and Concession 2 Road. While it is not anticipated that CMP would maintain an appropriate sweeper at site, it is important that CMP commit to ensuring any contracted sweeping, for both the paved entrance and Concession 2 Road, be available on a quick response contract. **Further details on contracted sweeping response times and requirements should be included in the Dust BMPP.**

8. The Dust BMPP does not include any discussion on handling complaints. Moreover, the Dust BMPP is silent on providing publicly visible on-site contact information (e.g. phone number,

email address) should there be off-site dust impacts. It would be appropriate for the Dust BMPP to include appropriate methods for the public to lodge a complaint, should an issue arise at the site or off-site as a result of the operations. As well, the Dust BMPP should include a procedure for handling complaints, including appropriate documentation (i.e. complaint form), notifying the MECP Spills Action Centre, carrying out additional mitigation and developing a corrective action to avoid the source of the increased dust emissions in the future. **We recommend that the Dust BMPP and the Site Plan be updated to include an appropriate complaint response procedure**.

Conclusions and Recommendations

The proposed Aberfoyle South Pit Expansion can be operated with minimal air quality impacts to the surrounding are if the operations at the site are well controlled to minimize dust emissions. A detailed Dust Best Management Practices Plan is required to ensure appropriate and timely mitigation of dust emissions. The current BMPP, which would be enforced through the Site Plans, is not sufficiently detailed nor does it include all potential dust emission sources.

Until an updated Dust BMPP is provided, it would be premature to conclude that the Aberfoyle South Pit will be operated to minimize air quality impacts.

Please contact us, if you have any further questions or require further clarification.

Yours truly,



Tony van der Vooren Ph.D., P.Eng.
President
Vooren Air Quality Management Services Inc.

ABOUD & ASSOCIATES INC.
Consulting Arborists • Ecologists • Landscape Architects

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GREEN ROOFS
CONTRACT ADMINISTRATION

EXPERT OPINION
OLT TESTIMONY
LEGAL PROCEEDINGS
PEER REVIEW
RESEARCH
EDUCATION

March 16, 2026

Our Project #: AA21-049A-004D
Sent by email: planning@puslinch.ca
mfarncombe@puslinch.ca

Monika Farncombe
Township of Puslinch
7404 Wellington Rd. 34
Puslinch, ON N0B 2J0

Re: Responses to Aboud & Associates Inc. / Township of Puslinch Review Comments - Proposed CBM Aberfoyle South Lake Pit (Prepared by: WSP Canada Inc., October 22, 2025) Peer Review – Ecology OPA submission documents

Dear Ms. Farncombe:

Aboud & Associates Inc. (AA) has been retained by the Township of Puslinch to complete a Peer Review of the Natural Environment Report (NER) and the Site Plans for the proposed Aberfoyle South Pit Expansion, Puslinch, ON. WSP Canada Inc. has issued a Technical Memorandum and several supplemental attachments in response to the Technical Peer Review completed by AA, dated February 8, 2024. This letter provides a review of the additional information submitted, including the following:

- Responses to Aboud & Associates Inc. / Township of Puslinch Review Comments - Proposed CBM Aberfoyle South Lake Pit
- Attachment 1:
    - Table 2 (Weather Conditions and Staff Qualifications)
    - Table 3 (Amphibian Call Count Data)
    - Table 4 (Breeding Bird Survey Breeding Evidence)
- Attachment 2: Fish Community Survey
- Attachment 3: HDF Assessment
- Attachment 4: MECP Correspondence
- Attachment 5: Natural Environment and Water Report Terms of Reference Concordance Cross-Check
- Attachment 6: Updated Figure 2
- Attachment 7: Supplemental Assessment of Potential Impacts to Provincially Significant Wetlands

Based on our review of the provided information, AA provides the following comments:

Methodology

The Peer Review was completed based on company experience and knowledge, standards for Environmental Impact Assessments in Wellington County and the GRCA, and the requirements of provincial and municipal policy documents. The review also cross-references the work completed with the accepted Terms of Reference, AA's comments on the Terms of Reference (dated October 26, 2021), and AA's comments on the Pre-Consultation Request (dated August 17, 2023) to ensure all requirements of the ToR have been met.

