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832 6820 7185

Township of Amaranth
Council Agenda
Wednesday, November 4, 2020
10:00 a.m.

-
1. **Call to Order**
 2. **Added Items (Late Submissions)** - To be in the office prior to the meeting
 3. **Approval of Agenda**
 4. **Disclosure of Pecuniary Interest and General Nature Thereof**
 5. **Approval of Minutes**
 - 5.1 Regular Meeting Minutes held October 22, 2020
 6. **Closed Meeting**
 - 6.1. Litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local board; and/or Advice that is subject to solicitor-client privilege, including communications necessary for that purpose
OPA 4 LPAT Appeals

- 6.2. Information explicitly supplied in confidence to the municipality or local board by Canada, a province or territory or a Crown agency of any of them.

Capital Cost Sharing Project

- 6.3. Labour relations or employee negotiations

CAO/Clerk Performance review

CAO/Clerk recruitment

- 6.4. Personal matters about an identifiable individual, including municipal or local board employees

Workplace Harassment investigative summary

- 6.5. **Adoption of Closed Meeting Minutes** – October 22, 2020 Closed Meeting

7. Public Question Period (10:30 a.m. approximately)

*A maximum of 15 minutes will be set aside for Public Question Period, with each speakers comments limited to two minutes. Questions will be responded to with a brief response from the Chair, who may also request a response from other Council members and/or staff. All questions are read by the Clerk.

Please send your name, email, comment and phone number to the Clerks Office at deputy.clerk@amaranth.ca by NOON on Tuesday, November 3, 2020 to be added to the speaking list during the comment period. Additionally, questions can be submitted through the secure drop box located at the Municipal Office by NOON on Tuesday, November 3.

8. Delegations/Presentations

- 8.1. **Headwaters Health Care Centre**

Township of Amaranth One Community, Caring Together

9. Public Meetings – None Scheduled

10. Unfinished Business

- 10.1. **Other, if any**

11. Planning Department

- 11.1. **Site Plan Approval**

Dynevor Express Limited – 473032 County Road 11

- 11.2. **Town of Shelburne**

Planning Application 501 and 505 Main Street West

- 11.3. **Township of Amaranth File B4-20**
Notice of a Complete Application & Notice of a Public Meeting

- 11.4. Other, if any.

12. **Public Works Department**

- 12.1. **Report to Council 2020-027**
Director of Public Works update
- 12.2. **Memo to Council 2020-031**
Renovation to Public Works Building
- 12.3. **20TH Sideroad Resurfacing Project**
Verbal concerns from Councillor Foster

- 12.4. Other, if any.

13. **County Council Business**

- 13.1 **Building Department**
MPAC Submission Report – September 2020
- 13.2 **Diversity, Equity and Inclusion Community Advisory Committee**
Press Release
- 13.3. Dufferin County Council Agenda – [October 28, 2020](#)
- 13.4. **County of Dufferin Economic Development**
Agriculture and Rural Business Roundtable
- 13.5 Other, if any.

14. **Committee Reports**

- 14.1 **Grand River Conservation Authority**
[New grant program for farmers in upper Nith River subwatershed](#)
- 14.2 **Grand River Conservation Authority**
[Apply for scholarships through the Grand River Conservation Foundation](#)
- 14.3 **Grand River Conservation Authority**
Summary of the General Membership Meeting – [October 23, 2020](#)

- 14.4. **Shelburne Public Library**
Minutes of September 22, 2020 meeting
- 14.5. **Grand River Conservation Authority**
Final Natural Heritage Characterization Reports
- 14.6. **Grand River Conservation Authority**
[Forest improvements planned for Damascus Reservoir property](#)
- 14.7. Other, if any
- 15. **General Business and Correspondence**
 - 15.1. **AMO Communications** – [Municipal Cyber Security 101: What you need to know](#)
 - 15.2. **AMO Policy Update** – [COVID-19 Liability Protection, Municipal Elections Act; An Ontario Digital Identity; Public Health Orders; and Child Care](#)
 - 15.3. **AMO WatchFile** – [October 22, 2020](#)
 - 15.4. **AMO Policy Update** – [New Legislation Expedites Provincial Infrastructure, Reduces Red Tape, and Allows Off-Peak Deliveries](#)
 - 15.5. **AMO Policy Update** – [2020 Provincial Budget Date Announced](#)
 - 15.6. **Government of Ontario News:** [Tuesday October 20, 2020](#)
 - 15.7. **Government of Ontario News:** [Wednesday October 21, 2020](#)
 - 15.8. **Government of Ontario News:** [Thursday October 22, 2020](#)
 - 15.9. **Government of Ontario News:** [Friday October 23, 2020](#)
 - 15.10. [ROMA 2021](#) Annual General Meeting and Conference Connection
Rural Ontario
 - 15.11. **AMCTO** [Fall Budget Date will be November 5th](#)
 - 15.12. **MP Kyle Seebach** – [Update from your Member of Parliament](#)
 - 15.13. **Township of South-West Oxford**
Assessing Aggregate Resource Properties resolution
 - 15.14. **Northumberland County Council**

Resolutions adopted

- 15.15. **Township of Oro-Medonte**
Request for Support to Declare Snowsports, Skiing and Snowboarding,
Alpine and Nordic Deemed Essential
- 15.16. **Township of Huron-Kinloss**
Resolution Heritage Bill
- 15.17. **Township of Huron-Kinloss**
Resolution Municipal Elections Act
- 15.18. MPAC – [October 2020 InTouch](#)
- 15.19. **Town of Orangeville**
New Municipal Water Supply Schedule B Municipal Class EA
- 15.20. **Township of Mulmur**
Letter of Support
- 15.21. **AMO Policy Update** – [COVID-19 Resiliency Stream Launch and New Funding to Fight Human Trafficking](#)
- 15.22. **Government of Ontario News:** [Wednesday, October 28, 2020](#)
- 15.23. **AMO WatchFile** – [October 29, 2020](#)
- 15.24. **AMCTO Policy Blog** – [Ontario ICIP Resiliency Stream Launched](#)
- 15.25. Other, if any
- 16. **Treasury/Accounts**
 - 16.1. Preliminary 2021 Budget dates to be set
 - 16.2. Other, if any
- 17. **Added Items (Late Submissions)**
- 18. **New Business**
 - 18.1. **Dufferin County CP Rail Trail**
Cycling and walking trails/routes
 - 18.2. **Town of Grand Valley/Royal Canadian Legion (Orangeville and Shelburne)**

Remembrance Day Request for support

18.3. **Report to Council 2020-026**

Holiday Closure schedule

18.4. **The Royal Canadian Legion Ontario Command**

8th Annual Military Service Recognition Book request for support

19. **Notice of Motions**

20. **By-Laws**

Notice of intention to pass the following By-Laws:

21. **Confirming By-Law**

22. **Adjournment**

22.1. To meet again for the Regular Meeting of Council on Wednesday,
November 18, 2020 at 6:00 p.m. or at the call of the Mayor.



**Township of Amaranth
Council Minutes
Thursday, October 22, 2020
4:00 p.m.**

Electronic Meeting

The Township of Amaranth Council held an electronic regular meeting on Thursday, October 22, 2020, commencing at 4:00 p.m.

Council Present:	Mayor	B. Currie
	Councillor	G. Little
	Councillor	H. Foster

Council Present Via audio:	Deputy Mayor	C. Gerrits
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Staff Present:	Acting CAO/Clerk	N. Martin
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Via Audio:	Township Planner	J. Johnstone (for parts)
	Treasurer	F. Quadri (for parts)

1. Call to Order

Clerk determined quorum was obtained and the meeting was able to proceed.

Mayor Currie called the Meeting to Order at 4:09 p.m.

2. Added Items (Late Submissions) –

Added item to 11.3 Other, Planning Department, Memo to Council 2020-030
Added item to 8.1 delegation, information from site alteration permit update to be discussed and form part of the minutes moved from item 10.3

3. Approval of Agenda

Resolution #1

Moved by: H. Foster – Seconded by: G. Little

BE IT RESOLVED THAT:

Council do hereby approve the agenda as amended.

CARRIED

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

4. Disclosure of Pecuniary Interest with Reasons

Deputy Mayor Gerrits provided a Declaration of Interest with respect to item 10.2

5. Approval of Minutes

5.1. Regular Meeting of Council Minutes held October 7, 2020

5.2. Special Meeting of Council Minutes held October 7, 2020

Resolution #2

Moved by: G. Little – Seconded by: H. Foster

BE IT RESOLVED THAT:

Council do hereby adopt the minutes of the Regular Meeting of Council held on October 7, 2020; and the special meeting minutes held October 7, 2020 as circulated.
CARRIED

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

6. **Closed Meeting**

Resolution #3
Moved by: H. Foster – Seconded by: G. Little
BE IT RESOLVED THAT:

Council move to a Closed Meeting pursuant to Section 239 of the Municipal Act, 2001, as amended for the following reasons:

- 6.1. Labour relations or employee negotiation;
Litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local board and
Advice that is subject to solicitor-client privilege, including communications necessary for that purpose.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

Resolution #4
Moved by: H. Foster – Seconded by: G. Little
BE IT RESOLVED THAT:

Council do now rise and report from Closed Meeting.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

It was confirmed that the only items discussed in closed session were those items on the closed session agenda. Council confirmed that instruction was given to staff and the solicitor in closed, there were no further matters arising from closed session.

7. **Public Question Period**

The following is a letter received from a ratepayer and was read and will form part of the minutes.

Re: burning grass and & road conditions

You sent me a letter Sept. 22 2020, about burning grass in a Municipal drainage ditch, that ditch is about 200 feet from the house and is safe for burning.

However if I am in the near future can not continue burning the grass that I cut, perhaps you can send somebody over from the municipal garage to use it for their goats.

I have a much more burning situation to report, I seen trucks from Lundy farms Ltd out of Alliston using 5 sideroad between second and County Rd 11, a no truck road, with loads up to 25 tons for the last 2 years. I stopped Truck XXX twice, told him that this is a no truck road, however the destruction of this road continued. There are alternative routes available since their filed is on the second line, they could use second line north, or to highway nine. Made two calls to your office, was told, we will send somebody to assess the damage. The grooves from those trucks getting deeper and water is standing in them, specially in the winter, then your sanders Put sand on the road and turn it into a mud hole.

I hope when you reservice this road for an estimated cost of approximately \$400 000 you made sure to keep these trucks of this road.

Sincerity
Frank Reichenauer

Council discussed the letter and if the waste disposal collected grass clippings in the green bin collection. The Director of Public Works has been asked to look at the roads for any damage from the heavy loads and the signage at the roads. The writer will be reminded to contact the OPP for any ticketing offences.

8. **Delegations/Presentations**

- 8.1. Nick Rogic – Donnell Law Group
Site alteration Permit 285462 County Road 10, Amaranth

Council reviewed the draft site alteration agreement and the other documents supplied in support of the agreement. The road repairs should be made payable to the Township of Amaranth at the earliest. The deposit was also discussed. Council discussed further work and the necessity of it being supervised by R.J. Burnside.

9. **Public Meeting**

- 9.1. None at this meeting

10. **Unfinished Business**

- 10.1. **Memo to Council 2020-025**
Council vacancy procedures

Council discussed the vacant seat and the further options presented. Council was not in favour of any of the options.

Resolution #5
Moved by: H. Foster – Seconded by: C. Gerrits
BE IT RESOLVED THAT:

Council receive Memo to Council 2020-025 as information.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie		X	

- 10.2. **Memo to Council 2020-029**
Ice River Springs update

Deputy Mayor Gerrits declared a conflict on this agenda item and logged out of the meeting at this time.

Council discussed the agreement as presented and asked for an amendment to section 6 Contribution to Township to clarify the wording that the amount due be compounded and not start at the base of \$25,000.00 fee amount.

Resolution #6
Moved by: G. Little – Seconded by: H. Foster
BE IT RESOLVED THAT:

Council hereby receive Memo to Council 2020-029 and approve the execution of the amended License Agreement for Use of Part of the Township Highway with Ice River Springs and directs staff to prepare a by-law for the agreement's execution.

CARRIED.

Recorded Vote	Yea	Nay	Abstain
Deputy Mayor Chris Gerrits			X
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

Deputy Mayor Gerrits logged back into the meeting at approximately 5:35 p.m.

10.3. **Update to Council**
 285462 County Road 10 – Site Alteration application

Item has been moved to and dealt with under 8.1 Delegation.

10.4. **Memo to Council 2020-027**
 Tow Truck resolution

Council briefly discussed the last decision by Council to have the County of Dufferin act as the lead on the project and agreed to having the Town of Orangeville act as the lead.

Resolution #7
Moved by: H. Foster – Seconded by: G. Little
BE IT RESOLVED THAT:

WHEREAS, Council for the Township of Amaranth supports the development of a uniform Tow Truck Licensing By-law throughout the County of Dufferin that takes into consideration any recommendations of the provincial task force established to look at improving safety, consumer protections and industry standards of the Towing Industry;

AND WHEREAS, the Town of Orangeville has an established business licensing and enforcement program;

NOW THEREFORE the Township of Amaranth hereby requests the Town of Orangeville to work with the Dufferin County municipalities in the development of a uniform Tow Truck Licensing By-law and to oversee the administration and enforcement of the By-law across the County upon its adoption.

CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

11. Planning Department

The following items were received and/or dealt with:

- 11.1. **PL 190487 LPAT Decision Issued**
293274 8th Line – McNeilly applicant
- 11.2. **Township of East Garafraxa**
Notice of Complete Application and Public Meeting Z11-20
- 11.3. **Memo to Council 2020-030**
2147102 Ontario Inc. Site Plan Agreement Redline Revisions

The above item having been added to the agenda, the Township Planner, James Johnstone updated Council on an existing site plan agreement.

Resolution #8
Moved by: H. Foster – Seconded by: C. Gerrits
BE IT RESOLVED THAT:

Council receive Memo to Council 2020-030 and proceed to approve the associated redline revisions.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

12. Public Works Department

- 12.1. **Memo to Council 2020-024**
R.J. Burnside 20th Sideroad update

Council is not pleased with the progress of the road resurfacing. Council has asked that a representative be available at the next meeting to answer to the concerns.

- 12.2. **Memo to Council 2020-025**
Leader Drain Update for information

Council discussed the information in the memo.

Resolution #9
Moved by: C. Gerrits – Seconded by: H. Foster
BE IT RESOLVED THAT:

Council receive Memo to Council 2020-025 concerning the Leader Drain update and instruct staff to proceed with the work as described.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

- 12.3. Other, if any.

13. County Council Business

The following items were reviewed and dealt with:

- 13.1. **Council Agenda** – [October 8, 2020](#)
- 13.2. Council Meeting – [Training October 21, 2020](#)
- 13.3. Infrastructure and Environmental Services Committee Agenda – [October 22, 2020](#)
- 13.4. Council Meeting – Special Meeting – Strategic Priorities – [October 22, 2020](#)

Council was updated on the recent meetings at the County of Dufferin. The walking and biking trails in the County were discussed.

14. **Committee Reports**

The following were received and/or dealt with:

- 14.1. **Grand River Conservation Authority**
[By-Law 3-2020](#)
- 14.2. 2020 Court Security and Prisoner Transportation Grant Remainder
- 14.3. **Nottawasaga Valley Conservation Authority** – Media Release
- 14.4. Dufferin POA Update
- 14.5. **Nottawasaga Valley Conservation Authority** – [Monthly Newsletter](#)
- 14.6. **Ontario Fire Marshall** – Communique 2020-18 Staffing Levels and Firefighter Safety
- 14.7. **Grand Valley Public Library** – Minutes September 2020
- 14.8. Other, if any.

15. **General Business and Correspondence**

The following were received and/or dealt with:

- 15.1. **AMO Policy Update** – [COVID-19 Fall Plan, COVID-19 Modelling, Social Assistance Recovery & Renewal Plan, Food & Organic Waste Policy Statement, and Pre-Budget Submissions](#)
- 15.2. **AMO Policy Update:** [Temporary PSW Support, Cybersecurity Resources and Updated COVID school + child care screening guidance](#)
- 15.3. **AMO Policy Update** – [COVID-19 Public Health Measures, Municipal Relief Phase 2 Funding, and an Inspector General of Policing](#)
- 15.4. **AMO Policy Update** – [Main Street Recovery Plan & Increased Mental Health Services, Economic Recovery Legislation, Firefighter Safety, Child Care](#)
- 15.5. **AMO WatchFile** – [October 8, 2020](#)
- 15.6. **AMO Policy Update** – [Modified Stage 2 Restrictions for High-Risk Areas, Caution for Rest of Province, and Support for Small Businesses](#)

- 15.7. **AMCTO Policy Blog** – [Bill 213: Better for People, Smarter for Business Act, 2020 \(reducing regulatory burdens\)](#)
- 15.8. **AMCTO Policy Blog** – [EBR Posting Related to Bill 213](#)
- 15.9. **AMCTO Policy Blog** – [Regulatory Posting: Limiting Municipalities from Regulating Noise](#)
- 15.10. **Government of Ontario News:** [Thursday October 1, 2020](#)
- 15.11. **Government of Ontario News:** [Friday October 2, 2020](#)
- 15.12. **Government of Ontario News:** [Wednesday October 14, 2020](#)
- 15.13. **Minister of Municipal Affairs and Housing, Honourable Steve Clark**
Safe Restart Agreement – Municipal Operating Funding (Phase 2)

Council discussed the funding opportunities and if they should be applying in conjunction with other municipalities to be used for arenas and libraries.

Resolution #10
Moved by: C. Gerrits – Seconded by: G. Little
BE IT RESOLVED THAT:

Council approve applying for Phase 2 funding under the Safe Restart Agreement.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

- 15.14. Letter from the Honourable Sylvia Jones, Solicitor General
- 15.15. **Town of Wasaga Beach**
Unauthorized Car Rally in Wasaga Beach
- 15.16. **City of St. Catherines**
Motion of Council re. Development Approval Requirements for Landfills (Bill 197)
- 15.17. **County of Wellington**
Ontario Wide request to pass County of Wellington Aggregate Resolution
- 15.18. **Loyalist Township**
Council Resolution re Funding for Community Groups and Service Clubs
- 15.19. **Township of Blandford-Blenheim**
Council Resolution regarding Unlicensed and Unmonitored Cannabis Grow Operations
- 15.20. **AMO WatchFile** – [October 15, 2020](#)

16. **Treasury/Accounts**

The following were received and/or dealt with:

- 16.1. **Bills and Accounts - General Accounts**

Council had brief discussions regarding some of the accounts.

16.2. **Bills and Accounts - Road Accounts**

Resolution #11

Moved by: C. Gerrits – Seconded by: G. Little

BE IT RESOLVED THAT:

The following Bills and Accounts be approved for payment:

General 2020 \$1,259,891.14
Roads 2020 \$ 231,426.46

CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

16.3. **Budget vs. Actual**
 comparison report

Council briefly discussed the report provided. Council discussed the payments for Bridge 6 and where the funds were coming from.

16.4. 2021 Budget Preliminary and 2021 Budget Preliminary Capital Assets

Council requested setting the budget dates and it was decided that would be determined at the next meeting.

16.5. Other, if any

17. **Added Items - Late Submissions (to be in office prior to meeting)**

17.1. None at this meeting.

18. **New Business**

18.1. **Memo to Council 2020-026**
 Boundary Road Agreement

Council has requested an amendment to the agreement, that they be informed of any entrance permits that have been applied for along the boundary road and Amaranth public works be asked to provide comments for Grand Valley entrances for the section that Amaranth maintains.

Resolution #12

Moved by: H. Foster – Seconded by: G. Little

BE IT RESOLVED THAT:

Council do hereby receive Memo to Council 2020-026 and approve the execution of an amended Boundary Road Agreement with the Town of Grand Valley and direct staff to prepare a by-law for the agreements execution.

CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

18.2. **Memo to Council 2020-028**
 Council chambers upgrades

Council discussed the memo as presented and wanted to remove some of the items and ask for a new quote just for improvements to the audio system at this time. The requirement for closed captioning was also discussed and moving to the Webex platform and not the Zoom platform.

19. **Notice of Motions**

The Deputy Mayor will be bringing forward a motion at the November 4 meeting to support the development of the CP Rail Trail for the purposes of cycling and walking.

20. **By-Laws**

Notice of intention to pass the following By-Laws:

20.1 Resolution #13
Moved by: H. Foster – Seconded by: C. Gerrits
BE IT RESOLVED THAT:

Leave be given to enter into an agreement for the execution of a Boundary Road Agreement between the Township of Amaranth and the Town of Grand Valley; and that it be given the necessary readings and be passed and numbered 63-2020.

CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

20.2 Resolution #14
Moved by: G. Little – Seconded by: H. Foster
BE IT RESOLVED THAT:

Leave be given to introduce a by-law to enter into an agreement for the execution of a License Agreement for Use of Part of the Township Highway between the Township of Amaranth and Ice River Springs; and that it be given the necessary readings and be passed and numbered 64-2020.

CARRIED.

Recorded Vote	Yea	Nay	Abstain
Deputy Mayor Chris Gerrits			X
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

21. **Confirming By-Law**

Resolution #15
Moved by: C. Gerrits – Seconded by: H. Foster
BE IT RESOLVED THAT:

Leave be given to introduce a by-law to confirm the Regular Meeting of Council of the Township of Amaranth for October 22, 2020; and that it be given the necessary readings and be passed and numbered 65-2020.

CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		

Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

22. **Adjournment**

Resolution #16
Moved by: C. Gerrits – Seconded by: H. Foster
BE IT RESOLVED THAT:

Council do now adjourn to meet again for the Regular Meeting of Council on Wednesday, November 4, 2020 at 10:00 a.m. or at the call of the Mayor.
CARRIED.

Recorded Vote	Yea	Nay	Absent
Deputy Mayor Chris Gerrits	X		
Councillor Heather Foster	X		
Councillor Gail Little	X		
Mayor Bob Currie	X		

There being no further business the meeting adjourned at 7:05 p.m.

Head of Council

Acting CAO/Clerk



Township of Amaranth

One Community, Caring Together

About us ...

STRATEGIC DIRECTIONS

GETTING EVEN BETTER

- Relentlessly driving even higher levels of quality across our teams
- Investing in the continuous development and recognition of our people
- Continuously improving our facility and driving operational excellence

NOTHING ABOUT YOU, WITHOUT YOU

- Partnering with patients and families on what's most important to them
- Empowering individuals and teams to have more control over their work and work life
- Continuing to build the future of our hospital with our community

INTEGRATED CARE, CLOSE TO HOME

- Partnering to advance integrated systems of care in our community
- Improving the health of our community with our partners

SUPPORTS

MAKING EVERY DOLLAR COUNT FOR OUR PATIENTS & COMMUNITY

INNOVATION, RESEARCH & TECHNOLOGY

OUR VALUES

KINDNESS



PASSION



COURAGE



TEAMWORK

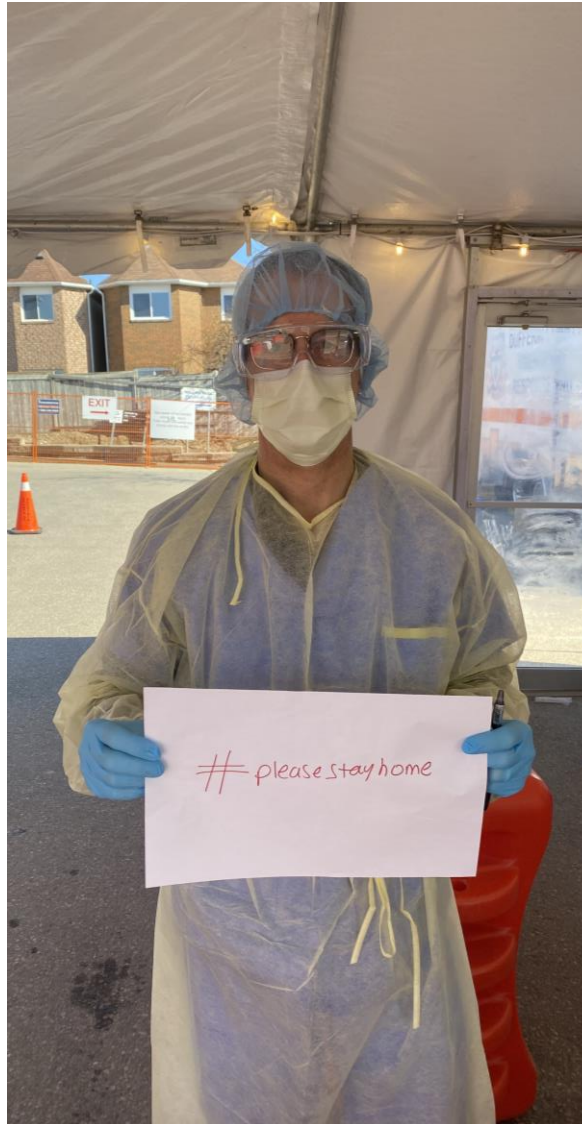


OUR PURPOSE

**ONE
COMMUNITY,
CARING
TOGETHER**



COVID-19 tested our resolve

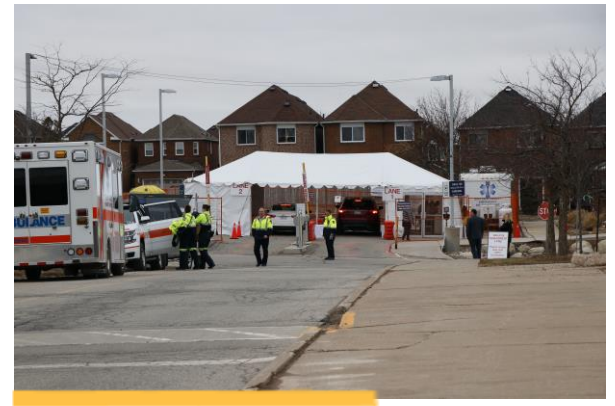


Key Hospital Updates : COVID-19

- Our response
- COVID-19 Assessment Centre
- Community outpouring of support

[Look inside our Assessment Centre](#)

[Watch a parade of support from Emergency Services](#)



By the numbers ...



Key Hospital Updates : Program/Service Improvements

- Patient Family Advisory Partnership
- New wireless fetal monitor and laboratory machines
- Increased access to health information
- Choosing Wisely Canada Designation
- Hospital One-Year Mortality Risk (HOMR) Project
- Renewed Urology Program and Equipment
- New Independent Spinal Assessment and Education Clinic & Musculoskeletal Rapid Access Clinic
- Continued infrastructure improvements



[Look inside our renewed Urology Program](#)



Key Hospital Updates : Facility Improvements

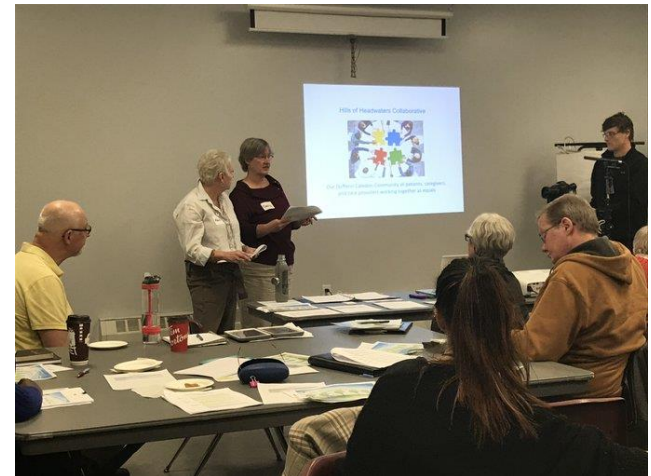
- Joan & Paul Waechter Welcome Centre
- Main hospital entrance and patio
- Paediatric department upgrades



Ontario Health Team

- Supporting local health care during COVID-19
- Congregate Care Settings
- Mental Health & Addictions
- Palliative Care
- Digital Health
- Community Wellness Council

[Meet the Hills of Headwaters Collaborative](#)



Local Heroes

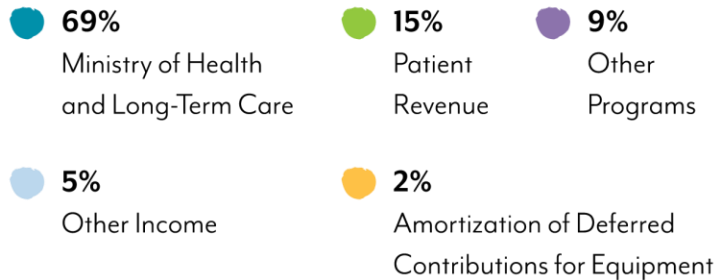


Making every dollar count ...

The operating results for the year ended March 31, 2020 is a deficit of \$716,600, before building amortization expense and related deferred capital contributions.

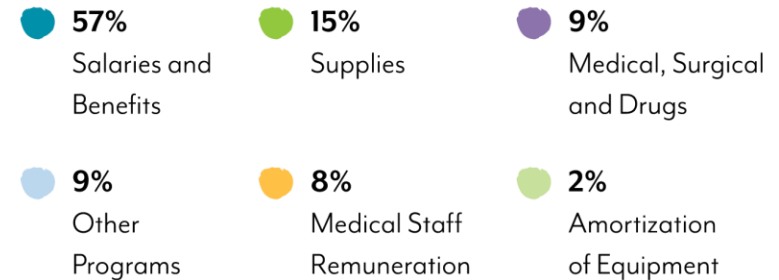
REVENUES \$76.9 Million

Revenues increased \$5.2M or 7.2% from the year prior. Special one-time investments and rebates received contributed to the majority of the increase in revenues.



EXPENSES \$77.7 Million

Total expenses increased by \$5.9M or 8.2%, relating mostly to annual inflation, increased drug costs and one-time investments. The deficit incurred in the year is a result of COVID-19 costs, which were unfunded as of March 31, 2020.



2020/2021 Areas of Focus...



- Replacement of our Health Information System (Meditech)
- Continued COVID-19 Pandemic Response
- Hills of Headwaters Collaborative Ontario Health Team
- Accreditation 2021
- Our People Strategy



Be part of health care in your community ...

- Join our team
- Join our Patient Family Advisory Partnership
- Volunteer with us at the hospital, in the gardens or in the community
- Participate with us at community events
- Donate to Headwaters Health Care Foundation at **hhcfoundation.com**



For more information:

Connect with us anytime by email at **info@headwatershealth.ca**, online at **headwatershealth.ca** or on social media at **@headwatershcc**

Partner in the Hills of Headwaters Collaborative, the Dufferin-Caledon Ontario Health Team. Learn more at **hillsofheadwaterscollaborative.ca**.

One Community, Caring Together



NEVER, NEVER UNDERESTIMATE
THE POWER OF HIGH HEARTS
WHEN THEY'RE COMBINED WITH
PRINCIPLED, UNYIELDING WILLS.

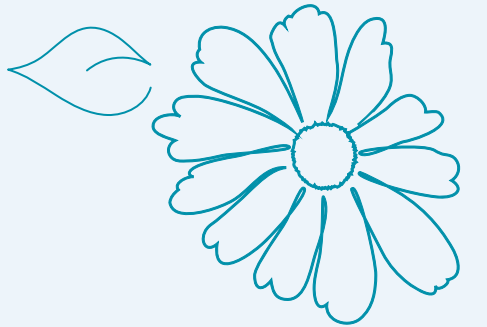
— JANE
JACOBS

 **HEADWATERS**
Health Care Centre

ABOUT US

Our Purpose

One Community, Caring Together



Our Strategic Directions

The strategic directions were developed from our extensive planning and engagement process and provides the framework for all of our decision-making.