Our review has been broken down by outstanding comments pertaining to the NER and supplemental attachments provided in the Technical Memorandum. The following sections provides a brief summary of any primary concerns or comments for each document.

Natural Environment Report

AA acknowledges receipt of the supplemental information provided in the form of a comment response matrix and supporting attachments. Based on our review, the additional information provided addresses several of AA's original comments and has improved the clarity of the assessment. However, a significant number of comments are outstanding or require further clarification.

Study Area

The study area for the Natural Environment Report was defined as the proposed excavation limits and the area within 120 m of these limits. However, the groundwater modelling indicates that predicted changes to groundwater conditions will extend beyond 120 m from the excavation area. At present, the Natural Environment Report relies primarily on field data collected within the 120 m study area to inform the impact assessment and does not fully evaluate the potential for effects beyond this boundary.

In addition, field investigations appear to have been largely limited to lands owned by the proponent. In areas where private property restricted access, observations were made from roadside locations or from areas where access was permitted. While this approach is understandable from an access perspective, it introduces the potential that sensitive habitats or vegetation communities beyond the accessible areas may not have been fully documented, which may reduce the overall confidence in the impact assessment.

Given that the groundwater modelling predicts potential changes extending beyond the defined study area, it is recommended that the impact assessment be revisited to consider the broader area of predicted groundwater influence. Expanding the evaluation in this manner would help ensure that any potential effects to natural heritage features beyond the 120 m boundary are appropriately identified and assessed.

Groundwater

The primary outstanding concern relates to the assessment of potential impacts to Mill Creek, the surrounding Provincially Significant Wetland (PSW), and associated wildlife habitat. The portion of Mill Creek within the study area is located along the eastern boundary, where groundwater modelling predicts a reduction in groundwater elevation. However, Mill Creek flows westward through an area where the modelling indicates an increase in groundwater elevation. At present, it appears that the evaluation of impacts for Mill Creek reflect only the groundwater conditions on the eastern portion, rather than the full range of predicted changes.

Given the spatial variability in projected groundwater conditions across the site and surrounding landscape, AA recommends that the impact assessment be revisited to address these differing groundwater influence zones. This review should consider whether the potential effects to Mill Creek, the PSW, and associated habitats may differ between areas of predicted groundwater decrease and increase. Where sections of Mill Creek or associated features fall outside the areas previously surveyed or where information is limited, supplemental field observations should be undertaken to ensure that baseline conditions are adequately characterized in all areas and that the assessment appropriately reflects the full spatial extent of potential groundwater-related effects. Further, the proposed ecological monitoring plan should account for these variations and include monitoring locations within both decreased and increased groundwater influence zones for fisheries, amphibian, and wetland receptors.

Tile Drain implementation

The third matter relates to the proposed tile drain along the western boundary, discharging into Tributary #3. This design is anticipated to increase baseflow contributions beyond existing conditions. Confirmation is required that the downstream receiving watercourse has been evaluated to ensure it can accommodate the projected increase in flow without resulting in channel instability, excessive erosion, or downstream impacts. In addition, a private driveway crossing is located downstream within Tributary #3. Clarification should be provided to confirm that this structure has been assessed for hydraulic capacity under the proposed flow regime and to determine whether upgrades to the culvert may be required.

Further to the above, AA has concerns regarding the proposed location of the tile drain within the 30 m buffer setback from the PSW. While the current land use within this area is agricultural and installation of a tile drain under existing conditions is unlikely to result in direct impacts to the PSW, the tile drain represents long-term infrastructure that will require periodic maintenance, repair, and eventual replacement. As currently proposed, the tile drain is shown to be buried within the buffer and beneath a berm. A detailed plan should be prepared outlining the extent of excavation required for the installation of this structure to evaluate the potential for adjacent impacts and demonstrate that it can be installed without encroaching the dripline and wetland limit. Future access for repair or replacement would require excavation and disturbance within what is intended to function as a restored natural heritage buffer. Over time, this buffer area is intended to naturalize and become part of the PSW's ecological protection zone. Locating permanent infrastructure within this setback is therefore not appropriate from a long-term natural heritage planning perspective. Consideration should be given to relocating the tile drain outside of the buffer to avoid future potential impacts.

AA acknowledges that a Letter of Advice (LOA) has been issued by Fisheries and Oceans Canada (DFO). However, clarification is requested to confirm that the tile drain design and anticipated baseflow changes to Tributary #3 were included as part of the submission reviewed by DFO, as these elements were introduced later in the review process. Further discussion regarding fisheries is provided below as part of the Attachment 2: Fish Community Survey review.

Cumulative Impacts

Since the original submission of the Natural Environment Report, several additional technical studies and assessments have been completed and circulated as part of the review process. While these documents address previous data gaps and provide important information regarding anticipated impacts, it is currently unclear whether the anticipated effects identified across these studies have been evaluated collectively from a broader, cumulative perspective.

Given the interrelated nature of the potential impacts to hydrology, groundwater, surface water features, wetlands, and associated ecological receptors, AA recommends that a cumulative impact assessment be undertaken. This assessment should summarize the findings of the various supporting technical studies and clearly demonstrate how the predicted changes interact spatially and functionally across the site and surrounding natural heritage features.

AA further recommends that a revised Natural Environment Report be prepared and resubmitted with the incorporated additional technical information that demonstrates how the combined effects have been considered within the overall impact assessment.

Subject to the above outstanding concerns, the supplemental information has largely advanced the assessment and resolved many of the initial technical concerns identified during the first round of review.

Attachment 1: Table 2 (Weather Conditions and Staff Qualifications)
AA does not have any major concerns relating to this supplemental document, which has supported the resolution of previous comments.

Attachment 1: Table 3 (Amphibian Call Count Data)
There are several assumptions made in the analysis of data that are not technically correct per the SWH criteria. While 'wetland' amphibian breeding habitat is typically >120m from a woodland, this is not a requirement for candidacy, and several of the amphibian stations could be considered both woodland and wetland candidate habitat and should be assessed under both types. For example, the assessment for station 3 notes that the wetland must be >120m from a woodland to be considered candidate 'wetland' amphibian breeding SWH, however, this distance is not a requirement for candidacy. In addition, several surveys note that the habitat did not meet the abundance threshold, however, in past communication with MNR staff, they have noted that it is a cumulative total of individuals of all species, not an individual total per species.

Given the assessment for Significant Wildlife Habitat (SWH) and impact assessment in the NER was based on several incorrect assumptions, these conclusions should be reviewed and updated, where appropriate.

Attachment 1: Table 4 (Breeding Bird Survey Breeding Evidence)
AA does not have any major concerns relating to this supplemental document, which has supported the resolution of previous comments.

Attachment 2: Fish Community Survey
The methodology of the fish community survey appears to be appropriate. However, the conclusion that salmonids are absent from Tributaries #2, #3, and #5 appears to be largely based on the survey results. To confirm that this conclusion is appropriate, clarification is required regarding the specific location and length of reaches sampled, as well as the level of sampling effort expended (e.g., catch per unit effort) in each reach. Justification should be provided to demonstrate that the level of sampling effort was sufficient to reasonably conclude the absence of these species. Additionally, it may

not be appropriate to conclude the absence of salmonids from these tributaries based on only one sampling event, particularly considering the connectivity of the watercourses and migratory nature of salmonids to access spawning habitats.