GETTING EVEN BETTER

- Relentlessly driving even higher levels of quality across our teams
- Investing in the continuous development and recognition of our people
- Continuously improving our facility and driving operational excellence

NOTHING ABOUT YOU, WITHOUT YOU

- Partnering with patients and families on what's most important to them
- Empowering individuals and teams to have more control over their work and work life
- Continuing to build the future of our hospital with our community

INTEGRATED CARE, CLOSE TO HOME

- Partnering to advance integrated systems of care in our community
- Improving the health of our community with our partners

Supports

These are what enable us to achieve our outcomes and ensure that our services will be there for the people who need us, now and in the future.



Making every dollar count for our patients and community

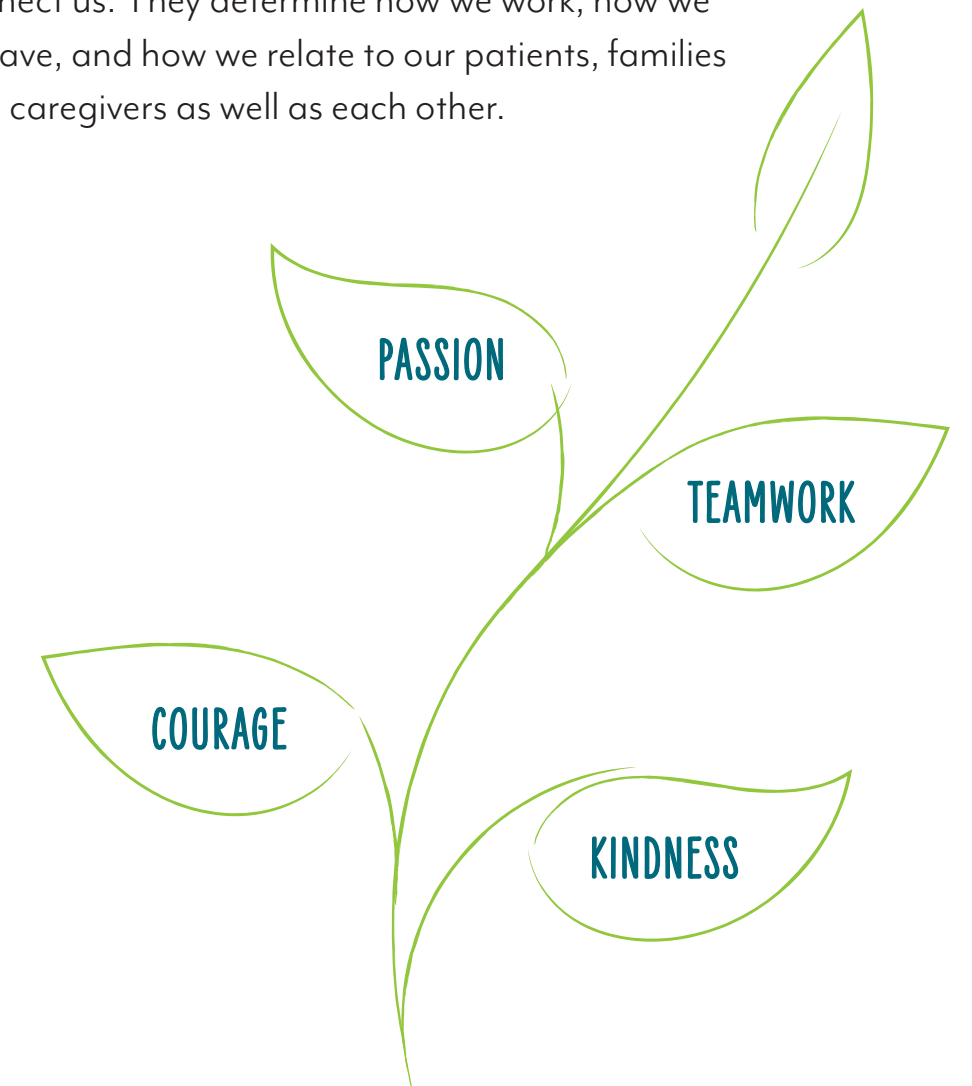


Innovation, research and technology



Our Values

More than words, our values are what define and connect us. They determine how we work, how we behave, and how we relate to our patients, families and caregivers as well as each other.



A Message from our Board Chair and President & CEO, Headwaters Health Care Centre

This has been a year of tremendous change both inside our hospital, in our community, across the province and worldwide. While the first nine months of our fiscal year were spent as planned, the last three were defined by the increasing threat, then arrival of COVID-19 in our community and hospital. It upended our best laid plans as our emergency response came into effect.

Provincially, we saw our purpose of 'ONE COMMUNITY, CARING TOGETHER' transform from words on paper to action in the selection of the Hills of Headwaters Collaborative, as one of the first wave of 24 Ontario Health Teams. The hospital is a proud partner in the Collaborative's work with the focus on the first-year priorities of palliative care, mental health and addictions, integrated community care and virtual care.

Locally, we put our patients, families and caregivers at the forefront of everything we do. We strengthened our Patient and Family Advisory Partnership at the hospital. And, as part of the Collaborative, we are partners in the development of the Community Wellness Council ensuring that members of our broader community are part of how we are getting even better.

Inside Headwaters, we welcomed new staff members, new leaders in several areas of our hospital, new physicians and a new Chief of Staff, Dr. Peter Cino. We were both also new to our roles as President & CEO and Board Chair.

This year, we announced our partnership with three other health care centres to upgrade our Health Information Management System. We also opened a Musculoskeletal Rapid Access Clinic for patients contemplating hip or knee replacement surgery. Plans are underway as well for an Independent Spinal Assessment and Education Clinic for patients with long-term back pain who are considering surgery.

Thanks to the generosity of Headwaters Health Care Foundation, Headwaters Health Care Auxiliary and Smilezone Foundation we were also able to invest in our aging infrastructure. We renovated our main staircase and lobby, established the Joan & Paul Waechter Welcome Centre, and partnered with the Smilezone Foundation to renovate our paediatric area and family waiting rooms.

We have also been fortunate to continue to benefit from the support of extraordinary volunteers who contributed countless hours escorting patients and providing much needed information, creating inspiration and joy in our gardens and tending to the spiritual needs of those who visit and work here.

We do know that despite the pandemic crisis we are in, our amazing team at Headwaters will continue to thrive and demonstrate their dedication to our patients and community.

Together we can accomplish so much; with our staff, volunteers, physicians, partners and through the generosity and support from our community. The future will be different than we anticipated, but this report's review of the past year shows how we have continued to take steps to be prepared for whatever comes our way.



LORI KER,
BOARD CHAIR
Headwaters Health Care Centre



KIM DELAHUNT,
PRESIDENT & CEO
Headwaters Health Care Centre



LORI KER
BOARD CHAIR



KIM DELAHUNT
PRESIDENT & CEO



DR. PETER CINO
CHIEF OF STAFF &
VICE PRESIDENT,
MEDICAL AFFAIRS



PETER VARGA
VICE PRESIDENT,
PATIENT SERVICES
& CHIEF NURSING
EXECUTIVE



CATHY VAN LEIPSIG
VICE PRESIDENT,
CORPORATE
SERVICES & CFO





A Message from our Board Chair and CEO, Headwaters Health Care Foundation

On behalf of the Headwaters Health Care Foundation Board and Staff, we wish to thank you for your support in 2019/20. Your commitment to our Hospital was unmatched, and we achieved many significant milestones, thanks to you.

TIM PETERS & DORA BOYLEN-PABST

You have been so generous in supporting our local Hospital. We had our first matching gift campaign over the Holidays, and the community stepped up to not only match the Galt Family Foundation's \$180,000 but exceed it by contributing over \$194,000 in support of the Hospital's most urgent priorities! Well done! Thank you as well to Vivienne who wrote a very inspiring letter that we all just couldn't say no to.

2019 also saw record results at our annual Gala, Golf Tournament and Tour de Headwaters. And, we granted the most funds to Headwaters ever, \$3,218,887! Our followers across all of our social platforms increased exponentially, and gifts of securities were the highest ever. We also confirmed seven Will bequests from committed members of our community—what better way to leave a legacy of care for our Hospital?

As the 2020/21 fiscal year starts we have many challenges facing us, primarily due to the arrival of COVID-19. However, we also have a long list of things to look forward to: our renovated Joan and Paul Waechter Welcome Centre is now open. It

is a new focal point for the Hospital, where Headwaters patients and their families will experience a one-stop shop with respect to registration, bill payment, parking payment, expanded waiting areas, a therapeutic outdoor space, a re-designed gift and coffee shop and a new central staircase designed to improve safety and accessibility for all. There are plans underway to re-design the busy Emergency Department which sees over 45,000 patients each year and growing! The waiting rooms and treatment areas will be improved, and staff and physicians will benefit from having more modern and efficient areas to care for patients. Finally, the Foundation will be launching a \$3.3M effort to update and better equip our Diagnostic Imaging Department — a unit that touches almost every patient that comes through our doors. This is all on top of our annual need for new and replacement equipment across the Hospital, as well as ongoing COVID-19 supplies and related equipment and infrastructure needs—including the needs that will come as a result of an anticipated baby boom!

It will be a challenging year, but we know you, our community, has our back, just as the Headwaters Health Care Centre and Foundation Teams have yours.

We are 'ONE COMMUNITY, CARING TOGETHER.' Thank you for your commitment to the best possible care, close to home.

For more information on Headwaters Health Care Foundation, please visit our website at hhcfoundation.com to stay up-to date.



TIM PETERS,
BOARD CHAIR
Headwaters Health Care Foundation



DORA BOYLEN-PABST,
CEO
Headwaters Health Care Foundation



A Message from our Volunteers

At Headwaters, we are privileged to have not one but five groups of volunteers who devote their time and talents to support the work of our hospital.

HEADWATERS HEALTH CARE AUXILIARY & SECONDS COUNT THRIFT SHOP

Our Auxiliary celebrated its 65th Anniversary this year. We are part of what feels like a small army who support the important work at the hospital. Our team of over 300 volunteers devoted to in-hospital work are the beacon that navigates the storm; we steer families unsure of where to go and patients needing safe transport. Our fundraising volunteers operate the Gift Shop and Café as well as the much-loved Headwaters House Tour. This past year, our Auxiliary contributed \$250,000 to support the Joan & Paul Waechter Welcome Centre which

saw much needed renovations. Seconds Count Thrift Store, the Auxiliary's largest fundraising endeavour, is run by an amazing team of over 70 volunteers. First opening in 2014, it has been an outstanding success—contributing \$364,000 during this past fiscal year.

Sophie Graham,
Seconds Count
Volunteer.



Mike Carter, Interim President,
Headwaters Health Care Auxiliary.



Lynn Sinclair-Smith, Coordinator (right) with fellow Friendship Gardens Volunteer, Tandy (left).

FRIENDSHIP GARDENS

When the hospital was initially built there was no money for gardens or additional trees. I made a commitment with some friends to create one garden so that patients, families and staff might have a living sanctuary. Today, the Friendship Gardens consist of 20 distinct gardens with over 400 trees. Thanks to the generous support of our community we successfully built a drystone wall and pavilion this year. Students also planted many pollinator plants. Currently we are working on completing a naturalization project of 200 saplings, plants and 3,500 pollinator plugs. The Gardens are an important part of my life and to my fellow 30 volunteer friends.



Barbara Moulton, Spiritual Care Program Coordinator.

SPIRITUAL CARE

Spirituality is rooted in the desire to find meaning, purpose and hope in life. Visiting our hospital can be the result of some of the most challenging times in a person's life and it can be difficult to attend to these spiritual needs. Many of us require time to process what is happening; whether it be a patient needing a safe space to discuss their feelings, a family member coming to terms with a loved one's illness or a staff member needing support before caring for the next patient. I feel privileged to stand beside a tremendous team of 27 volunteer Chaplains to offer that supportive presence. Our volunteer Chaplains provided 900 hours of Spiritual Care this year.

PATIENT FAMILY ADVISOR PARTNERSHIP

As Patient Family Advisors, we lend our experience to strengthen the work underway at the hospital. Navigating the health care system as a patient, family or caregiver has its challenges. Being part of a group of volunteers, sharing our experiences, is powerful. We can remove some of the red tape that exists, say what needs to be said and are part of the resulting transformation. I know my voice is heard, I know I am making a difference and that is what matters.



Ashley Dann,
Patient
Family
Advisor.

Lori Ker, Board Chair with Kim Delahunt,
President & CEO handing out treats over
the Christmas holidays.



BOARD OF DIRECTORS

Governors often volunteer behind the scenes, as champions of the hospital's purpose, strategy, and culture. I am proud to volunteer alongside a group of talented and dedicated directors who exemplify the values, and care about the well-being of this hospital, its exceptional team, and the community it serves.

We have had many challenges in the last year before the pandemic arrived, advocating for medium-sized hospital funding, launching a clinical transformation technology project, navigating collaborative governance, and recruiting a new President and CEO. Kim has demonstrated a strong commitment to Headwaters, and we look forward to serving along with her and the hospital team in the future.



LIVING OUR VALUES

Passion

When Jillian's family doctor left the family health team this year, her family went from the comfort of being cared for by someone they knew well to impersonal trips to the hospital and walk-in clinics.

Jillian's family found themselves in a predicament over the Christmas holiday. They thought they would be spending enjoyable time with each other and family, but instead spent most of their time worrying about their boys' health. Her two sons, six-year-old Isaac and four-year-old Marlo, experienced diarrhea and vomiting for a week, had fevers that would not let up and they eventually stopped drinking and eating entirely. "It just seemed to go from bad to worse," Jillian recalled.

On the first Friday of the Christmas break, Jillian brought Isaac to the hospital and waited in the Emergency Department for several hours before tests were run. Those confirmed he had pneumonia and a bacterial infection.

The next day, Jillian brought Marlo to the hospital and thankfully it wasn't nearly as busy. The Triage Nurse pointed to a cart that was nearby and told Marlo he could pick out a toy. New, unopened toys are often donated to the hospital over the holidays by generous community members. Marlo picked out a monster truck.

Within 45 minutes of arriving they were seen by Dr. Kahn, a physician they had visited before and who remembered them. It was different than their past experiences with a hospital. It felt more like what they had been used to with their family physician; comfortable and familiar.

Dr. Kahn was patient with Marlo, he listened and responded empathetically. "We were there for six hours with Marlo; not because it was overly busy but because of how thorough the doctor was being," said Jillian.

The Diagnostic Imaging team completed an X-ray. "The staff were so helpful. They explained everything we could expect and were really friendly to Marlo," said Jillian. A nurse in the Emergency Department put in an IV and Jillian noted that, "He was worried about inserting the IV but then got the job done flawlessly."

Marlo tested positive for Influenza B and had a possible infection in his ear. The two returned home and received a follow up call from Dr. Kahn. He confirmed the ear infection and instructed Jillian to start antibiotics.

After a few days, both boys' health started to improve, and they went back to their happy, healthy selves. They began to truly enjoy their Christmas break.



Marlo and Isaac playing together at home.

Marlo has incorporated his visit to Headwaters into his pretend play. As he drives his patients to the hospital in his monster truck you can hear him saying, "When you get sick, you have to go to the hospital to see the doctor and then you get to pick out a toy," Jillian explained fondly.

The passion our health care team demonstrates for providing excellent care to patients coupled with the passion our community shows for our hospital, by generously providing toys, enabled Marlo to have a fond memory of his visit that he enjoys replaying day after day.

Marlo and the truck he received during his visit to Headwaters over the Christmas holiday.



Teamwork

Local business owner Xiang manages a farm. He never imagined that a routine task such as cutting wood would forever change how he experiences the world.

Xiang was tired and rushing through his work when the spinning blade from the wood cutter tore through his right little finger. The finger was badly damaged and only attached by a small, remaining piece of skin. “I was in shock. I couldn’t believe this had happened to me,” recalled Xiang.

Xiang at Headwaters Health Care Centre following several surgical procedures to his right little finger.



Driving himself to the hospital, Xiang couldn’t help but think about the worst; asking himself “Can I live without this finger?” By the time he arrived thirty minutes later he had come to terms with that awful possibility.

He entered the Emergency Department at Headwaters and the team provided temporary care by cleaning, stitching and bandaging the wound. Xiang was sent home and asked to return the next day when Plastic Surgeon, Dr. Rebecca Greer-Bayramoglu, would be onsite. Xiang struggled the entire night due to the pain and worried that he would not be able to keep his finger.

The next morning, Dr. Greer-Bayramoglu took one look at the wound and scheduled him for surgery that same day. She would need to repair and reconstruct the finger as soon as possible. “Dr. Greer tried her best to reconstruct my finger and did a great job.

When I saw the X-ray, I thought of a puzzle and how hard it would be to put all the broken pieces back together,” recalled Xiang.

It meant a lot to Xiang to be treated with such care from everyone at the hospital; from nurses, physicians and volunteers. “There is great coordination here. Everyone works together like a well-oiled machine and the volunteers are the lubricant—without them it wouldn’t run nearly as smooth,” said Xiang.

The healing process has been long and is still ongoing with frequent visits to the hospital for follow-up surgical care. Xiang may never regain full function in his finger, but he is not letting that change his positive outlook on life.

While he cannot tend to his business with the same force he did before, if he goes slow and is careful, he can still do

a great job. Xiang feels more grateful now than before this experience and wants to give back to the community. He remarked, “I have become a stronger person through this accident. I learned a valuable lesson and had the opportunity to meet a group of genuine and warm-hearted people. I have been and will always be grateful for receiving abundant kindness from them.

This experience has provided me with the motivation to pass down the positive energy of life to others. I want to be part of the volunteer team at the hospital—I want to be one of them one day.”

Thanks to the incredible coordination of care and teamwork from everyone Xiang encountered at Headwaters, the worst-case scenario he imagined driving to the hospital was averted.



Courage

When 20-year-old Brianna came home to Orangeville on a two-week break from college, she had no idea she wouldn't be returning the next semester.

Brianna woke up one night with stomach discomfort and told her mom Mary-Jane, who had sensed something was wrong, that she thought she just had indigestion. Mary-Jane kissed her and went to work not thinking much of it.

As the hours progressed, so did the pain. Brianna was home alone, scared and unable to move from the debilitating pain. From the bathroom, Brianna screamed out for Siri (the iPhone App) to call 9-1-1.

Dufferin County Paramedic Service responded to the call. While they were on the way, Brianna was shocked to give birth, catching the baby as he plunged into the toilet she was sitting on.

When Paramedics Stacey, Mike and Robin arrived on the scene, they were not expecting to see a baby. However, they had received training for this type of situation.

In fact, Stacey had taken a refresher course earlier in the year.

The Paramedics provided care to both Brianna and her newborn son; cutting the umbilical cord and helping Brianna overcome her shock, as she had no idea she was even pregnant. "The paramedics did a really good job!" recalled Mary-Jane.

Both patients were bundled up and taken to Headwaters. Brianna's baby, who she named Charlie, weighed in at a healthy seven pounds two ounces and Brianna faced her biggest fear—telling her mom.

Nurses in the Obstetrics Department at Headwaters called Mary-Jane at work. She fled in shock to the hospital after making some quick phone calls to family and friends. In turn, those neighbours, family and friends generously stocked her home with everything needed to bring Charlie home.

When Mary-Jane arrived at the hospital, her primary concern was making sure her daughter knew she was loved—no matter what. Wiping tears from her eyes, Mary-Jane, rushed to Brianna's side and embraced her new grandson.



Baby Charlie with Dufferin County Paramedic, Stacey.

Later that day, Paramedic Stacey, went back to the hospital to see how everyone was doing. Having recovered from the initial shock, the family was over-the-moon with the new addition. Brianna remained in hospital with Charlie for follow-up care before they both went home healthy and happy. "We have a baby to raise now," said Mary-Jane. "We have to raise this tiny human the best we can."

It takes courage to remain calm in uncertain times. Thanks to Brianna's courage and the swift response from our Paramedics, both she and Charlie are thriving against incredible odds.

Kindness

David and his wife of 52 years, Muriel, never thought they would go from touching the tips of Pitons in Saint Lucia to neurosurgery days later.

While onboard a cruise ship, David began exhibiting symptoms of a stroke; his mouth was drooping, his speech was slurred, and he no longer had control over some of his movements. Reluctant to receive care in a foreign country, David and Muriel returned home. Their son met them at airport arrivals and drove straight to Headwaters. "If we were going to go to the hospital, I wanted to come here," said David.

Entering through the Emergency Department, David was seen right away. He received a CT Scan and was told almost immediately that he had two masses on his brain that were likely malignant.

In less than 24 hours he was transferred to Trillium Health Partners for neurosurgery. One week later, the larger tumor was successfully removed but the smaller one was inoperable. David developed

paralysis—losing muscle function in the left side of his body.

He was transferred back to Headwaters for rehabilitation treatment. "Physio has been unbelievable. I received therapy twice a day for five days a week and it made a huge difference," said David.

The most challenging part of his journey has been communication. "It got to the point where David didn't even want his phone anymore because the person on the other end couldn't understand what he was saying because his speech was so impacted," said Muriel. Thanks to the care of a Speech Pathologist at Headwaters, David can now talk and be understood once again.



David and his wife Muriel touching the tips of Pitons in Saint Lucia.

When asked which of the hospital's values he thinks the team at Headwaters represents most, David replied "Kindness. It's the little things that they do, the ones they don't have to, that are truly kind."

David shared several stories of kindness, including one of an Environmental Services member going out of their way share information with his wife, a Nutrition Services member running to find his meal tray after it had been removed and volunteers opening his food containers when he struggled with only having the use of one hand. "Headwaters has shown me how to make the moments work," said David.

After several weeks at Headwaters, David returned home and is receiving palliative tumor and radiation treatment at Credit Valley Hospital on an outpatient basis. "If you don't accept that someone is terminally ill, you don't give the person the space to discuss how they feel. It's not about giving up, it's about accepting," said Muriel.

COVID-19

Our COVID-19 Response

In the toughest of times we learn who we really are, who we can rely on and our true strength. The COVID-19 Pandemic took us all by storm and we couldn't be more proud of our team that rose to the occasion and our community that responded with an outpouring of support.



We heard you when you banged your pots and pans from your doorsteps and saluted us in Emergency Services vehicles. We saw your uplifting messages on sidewalks, in your windows, children's artwork near our hospital and your messages shared on social media. We appreciated every donated item that kept us going from food, supplies and equipment.

The men and women who courageously provided care to our community are Headwaters Heroes. From the screeners at entrances and the team who wiped down every surface, to those who assessed and cared for the sick both at the hospital and who working in some of our long-term care facilities when the need was the most urgent. Thank you for your unwavering commitment to keep us all safe.



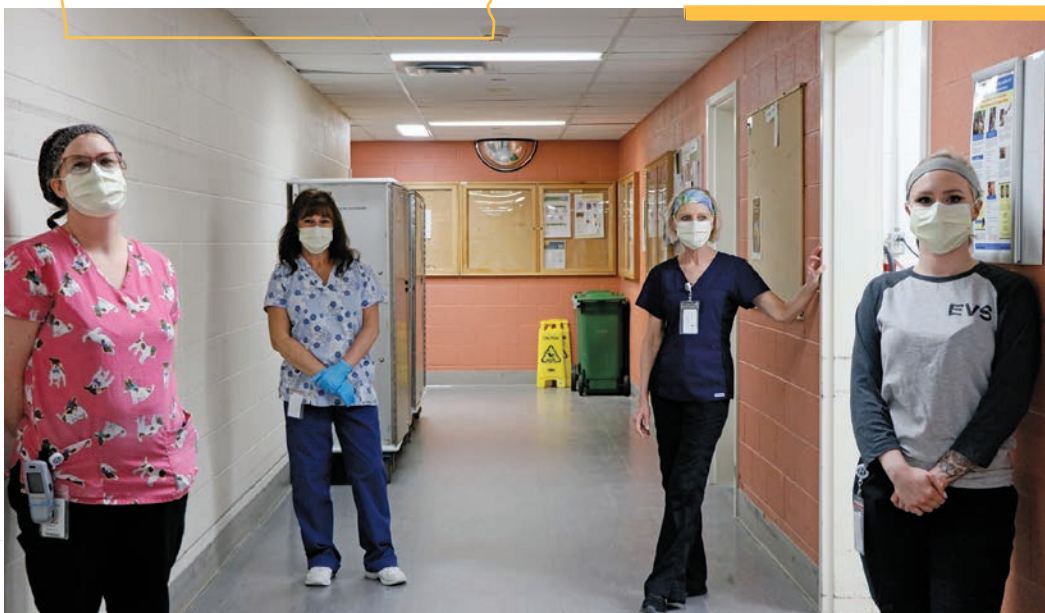
While we may not know what is around the next corner we know that our team and community will be ready to rise to the occasion.

Our Emergency Department team who were among many RPNs, RNs and PSWs who provided care across our hospital and community.

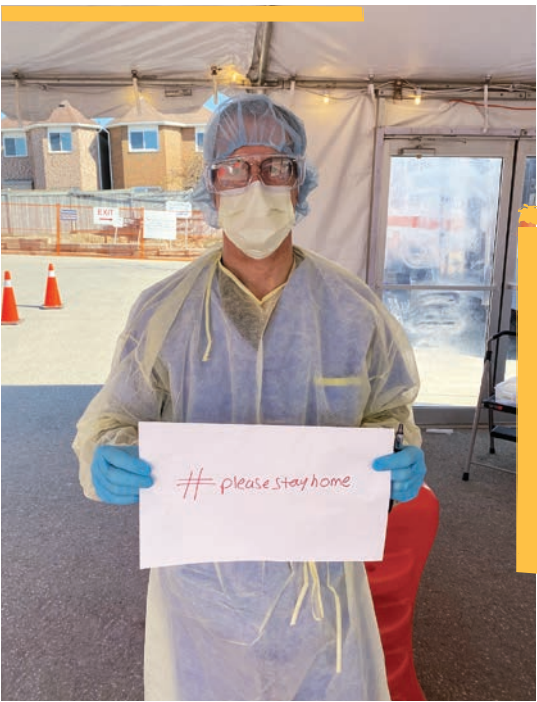


Several members of our Environmental Services team who made sure our hospital continued to be a safe, clean place to work and receive care.

A few members of the team behind the scenes making sure our hospital continued to run smoothly.



Outside our COVID-19 Assessment Centre as Emergency Service vehicles offer a parade of support.



One of the many physicians who stepped up to provide care inside and outside our hospital.

OUR STRATEGIC PLAN IN ACTION

Getting Even Better

In a matter of weeks, Brittany went from someone who had never visited Headwaters, to someone who knew it intimately.

Brittany was experiencing shortness of breath, coughing and a rapid heart rate. Believing she had caught a virus, she went to the hospital to get checked out. Brittany returned to the hospital four more times with the same symptoms; each time she was diagnosed with pneumonia, admitted for the day or spent a night in the Emergency Department.

The troubling part was that the pneumonia just wouldn't seem to go away. It wasn't until Brittany's fifth visit to the hospital that the team discovered she was experiencing congestive heart failure. Many of the symptoms and test results of congestive heart failure are the same as pneumonia, and it was Brittany's inability to heal that triggered the team to see if something else might be going on.

Brittany was admitted to the hospital and spent a week as an inpatient.

"The nurses were amazing. They gave me tips on how to deal with my illness. I had no idea what I was doing and really appreciated the help," said Brittany.

She was able to recover from her state of crisis but requires ongoing care from experts in cardiology. Every six months Brittany connects with specialists in Brampton and Mississauga. Brittany can touch base with her entire care team on her lunch hour using two-way videoconferencing via the Ontario Telemedicine Network at Headwaters. "This experience really made me realize how important it is to have a hospital

close to home. If I had to travel to get the care I needed it would really difficult," said Brittany.

After Brittany returned home, she remembers going to a restaurant in town and seeing one of the nurses who had helped her during her stay. The nurse recognized her and went out of her way to come up, say hello and ask Brittany how she was doing. The relationship she developed with the nurses made a lasting impression. "They provide such great care, remember their patients and recognize them in the community. This is something you just wouldn't get at a larger hospital," recalled Brittany.

Inspired, she wanted to give back to the hospital so became a Patient Family Advisor. Brittany lends her voice to help the hospital get even better. "Being a patient here and having family members that have been patients here gives you different insight," explained Brittany. This insight is built into planning and implementing different initiatives such as the future Emergency Department renovations.

Brittany using the Ontario Telemedicine Network to meet with experts in cardiology.



Nothing About You, Without You

When Patricia found out she had skin cancer below the bridge of her nose and required surgery to remove it she was worried. She didn't want to come out of the procedure looking like a different person.



As a health care professional, Patricia is familiar with how the system works but had never experienced it from the perspective of a patient. Entering the hospital with her friend, "I felt vulnerable," she recalled. She registered using the new kiosks at the hospital and signed up for MyChart (an online health information system). "The registration and enrollment gave me a sense of control over what was happening," said Patricia.

Right before the surgery, Patricia talked to her surgeon Dr. Kim about how she was feeling. She explained her worst fears, including not looking like herself anymore. Dr. Kim listened and reassured Patricia; she couldn't make any promises but would certainly do her best to maintain Patricia's appearance.

The surgery took 45 minutes and Patricia was awake for the entire procedure. "I had wet pads on my eyes and couldn't see anything," said Patricia. "I remember the nurse, Barb, coming to check on me and her voice grounding me. It was calming to hear her, and I felt like she genuinely cared about me."

After the surgery was complete, Dr. Kim let Patricia know that not only was she able to remove all the cancer but had protected her nose too. Patricia would indeed look like the same person after she finished healing.

Now, a few months later, you can't even tell that Patricia underwent facial surgery and she has regained full sensation in her nose.

"The care I received was exceptional. This hospital is exceptional," said Patricia.

From start to finish there was nothing about Patricia's surgery, without Patricia; she was an active participant during the whole experience. Her fears and needs were heard and respected.



Patricia, fully recovered from surgery on the bridge of her nose.
— John Cox/Photography



Integrated Care Close to Home

While visiting his son just outside of Chicago, Orangeville resident Bob, started having difficulty breathing. He wasn't sleeping and had little energy.

Bob set up an appointment to get checked out at a clinic close to home. The physician, after hearing his symptoms, sent him straight to the Emergency Department at Headwaters. Bob was on the verge of congestive heart failure.

At Headwaters, the health care team discovered that Bob had a heart arrhythmia (when the electrical impulses that coordinate your heartbeats don't work properly). During his week-long hospital stay, the team tried everything to resolve the problem including medication, diet and therapy. Nothing seemed to work; Bob needed a cardiac ablation so one was booked for the following week at Southlake Regional Health Centre.

The surgeon advised that there was a 75% chance that the procedure would work. Unfortunately, one year later, Bob's heart was out of rhythm once again and he needed another cardiac ablation; this one was successful. Bob recalled, "It felt unreal getting into my car to drive home the next morning. I remember thinking they were just inside my heart last night." Bob received follow-up care at the Cardiac Rehabilitation Clinic at Headwaters.

Following the challenges with his heart, Bob was diagnosed with Peripheral Neuropathy, resulting from Type 2 Diabetes and once again the team Headwaters stepped in to help. Bob meets annually with the Diabetes Education Program who help him learn to manage his symptoms.

"I have a far greater respect for the health care network and the professionals that are in it because of everything that has happened. They basically saved my life and I am aware now of how important it is to take care of your health," said Bob.

These experiences led Bob to become involved with the Hills of Headwaters Collaborative Ontario Health Team as a Patient Family Advisor.

Bob and his friend Eileen developed the idea of holding open forums where anyone in the community could come and share ideas about how care could be improved in Dufferin-Caledon. From this idea the Community Wellness Council was born; which now consists of an entire team of patients, families and caregivers.



Bob, Patient Family Advisor with the Hills of Headwaters Collaborative—Matthew Strader/Caledon Enterprise.

"The fact that 30 plus organizations are sitting together around a table talking to each other and planning together, with patients, demonstrates how integrated the process is. What's even more incredible is that the same level of respect is given across that table; whether you're the largest organization or one person," said Bob.

OUR SUPPORTS

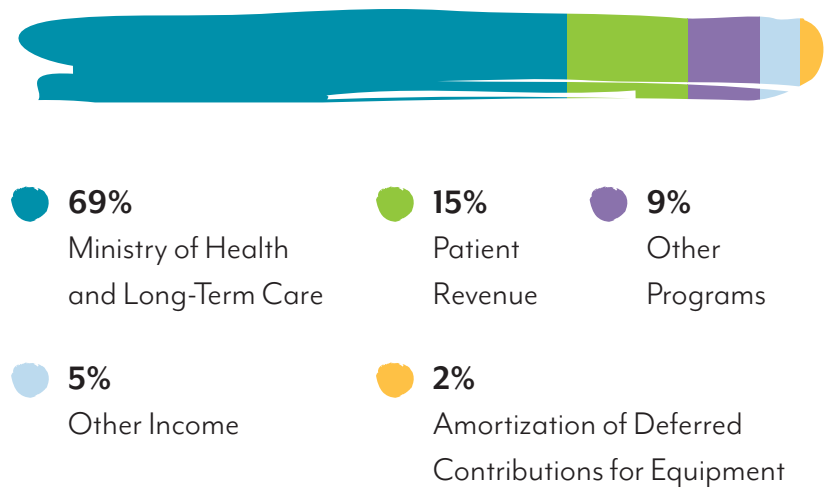
Making Every Dollar Count

We have developed an audited report on our financial activities and position over the past fiscal year as part of our commitment to being open, transparent and accountable to our community. The report shows how we put your health care dollars to work.

The operating results for the year ended March 31, 2020 is a deficit of \$716,600, before building amortization expense and related deferred capital contributions.

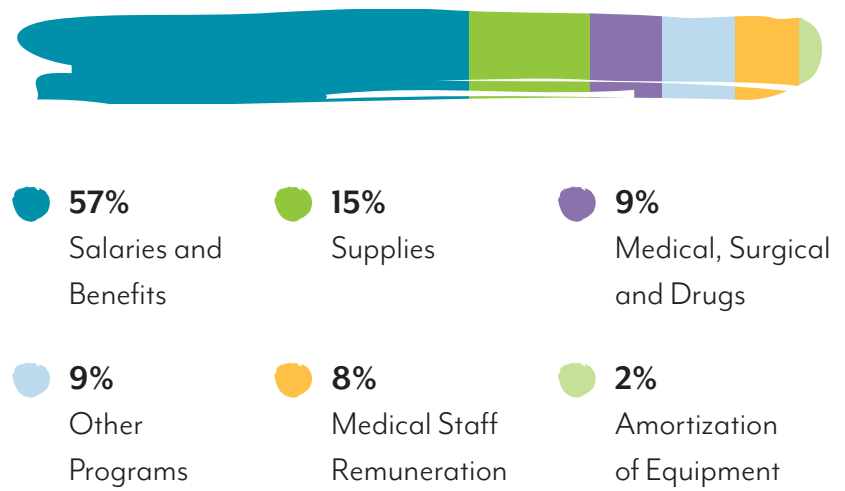
REVENUES \$76.9 Million

Revenues increased \$5.2M or 7.2% from the year prior. Special one-time investments and rebates received contributed to the majority of the increase in revenues.



EXPENSES \$77.7 Million

Total expenses increased by \$5.9M or 8.2%, relating mostly to annual inflation, increased drug costs and one-time investments. The deficit incurred in the year is a result of COVID-19 costs, which were unfunded as of March 31, 2020.



FINANCIAL STATEMENTS ONLINE

To view our audited financial statements, please visit our website at headwatershealth.ca

Innovation, Research and Technology

More and more is being asked of health care organizations, which has never been more apparent than during the COVID-19 pandemic.

Even before it became a fixture in our reality, Headwaters has put innovation, research and technology at the forefront of our planning for the future. We know that to provide the best care for our patients, family and caregivers we must create modern facilities, use the most up-to-date knowledge and leverage the most efficient technology available to us.

INNOVATION

The foundation for innovation at Headwaters is based on three pillars; upgrading our aging infrastructure, enhancing our programs and services and partnering to advance integrated systems of care.

Our new Joan & Paul Waechter Welcome Centre

Thanks to the generous support from donors we renovated our main lobby and enhanced patient and family experiences, such as a new registration and bill payment area, expanded waiting areas and a new, safer staircase.



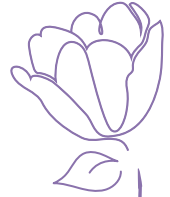
Joan Waechter with a member of our painting crew in our new Joan and Paul Waechter Welcome Centre.

Paediatric Upgrades

Our hallways and family rooms have been transformed to comforting enclaves with technological upgrades, thanks to the Smilezone Foundation. We brought our Friendship Gardens indoors with magical new murals and much more.



Celebrating the grand opening of our new paediatric spaces courtesy of Smilezone Foundation.





Dr. Pre Moodley,
our new Urologist.

Renewed Urology Program and Equipment

We renewed our program to treat diseases and disorders of the urinary system in men and women, led by Dr. Pre Moodley.

New Clinics

An Independent Spinal Assessment and Education Clinic for patients with longer term back pain who are considering surgery as well as a Musculoskeletal Rapid Access Clinic for patients considering hip or knee replacement surgery were developed.

The Hills of Headwaters Collaborative—Dufferin Caledon's Ontario Health Team.

Introducing the Hills of Headwaters Collaborative

We are part of Dufferin-Caledon's Ontario Health Team—A collaborative group of health and care agencies and individuals working toward improved communication, efficient digital health applications, equitable access to services and many other initiatives to ensure the best care for people in our community.

Replacement of our Health Information System

Partnering with Collingwood General and Marine Hospital, Georgian Bay General Hospital and Royal Victoria Regional Health Centre we plan to provide a seamless integration of information between hospitals and clinicians and provide advanced functionality for accessing patient records and other health information.

Next, we plan to renovate the Emergency Department. We will be reconfiguring key spaces to provide more efficient and patient-centered care.



RESEARCH

Exploring new ways to provide care and understanding leading edge methods is a hallmark of how we do things at Headwaters.

Achieving Choosing Wisely Canada Designation

We reached Level 1 Designation in recognition of our commitment to reducing unnecessary test and treatments.



The team that helped us achieve our Level 1 Choosing Wisely Canada Designation.

Hospital One-Year Mortality Risk (HOMR) Project

We participated in a multi-site research project that uses data pulled daily from our health information system to help identify patients who may benefit from a palliative approach to care.

Next, we plan to complete Accreditation with flying colours. While our efforts have been postponed due to COVID-19, we are still preparing to maintain our Exemplary standing, the highest level possible from Accreditation Canada.

TECHNOLOGY

Using the best tools available supports our patient care goals.

Enhancing Laboring Mothers' Experiences

We introduced a new wireless fetal monitor that provides continuous monitoring of soon-to-be-born infants which provides more flexibility and comfort for mothers.

New Blood Gas Analyzer

Our Laboratory welcomed two new machines that aid in diagnosis of respiratory and metabolic medical issues by assessing how well the blood is oxygenated and removes waste products.



Jay, our Laboratory Manager with our new Blood Gas Analyzer.



A member of our Obstetrics Team using the new wireless fetal monitor on a patient.

Increased Access to Health Information

We launched two new online tools to increase access to health records: Pocket Health and MyChart. Pocket Health is an online tool that allows complete access to medical imaging records. MyChart provides a consolidated view of a patient's health journey at Headwaters.

Real-Time Screening

We rolled out Your Symptoms Matter, an electronic symptom-based screening tool completed by all Ambulatory Care and Renal patients at each visit enabling them to customize and adjust treatment based on a patient's current situation.

Next, we plan to implement new information technology that we developed from the research uncovered from the HOMR project. This technology will help patients going home for palliative care have appropriate pain management and support from a community nurse.



By the numbers

Here is statistical information about Headwaters for the year ending March 31, 2020.



41,618
Emergency
Department Visits



4,396
Dialysis Visits

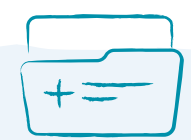
2,550

Oncology Consultations

795,592
Lab Tests
(excluding DI)

5,910

Inpatient Admissions



1,211

Telehealth Visits

898

Babies Delivered

1,472

Chemotherapy Treatments



39

Medical Students

158

Physicians, Dentist
& Midwives

764

Staff

453

Volunteers

24,921

Outpatient Visits
(excluding DI, ED and Lab)

979

Inpatient Surgeries

29,876

Diagnostic Imaging
Tests

* You may notice differences to specific areas in this year's By the Numbers, compared to last years. This is as a result of how some of the reporting has been refined within our decision support system.



OUR TEAM

Meet the Team

EDITORIAL

This Annual Report was made in collaboration with members of our Patient Family Advisory Partnership. Members help us get even better by identifying the most important things that can be done to improve the care experience.

GOVERNANCE

Our Board of Directors provide oversight in making strategic decisions, ensuring we provide quality care, our financial well-being and staying abreast of health care best practices. We also have several committees which consist of senior leaders, directors and community members. They are a group of dedicated and dynamic people that help support our local community.



EDITORIAL

Ashley Dann
PATIENT FAMILY
ADVISOR

Annie Gordon
PATIENT FAMILY
ADVISOR

Jennifer Nicolucci
CO-CHAIR, PATIENT
FAMILY ADVISORY
PARTNERSHIP

GOVERNANCE

SENIOR MANAGEMENT
COMMITTEE

Kim Delahunt
PRESIDENT & CHIEF EXECUTIVE
OFFICER

Peter Varga
VICE PRESIDENT, PATIENT SERVICES
& CHIEF NURSING EXECUTIVE

Cathy van Leipsig
VICE PRESIDENT, CORPORATE
SERVICES & CHIEF FINANCIAL
OFFICER

Dr. Peter Cino
CHIEF OF STAFF & VICE PRESIDENT,
MEDICAL AFFAIRS

Dora Boylen-Pabst
CHIEF EXECUTIVE OFFICER,
HEADWATERS HEALTH CARE
FOUNDATION

BOARD OF DIRECTORS

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BOARD CHAIR

Sandy Kang-Gill
VICE-CHAIR

Greg Pope
TREASURER

Kim Delahunt
SECRETARY

Dr. Peter Cino
CHIEF OF STAFF & VICE
PRESIDENT, MEDICAL AFFAIRS

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STAFF

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DIRECTOR

Janice Peters
DIRECTOR

Tim Peters
FOUNDATION REPRESENTATIVE

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VICE PRESIDENT, GENERAL
MEDICAL STAFF

Dave Straughan
DIRECTOR

Ken Topping
DIRECTOR

Carolyn Young
DIRECTOR

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DIRECTORS

Tim Peters
BOARD CHAIR

Sarah Mailhot
VICE-CHAIR

Susan McCutcheon
TREASURER

Ed Upenieks
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DIRECTOR

Kim Delahunt
PRESIDENT & CHIEF EXECUTIVE
OFFICER, HEADWATERS HEALTH
CARE CENTRE

Bill Duron
DIRECTOR

Lori Ker
HOSPITAL REPRESENTATIVE

Shawn Long
DIRECTOR

Christopher Stewart
DIRECTOR

Kathy Yardley
DIRECTOR

MEDICAL ADVISORY
COMMITTEE

Dr. Peter Cino
MEDICAL ADVISORY COMMITTEE
CHAIR
CHIEF OF STAFF & VICE
PRESIDENT, MEDICAL AFFAIRS

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PRESIDENT, GENERAL MEDICAL
STAFF

Dr. Mercedes Rodriguez
VICE PRESIDENT, GENERAL
MEDICAL STAFF

Dr. Michael Stefanos
SECRETARY, GENERAL MEDICAL
STAFF

Dr. Amy Catania
CHIEF OF FAMILY PRACTICE

Dr. Rupinder Dhillon
CHIEF OF MEDICINE

Dr. Basem Hafazalla
CHIEF OF OBSTETRICS &
GYNECOLOGY

Dr. Dan Mozeg
CHIEF OF DIAGNOSTIC IMAGING

Dr. Mark Murphy
CHIEF OF ANAESTHESIA

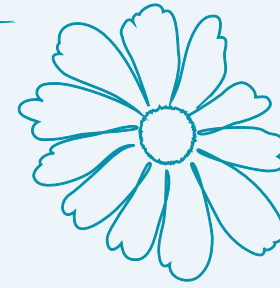
Dr. Paul Scotton
CHIEF OF EMERGENCY MEDICINE

Dr. Grace Wang
CHIEF OF SURGERY

Kim Delahunt
PRESIDENT & CHIEF EXECUTIVE
OFFICER

Peter Varga
VICE PRESIDENT PATIENT
SERVICES & CHIEF NURSING
EXECUTIVE





Be part of health care in your community:

- Join our team
- Join our Patient Family Advisory Partnership
- Volunteer with us at the hospital, in the gardens or in the community
- Participate with us at community events
- Donate to Headwaters Health Care Foundation at **hhcfoundation.com**

FOR MORE INFORMATION:

Connect with us anytime by email at
info@headwatershealth.ca

Or visit us online at
headwatershealth.ca

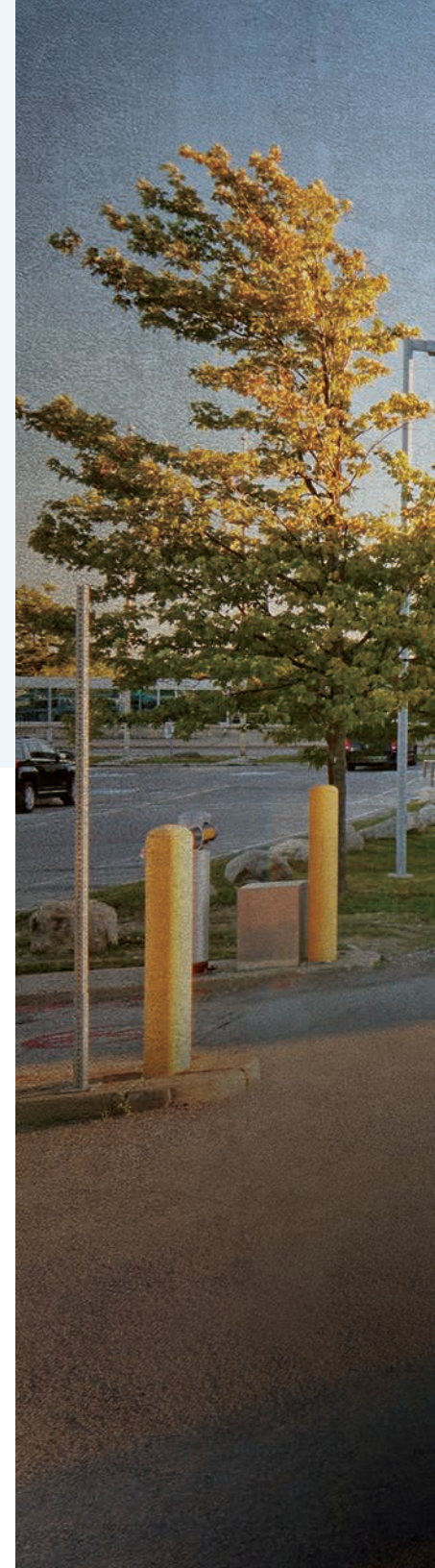
Partner in the Hills of Headwaters
Collaborative, the Dufferin-Caledon
Ontario Health Team.

Learn more at:
hillsofheadwaterscollaborative.ca



100 Rolling Hills Drive
Orangeville, ON L9W 4X9

PHONE: (519) 941.2410



The Township of Amaranth - Staff Report to Council

To: Mayor Currie and Members of Council

From: James Johnstone, Township Planner

Date: October 30, 2020

Applicants/Owners: Dynevor Express Limited

Address 473032 County Road 11, Amaranth

Subject: Application for Site Plan Approval (SPA1-20)

Official Plan Designation: Employment Area (EA) and Environmental Protection (EP)

Zoning: Industrial (M1) and Environmental Protection (EP)

1) Purpose of Application

An Application for Site Plan Approval (the “Application”) has been submitted by Dynevor Express Limited (the “Owner”) for 473032 County Road, Amaranth, Ontario (the “Property”).

The purpose of the owner’s application is to develop the property to allow for the parking of 30-50 transportation trailers on a gravel parking lot surrounded by a security fence/gate.

2) Background

The property is legally referred to as Part Lot 1, Concession 3 East, now known as Parts 1-3 on Reference Plan 7R-3544, Township of Amaranth, County of Dufferin.

The property is currently designated as “Employment Area” and Environmental Protection” in the Township Official Plan. The property is currently zoned “Industrial” and “Environmental Protection” in the Township Zoning By-Law.

The property has an area of approximately 4.01 hectares with a frontage of approximately 86.26 metres.

Established in approximately the early 1980s, the now vacant property was historically the location of Orangeville Iron and Metal. All buildings and structures on the property were demolished as part of Building Permit #D-011-18-0121 in 2018.

3) Engineering Review

The Township Engineer (R.J. Burnside) completed a review of the proposed site plan (email dated October 22, 2020) and a summary of the main points from their engineering review is summarized below.

- Applicant should modify site plan to conform to County Entrance Policy (5-3-17) as slope of proposed entrance exceeds 10% when requirements are 3%.
- Applicant should abandon three monitoring wells on the property in conformance with Wells Regulation (Ontario Regulation 903).
- Applicant should plant trees in order to assist in shielding headlights from neighboring properties along northern, eastern and southern property boundaries.
- Applicant should restrict trailer parking in vicinity of timber retaining wall (northeast corner of property) until it has been confirmed trailer parking will have no negative impacts on this structure.
- Applicant should confirm whether on-site drainage is being directed towards the northwest corner of the property and mitigate any potential impacts to neighboring properties.

4) Agency Comments

a) Grand River Conservation Authority (Email Dated October 8, 2020).

- The proposed development is to be located outside the wetland and its associated 30 metre regulated allowance; therefore, the GRCA states that no permit is required.
- The GRCA made no comments with respect to woodlands or source water protection.

b) County of Dufferin (Email Dated October 21, 2020)

- Although natural heritage mapping and criteria for determining significance of natural heritage features does not apply until incorporated into a future County Official Plan, the County recommends that confirmation should be provided as to whether an Environmental Impact Statement (EIS) is required for woodlands.
- The County has recommended consultation with the GRCA in order to determine any potential impacts in relation to source water and wetlands.

5) Recommendation

it is recommended that staff be directed to complete a site plan agreement with the applicant with the following reasons advanced in support of the application:

- R.J. Burnside (Township Engineer) has identified minor driveway entrance, monitoring well, site landscaping, retaining wall and site drainage issues in the proposed site plan but these issues can be rectified as conditions to Site Plan Agreement.
- The GRCA has no comments with respect to wetlands or potential source water impacts.
- In relation to woodlands for which there are no definitive guidelines or regulations at this time, Council should not require an Environmental Impact Statement (EIS) as the proposed development is located outside the woodland and at least 30 metres from the woodland (similar buffer to wetlands).

6) Documentation

- Site & Grading Plan (attached)

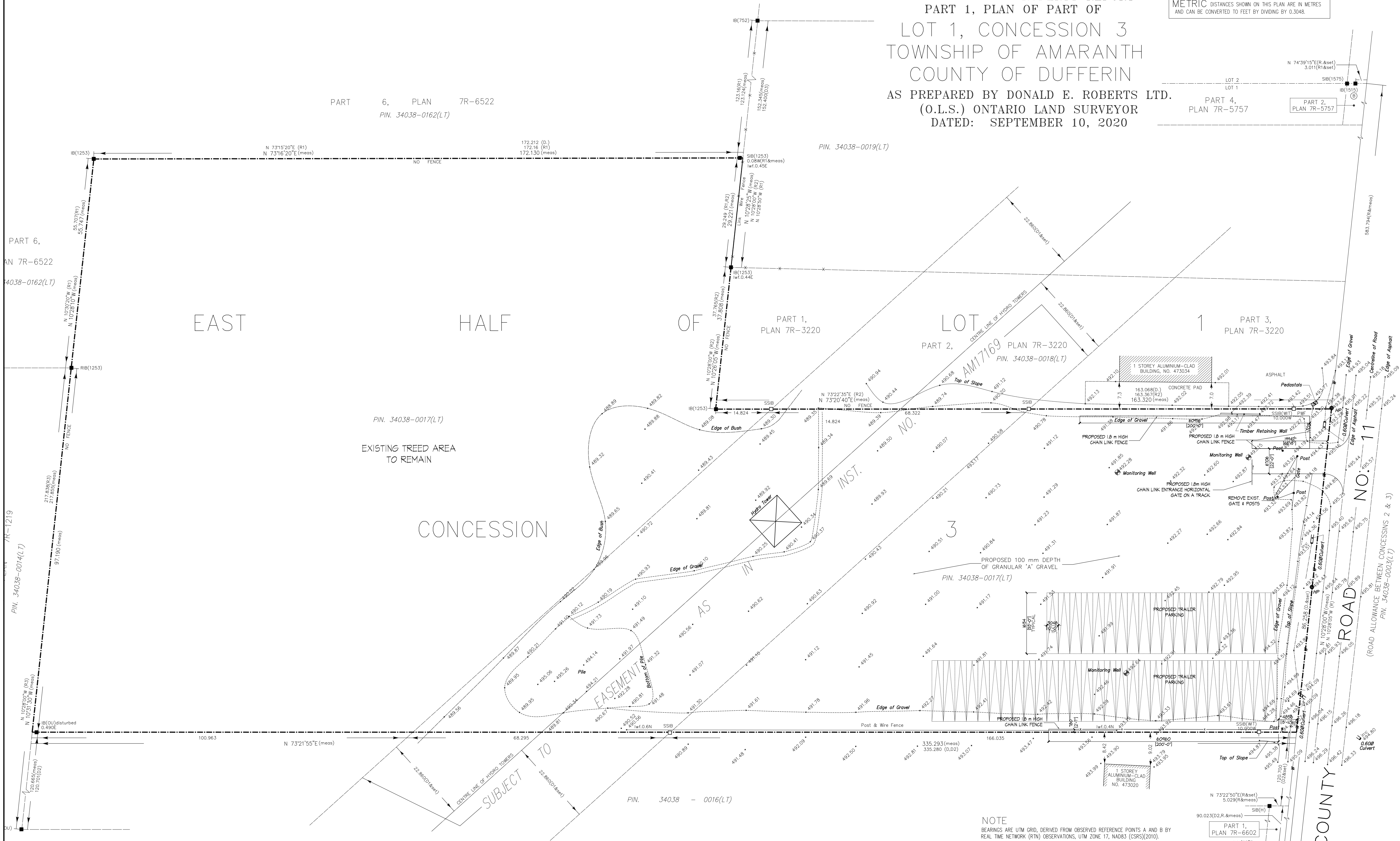
Respectfully Submitted,

James Johnstone, Township Planner

SEE SURVEY BY. O.L.S FOR VERIFICATION
SURVEY INFORMATION TAKEN FROM
SURVEYOR'S REAL PROPERTY REPORT
PART 1, PLAN OF PART OF
LOT 1, CONCESSION 3
TOWNSHIP OF AMARANTH
COUNTY OF DUFFERIN
AS PREPARED BY DONALD E. ROBERTS LTD.
(O.L.S.) ONTARIO LAND SURVEYOR
DATED: SEPTEMBER 10, 2020

METRIC DISTANCES SHOWN ON THIS PLAN ARE IN METRES
AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

DO NOT SCALE DRAWINGS.
CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND
REPORT ANY OMISSIONS OR DISCREPANCIES TO V. ROSA
DESIGNS LTD. BEFORE PROCEEDING WITH WORK.
ALL PRINTS AND SPECIFICATIONS ARE THE PROPERTY OF V. ROSA
DESIGNS LTD. AND SHALL NOT BE COPIED, IN PART OR WHOLE
WITHOUT PRIOR WRITTEN PERMISSION.



TOTAL LOT AREA = 40,171.94 m² = 4.02 Ha
AFFECTED LOT AREA = 1.06 Ha
PROPOSED TRANSPORTATION TRAILER PARKING
MAXIMUM 50 TRAILERS
TYPICAL TRAILER = 16.2 m x 2.44 m

SITE & GRADING PLAN
SCALE : 1 : 500

NOTE
BEARINGS ARE UTM GRID, DERIVED FROM OBSERVED REFERENCE POINTS A AND B BY
REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (2010).

- DENOTES
- SURVEY MONUMENT SET
 - SIB SURVEY MONUMENT FOUND
 - STANDARD IRON BAR
 - IB IRON BAR
 - CC CUT CROSS
 - SSIB SHORT STANDARD IRON BAR
 - D.J. CULLEN O.L.S.
 - VAN HARTEN SURVEYING INC.
 - INST. NO. MF26508
 - D1 INST. NO. AM17169
 - Wf LINK WIRE FENCE
 - RIB ROUND IRON BAR
 - WT WITNESS
 - D2 INST. NO. AM21963
 - D3 INST. NO. AM250366
 - R PLAN 7R-6602
 - R1 PLAN 7R-6522
 - R2 PLAN 7R-3220
 - R3 PLAN 7R-1219
 - OU ORIGIN UNKNOWN
 - 752 DENOTES W.H. CARR O.L.S.
 - 1515 T.V. LANKVELD O.L.S.
 - 1575 J.R. FINNE O.L.S.

ROTATION NOTE
FOR BEARING COMPARISONS, A ROTATION OF 3100° COUNTER CLOCKWISE
WAS APPLIED TO BEARINGS SHOWN ON PLAN 7R-3220.

BENCHMARK
ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM GPS REAL TIME NETWORK OBSERVATIONS (HT12.0)

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY
THE COMBINED SCALE FACTOR OF 0.999578

OBSERVED REFERENCE POINTS (ORP): UTM ZONE 17, NAD83 (CSRS) (2010.0)
COORDINATES TO URBAN ACCURACY PER SEC. 14 OF O. REG. 216/10

POINT ID	NORTHING	EASTING
A	4 861 723.81	567 230.74
B	4 862 298.35	567 126.67

V. ROSA
DESIGNS LTD.
CIVIL ENGINEERING
Victor M.D. Rosa
B.A.Sc., P.Eng.
1726 St. Clair Ave. West
Toronto Ontario, M6N 1J1
Tel: (416) 588-0001 Fax: (416) 588-3728



PROP. TRAILER STORAGE AT
473032 COUNTY ROAD #11
558 WESTMOUNT AVENUE
TOWNSHIP OF AMARANTH, ON

DRAWING NAME: SITE & GRADING PLAN

SCALE: 1:500	DRAWN BY: B.BAGHDADI
DATE: FEB. 2014	APPROVED BY: VMDR
PROJECT NO: 13050	DRAWING NO: A-1



October 22, 2020

Via: Email

James Johnstone
Township Planner
Township of Amaranth
374028 6th Line
Amaranth ON L9W 0M6

Dear James:

**Re: SPA1-20 Dynevor Express Limited
473032 County Road 11, Amaranth
First Submission Comments
Project No.: 300042974.0009**

We received the circulation associated with the above amendment application and offer the following comments:

1. The application is for trailer parking for a maximum of 50 trailers. The applicant should confirm what the remaining gravel area is being used for as it does not appear to be needed for the current application. The application indicates proposed 100 mm depth of granular A however we assume this is existing as the extent of the gravel limits is already shown.
2. The property boundaries should be confirmed, particularly, confirmation with the County regarding road widening requirements is needed. This will ensure that the parking area limits are set appropriately.
3. County entrance requirements should be included on the drawings. Some of the slopes exceed 10% which is too steep (btw 494.18 and 493.64 and 495.44 and 494.18 for example).
4. Within the Hydro easement there is a 'pile' noted. This should be removed, or the applicant should confirm it meets the requirements of the terms of the easement.
5. We do not know the history/reasoning of the monitoring well installation that's on site. There are some conflicts. If they are being abandoned to facilitate the site plan works, the applicant should ensure they are abandoned per O.Reg. 903 which requires a licensed well contractor. If all or some are to remain, we'd like to know their purpose, and the site plan will need to be updated to work around these monitoring wells.
6. It's not clear from the application whether truck trailers will be moved on a regular basis or whether the overall traffic on site will be minimal. This should be confirmed. Landscaping can improve the site from an aesthetic point of view but can also assist in shielding headlights from the offloading/loading of the trailers. No landscaping is proposed. On the south side, adjacent to the parking area, there are some existing trees, however there are existing gaps. We recommend that the Township require the owner to plant additional trees

in order that these gaps be filled. We also recommend the same on the south side, however only up to the hydro easement (not within). No front landscaping is proposed and should be considered.

7. Gravel areas have extended off property limits. The encroachment should be removed and restored to original elevations within 1.0 m of property limits. This was our recommendation during previous consultation.
8. There is a timber retaining wall that gravel extends up to. If the wall was not designed with the intent to have vehicular traffic in close proximity, then the gravel area limits should be adjusted away from the wall and re-vegetated. The gravel area in this location does not appear to be required for the proposed application. It's also not clear whether the timber wall blocks previous drainage from the neighboring property. The applicant should confirm.
9. The proposed chain-link fence may be problematic due to existing trees which are not shown on the drawing. Since they provide a buffer, it would be advantageous that they remain in place rather removed to accommodate a new fence. The fence should be adjusted or removed in lieu of planting additional trees.
10. On the north west corner (rear corner of adjacent lot (IB(1253))), existing drainage is not clear. As the gravel area increases runoff, confirmation on whether on-site drainage is being directed toward the neighbouring property should be confirmed. Particularly, we presume that runoff is directed towards the low spot of 489.08, but do not know what happens thereafter.

Please contact the undersigned if you have any questions.