Additional clarification is required regarding the rationale for excluding sampling within Mill Creek. The proponent indicates that sufficient background fish community information is available, including documented occurrences of Brook Trout (*Salvelinus fontinalis).* However, Brook Trout appear to have been excluded from the impact assessment on the basis that Brown Trout are the dominant salmonid species and that Brook Trout may be restricted to smaller coldwater tributaries. In the absence of recent, site-specific fish community sampling conducted within Mill Creek, this conclusion is not sufficiently supported. Furthermore, available ARA survey point data document the presence of Brook Trout within Mill Creek upstream of the site.

While the potential for impacts to the Mill Creek fishery has been determined to be low, insufficient information has been presented to justify excluding Brook Trout from consideration within the Mill Creek fish community. It is noted that the fish habitat assessment lacks observations for the majority of Mill Creek within the area of predicted groundwater changes. Therefore, supplemental fish habitat assessments and salmonid spawning surveys should be performed within the entire length of Mill Creek and tributaries in order to confidently rule out impacts.

Additionally, it is recommended that Brook Trout be used as the baseline species for impacts to ensure the most sensitive species has been considered, including during the development of the ecological monitoring plan. This should include implementation of salmonid redd spawning surveys, to verify continued use of the system and to detect any changes in reproductive activity over time. Where appropriate, clearly defined monitoring thresholds and adaptive management triggers should be established based on Brook Trout life history requirements, including thermal tolerances and spawning habitat needs.

Attachment 3: HDF Assessment

The field methodology applied in the Headwater Drainage Feature (HDF) Assessment is considered appropriate and consistent with the *Ontario Stream Assessment Protocol (OSAP), Section 4 Module 11 – Unconstrained Headwater Sampling* and the *CVC/TRCA Evaluation, Classification, and Management of Headwater Drainage Features Guideline*. However, AA does not agree with several aspects of the feature classification and the resulting management recommendations.

In particular, several components of the classification appear to be under-represented, resulting in lower overall feature rankings than would be anticipated based on the documented field observations. Evidence of standing water during late summer survey conditions, amphibian breeding activity, and the presence of wetland or scrubland riparian communities collectively suggest a stronger hydrological and ecological function than reflected in the final classifications. These observations indicate that certain features function, at least in part, as groundwater discharge (upwelling) areas and provide demonstrated habitat value.

While AA recognizes that the aforementioned guidelines allow for the application of modifiers and professional discretion to account for adjacent agricultural land use activities, the extent to which modifiers have been applied appears excessive and not well justified, resulting in a substantial downgrading of feature classification and management recommendations. In several instances, the rationale for modifiers does not appear fully supported by aerial imagery or field context, particularly where features retain intact riparian vegetation and are not actively cropped through. The cumulative application of modifiers in this case has the effect of minimizing the ecological and hydrological importance of these features.

Additional justification is required in order to accept the conclusion that these features do not warrant formal protection designation within the context of the proposed extraction limit. Given the apparent groundwater discharge function of certain HDFs and their demonstrated contribution to downstream flows, the recommended management approach of “Maintain Recharge” is not considered sufficient in the case of HDF-1 and HDF-2. This recommendation is typically applicable to features functioning primarily in infiltration; it does not adequately address features that contribute baseflow through groundwater upwelling. The assessment should include further discussion regarding how the proposed removal of these HDFs may influence downstream hydrology, including potential changes to baseflow contributions to the receiving tributaries and ultimately Mill Creek. It is currently unclear whether the modelled changes in baseflow incorporate the potential loss of these HDF functions, or whether these effects would need to be incorporated as part of the broader cumulative impact assessment discussed above.

Additional justification should be provided to demonstrate how the hydrological function, flow contribution, and associated habitat values of these features will be maintained during and following extraction.

Attachment 4: MECP Correspondence

AA does not have any major concerns relating to this supplemental document, which has supported the resolution of previous comments.

Attachment 5: Natural Environment and Water Report Terms of Reference Concordance Cross-Check – Proposed CBM Aberfoyle South Lake Pit

AA does not have any major concerns relating to this supplemental document, which has supported the resolution of previous comments.

Confirmation should be provided from the proponent that all reviewing parties of the Terms of Reference (TOR) have provided acceptance. This was requested in Comment #50 and remains outstanding.

Attachment 6: Updated Figure 2

AA does not have any major concerns relating to this supplemental document, which has supported the resolution of previous comments.

Attachment 7: Supplemental Assessment of Potential Impacts to Provincially Significant Wetlands – Proposed CBM Aberfoyle South Lake Pit

The supplemental wetland assessment appears to be largely qualitative in nature and introduces a significant degree of uncertainty regarding the magnitude of potential impacts to the PSW complex. The assessment identifies several zones that are expected to experience hydrologic changes; however, the discussion appears to understate the potential for these changes to result in negative ecological impacts.

The presentation of plant community data is also insufficient to support independent review. Species composition and community structure are not clearly organized or linked to specific wetland communities, making it difficult to determine which species are present within each community type. As a result, it is challenging from a peer-review perspective to independently evaluate the potential ecological impacts or verify the conclusions presented in the assessment.

The wetland assessment further suggests that a reduction in overall water surplus may result in decreased drainage to downstream watercourses. It is unclear whether these potential reductions in wetland outflow have been considered within the broader fisheries and hydrologic impact assessments. Clarification is required regarding whether these changes have been incorporated into the modelling of downstream baseflow conditions and these effects would need to be incorporated as part of the broader cumulative impact assessment discussed above.

Additionally, the assessment largely focuses on the ability of the wetland vegetation communities to persist under conditions where precipitation becomes the primary water source. This approach does not adequately address potential impacts to other ecological functions of the wetland, including vernal pools and amphibian breeding habitat that may be supported by the existing shallow groundwater table.

Several species with CC value greater than 6 are identified within the botanical species list in the NER, including one species with a CC of 10, species with a high CC value have a high degree of fidelity to specific habitats and a low tolerance to changes in their environment and site disturbance. These species should be discussed and considered as part of the assessment of impacts resulting from a change in groundwater to the wetland communities. Several communities also had a significant number of obligate wetland species, and impacts to those communities should be considered and discussed specifically when it comes to changes in groundwater levels.

Lastly, the assessment assumes that the organic-rich wetland soils will continue to provide adequate water retention under altered hydrologic conditions. However, this assumption does not sufficiently consider the potential impacts of seasonal drought. Prolonged drying of organic soils can lead to irreversible structural changes that reduce their water-holding capacity. The potential role of the current shallow groundwater table in maintaining soil moisture during periods of limited precipitation should therefore be more thoroughly evaluated.

Conclusion

In conclusion, our review of the submitted documents indicates that several outstanding concerns remain that require clarification and additional justification to demonstrate that potential impacts have been fully considered. While the supplemental responses and supporting information have addressed a number of the previously identified data gaps, further information and, where necessary, supplemental field investigations are recommended to ensure that the impact assessment has been completed at an appropriate level of detail. At this stage, AA is unable to fully confirm that all potential impacts to surrounding natural heritage features have been adequately characterized.

Given the number of supplemental technical memoranda and assessments prepared since the original submission of the Natural Environment Report, it is recommended that these materials be consolidated and resubmitted as part of a single comprehensive report and include an updated NER that integrates all responses to comments from all submissions. This would ensure that all findings are clearly integrated and that potential effects are evaluated collectively within the overall impact assessment framework.