Yours truly,

R.J. Burnside & Associates Limited



Carley Dixon, P.Eng.
CD:Is

cc: Ben Ryzebol, Township of Amaranth (Via: Email)



MEMO

TO: Jenny Li, Planning Coordinator, County of Dufferin

FROM: Gregory Bender, Manager, Municipal Planning, WSP
Matt Alexander, Senior Planner, WSP
Tommy Karapalevski, Planner, WSP

SUBJECT: Zoning By-law Amendment Application (File #: SPA1-20) –
473032 County Road 11, Amaranth, ON

DATE: October 21st, 2020

Recommendation

Based on our review, the Site Plan application is consistent with the Community Settlement Area designation and the related policies in the Dufferin County Official Plan. It is recommended that:

- Confirmation be provided as to whether the woodlands located on subject property are deemed significant;
- Confirmation be provided as to whether an Environmental Impact Statement (EIS) is required relative to the proximity of woodlands and wetlands to the subject property; and
- Consultation occur with the Township of Amaranth and the Grand River Conservation Authority (GRCA) related to the potential impacts to source water due to the subject property being located within a source water protection area (Medium Vulnerability Aquifer, Significant Groundwater Recharge Area and Municipal Wellhead Protection Area) as shown on Appendix 2 of the Dufferin County Official Plan (2017).

Summary

The purpose of the Site Plan application is to install a chain link fence around the property and place 3-4 inches of grade A gravel for the parking of transportation trailers.

The subject property has a lot frontage of 86.26 metres, a lot depth of 335.29 metres and a lot area of 4.01 hectares.

Approximately 1% of the overall area of the property is wetland (regulated area) which is all located in the southwest corner of the property. The applicant at the present time only wishes to use the eastern third of the property, well setback from the wetland.

The documents received by WSP on September 29th, 2020 include:

- Site Plan Application;
- Site Grading Drawing;
- Regulated Areas Map.

The above documents were reviewed against the Province of Ontario's Natural Heritage mapping and the Dufferin County Official Plan.

Province of Ontario's Natural Heritage Mapping

As a result of Growth Plan 2019, the Province's Natural Heritage mapping must be studied and implemented into the County's Official Plan before it can be applied at a local level. However, while this is the case as it relates to land use designations, the mapping should continue to be used as a guide to determine if the subject property has identified Natural Heritage features, should the County or local Official Plans not reflect current mapping.

Under Ontario's Natural Heritage mapping, the subject property contains woodlands and is adjacent to unevaluated wetlands.

Dufferin County Official Plan (2017)

The subject property falls within the Community Settlement Area under Schedules A (Provincial Plan Areas) and B (Community Structure and Land Use) of the County Official Plan. Community Settlement Areas include small villages and rural hamlets that may experience limited growth through infilling and development of vacant lands. These areas are to maintain a rural settlement character and evolve as service and residential centres for their surrounding Countryside Areas. The range of permitted uses and associated land use policies will be established in the local municipal official plans and in accordance with the policies of the County Official Plan.

Schedule E (Natural Heritage Features) identifies woodlands in and adjacent (within 120 m) to the subject property. Further consultation with the Township of Amaranth and the GRCA should be undertaken to determine whether the woodlands are deemed significant and whether the proposed development will have a negative impact on the woodlands. Section 5.3.4 of the County Official Plan directs that development and site alteration adjacent to significant woodlands is not permitted unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions through preparation of an EIS.

The subject property is also adjacent (within 120 m) to unevaluated wetlands as per Ontario's Natural Heritage mapping. Development and site alteration will not be permitted

in or adjacent to any unevaluated wetland unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions through the preparation of an EIS (S. 5.3.6). Further consultation should be undertaken with the applicable Conservation Authority relative to whether an EIS is required given the type of development proposed and the presence of unevaluated wetlands.

Access is proposed to be maintained from County Road 11, therefore County public works should comment regarding access.

Under Appendix 2 (Source Water Protection) the subject property is located within a source water protection area (Medium Vulnerability Aquifer, Significant Groundwater Recharge Area and Municipal Wellhead Protection Area). Policy 5.4.2(c) states that prior to the approval of development applications within designated vulnerable areas, the proponents shall demonstrate to the satisfaction of the County, local municipality, Conservation Authority and Province, where necessary, that the quality and quantity of municipal drinking water sources will not be negatively impacted. It is anticipated that the GRCA will provide further review and comments with respect to the requirements for source water protection as it relates to the changes proposed on the subject property.

Recommendation

Based on our review, the Site Plan application is consistent with the Community Settlement Area designation and the related policies in the Dufferin County Official Plan. It is recommended that:

- Confirmation be provided as to whether the woodlands located on subject property are deemed significant;
- Confirmation be provided as to whether an Environmental Impact Statement (EIS) is required relative to the proximity of woodlands and wetlands to the subject property; and
- Consultation occur with the Township of Amaranth and the Grand River Conservation Authority (GRCA) related to the potential impacts to source water due to the subject property being located within a source water protection area (Medium Vulnerability Aquifer, Significant Groundwater Recharge Area and Municipal Wellhead Protection Area) as shown on Appendix 2 of the Dufferin County Official Plan (2017).



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

Phone: 519.621.2761 Toll free: 866.900.4722 Fax: 519.621.4844 Online: www.grandriver.ca

**PLAN REVIEW REPORT: Township of Amaranth
James Johnstone, Director of Planning**

DATE: October 8, 2020

YOUR FILE: SPA1-20

RE: **Site Plan Application**
473032 County Road 11
Township of Amaranth

GRCA COMMENT:*

The Grand River Conservation Authority (GRCA) has no objection to the proposed site plan.

BACKGROUND:

1. Resource Issues:

Information currently available at this office indicates that the subject property contains wetland and the regulated allowance adjacent to this feature.

2. Legislative/Policy Requirements and Implications:

Due to the presence of the above-noted feature, a portion of the property is regulated by the GRCA under the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 150/06). Any future development or site alteration within the regulated area may require prior written approval from GRCA in the form of a permit pursuant to Ontario Regulation 150/06.

Based on the site and grading plan provided by V. Rosa Design Ltd. Dated September 21, 2020, the proposed grading and trailer parking area is proposed to be located outside the wetland and its associated 30 metre regulated allowance. Therefore, the GRCA has no comments on the proposed site plan, and no GRCA permit will be required.

3. Additional Information/Suggestions provided in an advisory capacity:

A "minor" site plan application review fee is required for our review of this application. With a copy of this letter, the applicant will be invoiced the fee in the amount of \$420.00.

We trust the above information is of assistance. Should you have any further questions please contact the undersigned at 519-621-2763 extension 2231, or lwerner@grandriver.ca.

Yours truly,

A handwritten signature in black ink, appearing to read "Laura Warner". The signature is fluid and cursive, with the first name "Laura" and last name "Warner" clearly distinguishable.

Laura Warner,
Resource Planner
Grand River Conservation Authority

cc: Dynevor Express (2009) Ltd., 24 Bethridge Road, Etobicoke, ON M9W 1N1
Roger Beekman, 24 Bethridge Road, Etobicoke, ON M9W 1N1

- ***These comments are respectfully submitted to the Committee and reflect the resource concerns within the scope and mandate of the Grand River Conservation Authority.***



TOWN OF SHELburnE

Planning & Development Department

October 27, 2020

CIRCULATED BY E-MAIL TO:

- County of Dufferin
- MTO
- NVCA
- Township of Amaranth
- Township of Melancthon
- School Boards
- Canada Post
- OPG
- Hydro One
- Enbridge
- Bell
- Rogers Communication
- Shelburne EDC
- Engineering
- Legal
- Fire Dept
- Police
- Council
- Public Works

APPLICATION FOR DRAFT PLAN OF SUBDIVISION

FILE NO: DPS 20/01 – 501-505 MAIN STREET WEST
GROUNDWELL URBAN PLANNERS INC. ON BEHALF OF 1005024 ONTARIO LTD.

Please take notice that the Town of Shelburne received an application for a Draft Plan of Subdivision for land known municipally as 501 and 505 Main Street West, and legally described as Part of Lot 32, Concession 3, Plan 7R-1705 Parts 1 and 3 to 7 in the Town of Shelburne, County of Dufferin. A copy of the Notice of Complete Application, the completed Draft Plan of Subdivision application form, the draft plan of subdivision and a link to download other supporting information submitted by the applicant are attached. Please contact me should you require additional information to complete your review.

I would appreciate any comments, concerns or conditions you may have by:

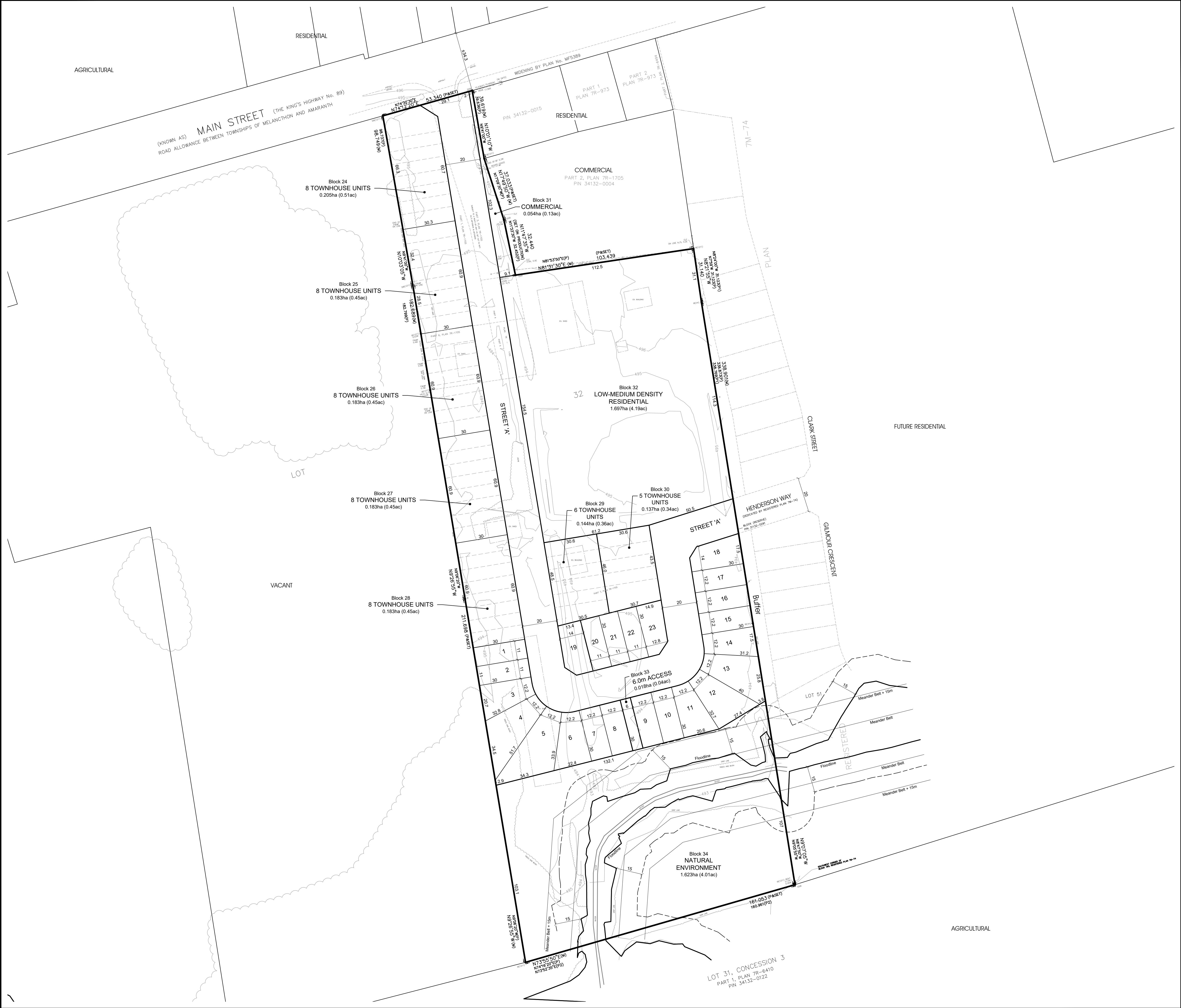
Friday, November 27, 2020.

Please provide comments in an electronic format via email, or if you have no comment or objection please complete the attached response sheet and return it by email, to planning@shelburne.ca. Should you have any questions or require any additional information, please contact me.

Sincerely,

Steve Wever, MCIP, RPP
Town Planner

Attachment(s)



KEY PLAN
1:30,000

■ SUBJECT LANDS
▨ ADJACENT SUBDIVISION

SCHEDULE OF LAND USE

Proposed Land Use	YIELD	LOT/BLOCK	ha	Ac.	%
Single Detached Lots (10.97m)	6	1-2, 20-23	0.204	0.50	3.0
Single Detached Lots (12.19m)	17	3-19	0.817	2.02	12.2
Townhouse Units (7.31m)	51	24-30	1.218	3.01	18.1
Commercial		31	0.054	0.13	0.8
Low-Medium Density Residential	fbt	32	1.697	4.19	25.3
6.0m Access Block		33	0.018	0.04	0.3
Natural Environment		34	1.623	4.01	24.2
Streets			1.085	2.68	16.2
Total	fbt		6.716	16.59	100.0

ADDITIONAL INFORMATION
REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

- a SHOWN ON DRAFT PLAN

b SHOWN ON DRAFT PLAN

c SHOWN ON KEY PLAN

d SHOWN ON LAND USE SCHEDULE

e SHOWN ON DRAFT PLAN

f SHOWN ON DRAFT PLAN

fi NONE
- g SHOWN ON DRAFT PLAN

h MUNICIPAL WATER SUPPLY WILL BE PROVIDED

i HONEYWOOD SILT LOAM

j SHOWN ON DRAFT PLAN

k FULL MUNICIPAL SERVICES WILL BE PROVIDED

l SHOWN ON DRAFT PLAN

OWNER'S AUTHORIZATION
I/WE, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE
GROUNDWELL URBAN PLANNERS INC., TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

SIGNED: SHIGETAKA KAMATA, OWNER
I/K: WORLD TRADING COMPANY LIMITED

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP
TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN.

SIGNED: OPHIR N. DZALDOV, O.L.S.
SCHAEFFER DZALDOV BENNETT LTD, ONTARIO LAND SURVEYORS

DESIGNER'S CERTIFICATE
PLAN DESIGNED AND PREPARED BY GROUNDWELL URBAN PLANNERS INC.

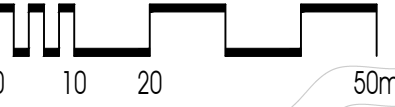
SIGNED: KERIGAN KELLY, MCIP, RPP
PRINCIPAL

No.	REVISION	DATE

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DRAFT PLAN of Subdivision

PART OF LOT 32, CONCESSION 3
(GEOGRAPHIC TOWNSHIP OF AMARANTH)
TOWN of SHELBURNE
COUNTY OF DUFFERIN



SEAL			SCALE 1:1,000
	DESIGN kk	DRAWN am	PROJECT No. 19-21
	APPROVED kk	DATE Apr 29, 2020	DRAWING No. 01
	90 MARINA STREET, SUITE 402 RICHMOND HILL, ONTARIO L4B 3G2 1-905-887-8204 F: 905-887-8904 groundswellplan.com		



Township of Amaranth
374028 6th Line
Amaranth ON L9W 0M6
Telephone: (519) 941-1007
Fax: (519) 941-1802
info@amaranth.ca

NOTICE OF A COMPLETE APPLICATION & NOTICE OF PUBLIC MEETING
TO CONSIDER AN APPLICATION FOR CONSENT UNDER THE PLANNING ACT

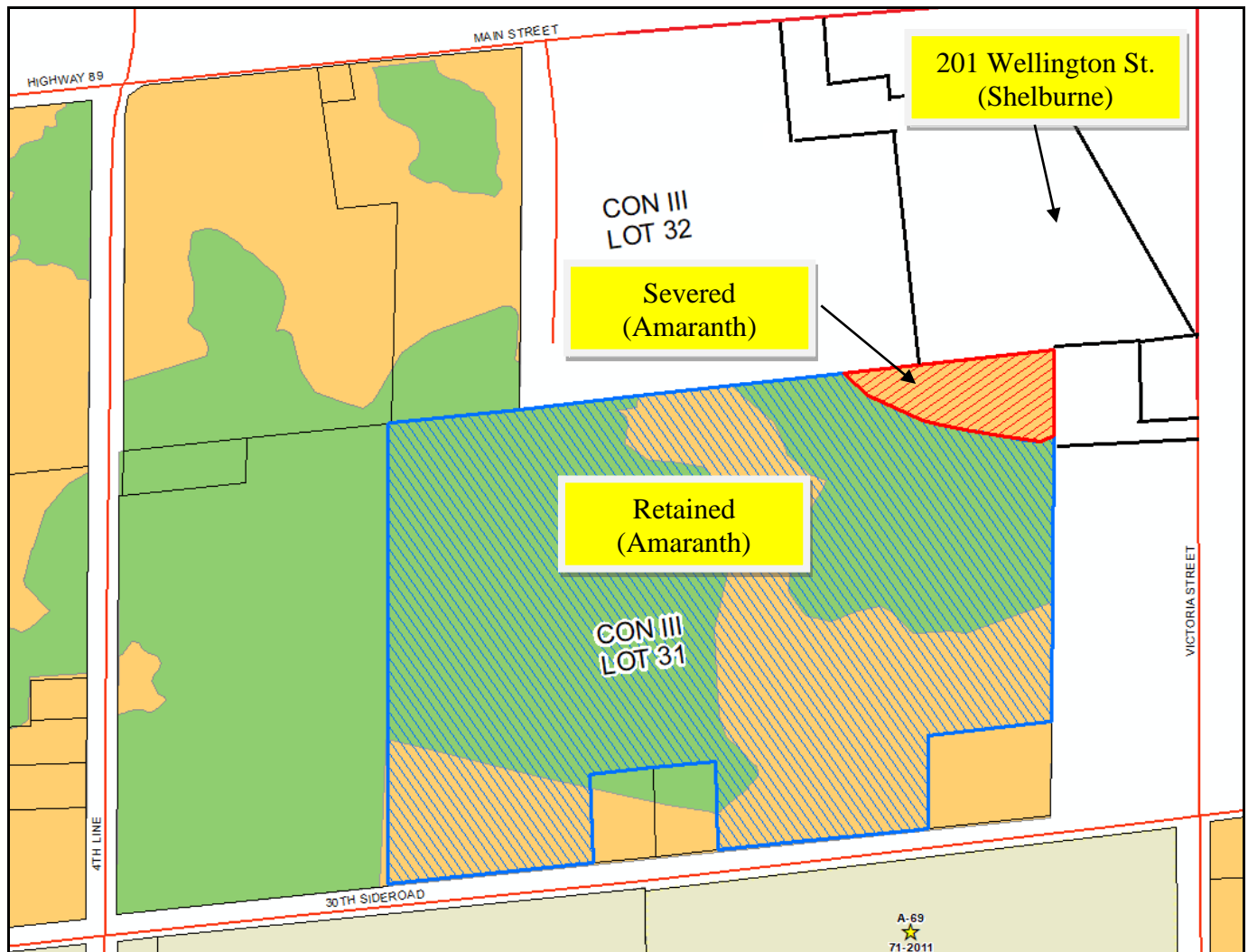
A public meeting will be held electronically, to consider the following application for a consent:

Application Number:	B4-20		
Owner/Applicant:	Besley Country Market Ltd. (c/o Brian Besley)		
Location:	Concession 3, Part Lot 31, 7R-6410, Part 1 (716 Victoria Street)		
Severed Area (approx.):	7.96ac (3.22ha)	Retained Area (approx.):	139.37ac (56.40ha)
Statutory Public Meeting/Council Meeting:	Wednesday, November 18, 2020 (Meeting starts at 6:00PM)		
Purpose:	Addition to a Lot (Severed property from Amaranth Township to be merged with 201 Wellington Street in Town of Shelburne).		

PUBLIC MEETING: You are entitled to attend this public hearing electronically to express your views about the proposed consent or you may be represented by counsel for that purpose. If you wish to make written comments, they may be forwarded to the Acting CAO/Clerk at the address shown above before **November 13, 2020**. A copy of the application is available for consultation at the Administration Office during regular office hours.

FAILURE TO ATTEND HEARING: If a person or public body that files an appeal of a decision of the Council of the Township of Amaranth in respect of the proposed consent does not make written submissions to the Council of the Township of Amaranth before it gives or refuses to give a provisional consent, the Local Planning Appeal may dismiss the appeal.

DECISION: If you wish to be notified of the Decision of the Council of the Township of Amaranth in respect of the proposed consent, you must submit a written request to the Township of Amaranth at the address above noted. This will entitle you to be advised of a possible Local Planning Appeal Tribunal Hearing.



For illustration purposes only. This is not a plan of survey

Dated: October 26, 2020
Nicole Martin, Dipl. M.A.
Acting CAO/Clerk
TOWNSHIP OF AMARANTH



REPORT TO COUNCIL 2020-27

TO: Mayor Currie and Members of Council

FROM: Ben Ryzebol, Director of Public Works

DATE: November 4, 2020

SUBJECT: Update

Recommendation

That Council accept the Director of Public Works report 2020-27 and provide any direction accordingly.

Update as of October 30, 2020

- Gravel crushing of next years spring maintenance gravel is well under way and should be completed by mid November.
- One small ditching job remains to be done plus clearing of culvert ends of driveway entrances in Sylvanwoods subdivision.
- 4 trucks are harnessed and standing ready to go if we get any early snow or freezing rain events.
- Graders will be fully harnessed for winter over the next few weeks as the graders are still busy grading roads before freeze up, one grader is fully harnessed and ready to go.
- Men are finishing up the last of their holidays before winter sets in.
- As of the Wednesday Council meeting Cox Construction should be into their second or third day of paving the 20th Sideroad.

Respectfully Submitted,

Ben Ryzebol, Director of Public Works



MEMO TO COUNCIL - 2020-031

TO: Mayor Currie and Members of Council

FROM: Nicole Martin Acting CAO/Clerk

DATE: November 4, 2020

SUBJECT: Public Works shop renovations

Recommendation

Council receive memo 2020-031 and waive the requirements under the procurement bylaw 65-2004 and proceed with the renovations to the public works building to allow for social distancing guidelines to be met.

Background

The COVID-19 constraints have impacted the space the public works employees have to work in. There is not enough space to meet social distancing guidelines. Staff have worked hard to clear out the upstairs of the building, files have been removed and gone through in accordance with the retention bylaw. There are further renovations required to the space upstairs to meet social distancing guidelines and allow for the public works employees to be able to be in the same room for a meeting or lunch. The stairs have also been identified as unsafe as the treads are too narrow and do not meet current code requirements. The carpet and windows need repair. There is significant water damage from the current leaky windows. Some of the lights are not operational, electrical repairs are required. In terms of maintenance and use of the upstairs of the building, it appears to not have any work done since the 1960's.

By-law 65-2004 does have a Purchasing in Emergencies section that reads:

12.1.2 An unexpected interruption of an essential public service.

Having COVID-19 in the public works shop would shut down the services for all residents for at least a 2 week period. This would be detrimental to the service delivery of the department. This is a proactive measure to mitigate the potential of that happening.

Budget Concerns

Renovation to this building was not contemplated in the 2020 budget and only became necessary as the pandemic gathering and distancing guidelines became something that were not being adhered to. It is suggested to use the Safe Recovery funding for this project.

Summary

Council is asked to instruct staff accordingly.

Respectfully Submitted,

Nicole Martin, Acting CAO/Clerk



351006 17th Line

East Garafraxa, Ontario

L9W 7C9

Cell (519) 217- 4016

Office (519) 941 7684

Fax. [519] 941-1647

Email triwayconltd@zing-net.ca

Date

October 5, 2020

Quote To: Amaranth Township
c/o Ben Ryzebol
5th line Amaranth

Labour & material to :

- remove all existing panel from walls and tile from ceiling
- remove all old insulation from walls and ceiling
- close in doorway at left side of stairs
- move existing door by bathroom at back stairs to other wall to make more room for kitchen
- supply and install 36" metal insulated doors for by both stairways
- supply and install 2 new single casement windows with grey tinted glass
- supply and install 1 layer of R22 Roxul insulation and vapour barrier in ceiling
- supply and install new R14 Roxul insulation and vapour barrier on walls
- supply and install resilient channel on 2 walls, shop side, for extra noise barrier
- rough in new electrical as required for AC unit, receptacles, lighting and kitchen
- rough in plumbing for sink in kitchen along back wall
- supply and install Ductless AC heat pump combo
- supply and install all new drywall on walls and ceilings
- tape and sand all drywall ready to prime
- prime and paint complete room
- screw down existing sub floor to prevent squeaks
- supply and install new underlay to prep for vinyl flooring
- supply and install new vinyl floor
- supply and install kitchen with Laminate countertop, along back wall 12ft long
- supply new sink and faucet
- supply and install new stairs to meet code
- dispose of all garbage from site

Break Down

Construction Materials	\$5,097.20
Doors and Windows	\$2,358.00
Electrical	\$3,850.00
Plumbing	\$850.00
Ductless AC/Heat pump	\$4,320.00
Tape & sand	\$1,150.00
Vinyl flooring	\$1,677.60
Stairs	\$3,200.00
Kitchen, & Countertop	\$4,287.50
Sink & faucet	\$487.00
Labour	\$17,650.00
Disposal Fees	\$400.00

Total Material and Labour \$45,327.30

HST	\$5,892.55
------------	-------------------

Total Cost	\$51,219.85
-------------------	--------------------

Note:

Ceiling height for room is 92"

Room is 15.5' x 34' (544 sq ft)

Window sizes are 55.5"W x 38"H grey glass single casement

For new stairs opening is 125" long x 48" wide between walls x 109" to top of floor

Would want stair width to be 47" to fit easily

Terms and Conditions

\$7,500.00 deposit on signing

\$25,000 due when 50% complete

Balance due on completion

Authorization to proceed:_____. **Date:**_____.

Dufferin County
Permits Submitted to MPAC [Date of Submission]
From: 10/16/2020 To: 10/23/2020

Permit # Type Parcel #

Last Sent Date Issued Date Occupancy Revoked Final Inspection

Amaranth						
	PRDS202000403	Designated Structure	220800000108500	473006 COUNTY ROAD 11, Amaranth, ON		
	Oct-19-20	Sep-02-20				
	PRAB202000438	Accessory Building	220800000321580	375557 6TH LINE, Amaranth, ON		
	Oct-19-20	Sep-22-20				
	PRAB202000514	Accessory Building	220800000301000	555272 MONO-AMARANTH TLINE, Amaranth, ON		
	Oct-19-20	Sep-23-20				
	PRNR202000585	New Non-Residential	220800000101800	554060 MONO-AMARANTH TLINE, Amaranth, ON		
	Oct-19-20	Sep-23-20				
	PRAB202000611	Accessory Building	220800000115500	434136 4TH LINE, Amaranth, ON		
	Oct-19-20	Sep-24-20				

Permit(s) Issued
Permit(s) Issued
Permit(s) Issued
Permit(s) Issued
Permit(s) Issued

Dufferin County Diversity, Equity, and Inclusion Community Advisory Committee

October 23, 2020 – The County of Dufferin has recently established its first Diversity, Equity and Inclusion Community Advisory Committee (DEICAC) to advise County Council, make recommendations and provide a monitoring and measuring role to help ensure that the County applies a diversity, equity and inclusion lens to its policies, services and programs.

The DEICAC will work closely with the County of Dufferin staff Diversity and Inclusion Committee and County senior leadership. The purpose of this committee is to foster cooperation that will allow a clear understanding of the current state of diversity, equity and inclusion work happening within the organization at a staff level. Their role is also to assist with identifying and creating strategies that will ultimately result in a more diverse and inclusive workplace that is able to offer programs and services that meet the needs of an increasingly diverse community. A key part of the strategy work for the committee will be to provide advice and recommendations on the development and content of a new Diversity, Equity & Inclusion Policy which shall include an annual work plan with clear actions and measurable goals and objectives. [The Terms of Reference](#) is available on the County website.

The Diversity, Equity and Inclusion Community Advisory Committee members are:

Councillor Steve Anderson
Councillor Sandy Brown
Councillor Laura Ryan

Community Members:

Althea Casamento
Krisma Chahal
Jordan Dedier
Phil Dewar
Sabina Greenly
Christie Lazo
Trisha Linton
Alethia O'Hara-Stephenson
Preeya Rateja
Jim Waddington

Representatives from the Staff D&I Committee

Angela Pollard
Kareema Sookdeo



The committee is currently scheduled to meet on the 2nd Wednesday of the month at 7pm via zoom. The first meeting will take place on November 11th and will include a training session to ensure a common understanding around how the committee will conduct its diversity, inclusion and equity work. It is anticipated that additional training will take place at various intervals.

Contacts:

Michelle Dunne, Deputy Clerk
Dufferin County
519-941-2816 x 2504
mdunne@dufferincounty.ca



GROWING OPPORTUNITY through COVID-19

**A Virtual Agriculture
and Rural Business Roundtable**
with Councillor Chris Gerrits

Topic: SWIFT Project

Date: Thursday November 26, 2020

Time: 9:00 - 10:00 am

Registration: <https://www.eventbrite.ca/e/agriculture-roundtable-growing-opportunity-through-covid-19-tickets-126799379357>

*Minutes for Shelburne Public Library Board Meeting
Tuesday, September 22, 2020*

Present: Geoff Dunlop Margaret Mercer Shane Hall
 Paul Barclay James Hodder Mikal Archer
 Gail Little Patricia Clark

Also Present: Rose Dotten, CEO/ Head Librarian,

Regrets: Sharon Martin

The participants met on-line through the Zoom platform due to the COVID-19 Pandemic.

The Chair, Geoff Dunlop, called the meeting to order at 7:00 P.M. and stated some guidelines for the meeting.

- a) Participants were to mute themselves when not speaking. Rose/Geoff to stay unmuted to recognize members.
- b) Participants were to raise their hands to ask questions or comment and wait to be recognized.
- c) Participants were to raise their hands to vote on motions.

Motion 45-20 J. Hodder, P. Barclay

In accordance with a previous motion approved by the SPL Board that members can participate in a virtual meeting;

Be it resolved that the Board now hold a virtual meeting for all board members not able to be physically present due to COVID-19 restrictions.

Carried

Motion 46-20 M. Mercer, G. Little

Be it resolved that we approve the Agenda of the September 22, 2020, meeting, as amended.

Carried

Motion 47 -20 S. Hall, M. Archer

Be it resolved that we approve the minutes of the board meeting dated August 18, 2020.

Carried

Motion 48-20 P. Clark, J. Hodder

Be it resolved that we approve the Accounts Payable Register for August, 2020, with invoices and payments in the amount of \$38,561.50.

Carried

CEO/ Head Librarian's Report:

- **Statistics**

The statistics for active circulation are not available, as the Library has been closed since March 15, 2020. However, Rose presented a verbal report outlining Statistics relating to

Curbside Pickup for August, 2020. We circulated approximately 1656 items and additionally over 1200 through Overdrive and Libby (e-books and audio books).

- **Verbal/anecdotal Social Media Outreach**

Rose also presented anecdotal information about the Social Media Outreach for the library including statistics for E-Resource use which included the fact that Press Reader is very popular with over 180 issues opened. Although this is an expensive resource, we are finding it is well used.