Several comments remain regarding the implementation of mitigation measures and the scope of the proposed ecological monitoring plan, which require revision. To ensure that potential impacts to the surrounding natural environment are effectively mitigated, it is recommended that a more comprehensive and quantitative ecological monitoring plan be developed. At a minimum, this plan should include defined monitoring commitments for wetland vegetation plot monitoring, soil moisture readings, floristic quality assessment, amphibian monitoring, and salmonid redd spawning surveys. Monitoring should be conducted multiple times per year and across spring, summer and fall to ensure a comprehensive picture of baseline conditions and adequately captures changes that may be seasonal in nature. These surveys directly monitor the sensitive receptors identified in the impact assessment and should form the foundation of the monitoring framework.

Pre-extraction surveys throughout the limits of the groundwater impact area should be completed to establish clear baseline existing conditions. In addition, well-defined trigger thresholds and corresponding adaptive management measures should be clearly outlined and formally committed to. The monitoring program should be implemented annually throughout the active extraction phase and continue for an appropriate period following site restoration to evaluate potential long-term effects. One year of post-restoration monitoring is not sufficient to evaluate long-term impacts, given that the most significant impact is expected post-restoration (permanent change to groundwater availability). For the post-restoration phase, a reduction in monitoring frequency may be appropriate only once monitoring results demonstrate that no adverse impacts have occurred.

Please contact the undersigned should you require additional information of the above.

Yours truly,

ABOUD & ASSOCIATES INC.

[redacted]

Jordan Widmaier, B.Sc.
CAN-CISEC
Aquatic Ecologist

&

[redacted]

Cheryl-Anne Ross, B. Sc., F.W.T.
MNRF Certified ELC & OWES
Ecology Lead & Wildlife Ecologist

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THE CORPORATION OF THE TOWNSHIP OF PUSLINCH

BY-LAW NO 2026-012

A by-law to authorize the temporary borrowing of funds to meet current expenditures of the Corporation of the Township of Puslinch during the fiscal year ending December 31, 2026.

WHEREAS in accordance with Section 407 of the *Municipal Act, S.O. 2001, c. 25* as amended, the Corporation of the Township of Puslinch ("Township") considers it necessary to have authorization in place in the event that temporary borrowing is required to meet current expenditures for the year 2026 until taxes are collected and other revenues are received; and

WHEREAS the total amount which may be borrowed from all sources at any one time to meet the current expenditures of the Municipality, except with the approval of the Ontario Land Tribunal, is limited by Section 407 of the *Municipal Act, 2001, S.O. 2001, c.25*, as amended; and

WHEREAS the total amount previously borrowed by the Township pursuant to Section 407 that has not been repaid is NIL.

NOW THEREFORE the Council for the Corporation of the Township of Puslinch hereby enacts as follows:

1. That the Mayor and Treasurer be and the same are hereby authorized on behalf of the Township to borrow from time to time by way of a promissory note from THE TORONTO DOMINION BANK ("TD") a sum or sums not exceeding in the aggregate of $1,500,000.00 to meet, until taxes are collected and other revenues are received, the current expenditures of the Township for the year as permitted by Section 407 of the *Municipal Act* and to give to TD promissory notes, sealed with the Township's corporate seal and signed by the Mayor and Treasurer for the sums borrowed plus interest.

2. That the total amount borrowed at any one time plus any outstanding amounts of principal borrowed and accrued interest shall not exceed,

    a) from January 1 to September 30 in the year, 50 percent of the total estimated revenues of the municipality as set out in the budget adopted for the year; and

    b) from October 1 to December 31 in the year, 25 per cent of the total estimated revenues of the municipality as set out in the budget adopted for the year.

3. For purposes of this by-law, the estimated revenues referred to in section 2 do not include revenues derivable or derived from: a) any borrowing, including through any issue of debentures; b) a surplus, including arrears of taxes, fees or charges; or c) a transfer from the capital fund, reserve funds or reserves.

4. All sums borrowed pursuant to this by-law, as well as all other sums borrowed pursuant to the Act in this year for any purpose will, with interest thereon, be a charge upon the whole of the revenues of the Township for the current year and when this revenue is received.

5. The Treasurer is authorized and directed to apply in payment for all sums borrowed plus interest, all of the monies collected or received on account in respect of taxes levied for the current year or from any other source which may lawfully be applied for this purpose.

READ A FIRST, SECOND AND THIRD TIME AND FINALLY PASSED THIS 25th DAY OF MARCH, 2026.

_____
James Seeley, Mayor

_____
Justine Brotherston, Municipal Clerk

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH

BY-LAW NUMBER 2026-010

Being a by-law to Stop Up, Close and Declare Surplus Part 1 R-Plan 61R-23192 of Road Allowance Between Lots 5 & 6, Concession 1 Township of Puslinch, North of Puslinch Lake & South of Little Lake, Township of Puslinch.

WHEREAS, Section 9 of the *Municipal Act, 2001*, S.O. 2001, c.25 (the "*Municipal Act*"), as amended, provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under the *Municipal Act* or any other Act;

AND WHEREAS pursuant to the provisions of Section 34 of the *Municipal Act*, as amended, the Council of every municipality may pass by-laws for stopping up and closing any highway or part thereof;

AND WHEREAS The Corporation of the Township of Puslinch owns and has jurisdiction over that road allowance known as Lake Avenue and described as Road Allowance between Lots 5 & 6, Concession 1, Township of Puslinch, North of Puslinch Lake & South of Little Lake; Township of Puslinch (PIN 71207-0106(LT);

AND WHEREAS the Council of The Corporation of the Township of Puslinch deems it expedient to stop up, close, and declare surplus that portion of the road allowance described in Paragraph 1 below, which lands are no longer required for highway purposes;

AND WHEREAS notice of this by-law was given, including notice on the Township website on February 20th, 2026;

NOW THEREFORE the Council of The Corporation of the Township of Puslinch enacts as follows:

1. That Part of the Road Allowance between Lots 5 & 6, Concession 1, Township of Puslinch, North of Puslinch Lake & South of Little Lake, designated as Part 1, 61R-23192, Township of Puslinch, being part of PIN 71207-0106(LT) is hereby stopped up, closed, the highway dedication removed, and declared surplus;

2. That the Mayor and Clerk of the Township of Puslinch are hereby authorized to execute such authorizations, forms and other documents on behalf of the Township as may be necessary for the above stated purpose;

3. That where the provisions of any other by-law are inconsistent with the provisions of this by-law, the provisions of this by-law shall prevail;

4. That this by-law does not take effect until it has been registered on title in the Land Registry Office.

READ A FIRST, SECOND AND THIRD TIME AND FINALLY PASSED AND ENACTED THIS 25th DAY OF MARCH 2026.

_____
James Seeley, Mayor

_____
Justine Brotherston, Municipal Clerk

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH

BY-LAW NUMBER 2026-011

Being a by-law to authorize the entering into Purchase and Sale Agreement for the sale of a portion of an unopened road allowance and to enter into an encroachment agreement for 6 Lake Avenue.

WHEREAS the *Municipal Act*, *2001*, S.O. 2001, c.25 (the "*Municipal Act*") authorizes a municipality to enter into agreements;

AND WHEREAS the *Municipal Act* authorizes a municipality to delegate authority in accordance with the provisions in the *Municipal Act*;

AND WHEREAS Report COR-2026-009 was considered at the Council meeting held on March 25, 2026, and subsequently authorized and approved by Council, to accept an offer to purchase Part of the Road Allowance between Lots 5 & 6, Concession 1, Township of Puslinch, North of Puslinch Lake & South of Little Lake, designated as Part 1, 61R-23192, Township of Puslinch, being part of PIN 71207-0106(LT) by the property owners of 6 Lake Avenue for $13,500, and all costs associated with the sale;