Other statistics: Library News sent – 7158

Children's Library News - 165

Facebook - 863 total engagement

Instagram – 351

Video watches - 233

- **Programming**

- **Summer Programming statistics and awards** – statistics are attached for TD Summer Reading, (ages 0-6, 7-12) Teen Summer Reading Challenge and the Adult Summer Reading Challenge

- **Scientists in Situ**

This is an excellent program by scientists demonstrating online experiments. The children would have received a kit for each experiment prior to the actual video being broadcast. We are fortunate to have 8 in the series.

- **Community Readers**

The library has started a new initiative to have people living in the community do story-time readings that are posted on the Library website. So far, some of the people reading are Rose, Bella Carter, Steve Anderson—Deputy Mayor, Geoff Dunlop—Chair SPL, and Gord Gallagher, and several others are lined up for future sessions.

Business

- **Silent Auction**

Rose initiated a discussion re our Silent Auction for this year. It was felt by staff that along with COVID quarantine of items, limitations of having people walk through and handle items and sign up for items, that it was difficult to institute a safe process. A virtual auction format would necessitate photographing all items for the auction, and posting them on-line. This would take so much more staff time to arrange that it would not be feasible. Various discussion items included formats such as Auction King, but other members felt that this would take away from the high end reputation that our auctions have had and “water down” our normal event. So many other major events have been cancelled across the province, that most patrons would expect us to cancel as well.

- **Rental Insurance**

Rose raised the issue that our rental contracts require that all renters must provide insurance before they will be allowed to rent the KTH room in the library.

- **Landscaping**

Rose was pleased to announce that the new landscaping had been completed. She asked all the board members to make sure to drive past the library so that they can see the work done by Hill

- **In Camera session**

The Board moved into a closed meeting at 7:55 pm pursuant to Section 16.1 (4) OR 16.1 (5) of The Public Libraries Act, R.S.O. 1990, as amended for the following reason: Personnel

That we rise from in-camera at 8:11 pm with no report.

Be it further resolved that these recommendations be reviewed at the next scheduled Board meeting on October 20, 2020. **Carried**

That we now adjourn at 8:18 p.m., to meet again October 20, 2020, at 7 pm., or at call of the Chair.

Carried



Upper Grand River Subwatershed

Natural Heritage Characterization Report

Version 1.0



October 2020

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1.0 Introduction

The Upper Grand River subwatershed drains approximately 791 km² of land within the headwaters of the Grand River watershed. The subwatershed comprises portions of the Townships of Amaranth, East Garafraxa, Grand Valley, and Melancthon (Dufferin County), Southgate (Grey County), and Wellington North (Wellington County) (see Figure 1). Communities located here include the Town of Grand Valley and the Town of Dundalk. Like many other areas within the Grand River watershed, agricultural land use is prevalent within this subwatershed. Mineral extraction and peat mining also occur sporadically. Although large areas have been drained to accommodate various land uses, this subwatershed has the highest amount of wetland cover when compared to other areas of the Grand River watershed.

The following report provides comprehensive information and mapping on the natural heritage features and functions that characterize the Upper Grand River subwatershed. The information contained in this report is intended to complement and be read in conjunction with other watershed management plans completed by the GRCA, including the Fisheries Management Plan (GRCA & OMNR 1998, 2001, 2004), the Watershed Forest Plan (GRCA 2004), and the Water Management Plan (GRWMP 2014).

The report is based on existing information and mapping that was readily available from the following digital or hardcopy sources:

- eBird, Cornell Lab of Ornithology (Sullivan et al. 2009)
- Fisheries and Oceans Canada (Aquatic Species at Risk Mapping, Status Reports, & Recovery Plans)
- Grand River Characterization Report (GRCA 2008)
- Grand River Fisheries Management Plan (GRCA & OMNR 1998, 2001, 2004)
- Grand River Information Network (GRCA 2018)
- Grand River Watershed Integrated Water Budget Report (GRCA 2009)
- Grand River Watershed Forest Plan (GRCA 2004)
- Grand River Water Management Plan (GRWMP 2014)
- Natural Heritage Information Centre, Element Occurrence Database (NHIC 2013)
- Ontario Ministry of Natural Resources and Forestry, Wetland Evaluation Records (1984-2011)
- Ontario Ministry of Natural Resources and Forestry, Area of Natural and Scientific Interest Records (1979-1980)

Additional background information on the natural heritage features and functions within the Upper Grand River subwatershed can be found in the following studies:

- A Watershed Plan for the Upper Grand River Watershed (GRCA 1999)
- Report from the Headwaters of Canada's Heritage River (McIver 1999)

Several additional site-specific studies have been undertaken to support green energy projects, subdivisions, and gravel pits. Additional information can also be found in the Luther Marsh Wildlife Management Plan (GRCA & OMNR 2009).

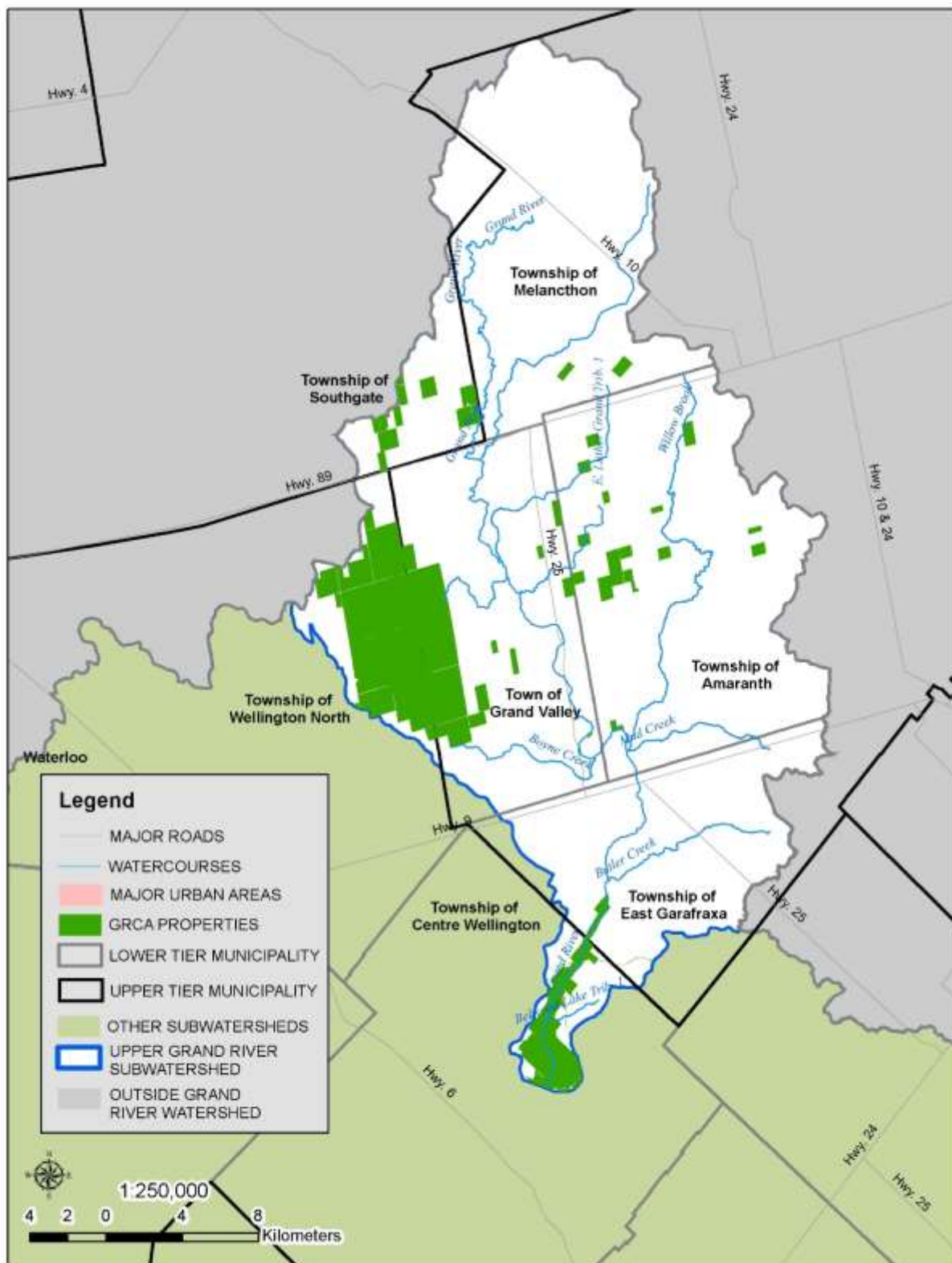


Figure 1. Upper Grand River Subwatershed Study Area

2.0 Physical Characteristics

The following subsections describe the physical characteristics of the Upper Grand River subwatershed. The combination of surficial geology, glacial history, soils, and climate influence the type and distribution of ecological features and functions found within the subwatershed.

2.1 Climate

The Upper Grand River subwatershed, like other portions of southern Ontario, is characterized by a humid continental climate with large seasonal differences of warm and humid summers to cold or very cold winters. Regional climate averaged data were obtained from Environment Canada's nearest weather station at Orangeville for the 30 year of 1981-2010 (see Figure 2). Summer days typically reach highs in the mid-20s (degrees Celsius) but may also include several days where temperatures exceed 30°C. During the winter, daytime highs are normally a few degrees below 0°C, but can also be much warmer or colder. Overall, the average annual daily temperature is 6.0°C.

The average annual precipitation in the area is 990 mm. The subwatershed typically receives more precipitation in the spring and summer months than in the fall and winter.

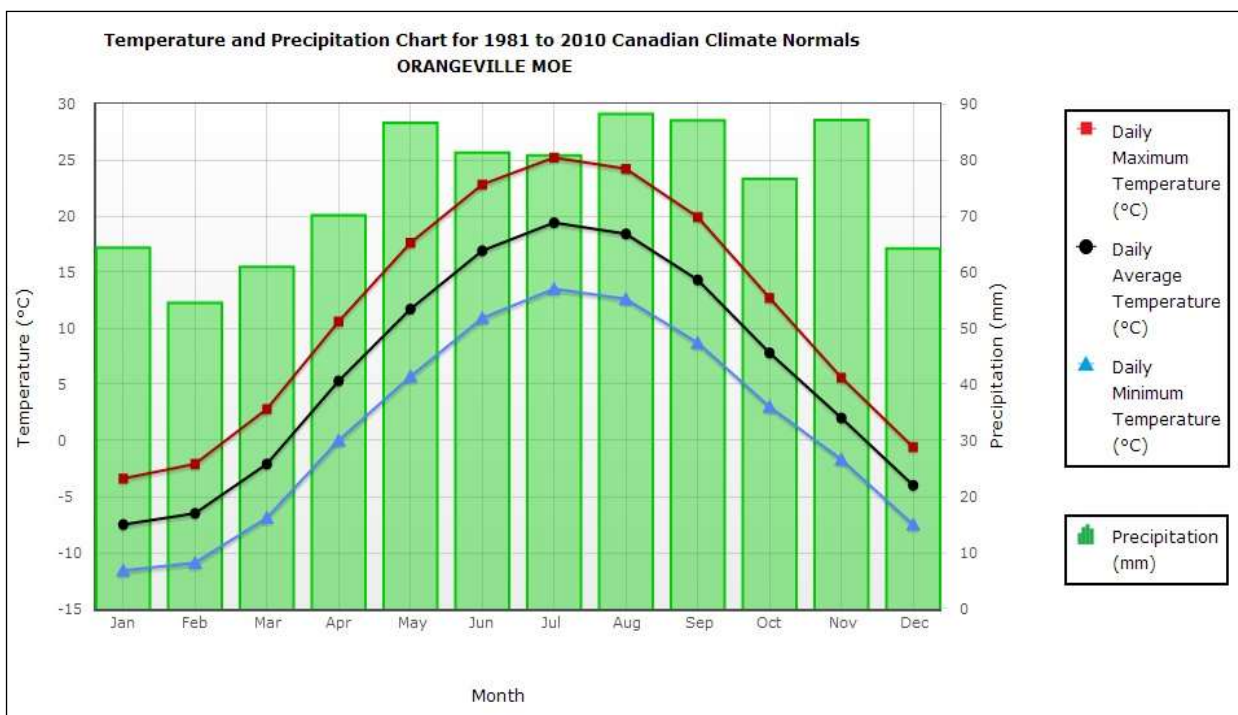


Figure 2. Environment Canada Climate data. Orangeville Weather Station

2.2 Physiography and Surficial Geology

The Upper Grand River subwatershed consists of four distinct physiographic regions that reflect unique combinations of glacial history, surficial landform, soils and drainage. The predominant physiographic region in the subwatershed is the Dundalk Till Plain. A small portion Stratford Till Plain lies southwest of Grand Valley and smaller portions of the Hillsburgh Sandhills and Guelph Drumlin Field are found in the southernmost section of the subwatershed (see Figure 3).

The Dundalk Till Plain, which occupies most of the upper subwatershed, was deposited by retreating glaciers. The area is characterized by gently undulating topography and consists of a mix of clay, gravel, and boulders. The till plain also contains extensive wetland complexes and wet meadows, which add considerable habitat diversity compared to the surrounding agricultural areas. The west-central portion of the subwatershed contains a section of the Stratford Till Plain, which can be characterized as flat, poorly drained clay plain. The fairly level terrain is made up of silty, clay rich soils much of which is actively drained by agricultural drains. A small portion of the lower subwatershed is occupied by the Hillsburgh Sandhill. The southernmost section of the subwatershed contains a small portion of the Guelph Drumlin Field.

Surficial geology is illustrated in Figure 4. The primary surficial deposits are Tavistock and Catfish Creek Till, which is primarily composed of low permeability materials and is considered to be poorly drained silty clay interspersed with ice contact deposits. Deposits of ice contact sands and gravels are interspersed throughout the subwatershed but are more prominent in lower regions.

Almost the entire Upper Grand River subwatershed is underlain by brown and tan dolostone of the Guelph Formation. A small section of the northeast portion of the subwatershed is underlain by the Amabel Formation, which is a blue-gray dolostone formation (GRCA 2008).

Overburden thickness represents the depth of unconsolidated sediment cover between the ground surface and the top of the bedrock surface, and varies throughout the subwatershed but is generally less than 50 m (see Figure 5). Overburden thickness is lowest along the northern and western margins of the subwatershed at less than 25 m. Overburden thickness is greatest in the southeast portions of the subwatershed at up to 50 m.

2.3 Soils

Proportions of the various soil deposits differ between the upper subwatershed and the lower subwatershed. The upper and central portion of the subwatershed is dominated mainly by loam soil with smaller amounts of silty loam and fine sandy loam. The lower portion of the subwatershed contains a more even mixture of these soil groups. The subwatershed also contains a high amount of organic soils relative to the rest of the Grand River Watershed. Soil types within this subwatershed are illustrated in Figure 6. The variable soil types and quaternary deposits have a direct effect on surface water and groundwater features. Hydrology and hydrogeological characteristics are discussed in Section 2.4 below.

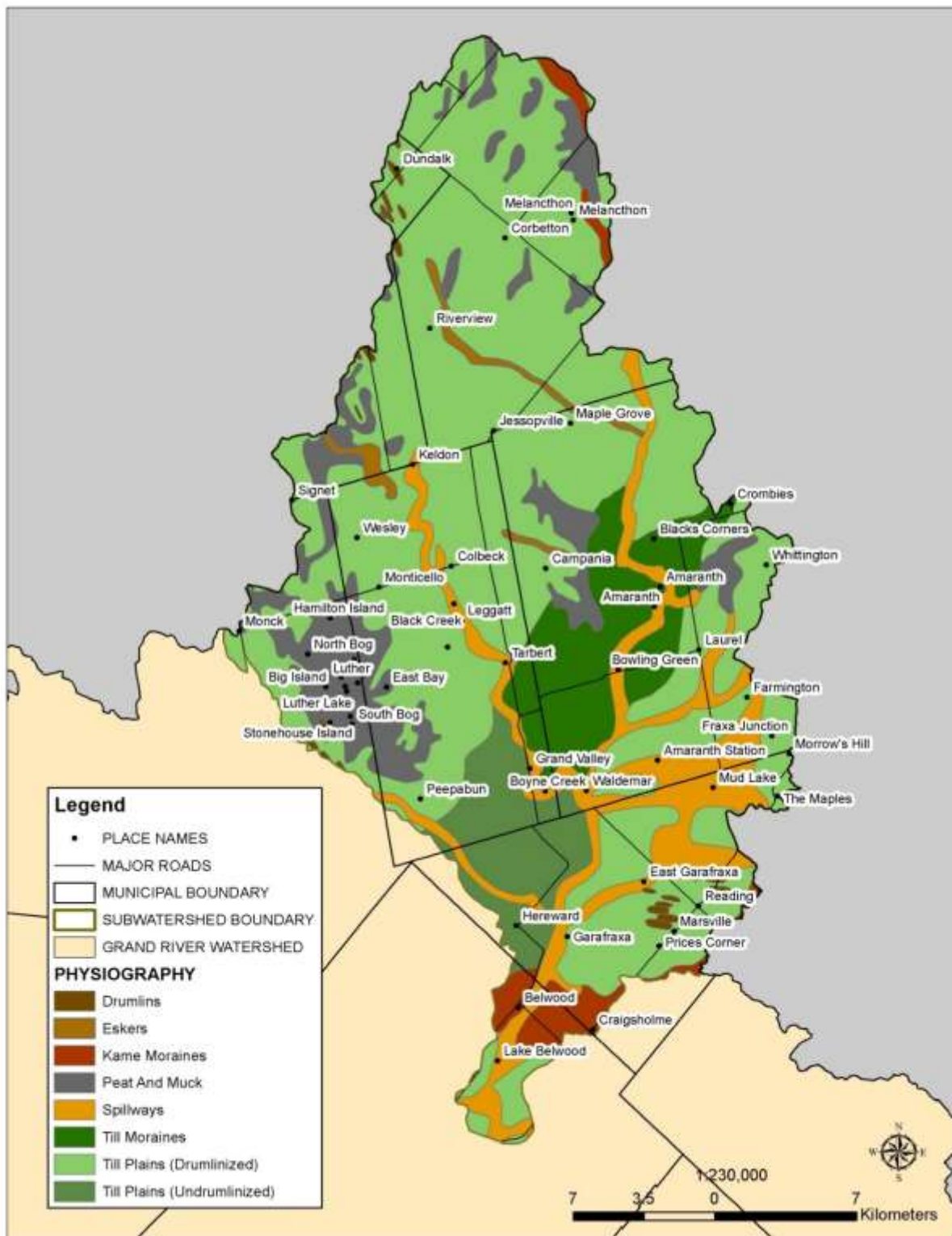


Figure 3. Physiography within the Upper Grand River Subwatershed

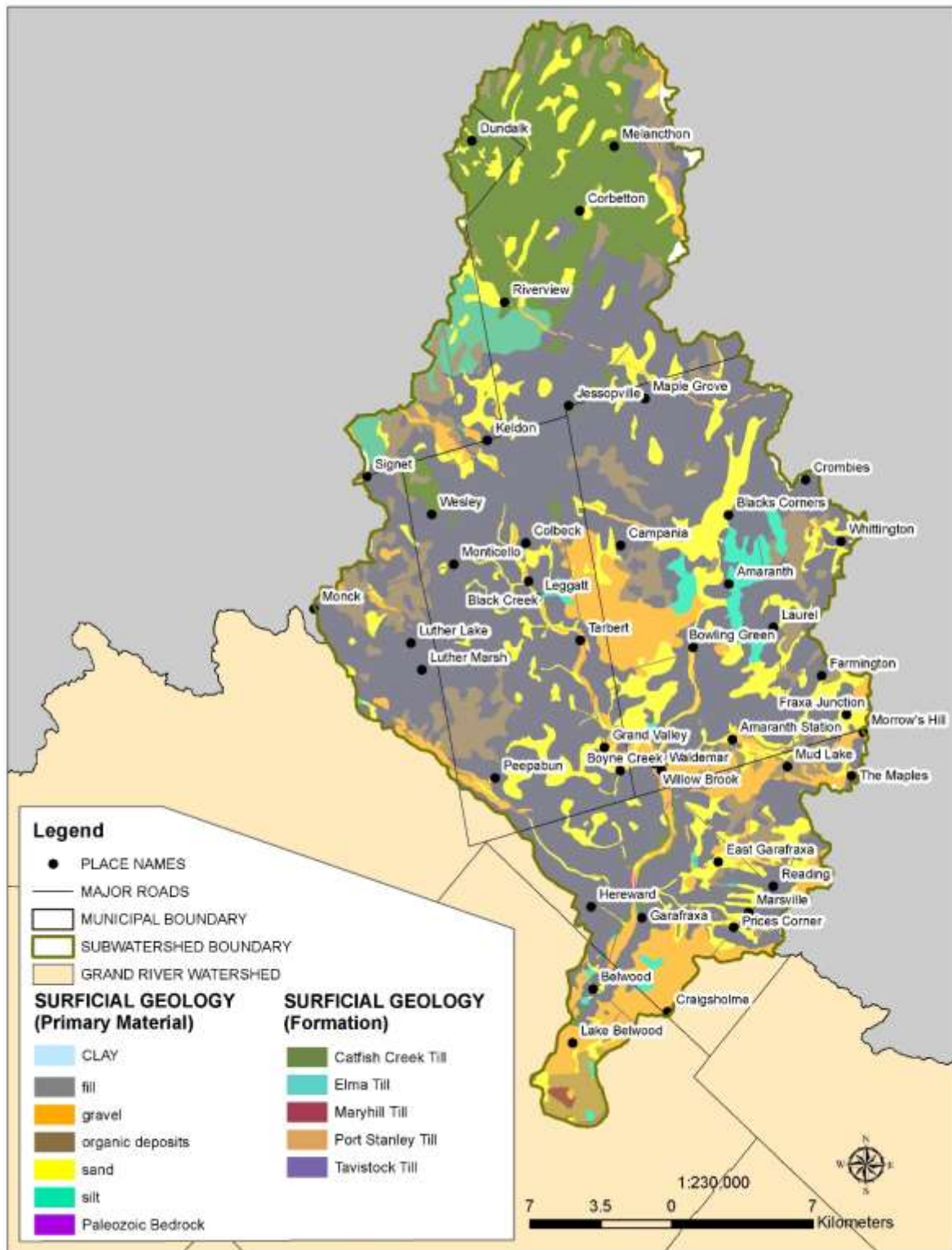


Figure 4. Surficial Geology within the Upper Grand River Subwatershed

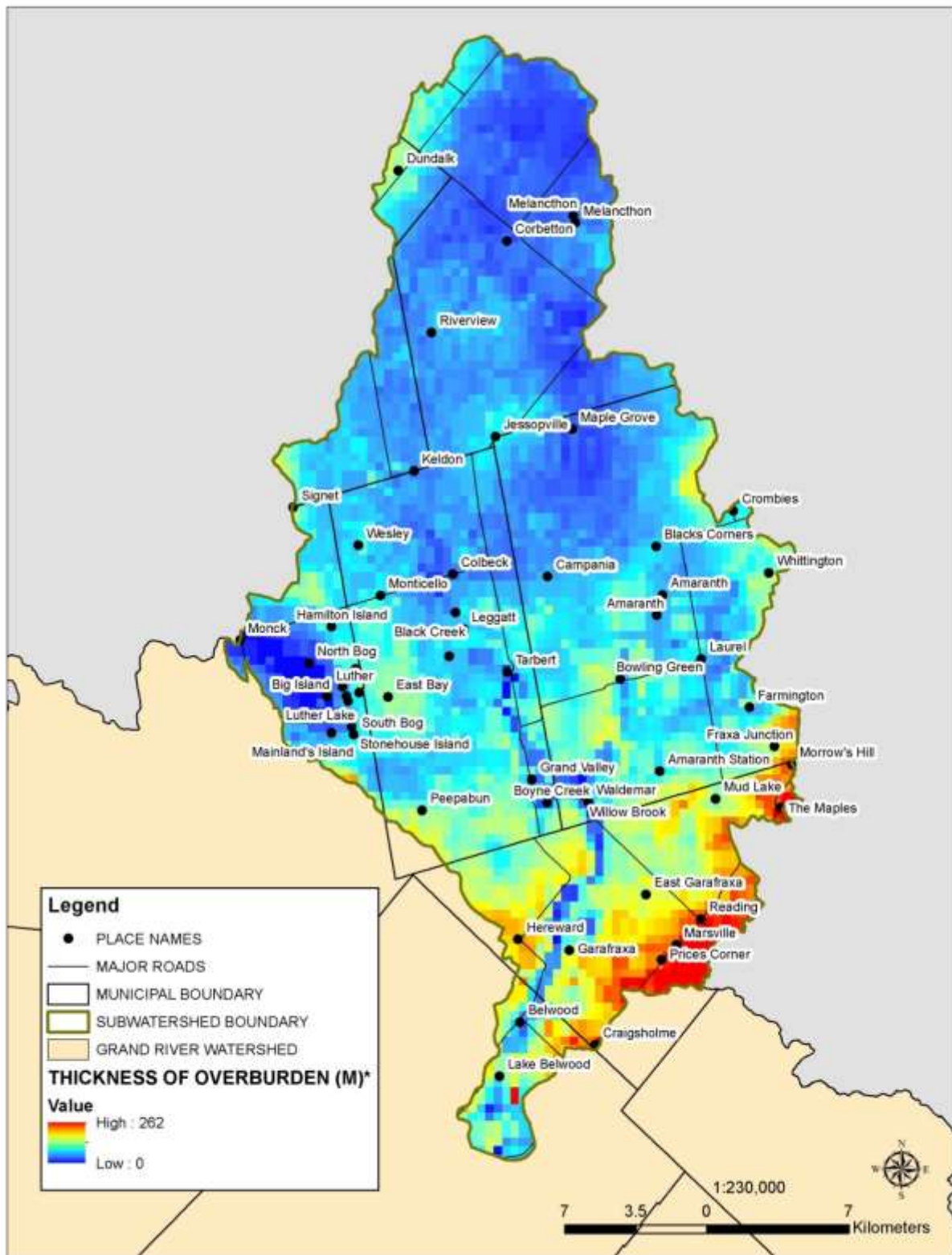


Figure 5. Overburden Thickness within the Upper Grand River Subwatershed

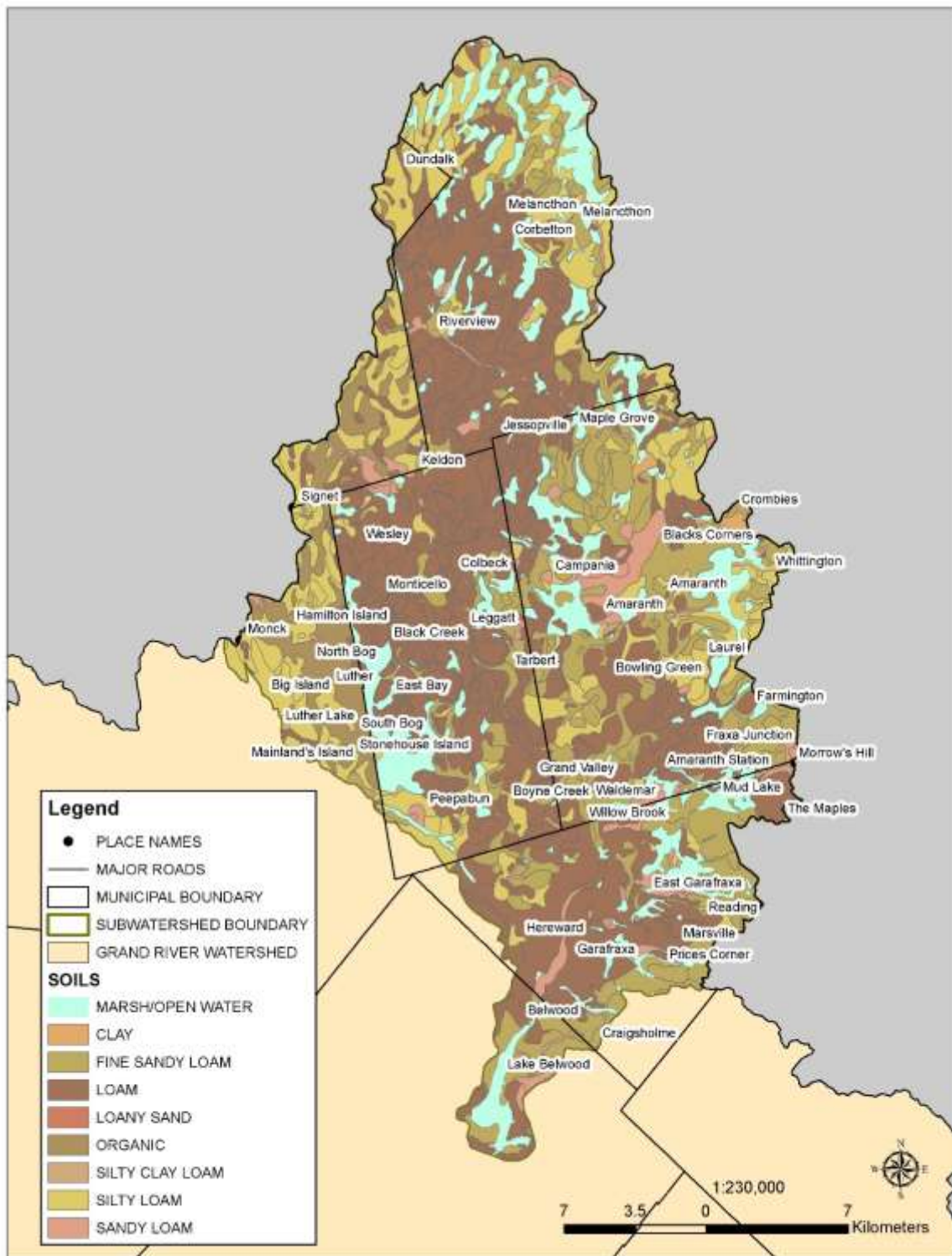


Figure 6. Soils within the Upper Grand River Subwatershed

2.4 Hydrology and Hydrogeology

The Upper Grand River subwatershed drains approximately 791 km² of land at the north end of the Grand River watershed. The subwatershed includes the headwaters of the Grand River, located north of Dundalk, and extends to and includes Shand Dam and Belwood Lake Reservoir at the downstream end. Hydrological characteristics vary across the watershed depending on the underlying soils, topography, land use, and the presence of water control structures. Because of the relatively flat topography and low permeability soils across much of the subwatershed, drainage is considered poor. These poor drainage conditions have resulted in the development of extensive wetlands and wet meadows, which provide important hydrological functions and also support local biodiversity. An extensive network of municipal drains, private agricultural drains, and in-field tile drain systems have been created throughout the subwatershed to drain land and improve agricultural conditions.

Infiltration and runoff rates vary considerably across the subwatershed. Northwestern sections have relatively high infiltration rates, in excess of 400mm/year, and correspondingly lower rates of runoff. The central and southern portions of the subwatershed is largely a runoff dominated system with high runoff rates and flashy peak flows during high rainfall or snowmelt events. Flows within the Grand River vary seasonally, with median summer flows 80-90% less than the spring flows (GRCA 2008). The large difference between high and low flows can be attributed to the high proportion of low permeability soils in the subwatershed and consequent high surface runoff and low recharge to groundwater (GRCA 2009). Modelled estimates of groundwater recharge throughout the subwatershed are shown in Figure 7.