AND WHEREAS Report COR-2026-009 was considered at the Council meeting held on March 25, 2026, and subsequently authorized and approved by Council, to enter into an encroachment agreement for Part of the Road Allowance between Lots 5 & 6, Concession 1, Township of Puslinch, North of Puslinch Lake & South of Little Lake, designated as Parts 2 & 3, 61R-23192, Township of Puslinch, being part of PIN 71207-0106(LT) by the property owners of 6 Lake Avenue;

AND WHEREAS the Council for The Corporation of the Township of Puslinch deems it desirable to accept the offer to purchase the said lands and enter into an Agreement of Purchase and Sale;

AND WHEREAS the Council for The Corporation of the Township of Puslinch deems it desirable to enter into an encroachment agreement to address the existing encroachments located within the Township's road allowance;

NOW THEREFORE the Council of The Corporation of the Township of Puslinch hereby enacts as follows:

1. That the acceptance of an offer to purchase and enter into an Agreement of Purchase and Sale with the Owners of 6 lake Avenue for the lands legally described as Part of the Road Allowance between Lots 5 & 6, Concession 1, Township of Puslinch, North of Puslinch Lake & South of Little Lake, designated as Part 1, 61R-23192, Township of Puslinch, being part of PIN 71207-0106(LT) by the property owners of 6 Lake Avenue for $13,500, and all Township costs associated with the sale covered, is authorized and approved;

2. That entering into of an encroachment agreement to retain the existing encroachments on the lands legally described as Part of the Road Allowance between Lots 5 & 6, Concession 1, Township of Puslinch, North of Puslinch Lake & South of Little Lake, designated as Parts 2 & 3, 61R-23192, Township of Puslinch, being part of PIN 71207-0106(LT), with all Township costs covered, is authorized and approved;

3. That the Mayor and Municipal Clerk are hereby authorized to negotiate and execute the Purchase and Sale Agreement and the Encroachment Agreement, which shall be subject to satisfactory review by the Township's solicitor, and to execute all ancillary documents required to complete the transactions contemplated therein;

4. That the Mayor and Municipal Clerk be authorized to execute on behalf of the Township amendments to the Purchase and Sale Agreement that have no budgetary impact.

READ A FIRST, SECOND AND THIRD TIME AND FINALLY PASSED AND ENACTED THIS 25th DAY OF March 2026.

_____
James Seeley, Mayor

_____
Justine Brotherston, Municipal Clerk

THE CORPORATION OF THE TOWNSHIP OF PUSLINCH

BY-LAW NUMBER 2026-018

Being a by-law to confirm the proceedings of the Council of the Corporation of the Township of Puslinch at its Council meeting held on March 25, 2026.

WHEREAS by Section 5 of the *Municipal Act, 2001, S.O. 2001, c.25* the powers of a municipal corporation are to be exercised by its Council;

AND WHEREAS by Section 5, Subsection (3) of the *Municipal Act,* a municipal power including a municipality's capacity, rights, powers and privileges under section 8, shall be exercised by by-law unless the municipality is specifically authorized to do otherwise;

AND WHEREAS it is deemed expedient that the proceedings of the Council of the Corporation of the Township of Puslinch at its Council meeting held on March 25, 2026, be confirmed and adopted by By-law;

NOW THEREFORE the Council of the Corporation of the Township of Puslinch hereby enacts as follows:

1) The action of the Council of the Corporation of the Township of Puslinch, in respect of each recommendation contained in the reports of the Committees and each motion and resolution passed and other action taken by the Council at said meeting are hereby adopted and confirmed.

2) The Head of Council and proper official of the Corporation are hereby authorized and directed to do all things necessary to give effect to the said action of the Council.

3) The Head of Council and the Clerk are hereby authorized and directed to execute all documents required by statute to be executed by them, as may be necessary in that behalf and the Clerk authorized and directed to affix the seal of the said Corporation to all such documents.

READ A FIRST, SECOND AND THIRD TIME AND FINALLY PASSED THIS 25 DAY OF MARCH 2026.

_____

James Seeley, Mayor

_____

Justine Brotherston, Municipal Clerk