Located near the north end of the subwatershed, Luther Marsh Wildlife Management Area plays a significant role in the hydrological cycle. The area features extensive wetlands and a large reservoir, which was created in 1954 by impounding Black Creek, a tributary of the Grand River. The area contains one of southern Ontario's most significant wetlands and is an important area for biodiversity. Luther Marsh stores surplus water and releases it slowly during periods of drought and low flow. Flow augmentation from this marsh often exceeds 80% of the total flow in the Upper Grand River during summer months and helps to maintain water quality during the summer months (GRCA 2009).

Modelled estimates of groundwater discharge is shown in Figure 8 (GRCA 2008). The highest relative rates of groundwater discharge within the subwatershed occur within the Grand River, particularly as it travels through the middle and lower portions of the subwatershed. This groundwater discharge supports a cool water fishery through this section of the subwatershed.

Average annual precipitation in the Upper Grand River subwatershed is approximately 990 mm/yr, consistent with or slightly higher than the Grand River watershed average of 935 mm/yr. Lake effect snowfall may have an influence on total precipitation within the upper subwatershed but this cannot be determined precisely with currently available climate data (GRCA 2009). The upper subwatershed average annual runoff value of 350 mm/yr is significantly higher than the Grand River watershed runoff average of 260 mm/yr. The average annual

groundwater recharge within the upper subwatershed is 180 mm/yr, which is the same as the Grand River watershed recharge average (GRCA 2009). These hydrological and hydrogeological characteristics influence the type and sensitivity of ecological features found throughout this subwatershed. Key ecological features and their functions are discussed in Sections 3 and 4 below.

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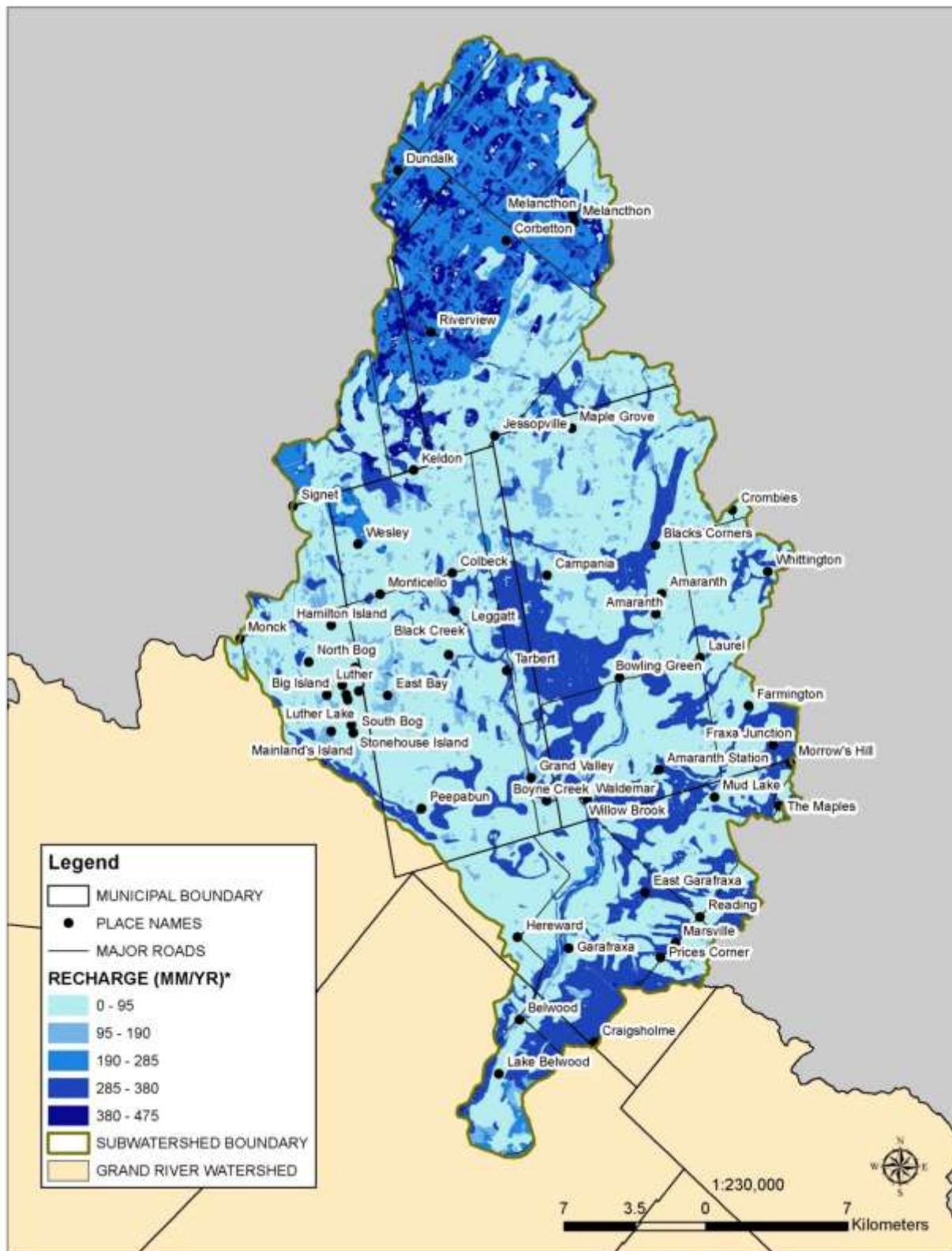


Figure 7. Modelled Ground Water Recharge within the Upper Grand River Subwatershed

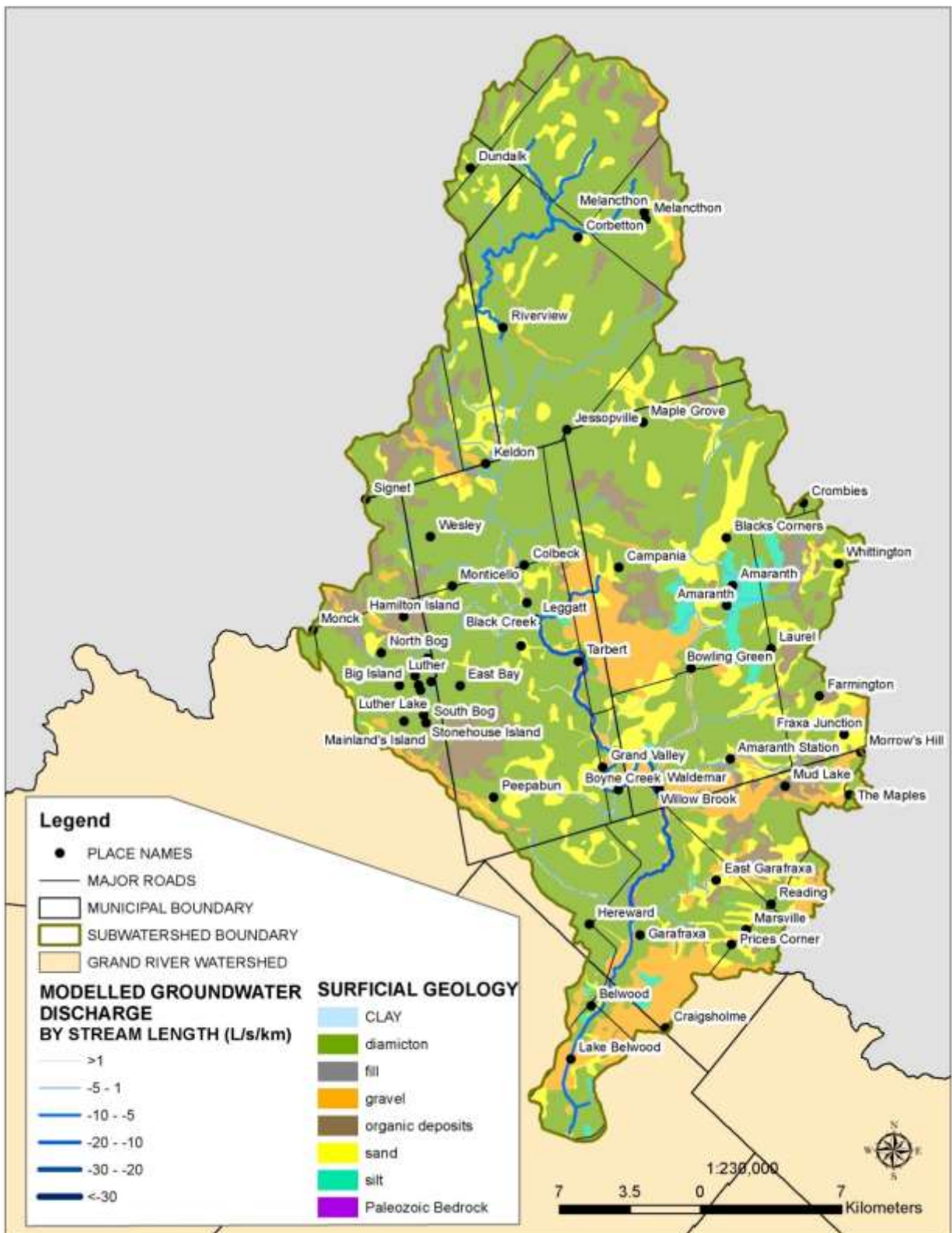


Figure 8. Modelled Groundwater Discharge within the Upper Grand River Subwatershed

3.0 Aquatic Ecology

3.1 Overview

Watercourses are classified by the Ontario Ministry of Natural Resources and Forestry (OMNRF) based on assessments of the temperature regime and the composition of the fish community within specific reaches. Waterbodies may be classified as cold, cool or warm. Thermal regime is determined using measures of water temperature and/or inferred from knowledge of the existing fish or invertebrate community present. Cold water tributaries are those which contain cold water fish species such as native brook trout, brown trout, and/or mottled sculpin. Watercourses may also be classified as potential cold water habitat if the mean summer water temperature is less than 19°C. Cool water tributaries are characterized by average summer water temperatures of between 19°C and 25°C and a fish community consisting of Esocids (e.g. northern pike) and Percids (e.g. darters walleye, yellow perch). Warm water tributaries are characterized by average summer water temperatures in excess of 25°C and a fish community consisting of Centrarchids (bass and sunfishes) and more tolerant fish species such as carp and bullheads.

Relatively few watercourses (33% of total length) within the Upper Grand River subwatershed have been classified by the Province. Over two thirds of all watercourses in this subwatershed have not been assigned a thermal regime by the OMNRF, as indicated in Table 1.

Stream classifications and known aquatic survey locations are illustrated in Figure 9.

Table 1. Summary of Stream Classifications As Determined by the OMNRF

Watershed	Cold Water (km)	Cool Water (km)	Unassigned Water* (km)	Warm Water (km)	Total Classified (km)	Total Watercourse Length (km)	Not Classified (km)	% Not Classified
Grand River	1,011	666	1,483	2,668	4,345	11,329	6984	62%
Upper Grand River and its tributaries	50	193	486	127	370	1,128	758	67%

*Assessed by Ontario Ministry of Natural Resources and Forestry but no thermal regime assigned.

3.2 Watercourse Review

The upper reaches of this subwatershed are dominated by clay and silty clay till plains that are characterized by low recharge rates, high runoff, flashy flows, and extremely low baseflows. The lack of groundwater discharge conditions upstream of Grand Valley limits fish communities to warm or cool water species. The Upper Grand River flows intermittently near its headwaters and many first order tributaries are also intermittent. Localized deposits of sand and gravel are present but are very shallow and contribute little to low flows in the main stem or tributaries. The river enters a narrow gravel spillway in Grand Valley where it receives some groundwater. A large sandplain southeast of Grand Valley also generates local groundwater discharge conditions to support a cold water fish community along Butler Creek. Other local watercourses are influenced by groundwater discharge and have the potential to support cold water species. The fisheries management objective within

these watercourses is to maintain or restore cold water fish communities dominated by top predators such as brook trout or brown trout.

Tributaries that support cool or mixed water fish communities include Mud Creek, Willow Brook, and several unnamed creeks.

Tributaries that support warm water fish communities include Boyne Creek, which contains a variety of Centrarchids (bass and sunfish) and Cyprinids (dace and minnows). The fisheries management objective within these watercourses is to support a diverse warm water fish community.

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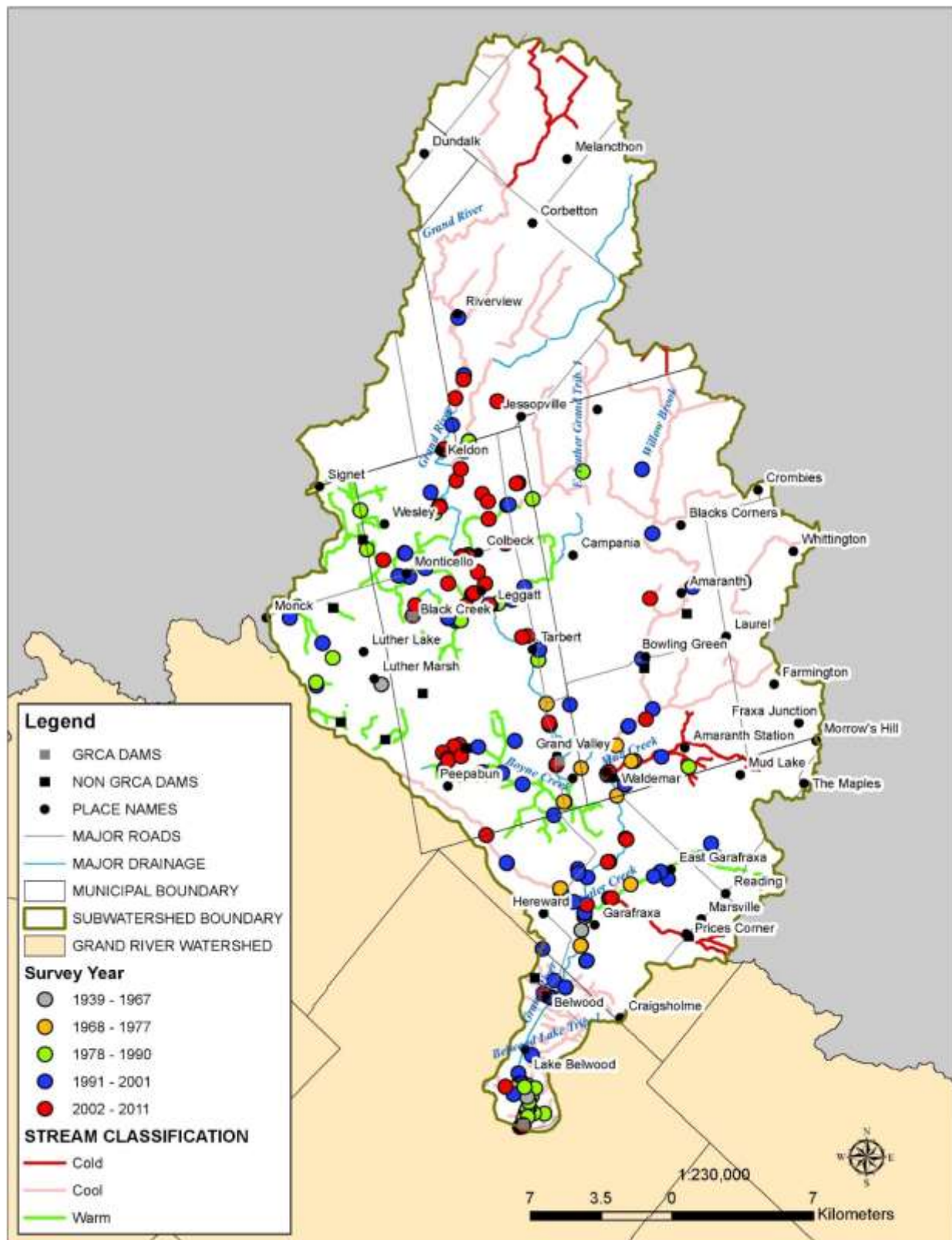


Figure 9. Aquatic Survey Locations and Thermal Regimes within the Upper Grand River Subwatershed

3.3 Municipal Drains

Many tributaries of the Upper Grand River have been converted to municipal drains that have status and are maintained under the Drainage Act. Municipal drains can vary in length and quality. Municipal drains within this subwatershed measure 568 km in total length, not including tile drains. Municipal drains are classified by Fisheries and Oceans Canada (DFO) based on flow regime, thermal regime, and fish community composition. A summary of total drain length by drain type is provided in the box below:

B/E Class (Permanent flow, warm water, sensitive species present) = 108 km
C Class (Permanent flow, warm water, no sensitive species present) = 181 km
D Class (Permanent flow, cool/cold water, sensitive species present) = 8 km
F Class (Intermittent flow) = 153 km
T Class (Tile Drain) = 7 km
NR (Not Rated) = 110 km

Many municipal drains in this subwatershed traverse GRCA property. Of the 31 properties owned by the GRCA within this subwatershed, municipal drains can be found on the following GRCA properties:

<i>GRCA Property</i>	<i>Name of Drain</i>	<i>Drain Class</i>
<i>Amaranth (85 ha)</i>	Connor Drainage Works	F
	Hicks Drainage Works	C
	No. 7 Drainage Works	F
<i>Baxendale - West Tract (53 ha)</i>	James Tyner Award Drain	NR
<i>Belwood Lake Conservation Area (1,277 ha)</i>	Willam Rogers Drain	E
<i>Boutros (46 ha)</i>	Eber Drainage Works, 2002	F
	Leader Drainage Works	E
	McLaren-Tacky Drain	E
	No. 51 Drain	F
<i>Bruce Tract (39 ha)</i>	Little Drain	F
	No. 20 Drainage Works	F
<i>Carrow Tract (62 ha)</i>	Henry Drainage Works	C
<i>Cutting Tract (80 ha)</i>	DRAIN NO. 12	E
<i>Hilborn Tract (20 ha)</i>	Nelson Drainage Works	F
<i>Irving Tract (42 ha)</i>	No. 7 Drainage Works	NR
	Potter Drain	F
<i>Keldon Source Area (378 ha)</i>	Drain No. 10	E
	Drain No. 24	C
	East Luther No. 11 DRAIN	C
	Hooker Drainage Works	E
<i>Lama Tract (72 ha)</i>	Bingham Drainage Works	F
	Hendry Drainage Works	F

<i>Luther Marsh Wildlife Management Area (5,624 ha)</i>	No. 48 Drainage Works	D
	Gibson Drainage Works	F
	Hooker Drainage Works	NR
	No. 1 Drain	NR
	No. 10 Drainage Works	NR
	No. 12 Drain	NR
	No. 15 Drainage Works	E
	No. 16 Drainage Works	E
	No. 2 Ext. Drainage Works	NR
	No. 31 Drain	E
	No. 33 Drain	E
	No. 50 Drain	F
	West Luther Drain 63	NR
<i>Mac Coutts Tract (41 ha)</i>	East Luther No. 11 Drain	NR
<i>Nunn Tract (47 ha)</i>	Leenders Drainage Works	F
<i>Peffler Tract (20 ha)</i>	Richardson Drainage Works	D
<i>Rintoul Tract (22 ha)</i>	McLaren-Tacky Drain	E
<i>Ritchie Tract (207 ha)</i>	Pearce Drainage Works	F
<i>Robinson Tract (81 ha)</i>	Hooked Drainage Works	E
<i>Smith Tract (39 ha)</i>	Verbanac Drainage Works	F
<i>Young Tract (42 ha)</i>	Connor Drainage Works	F

Butler Creek

The main channel is classified as warm water fish habitat and one tributary originating southeast of Marsville is classified as cold water habitat owing to the presence of mottled sculpin. Several additional tributaries remain unclassified. A small section has been converted to a municipal drain.

Boyne Creek

This watercourse has been converted to a municipal drain and has been classified as warm water fish habitat by DFO.

Mud Creek

The main, central channel was assessed as a municipal drain (Wilson Drainage Works, Type D) by DFO and is currently classified as permanently flowing cold water fish habitat owing to the presence of brook trout whereas smaller tributaries within the upper reaches provide exceptions. Edelbrock Drain is intermittent (Type F). Ward Drain, located within the upper reaches of this creek system, remains unclassified.

Willow Brook

The main channel and tributaries of Willow Brook have been converted to municipal drains. The main channel is classified as cool water fish habitat whereas the tributaries are classified as warm and cool water fish habitat with sensitive species. It should be noted that Provincial and Federal habitat classifications are not consistent along some reaches.

Black Creek (Town of Grand Valley)

The majority of this watercourse was converted to a municipal drain. The lower reach between Side Road 24-25 and the Grand River is classified as cold water fish habitat owing to the presence of mottled sculpin. The middle reach passes through the Monticello wetland and is classified as warm water habitat. This watercourse includes Nelson Drainage Works (F), Palmer Drain (C), No. 16 Drainage Works (C, NR), Gibson Drainage Works (F), which is the outlet for the Monticello Wetland, No. 31 Drainage Works (NR), and No. 15 Drainage Works (NR), which is the outlet for the Townline wetland, East Luther Drain No. 11 (C), and Drain No. 24 (C).

Galbraith Drain Catchment

This catchment contains numerous drains including Galbraith Drain (C), Loughheed Drainage Works (NR), Whitten Drainage Works (C), Hansen Drainage Works (NR), Potter Drain (F), No. 41 Drainage Works (C), Brown Drainage Works (B), Hicks Drainage Works (NR), Teeter-Jordan Drain (F), Connor Drainage Works (F), and Henry Drainage Works (C).

McNabb Drainage Works

This watercourse drains a very large catchment. Drains within this catchment are classified as warm and cool water fish habitat: Mather Drainage Works (B), Gray Drain (F), McCue Drainage Works (C, F, NR), Day Drainage Works (B, F), Stewart Drainage Works (C).

Upstream of Riverview

The Grand River is classified as cool water fish habitat by the Province. Tributaries such as Crowder Drainage Works (C) and Broster Drainage Works (C, E, NR) are classified as warm water fish habitat by DFO based on the presence of warm water fish species within these watercourses.

Dundalk Area

This area includes Bradley Drainage Works (E), Broster Drainage Works (NR, E, C), Doyle Drainage Works (F), Fraser-Lee Drain (C), James Foley Drain (C, E), and Keating Drain (F), all of which are classified as warm water fish habitat. Sections of Broster and Bradley Drain, east of Dundalk, are classified as cold or cool water fish habitat by the Province owing to the presence of cool or cold water indicator species. Mottled sculpin, a cold

water species, is present in northern reaches of Broster Drain, which is classified inconsistently by the OMNRF and DFO.

3.4 Dams and Reservoirs

The Upper Grand River subwatershed contains 15 dams, 10 of which are owned and maintained by the GRCA. These dams are managed under the auspices of the Conservation Authorities Act and the Lakes and Rivers Improvement Act. Small, privately owned dams are located along tributaries of Butler Creek, Boyne Creek, and Willow Brook. Dam locations are shown on Figure 9 above.

GRCA-owned dams include the Grand Valley Dam, a flood control structure situated along the Grand River, as well as Luther Marsh Dam and Shand Dam, which were constructed for the purpose flood control and baseflow augmentation. Shand Dam is 1 of 3 hydro power facilities located within the Grand River watershed. Luther Marsh Reservoir helps maintain a variety of wetland habitats suitable for a variety of wetland-dependent species. The dam is located along Municipal Drain No. 33 (aka Black Creek), which flows east toward the Grand River. Six smaller dams are also maintained within or near Luther Marsh Wildlife Management Area. Built in cooperation with Ducks Unlimited Canada, the OMNRF, and others, the Monticello Wetland is the largest constructed wetland within the Grand River watershed. Consisting of 2 large cells, the wetland was created by constructing small earthen berms along Gibson Drainage Works, which also flows east toward the Grand River. Several smaller satellite wetlands (Mallard Pond, Blue-winged Teal Pond, Pintail Pond, Wood Duck Pond, and Rut-N-Strut Wetland) were constructed by impounding areas that now drain toward Luther Marsh. The Townline Wetland was created by constructing a small earthen berm along No. 15 Drainage Works, which flows south toward LMWMA and then east toward the Grand River. These smaller impoundments provide limited warm water habitat for relatively few fish species that are able to tolerate shallow water conditions. These smaller water control structures are not included in the GRCA's dam inventory and as such as mapped as non-GRCA dams in Figure 9.

3.5 Aquatic Communities

According to unpublished data obtained from the Ontario Ministry of Natural Resources and Forestry (OMNRF), a total of 34 fish species representing 26 genera have been recorded throughout the Upper Grand River and its tributaries (see Table 2). Fish communities are diverse and include a variety of game species. Top predators in warm and cool waters can include species such as smallmouth bass and northern pike, whereas brown trout and brook trout tend to inhabit colder watercourses with groundwater upwellings and seepages. Brown trout, an introduced species, tends to be found in the main stem of the Grand River and near the mouth of larger tributaries. Other watercourses flowing through areas of sand and gravel that promote groundwater recharge and discharge conditions are suitable for other cold or coolwater species such as mottled sculpin, northern redbelly dace, finescale dace, pearl dace, and several darter species.

According to unpublished data obtained from DFO, 6 mussel species representing 6 genera have been recorded within the Upper Grand River and its tributaries. No mussels have been found at Luther Marsh but a

single species (*Strophitus undulates*) was found in Black Creek, approximately 3.5 km downstream of Luther Dam.

For many years, there has been a concern that fish communities within the Upper Grand River and its tributaries have been negatively impacted by a variety of human activities, including farm drainage, peat extraction, and commercial water taking, all of which can have a negative effect on water quality (GRCA 1999). Historical and current drainage practices have also led to the creation of broad channels that lack a low flow channel suitable for fish (OMNR & GRCA 2001).

More recently, two aquatic invasive species, rusty crayfish and round goby, were detected at Belwood Lake by GRCA staff. Viral hemorrhagic septicemia (VHS), an infectious fish disease first detected in Ontario in 2005, has not been detected in this subwatershed. Outbreaks in other areas of the Province are most common in the spring when temperatures are fluctuating and when fish are spawning.

Special regulations (catch and release or limited harvest) have been enacted to improve opportunities to catch “trophy trout” on the Upper Grand River. The locations of catch and release trout fishing zones have been chosen to avoid popular fishing sites (GRCA & OMNR 2001).

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Table 2. Fish and mussel species recorded within the Upper Grand River and its tributaries

Common Name	Scientific Name	Provincial Rank ¹	Provincial Status ²	Federal Status ³	Thermal Preference ^{4,5}
<i>Fishes</i>					
Brown Trout	<i>Salmo trutta</i> *	S5	No Status	No Status	Cold water
Brook Trout	<i>Salvelinus fontinalis</i>	S5	No Status	No Status	Cold water
Northern Pike	<i>Esox lucius</i>	S5	No Status	No Status	Cool water
Central Mudminnow	<i>Umbra limi</i>	S5	No Status	No Status	Cool water
Round Goby	<i>Neogobius melanostomus</i>	SNA	No Status	No Status	Cool water
Northern Hog Sucker	<i>Hypentelium nigricans</i>	S4	No Status	No Status	Warm water
Northern Redbelly Dace	<i>Chrosomus eos</i>	S5	No Status	No Status	Cool water
Finescale Dace	<i>Chrosomus neogaeus</i>	S5	No Status	No Status	Cool water
Common Carp	<i>Cyprinus carpio</i> *	SNA	No Status	No Status	Warm water
Brassy Minnow	<i>Hybognathus hankinsoni</i>	S5	No Status	No Status	Cool water
Common Shiner	<i>Luxilus cornutus</i>	S5	No Status	No Status	Cool water
Pearl Dace	<i>Margariscus nachtriebi</i>	S5	No Status	No Status	Cool water
Hornyhead Chub	<i>Nocomis biguttatus</i>	S4	No Status	No Status	Cool water
River Chub	<i>Nocomis micropogon</i>	S4	No Status	No Status	Cool water
Blacknose Shiner	<i>Notropis heterolepis</i>	S5	No Status	No Status	Cool water
Roseyface Shiner	<i>Notropis rubellus</i>	S4	No Status	No Status	Warm water
Bluntnose Minnow	<i>Pimephales notatus</i>	S5	No Status	No Status	Warm water
Fathead Minnow	<i>Pimephales promelas</i>	S5	No Status	No Status	Warm water
Blacknose Dace	<i>Rhinichthys atratulus</i>	S5	No Status	No Status	Cool water
Creek Chub	<i>Semotilus atromaculatus</i>	S5	No Status	No Status	Cool water
White Sucker	<i>Catostomus commersonii</i>	S5	No Status	No Status	Cool water
Central Stoneroller	<i>Camptostoma anomalum</i>	S4	No Status	No Status	Cool water
Brown Bullhead	<i>Ameiurus nebulosus</i>	S5	No Status	No Status	Warm water
Brook Stickleback	<i>Culaea inconstans</i>	S5	No Status	No Status	Cool water
Rock Bass	<i>Ambloplites rupestris</i>	S5	No Status	No Status	Cool water
Pumpkinseed	<i>Lepomis gibbosus</i>	S5	No Status	No Status	Warm water
Bluegill	<i>Lepomis macrochirus</i>	S5	No Status	No Status	Warm water
Smallmouth Bass	<i>Micropterus dolomieu</i>	S5	No Status	No Status	Warm water
Rainbow Darter	<i>Etheostoma caeruleum</i>	S4	No Status	No Status	Cool water
Iowa Darter	<i>Etheostoma exile</i>	S5	No Status	No Status	Cool water
Least Darter	<i>Etheostoma microperca</i>	S4	No Status	No Status	Warmwater
Johnny Darter	<i>Etheostoma nigrum</i>	S5	No Status	No Status	Cool water
Yellow Perch	<i>Perca flavescens</i>	S5	No Status	No Status	Cool water
Mottled Sculpin	<i>Cottus bairdii</i>	S5	No Status	No Status	Cool water
<i>MUSSELS</i> ⁶					
Creek Heelsplitter	<i>Lasmigona compressa</i>	S5	No Status	No Status	n/a
Creper	<i>Strophitus undulatus</i>	S5	No Status	No Status	n/a
Cylindrical Papershell	<i>Anodontoides ferussacianus</i>	S4	No Status	No Status	n/a
Eastern Elliptio	<i>Elliptio complanata</i>	S5	No Status	No Status	n/a
Giant Floater	<i>Pyganodon grandis</i>	S5	No Status	No Status	n/a
Slippershell	<i>Alasmidonta viridis</i>	S3	No Status	No Status	n/a

Sources: ¹ Natural Heritage Information Centre, ² Endangered Species Act (2007), O. Reg. 139/14, s.2, ³ Species at Risk Act 2002, Schedules 1-3, ⁴Eakins (2015), ⁵GRCA 1998. ⁶DFO unpublished data. Checklist order follows Scott and Crossman (1998); *denotes an introduced species

The fish community in Belwood Reservoir was assessed by the OMNRF in July 2012 and June 2016 using a broad-scale index netting protocol. These surveys provide data on species richness, population abundance, other population characteristics such as growth and age. Surveys completed in June 2016 confirmed that 10 species of varying size classes were present. Yellow perch (55%), walleye (13%) and smallmouth bass (7%) were determined to be the most abundant species based on catch ratios. Walleye sampled ranged from 18-57 cm in total length and the smallmouth bass ranged from 25-49 cm in length.

Walleye were historically not known to exist in this portion of the watershed. In the late 1990s, there were anecdotal reports of walleye being caught at Belwood Reservoir. The MNRF confirmed the presence of walleye in 2004. Unlike Conestogo Reservoir, no authorized stocking of walleye occurred at Belwood. Genetic analysis of scale and fin tissue samples indicate that the Belwood Reservoir walleye are genetically similar to fish from the Grand River and Conestogo Lake. Walleye from Belwood can survive passing through and over Shand Dam and appear to be populating the Grand River to West Montrose.

3.6 Aquatic Species at Risk

According to mapping information obtained from the OMNRF and DFO, aquatic Species at Risk are not known to be present within the Upper Grand River subwatershed.

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4.0 Terrestrial Resources

4.1 Wetlands

Wetlands are defined by the Province as:

“lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the ground surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. Periodically soaked or wet lands being used for agricultural purposes, which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition.”

A significant wetland area is identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using the Wetland Evaluation System, as amended from time to time (OMNR 2010, OMNRF 2014).

Wetlands are identified and mapped by the OMNRF and the GRCA using orthoimagery and other data sources. Wetland boundaries are verified in the field on a case by case basis, usually as part of a Scoped Environmental Impact Study.

Wetlands cover approximately 14,568 hectares, or 18%, of the Upper Grand River subwatershed. Wetland cover in this subwatershed is well above the Grand River watershed average of 9.5% and exceeds the federal watershed and subwatershed targets of 10% and 6%, respectively (see Environment Canada 2013). A majority of the mapped wetlands in this subwatershed (10,567 hectares or 73%) have been evaluated by the OMNRF. Currently, 9,102 hectares or 62% of all mapped wetland area is classified as Provincially Significant Wetland and another 2,157 hectares or 15% is classified as Non-Provincially Significant Wetland. Nearly 90% of all evaluated wetland is considered provincially significant (see Table 3).

A list of all evaluated wetland complexes, including the total size of the wetland complex and the calculated wetland area within this subwatershed, is provided in Table 4. The geographic extent of evaluated and unevaluated wetlands within this subwatershed is illustrated in Figure 10.

Summaries for evaluated wetlands are provided below and are based on information contained in Ontario Wetland Evaluation Records, mapping information available on the Grand River Information Network (GRCA 2018), and other sources (e.g. GRCA 2019b).

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Table 3. Wetland Cover within the Upper Grand River Subwatershed

Total Wetland Cover (mapped by GRCA and/or OMNRF)	14,568 ha or 146 km ² (18% of subwatershed area)	
Evaluated wetland cover expressed as a percentage of total subwatershed area	Provincially Significant Wetland Non-Provincially Significant Wetland Total Evaluated Wetland	9,102 ha or 12% 2,157 ha or 3% 10,567 ha or 13%
Evaluated wetland cover expressed as a percentage of total wetland area	Provincially Significant Wetland Non-Provincially Significant Wetland Total Evaluated Wetland	9,102 ha or 62% 2,157 ha or 15% 10,567 ha or 73%
Percentage of Evaluated Wetland that is Provincially Significant	86%	

Table 4. Evaluated Wetlands within the Upper Grand River Subwatershed

Provincially Significant Wetlands			
	Total Complex Area (Ha)	Wetland Area within Subwatershed (Ha)	Date of Last Evaluation and/or OWES Edition Used
Bowling Green Swamp	498	498	1986, OWES 2 nd Edition
Keldon Swamp	921	704	1984, OWES 2 nd Edition
Laurel Complex	350	196	1987, OWES 2 nd Edition
Luther Marsh	4029	3711	1986, OWES 2 nd Edition
Melanchton Wetland Complex # 1	2817	2614	1983, OWES 2 nd Edition
Mud Lake	312	312	1987, OWES 2 nd Edition
Reading Swamp	434	434	1985, OWES 3 rd Edition
Speed Lutteral Swan Creek Wetland Complex	5683	138	1987, OWES 2 nd Edition
Whittington Wetland Complex	503	496	1993, OWES 3 rd Edition
Non-Provincially or Locally Significant Wetlands			
Campania Fen	16	16	1984, OWES 2 nd Edition
Canadian Pacific Swamp	296	218	OWES 3 rd Edition
Cardwell Wetland	134	7	1987, OWES 2 nd Edition
Crombies Wetland Complex	74	23	1987, OWES 2 nd Edition
Farmington Swamp	47	41	1987, OWES 2 nd Edition
Jessopville North Wetland	46	46	OWES 2 nd Edition
Maple Grove Bog	300	300	1986, OWES 2 nd Edition
Maple Grove North Wetland	46	46	OWES 2 nd Edition
Maple Grove Northwest Wetland	19	19	OWES 3 rd Edition
Melanchton Wetland Complex #2	194	194	1983, OWES 3 rd Edition
Riverview Swamp	323	61	OWES 3 rd Edition
Willowbrook Swamp	662	492	1986, OWES 2 nd Edition

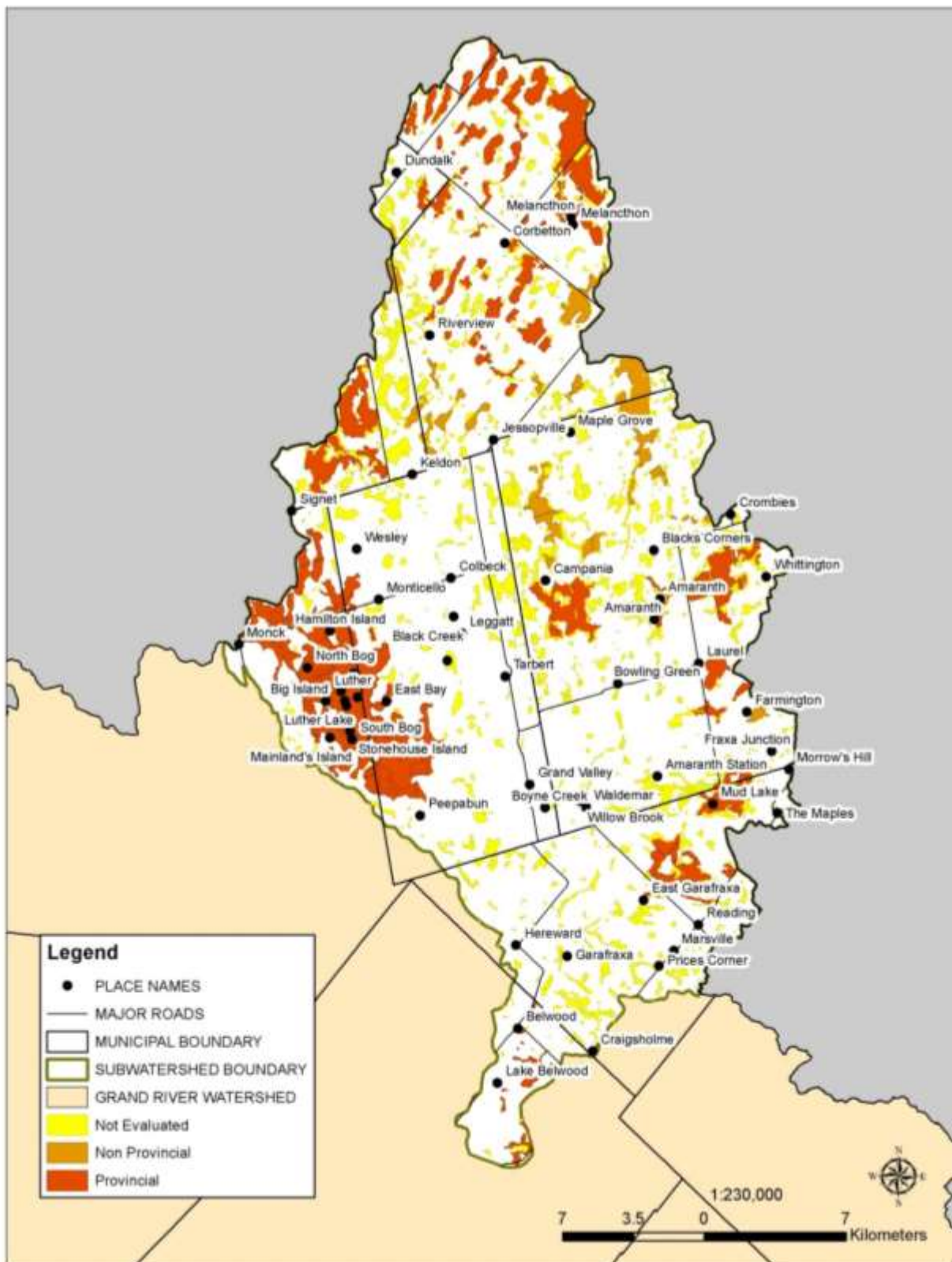


Figure 10. Evaluated and Unevaluated Wetlands within the Upper Grand River Subwatershed

Provincially Significant Wetlands

4.1.1 Bowling Green Swamp

Located in Amaranth Township (Dufferin County), this 498 hectare wetland consists of a single wetland unit comprising swamp (78%), bog (20%) and fen (2%) communities. The wetland is drained by several watercourses, many of which have been converted to municipal drains, which have likely affected local hydrology within this wetland. Additionally, peat mining has occurred within the wetland. Provincially significant species recorded here include snapping turtle and short-eared owl. The majority (88%) of this complex is situated on organic soils. Remaining portions are situated on clay, loam, or silty materials. A variety of furbearers have been recorded here historically, including muskrat, beaver, mink, fox, and eastern coyote.

4.1.2 Keldon Swamp

Located in Southgate Township (Grey County), the majority of this 921 hectare wetland drains toward the Upper Grand River via a series of municipal drains. Approximately, 217 hectares drain toward the Saugeen River. The wetland complex consists of 5 evaluated wetland units comprising swamp (87%) and marsh (13%) communities. A majority (90%) of the complex is situated on organic soils with a smaller portion situated on clay soils. Notable disturbances include channelization, drainage, and cattle access. The wetland is considered important for flow stabilization.

4.1.3 Laurel Wetland Complex

Located in Amaranth Township, this 350 hectare wetland complex consists of 5 evaluated wetland units, the majority of which drains southeast toward the Grand River via 2 municipal drains, which merge at County Road 12. Smaller portions drain west toward the Nottawasaga River. The wetland comprises swamp (95%) and marsh (5%) communities. Much of the wetland is dominated by deciduous trees and shrubs with smaller portions being dominated by conifers. A little more than half (60%) of the wetland is situated on clay soils. Remaining portions (40%) are situated on organic soils. Provincially significant species recorded here include snapping turtle. A variety of furbearers have been recorded here historically, including muskrat, beaver, mink, fox, and eastern coyote.

4.1.4 Luther Marsh Wetland Complex

Located in Wellington North and Grand Valley Townships, this wetland complex comprises marsh, swamp, bog, and fen communities, and occurs primarily on property owned and managed by the GRCA. Wetlands within the Luther Marsh Wildlife Management Area were evaluated by the Province in 1986. The wetland complex as a whole was considered a Class 1 Provincially Significant wetland. Wetland boundary mapping in select areas were subsequently refined in 2008 using 2006 digital ortho-rectified photography. The wetland evaluation record was not available for review.

A brief history of the wetlands within the Luther Marsh Wildlife Management Area is provided in the GRCA's Management Plan for this area. Luther Marsh is a large and biologically diverse headwater wetland. Historically,

much of the original wetland consisted of a cedar and tamarack swamp and a sphagnum bog. The creation of the Luther Marsh Reservoir in 1952 resulted in the inundation of some of these wetland areas and the creation of shallow marsh and open aquatic areas. Ducks Unlimited Canada (DUC), the OMNRF, and the GRCA have since cooperated to create and enhance additional wetland areas. Pintail Pond, Mallard Pond, and Wood Duck Pond were all created in 1985 to improve hunting opportunities in the area. The Monticello wetland is located on Crown Land near the northeast corner of the Luther Marsh Wildlife Management Area and represents the most significant wetland creation project in the Grand River watershed. Approximately 90 hectares of poorly drained farmland was impounded in 2000 to create approximately 240 hectares of marsh and thicket swamp. The Townline wetland was created north of County Road 15 and west of Townline Road in 2003. The Rut 'n Strut wetland was constructed in 2006. With the notable exception of Mallard Pond, the constructed wetlands are not considered to be part of the Provincially Significant Wetland Complex. Water levels within these constructed wetlands are manipulated using water control structures.

In 2001, Luther Marsh was designated a Nationally Important Bird Area by Bird Life International. The wetland and its adjacent areas are known to contain threatened and endangered species, species of special concern, and other significant species. Birds concentrate here in significant numbers when breeding and during spring and fall migration.

4.1.5 Melancthon Wetland Complex #1

As the name implies, this large (2617 ha) swamp complex is located in Melancthon Township (Dufferin County). The complex consists of several wetland units of various size. Further assessment is needed to quantify the number and size of individual wetland units within this complex. The entire wetland complex is situated on organic soils and many sections have been subject to channelization, drainage, and peat mining activities.

4.1.6 Mud Lake Wetland Complex

This 312 hectare wetland complex covers portions of East Garafraxa and Amaranth Townships and is bisected by County Road 109. Currently, the complex consists of 5 evaluated wetland units ranging from 5 ha to 235 ha in size. The wetland complex has a combined catchment size of approximately 27.2 km². Considerably more wetland area has been mapped by the GRCA within this area and many of these unevaluated wetlands also appear to drain toward Mud Creek, a municipal drain, and are hydrologically connected to each other. The wetland complex comprises swamp (80%), bog (15%), and marsh (5%) communities. A majority (85%) of the wetland area is situated on organic soils whereas the remainder is situated on mineral soils (15%). The wetland features a large (16 ha) body of water. Provincially significant species recorded here include snapping turtle. A variety of furbearers have been observed, including muskrat, beaver, mink, red fox, and eastern coyote.

4.1.7 Reading Swamp

Located within East Garafraxa Township, this 434 hectare wetland complex consists of 12 individual wetland units ranging in size from 0.43 ha to 121 ha and having a total catchment of 21.4 km². Considerably more wetland area has been mapped by the GRCA within the vicinity of this complex and, like the rest of the wetland

complex, many of these unevaluated wetlands also appear to drain toward Butler Creek, an eastern tributary of the Grand River upstream of Belwood Lake. The wetland complex comprises swamp (97%) and marsh (3%) communities. A majority (90%) of the complex is situated on organic soils. Swamp areas are covered by coniferous and deciduous swamp communities primarily whereas about 1/3 of the wetland area is dominated by tall shrubs. The complex is bisected by several roads and a utility corridor. Provincially significant species recorded here include snapping turtle. A variety of furbearers have been observed, including muskrat, beaver, mink, red fox, and eastern coyote.

4.1.8 Speed Lutteral Swan Creek Wetland Complex

Located in East Garafraxa (Dufferin County) and Center Wellington Townships, only 138 hectares (less than 3%) of the entire wetland complex occurs within this subwatershed. Currently, 22 individual wetland units ranging in size from just 0.12 ha to approximately 30 ha in size are considered to be part of the evaluated wetland complex, which has a total catchment of 237 km². These 22 evaluated wetlands are all associated with unnamed tributaries that flow into Belwood Lake whereas the remaining wetlands that make up the complex drain toward the Speed River and its tributaries. The wetland complex comprises deciduous and coniferous swamp (95% of the complex) and marsh (5% of the complex) communities. A majority of the wetland complex is situated on organic soils (60% of complex) and the remainder (30%) is situated on mineral soils such as clays, silts, and loam.

4.1.9 Whittington Wetland Complex

Located in Amaranth Township, this 503 hectare wetland complex consists of 18 individual wetland units ranging in size from just 0.05 ha to 196 ha and has total catchment of 520 hectares. Additional wetland areas within the vicinity of this complex remain unevaluated. The wetland complex is drained by a series of natural watercourses and municipal drains, which are part of the Willow Brook system. The wetland complex comprises swamp (95%) and marsh (5%) communities. Much (90%) of this wetland complex is situated on mineral soils such as silt and clay loams, whereas only about 10% of the complex is situated on organic soils. The wetland is considered important for flood and erosion control but owing to the limited extent of organic soils is not considered a good long-term nutrient trap. Provincially significant species recorded here include snapping turtle. A variety of furbearers have been observed, including muskrat, beaver, mink, red fox, and eastern coyote.

Non-Provincially or Locally Significant Wetlands

4.1.10 Campania Fen

Located in Amaranth Township, the evaluated wetland area measures 16 hectares in size and has a surface catchment measuring 3.1 km². Additional unevaluated wetland area has been mapped within the vicinity of this complex by the Province and the GRCA. The entire wetland is situated on organic soil and is therefore considered an important nutrient trap. Much of the wetland area comprises swamp (85%) whereas a smaller portion (15%) is identified as fen. The wetland contains a municipal drain, which according to its current classification has intermittent flow. Provincially significant species observed here include snapping turtle.

4.1.11 Canadian Pacific Swamp

The wetland evaluation record for this wetland was not available.

4.1.12 Cardwell Wetland

Located in Amaranth and Mono Townships, only about 5% (7 ha) of this wetland complex is situated within the Upper Grand River subwatershed. The rest of the wetland complex, which consists of 17 wetland units and has a total catchment measuring 28.44 km², is located south of Sideroad 15, within the Nottawasaga River subwatershed. A municipal drain has been established along the northern perimeter of the wetland unit located within the Upper Grand River subwatershed area. The watercourse flows intermittently and reportedly does not contain sensitive fish species. Evaluated wetland areas comprise swamp (87%) and marsh (13%) communities. A majority (65%) of this wetland area is situated on mineral soils and 35% is situated on organic soils. Provincially significant species recorded here include snapping turtle and Schweinitz's sedge. Additional unevaluated wetland area has been mapped within the vicinity by the Province and the GRCA.

4.1.13 Crombies Wetland Complex

Located in Amaranth Township, approximately 30% of this wetland complex is located within the Upper Grand River subwatershed. The remaining 70% is located within the Nottawasaga River subwatershed. Evaluated wetland units occurring within the Upper Grand River subwatershed are associated with the Looby Drain, which flows permanently but reportedly does not contain sensitive fish species. Evaluated wetland areas comprise swamp (94%) and marsh (6%) communities. Deciduous swamp accounts for 42% of the evaluated wetland area whereas other areas are dominated by conifers (16%), tall shrubs (17%), and low shrubs (20%). Approximately 60% of this wetland complex is situated on mineral soils and 40% is situated on organic soils.

4.1.14 Farmington Swamp

Located in Amaranth Township, this 47 hectare wetland complex consists of 3 evaluated wetland units that range from 0.7 ha to 42 ha in size and has a total catchment measuring approximately 2 km². A 4.6 hectare wetland unit occurs within the Nottawasaga River subwatershed. The remaining portions are closely associated with the Wolfe Drain, which flows south toward the Mud Lake Wetland Complex. The wetland complex comprises a mix of swamp (96%) and marsh (4%) communities. Mature deciduous swamp accounts for a majority (57%) of the complex area. Much of the wetland area (75%) is situated on mineral soils and a smaller portion is situated on organic soils. It appears that the smallest wetland unit located on the east side of County Road 11 has been eliminated through normal farming practices. Provincially significant species (snapping turtle) and a variety of furbearers (muskrat, beaver, mink, fox, and eastern coyote) have been documented here historically. Additional wetland areas within the vicinity of this complex remain unevaluated.

4.1.15 Jessopville North Wetland

Located in Melancthon Township, this evaluated wetland consists of a single evaluated wetland unit measuring 46 hectares. Additional unevaluated wetland area has been mapped within the vicinity by the Province and the

GRCA. The wetlands provide flow to the Mather Drain, which flows east toward the McNabb Drain. Both drains have permanent flow and contain sensitive fish species. The wetland evaluation record for this wetland was not available from the Province.

4.1.16 Maple Grove Bog

Located in Amaranth Township, this 300 hectare wetland complex consists of 7 individual wetland units ranging from 3.2 ha to 129 ha in size and has a total catchment size of approximately 29 km². Additional unevaluated wetland area has been mapped within the vicinity by the Province and the GRCA. Several municipal drains have been established within and downstream of this wetland. These drains provide intermittent or permanent outflow. Several roads and at least one private laneway bisect the wetland complex. The wetland complex comprises a mix of swamp (85%), bog (10%), and fen (5%) communities. Much of the wetland area (95%) is situated on organic soils. Provincially significant species observed within the vicinity of the wetland include snapping turtle and Henslow's sparrow. Furbearers observed here include muskrat, beaver, mink, fox, and eastern coyote. Portions of the wetland complex are found on 3 GRCA properties (Young Tract, Amaranth Tract, and Amaranth Source Area).

4.1.17 Maple Grove North Wetland Complex

Located in Melancthon Township, this 45 hectare wetland complex consists of 2 evaluated wetland units measuring 35 ha and 11 ha. Additional unevaluated wetland area has been mapped within the vicinity by the Province and the GRCA. The larger wetland unit is connected to the Henry Drain, which flows continuously but contains no sensitive fish species. This wetland unit and a 1.1 km section of drain occur on the Carrow Tract, which is owned and managed by the GRCA. The wetland evaluation record for this wetland was not available.

4.1.18 Maple Grove Northwest Wetland

Located in Melancthon Township, this evaluated wetland consists of a single evaluated wetland unit measuring 19 hectares. Additional unevaluated wetland has been mapped within the vicinity by the Province and the GRCA. The wetland evaluation record for this wetland was not available.

4.1.19 Melancthon Wetland Complex #2

Located in Melancthon (Dufferin County) and Southgate (Grey County) Townships, this 194 hectare wetland complex consists of 5 evaluated wetland units ranging in size from 16 to 60 hectares, and has a total catchment measuring 10.4 km². Additional unevaluated wetland has been mapped within the vicinity by the Province and the GRCA but is not considered to be part of this complex. Portions of the wetland contain municipal drains, which flow toward the Grand River. The wetland is bisected by several roads. Portions of the wetland are owned and managed by the GRCA (Southgate and Keldon Source Area properties). The wetland complex comprises mineral swamp (95%) and mineral marsh (5%) communities.

4.1.20 Riverview Swamp

Only a small portion (19%) of this wetland complex is located within the Upper Grand River subwatershed. Remaining portions are located within the Saugeen River subwatershed. Additional unevaluated wetland area has been mapped within the vicinity by the Province and the GRCA. Two provincially significant bird species, eastern meadowlark and bobolink, have been documented within the vicinity of this wetland complex. A full wetland evaluation record was not available from the Province.

4.1.21 Willow Brook Swamp

Located in Amaranth and Melancthon Townships, this 662 hectare wetland complex consists of 8 individual wetland units ranging from 1.03 ha to 502 ha in size, and has a total catchment size of approximately 31 km². The wetland complex comprises organic swamp (99%) and organic marsh (1%) communities. Deciduous swamp communities account for roughly 75% of the evaluated wetland area whereas the remaining 25% contains communities dominated by tall shrubs, conifers, and robust emergent vegetation. Approximately 25% of the complex lies outside the Grand River watershed and drains toward the Nottawasaga River, a tributary of Lake Huron. Additional unevaluated wetland area has been mapped within the vicinity by the Province and the GRCA. Several municipal drains have been established within and downstream of this wetland complex. These drains flow intermittently to permanently. Permanently flowing sections provide cold water habitat suitable for brook trout and brown trout. Redside dace, a nationally and provincially threatened species, historically occurred within some drain sections. Several roads and at least one private laneway bisect the wetland complex. Snapping turtle, a species of special concern, and a variety of furbearers (muskrat, beaver, mink, fox, and eastern coyote) have been observed within or adjacent to the wetland. Historically, eastern massassauga had been reported within the general vicinity of the wetland complex but the species has not been reported here since 1962. A portion of the swamp is located on the GRCA's Lama Tract.

4.2 Woodlands

Woodlands are defined by the Province as treed areas that provide environmental and economic benefits to both private landowners and the general public. These benefits include erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products (OMMAH 2020). Woodlands can include forests, woodlots, plantations, and swamps. Woodlands vary in their level of significance at the local, regional, and provincial levels. Woodlands may be delineated and mapped in accordance with Ontario Forestry Act protocols or in accordance with the Ecological Land Classification System for Southern Ontario definition of "forest" (see Lee et al. 1998).

The woodland layer used in this subwatershed analysis was derived from the Southern Ontario Land Resource Information System (SOLRIS). The classification of woodlands into smaller vegetation units was not within the scope of the current analysis. The terms woodland and forest are used interchangeably in this report. Interior forests are defined as those portions of the woodland in excess of 100 m from the woodland edge.

Woodlands cover 12,158 hectares or approximately 15% of the Upper Grand River subwatershed, which is slightly below the Grand River watershed total of 16% forest cover. Approximately 1,335 hectares, or roughly 11% of the total forested area within this subwatershed, is considered interior forest (see Table 5 & Figures 11 and 12). Just over 20% of the subwatershed's forest is located on GRCA-owned land. This is significant given that only 7% of the total forest cover across the entire Grand River watershed is owned and managed by the GRCA.

Table 5. Woodland Cover within the Upper Grand River Subwatershed

Subwatershed Area	79,124 ha or 791 km ²
Total Forest Cover	12,158 ha or 122 km ² (15% of subwatershed area)
Interior Forest Cover (100 metres from edge)	1,335 ha or 14 km ² (11% of total forest, 2% of subwatershed)
Jurisdictions where significant woodland has been identified and mapped	Wellington County, Grey County

As illustrated in Figure 11, many woodlands in the central portions of this subwatershed are fragmented and isolated from each other. Like many areas of the Grand River watershed, a significant portion of the woodlands in the Upper Grand River are associated with large wetland complexes. Large forest and wetland complexes found in the northeastern end of the subwatershed are associated with the Melancton Wetland Complex. Large and contiguous woodlands along the western edge are associated with the Keldon Swamp, which is connected to the Luther Marsh Wetland Complex. Within the southeast portion of the subwatershed just west of Orangeville, woodlands are associated with the Mud Lake Wetland Complex. A wide band of riparian forest connects Mud Lake Wetland to the Grand River. The Grand River corridor is also buffered by forests between Waldemar and Belwood Lake in the southernmost portion of this subwatershed. By contrast, riparian forest cover is considerably more fragmented north of Waldemar.

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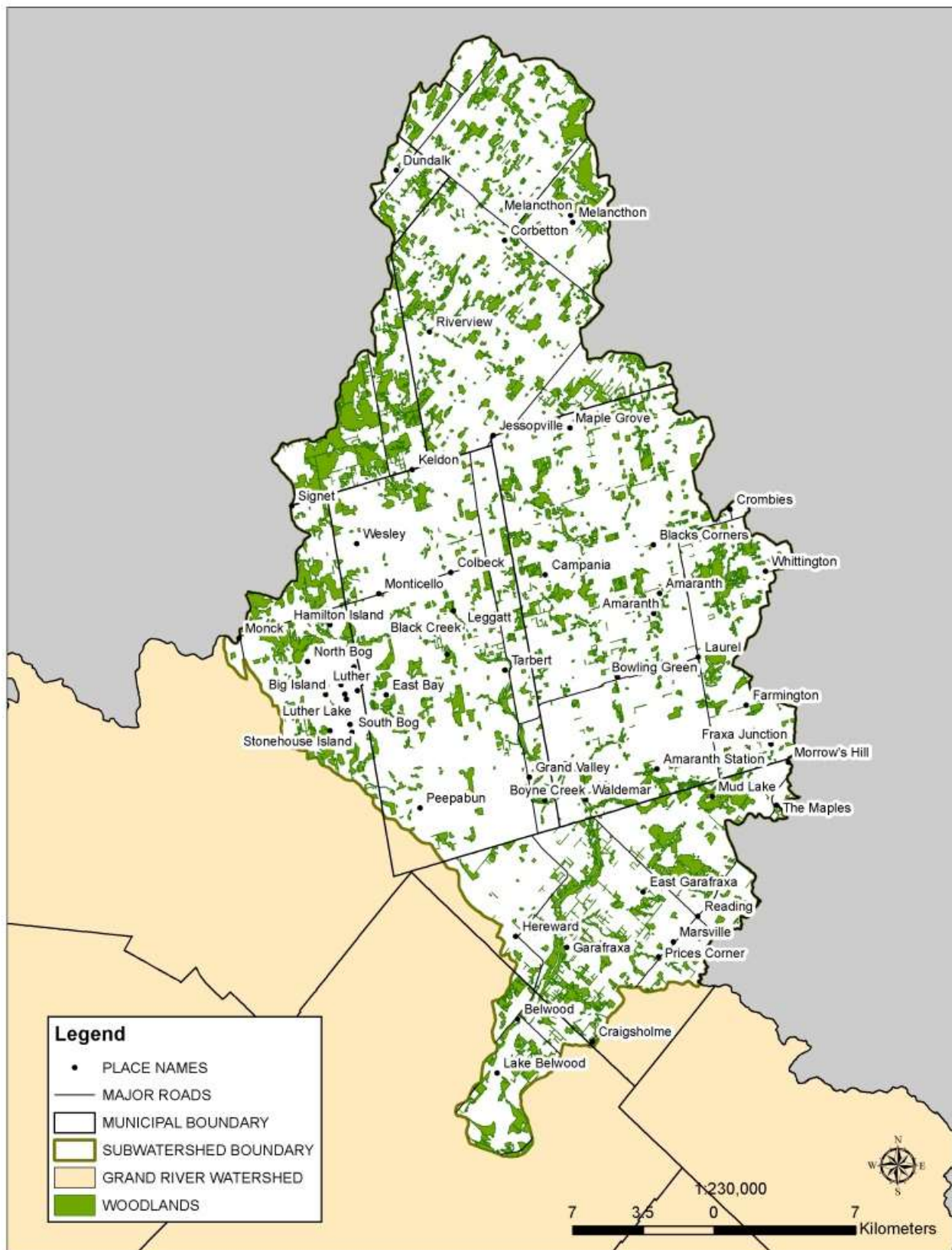


Figure 11. Woodland Cover within the Upper Grand River Subwatershed (includes treed wetlands)

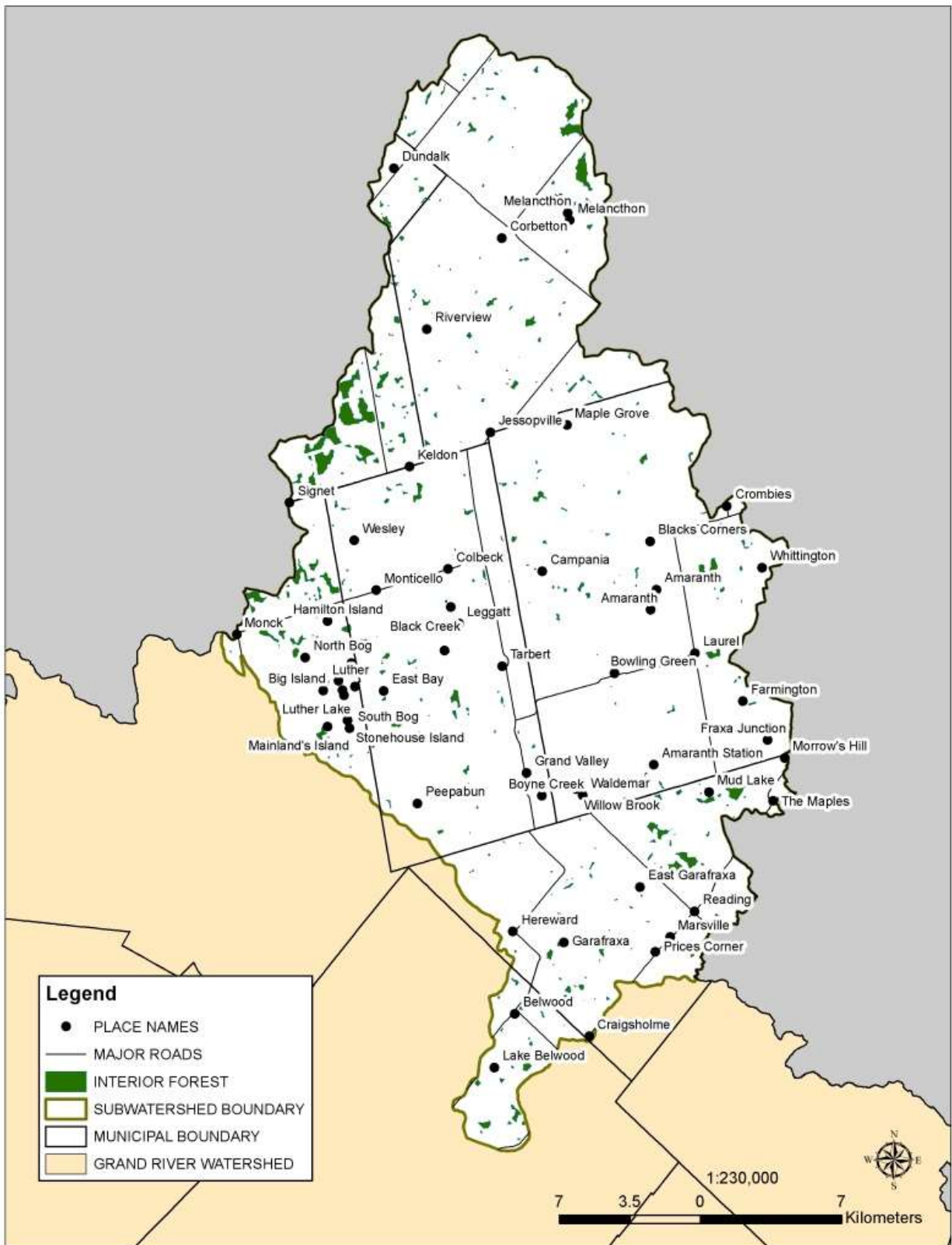


Figure 12. Interior Forest within the Upper Grand River Subwatershed (includes treed wetlands)

The province identifies significant woodlands as an area that is ecologically important in terms of features such as species composition, age of trees and stand history. A significant woodland may also be functionally important due to its contribution to the broader landscape, because of its location, size, and/or the amount of forest cover in the planning area. A significant woodland may also be economically important owing to site quality, species composition, or past management history. Significant woodlands may be identified using standardized criteria established by the Province (see OMMAH 2020, OMNR 2010).

Dufferin County's Official Plan does not include criteria to help determine woodland significance. The County plans to establish criteria when a natural heritage system strategy is being undertaken. In the interim, determination of significance is based on criteria provided in the Natural Heritage Reference manual and in local municipal official plans.

Woodlands have been inventoried and assessed in Wellington County using various ecological criteria (see Eagles et al. 1976, Elrich et al. 1977). Woodlands have also been identified as part of a larger and connected natural heritage system within the county (see GRCA 2018b). According to the current Official Plan for the County of Wellington, rural woodlands over 4 hectares in size and urban woodlands over 1 hectare are considered to be significant by the County, and are included in the County's Greenlands System. Rural plantations over 10 hectares are also considered to be significant by the County. Exceptions may include plantations established and continuously managed for the sole purpose of complete removal and without a reforestation objective, as demonstrated with documentation acceptable to the County.

Section 7.4 of Grey County's Official Plan defines significant woodlands as those greater than or equal to forty (40) hectares in size outside of settlement areas, or greater than or equal to four (4) hectares in size within settlement area boundaries. Smaller woodlands can also be significant if they meet any two of the following three criteria:

- a. Proximity to other woodlands i.e. if a woodland was within 30 metres of another significant woodland, or
- b. Overlap with the boundaries of a Provincially Significant Wetland and Significant Coastal Wetlands, Core Area, Significant Valleylands, or an Area of Natural and Scientific Interest, or
- c. Interior habitat of greater than or equal to eight (8) hectares, with a 100 metre interior buffer on all sides.

Significant woodlands were identified and assessed by NRSI (2017) and are mapped in Appendix B of Grey County's updated Official Plan, which was approved in 2019.

As stated earlier, significant woodlands may overlap or be contiguous with Provincially or Locally Significant Wetlands (see Section 4.1 above) or provincially designated Areas of Natural and Scientific Interest (ANSIs), which are discussed in the following section.

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4.3 Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interests, or ANSIs, are defined by the province as “an area of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.” The best representative sites outside of national parks, provincial parks, or conservation reserves are considered to be provincially significant ANSIs. Other sites that are considered to be the next best examples of a representative ecological or geological unit, landform, or community are identified as regionally significant or locally significant ANSIs (OMNR 2010).

Seven (7) ANSIs designated by the OMNRF are represented within the Upper Grand River subwatershed area. Four of these are provincially significant earth science ANSIs, and three have been designated as being a regionally significant life science ANSI. All ANSIs identified by the Province are listed in Table 6 and illustrated in Figure 13. A summary of each ANSI is also provided below based on information obtained from the OMNRF.

Table 6. ANSIs Represented Wholly or Partially within the Upper Grand River Subwatershed

ANSI Name	ANSI Type	Significance	Total Size (ha)	Total Area within Grand River Watershed (ha)	Total Area within Upper Grand River Subwatershed (ha)
Caledon Meltwater Channel West	Earth	Regional	227	227	227
Egerton Esker	Earth	Regional	309	246	246
Grand River Valley	Life	Regional	277	277	277
Hatherton Wetlands	Life	Provincial	2449	2	2
Keldon Esker	Earth	Provincial	97	93	93
Luther Marsh	Life	Provincial	3935	3826	3826
Tarbert Drift	Earth	Regional	1	1	1

4.3.1 Caledon Meltwater Channel West

Caledon Meltwater Channel West is a regional earth science ANSI. The ANSI lies south of Highway #9, approximately 5 kilometers west of the Town of Orangeville. It follows a former east to west meltwater channel which is occupied by wetlands and a small lake (Mud Lake).

The ANSI consists of portions of the Caledon Lake-Waldemar meltwater channel and surrounding glaciofluvial deposits. The glaciofluvial materials include outwash and a higher area of ice-contact stratified drift. At least three small kettle lakes are found on the outwash plain and meltwater terraces are cut into the edges of the glaciofluvial deposits.

The ANSI is ranked as regionally significant. Although it represents a key stage in the Port Bruce stadial and is the only site containing the meltwater event following formation of the Orangeville Moraine, the ANSI does not include sufficient representation nor is it likely the best locality for the highest scientific and interpretive values for the Caledon Lake-Waldemar meltwater channel.

4.3.2 Egerton Esker

The Egerton Esker, one of the two Luther Marsh Eskers, is a regionally significant earth science ANSI. The second esker is the Mount View esker, which is found in the Conestogo River subwatershed. These two esker segments are representative of those deposited by the Tavistock ice which moved out of the Georgian Bay basin during the Port Bruce Stadial. Single esker ridges are found at several locations and an esker outwash delta is found in the northwest corner of Luther Marsh.

4.3.3 Grand River Valley

The Grand River Valley ANSI is a regional life science ANSI. A report for this ANSI is currently not available.

4.3.4 Hatherton Wetlands

The Hatherton Wetlands ANSI is a provincial life science ANSI. The wetland is characterized by a mixed and coniferous lowland swamp on muck deposits. It is characterized by a mixed forest esker and several cleared drumlins. A large bog, approximately 160 hectare in size and dominated by low shrubs, as well as treed areas and several smaller bogs, occupies the center of the area. The Hatherton Wetland Complex is smaller and less diverse than the Luther Marsh complex but is still large and diverse wetland, comprising a variety of habitats. The Hatherton Bog is smaller than Wylde Lake Bog and it also lacks open water.

4.3.5 Keldon Esker

The Keldon Esker ANSI is a provincial earth science ANSI. The area features a long, slightly discontinuous, primarily single ridge feature from Keldon on Highway 89 at the south end of Proton Township northwest to the Saugeen River near the township's northern boundary. Across this length, the Esker appears in four segments. The esker formed during the Port Bruce Stadial, which, in this area, involved a number of advances associated with the combined Huron-Georgian Bay Lobe.

4.3.6 Luther Marsh

Luther Marsh ANSI is a provincial life science ANSI. A report for this ANSI is currently not available.

4.3.7 Tarbert Drift

The Tarbert Drift ANSI is a regional earth science ANSI. It is an ice-contact stratified drift over an area of isolated kames or minor recessional moraine deposits indicating stagnant conditions during retreat of the Georgian Bay ice lobe during the Port Bruce Stadial. Sediments through the Drift consist of a thin veneer of sand and gravel over the Tavistock Till ground. The Tarbert Drift is integral part of the deglaciation history of the Orangeville area.

Retreat of the Tavistock ice from the Orangeville Moraine halted near Tarbert, producing a meltwater channel indicating an ice-marginal position. The present day Grand River now flows in a valley that was once this meltwater channel.

Only a very small area of outwash in the southwestern part of the site has been designated as a sand and gravel resource of primary significance.

4.4 Significant Valleylands

Valleylands are defined by the province as natural areas that occur in a valley or other landform depression that has water flowing through or standing for some period of the year. A significant valleyland is ecologically important in terms of its features, functions, representation or amount, and ability to contribute to the quality and diversity of an identifiable geographic area or natural heritage system (OMMAH 2020). Significant valleylands may be designated using the technical guidelines outlined in Section 8 of the Natural Heritage Reference Manual (OMNR 2010).

Some valleylands are more well-defined than others. For example, steep valleylands with flows occurring overland through incised streams and rivers are more well-defined than valleylands where flows originate from springs, seepage zones or wetlands. Well-defined valleylands can be delineated along a stable top-of-bank whereas less well-defined valleylands can be delineated using a combination of proxy boundaries such as riparian zones, flood hazard limits, the meander belt of the watercourse, and/or the highest elevation of seasonal inundation (OMNR, 2010).

Grey County, in consultation with participating Conservation Authorities, identified and mapped significant valleylands as part of the County's Natural Heritage System Study (see NRSI 2017). Significant valleylands were mapped as 200m wide corridors (100m from the watercourse centerline). Detailed delineation of significant valleylands was beyond the scope of this study but can be done on a site specific basis using the following criteria identified during this study:

- The valley must be ≥ 100 m wide and ≥ 2 km long.
- The valley banks must be ≥ 3 m in height (extrapolated from 5m contours at 1:10,000 or better information where available).
- Where valley slope is 3:1 on one side with no slope on the opposite side of the watercourse, the opposite valley limit is delineated using either 100m from centreline of the watercourse or the limit of the floodplain to create a continuous valley feature.
- Where 3:1 valley slopes occur on both sides of the river, but they are not continuous, the floodplain limit (or contour information and professional judgment) is used to delineate a continuous valley feature.

Significant valleylands are illustrated in map 5 of the County's Natural Heritage System Study (NRSI 2017). Although the Upper Grand River subwatershed contains a very small portion of Grey County, the County's significant valleyland criteria may be also applicable in other portions of this subwatershed.

The Wellington County Natural Heritage System considers valleylands that provide ecological and/or hydrological functions but these areas are not mapped (see GRCA 2018).

The Grand River and many of the first order tributaries provide significant surface water functions, including water conveyance, attenuation, storage, and release. Springs, seepage areas, and wetlands associated with the main river valley and its smaller tributaries may also provide significant groundwater recharge and discharge functions. Further analysis is required to confirm to what extent these criteria are met within this subwatershed.

4.5 Significant Species

According to best information available to the GRCA, a total of 38 provincially significant species tracked by the Province (28 birds, 6 reptiles, 3 plants, and 1 damselfly) have been recorded in the Upper Grand River subwatershed (see Table 7). Of these species, 31 have been formally assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO) and are afforded legal protection in accordance with Ontario's Endangered Species Act (ESA). Twenty nine (29) species have been assessed separately by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are afforded legal protection in Canada in accordance with the Species at Risk Act (SARA).

As noted in Table 7, several species documented by the NHIC have not been observed within the last 20 years and are possibly or probably extirpated from this area. It is also conceivable that there has been a lack of recent survey work or reporting and that species such as Blanding's turtle and spotted turtle are still present in this watershed but have not been detected. Henslow's sparrow and yellow-breasted chat have not been seen in recent years despite repeated survey work. Habitat restoration efforts may improve habitat conditions and benefit these and many other significant species listed in this report.

A subwatershed checklist of significant species and their conservation status as of 2020 is presented in Table 7 below. Additional information and range maps for provincially listed Species at Risk may be found on the List of Species at Risk in Ontario, which is maintained by the Ontario Ministry of Environment, Conservation, and Parks (OMECF 2019).

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Table 7. Provincially Significant Species Recorded within the Upper Grand River Subwatershed

Common Name	Scientific Name	Provincial Rank ¹	Provincial Status ²	Federal Status ³	Source	Last Known Observation	Habitat still present
Plants							
Black Ash	<i>Fraxinus nigra</i>	S4	No Status	Threatened ⁴	GRCA 2019	2011	Yes
Emmons' White-tinged Sedge	<i>Carex albicans</i> var. <i>emmonsii</i>	S2	No Status	No Status	NHIC 2013	2004	?
Great Plains Ladies'-tresses	<i>Spiranthes magnicamporum</i>	S3	No Status	No Status	NHIC 2013	2012	?
Birds ⁵							
American White Pelican	<i>Pelecanus erythrorhynchos</i>	S2	Threatened	Threatened	eBird, 2020	2013	Yes
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2N, S4B	Special Concern	No Status	eBird 2020	2020	Yes
Bank Swallow	<i>Hirundo rustica</i>	S4	Threatened	Threatened	eBird 2020	2019	Yes
Barn Swallow	<i>Hirundo rustica</i>	S4B	Threatened	Threatened	eBird 2020	2019	Yes
Black Tern	<i>Chlidonias niger</i>	S3B	Special Concern	Special Concern	eBird 2020	2019	Yes
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	Threatened	Threatened	eBird 2020	2019	Yes
Canada Warbler	<i>Cardellina canadensis</i>	S4	Special Concern	Threatened	eBird 2020	2019	Yes
Chimney Swift	<i>Chaetura pelagica</i>	S4	Threatened	Threatened	eBird 2020	2019	Yes
Common Nighthawk	<i>Chordeiles minor</i>	S4	Special Concern	Threatened	eBird 2020	2019	Yes
Eastern Meadowlark	<i>Sturnella magna</i>	S4	Threatened	Threatened	eBird 2020	2019	Yes
Eastern Wood-Pewee	<i>Contopus virens</i>	S4	Special Concern	Special Concern	eBird 2020	2019	Yes
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4	Special Concern	Special Concern	eBird 2020	2019	Yes
Golden Eagle	<i>Aquila chrysaetos</i>	S2	Endangered	Not At Risk	eBird 2020	2019	Yes
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4	Special Concern	Threatened	eBird 2020	2019	Yes
Great Egret	<i>Ardea alba</i>	S2	No Status	No Status	eBird 2020	2019	Yes
Henslow's Sparrow	<i>Ammodramus henslowii</i>	SHB	Endangered	Endangered	eBird 2020	1986	Yes
Horned Grebe	<i>Podiceps auritus</i>	S1	Special Concern		eBird 2020	2019	Yes
Least Bittern	<i>Ixobrychus exilis</i>	S4B	Threatened	Threatened	eBird 2020	2019	Yes
Loggerhead Shrike	<i>Lanius ludovicianus</i>	S2B	Endangered	Endangered	eBird 2020	1986	?
Northern Bobwhite	<i>Colinus virginianus</i>	S1	Endangered	Endangered	eBird 2020	2005	Yes
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S4	Threatened	Threatened	eBird 2020	2019	Yes
Peregrine Falcon	<i>Falco peregrinus</i>	S3	Special Concern	Special Concern	eBird 2020	2019	Yes
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4	Special Concern	Threatened	eBird 2020	2019	Yes
Red-necked Grebe	<i>Podiceps grisegena</i>	S3B, S4N	No Status	Not At Risk	eBird 2020	2019	Yes
Rusty Blackbird	<i>Euphagus carolinus</i>	S4	Special Concern	Special Concern	eBird 2020	2019	Yes
Short-eared Owl	<i>Asio flammeus</i>	S2N, S4B	Special Concern	Special Concern	eBird 2020	2016	Yes
Wood Thrush	<i>Hylocichla mustelina</i>	S4	Special Concern	Threatened	eBird 2020	2019	Yes
Yellow-breasted Chat	<i>Icteria virens</i>	S2B	Endangered	Endangered	NHIC 2013	1983	Yes

Herpetofauna							
Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	Threatened	Threatened	NHIC 2013	1988	Yes
Butler's Gartersnake	<i>Thamnophis butleri</i>	S2	Endangered	Endangered	GRCA 2019	2018	Yes
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	S3	Special Concern	Special Concern	NHIC 2013	1997	Yes
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	No Status	Special Concern ⁴	GRCA 2019	2019	yes
Snapping Turtle	<i>Chelydra serpentina</i>	S3	Special Concern	Special Concern	GRCA 2019	2019	Yes
Spotted Turtle	<i>Clemmys guttata</i>	S3	Endangered	Endangered	NHIC 2013	2012	Yes
Odonata							
Painted Skimmer	<i>Libellula semifasciata</i>	S2	No Status	No Status	NHIC 2013	2004	?

¹Natural Heritage Information Centre 2013, ²Endangered Species Act 1997, O. Reg. 139/14, s. 2, ³Federal Species at Risk Act 2002 (Schedules 1-3), ⁴Assessed by COSEWIC but has not been given legal status (not currently listed on Schedule 1), ⁵Includes breeding and non-breeding species

4.6 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) is identified by the province as a natural heritage area for the purposes of implementing Section 2.1 of the Provincial Policy Statement (PPS). The Natural Heritage Reference Manual (OMNRF 2010) and the Significant Wildlife Habitat Technical Guide (OMNRF 2000) were prepared by the Ontario Ministry of Natural Resources and Forestry to assist planning authorities and others involved in land use planning and the protection of natural heritage systems in the province. According to the SWHTG, *wildlife* is described as “all wild mammals, birds, reptiles, amphibians, fishes, invertebrates, plants, fungi, algae, bacteria and other wild organisms” (Ontario Wildlife Working Group 1991).

The province defines *wildlife habitat* as:

“areas where plants, animals, and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle, and areas which are important to migratory or non-migratory species”.

Wildlife habitat is considered *significant* where it is:

“ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System. Criteria for determining significance may be recommended by the Province but municipal approaches that achieve or exceed the same objective may also be used” (PPS 2020).

The 4 general categories of SWH identified by the Province are listed and defined in Table 8 below. Subcategories of SWH are defined in greater detail in the SWHTG (OMNRF 2000). Habitat and species criteria are outlined in Ecoregion Schedules (OMNRF 2015). Candidate SWH is identified according to the Ecological Land Classification (ELC) System for Southern Ontario (see Lee et al. 1998). SWH is confirmed only when target species are known to be present within specific ELC vegetation types.

Table 8. Significant wildlife habitat categories and their definitions. Specific criteria for each sub-category are outlined in the Significant Wildlife Habitat Technical Guide and Ecoregion Schedule 6E (see OMNRF 2000, 2015).

Category	Definition
Seasonal Concentration Areas <ul style="list-style-type: none"> ➤ Waterfowl Stopover and Staging Areas ➤ Shorebird Migratory Stopover Areas ➤ Raptor Wintering Areas ➤ Bat Hibernacula ➤ Bat Maternity Colonies ➤ Turtle Wintering Areas ➤ Reptile Hibernacula ➤ Colonial Nesting Bird Habitats ➤ Deer Winter Congregation Areas 	<p>These areas contain large numbers or concentrations of 1 or more wildlife species annually and usually at certain times of the year, sometimes within relatively small areas. Examples include deer wintering areas, breeding bird colonies, and hibernation sites for reptiles, amphibians, and bats.</p>
Rare Vegetation Communities <ul style="list-style-type: none"> ➤ Cliff and Talus Slopes ➤ Alvars ➤ Old Growth Forests ➤ Savannah ➤ Tallgrass Prairie <p>or</p> Specialized Habitat for Wildlife <ul style="list-style-type: none"> ➤ Waterfowl Nesting Areas ➤ Bald Eagle and Osprey Nesting, Foraging and Perching Habitat ➤ Woodland Raptor Nesting Habitat ➤ Turtle Nesting Areas ➤ Seeps and Springs ➤ Amphibian Breeding Habitat ➤ Area-sensitive Bird Breeding Habitat 	<p>Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. Rare vegetation species and communities are identified by the Natural Heritage Information Centre using a ranking procedure developed by The Nature Conservancy. Some wildlife species require large areas of suitable wintering and breeding habitat for their long-term survival. Wildlife populations also tend to decline when habitat becomes fragmented and reduced in size. The more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife.</p>
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species) <ul style="list-style-type: none"> ➤ Marsh Breeding Bird Habitat ➤ Open Country Bird Breeding Habitat ➤ Shrub/Early Successional Bird Breeding Habitat ➤ Terrestrial Crayfish 	<p>This habitat includes wildlife species that are listed as Special Concern, are ranked as being rare, that are declining, or are featured species. Such habitats do not include habitats of Endangered or Threatened species as identified by the Endangered Species Act 2007.</p>
Animal Movement Corridors <ul style="list-style-type: none"> ➤ Amphibian Movement Corridors ➤ Deer Movement Corridors 	<p>These areas tend to be elongated areas used by wildlife to move from one habitat to another. They are important to ensure genetic diversity within populations, to allow seasonal migration of animals (e.g. deer moving from summer to winter range), and to allow animals to move throughout their home range from feeding areas to cover areas. Animal movement corridors function at different scales often related to the size and home range of the animal. For example, short, narrow areas of natural habitat may function as a corridor between amphibian breeding areas and their summer range, while wider, longer corridors are needed to allow deer to travel from their winter habitat to their summer habitat.</p> <p>Identifying the most important corridors that provide connectivity across the landscape is challenging because of a lack of specific information on animal movements. There is also some uncertainty about the optimum width and mortality risks of corridors. Furthermore, a corridor may be beneficial for some species but detrimental to others. For example, narrow linear corridors may allow increased access for raccoons, cats, and other predators. Also, narrow corridors dominated by edge habitat may encourage invasion by weedy generalist plants and opportunistic species of birds and mammals. Corridors often consist of naturally vegetated areas that run through more open or developed landscapes. However, sparsely vegetated areas can also function as corridors. For example, many species move freely through agricultural land to reach natural areas. Despite the difficulty of identifying exact movement corridors for all species, these landscape features are important to the long-term viability of certain wildlife populations.</p>

The identification of core natural heritage features such as significant wetlands, ANSIs, and other locally significant woodlands has facilitated the identification of Significant Wildlife Habitat. In addition, areas that are known to contain provincially significant species (see Table 7 in section 4.5) would also be considered SWH. A full and detailed assessment of SWH is beyond the scope of this report. However, it is worth noting that SWH is increasingly identified as part of the subwatershed and development planning process as well as through municipal-based natural heritage inventories and assessments (e.g. NRSI 2017).

Deer wintering sites identified by the Province and that are not contained within other designated areas are illustrated on Figure 13. Gull and great blue heron breeding colonies are confirmed at Belwood Lake CA and Luther Marsh Wildlife Management Area, respectively.

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5.0 Natural Heritage System Summary

The province defines a natural heritage system as “a system made up of natural heritage features and areas which are linked by natural corridors and which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems. These systems can include lands that have been restored and areas with the potential to be restored to a natural state (OMMAH 2020). Section 2.1.2 of the Provincial Policy Statement further states that *“the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.”* This report provides information and mapping that may help local planning authorities, including the GRCA, meet this policy objective.

Natural heritage features identified and mapped within the Upper Grand River subwatershed include the following:

- 1,128 km of watercourse, of which 50 km is classified as cold water, 193 km is classified as cool water, and another 127 km is classified as warm water habitat by the Province
- 14,568 ha total wetland cover, of which 10,567 ha is evaluated, 9,102 ha is provincially significant, and another 4,001 ha remains unevaluated
- 12,158 ha of forest, including 1,335 ha of interior forest habitat
- 7 Areas of Natural and Scientific Interest totalling 4,672 ha, including woodlands and wetlands
- 38 provincially significant species, including 31 Provincially-listed and 28 Federally-listed Species at Risk

Designated natural heritage areas are illustrated in Figure 13. Areas designated by the Province include Provincially Significant Wetlands (PSWs) and Life Science Areas of Natural and Scientific Interest (ANSIs). Greenlands are identified by the County of Wellington. Winter deer yards identified by the Province and GRCA properties are also mapped.

A more connected natural heritage system that incorporates aquatic, wetland, and terrestrial features is illustrated on Figure 14. This map is a composite image of the following GIS layers:

- Wetlands, watercourses, and floodplains identified and mapped by the GRCA
- Woodlands identified and mapped by the OMNRF

This map demonstrates that the natural heritage system within the Upper Grand River Subwatershed varies from being represented by large natural areas and higher connectivity in some areas (e.g. Luther Marsh, Keldon Source areas, Melancthon Wetland Complex, Compania Wetland Complex, Mud Lake Wetland Complex, and

Whittington Wetland Complex) to being represented by smaller, more isolated natural areas that are highly fragmented by agricultural areas and villages.

This map excludes Provincially designated Earth Science ANSIs. Also excluded are habitats such as grasslands and meadows, which have not been uniformly inventoried or mapped within the subwatershed but which may provide critical or supporting functions such as groundwater recharge and habitat for grassland species of conservation concern.

A comparison of Figure 13 and 14 demonstrates that provincially designated areas capture only a portion of the natural heritage system and by themselves are insufficient to protect the full suite of hydrological and ecological functions that are present across this landscape. The mapping presented in this report is limited in that it does not necessarily identify all areas that have been deemed locally significant by various municipalities and that may also be afforded some level of protection. The mapping also does not identify critical buffer zones that may provide supporting ecological or hydrological functions. The mapping does not identify significant groundwater recharge areas or other natural hazard areas (e.g. erosion slopes) that have been mapped by the GRCA and which may contribute to the overall importance of the natural heritage system.

The core areas and linkages illustrated in Figure 14 may be augmented over time as information gaps are filled and as natural areas are restored or enhanced through regulatory actions and voluntary stewardship efforts. Additional areas may also be added following the identification of Species at Risk habitat or Significant Wildlife Habitat adjacent to these core natural areas and linkages.

Additional information and mapping relevant to the identification of natural heritage systems within Wellington County and Grey County is presented elsewhere (GRCA 2018b, NRSI 2017).

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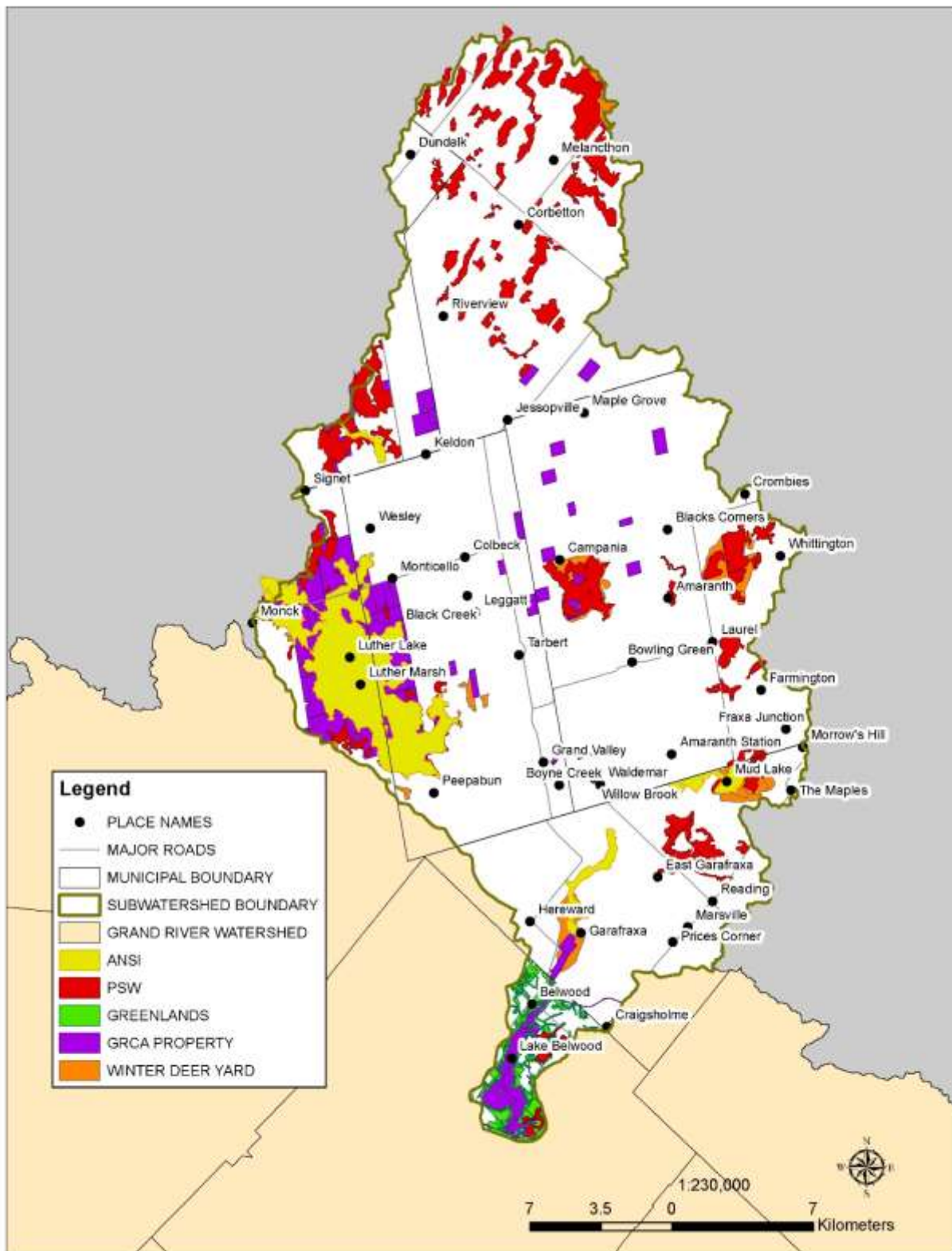


Figure 13. Designated Natural Heritage Areas in the Upper Grand River Subwatershed

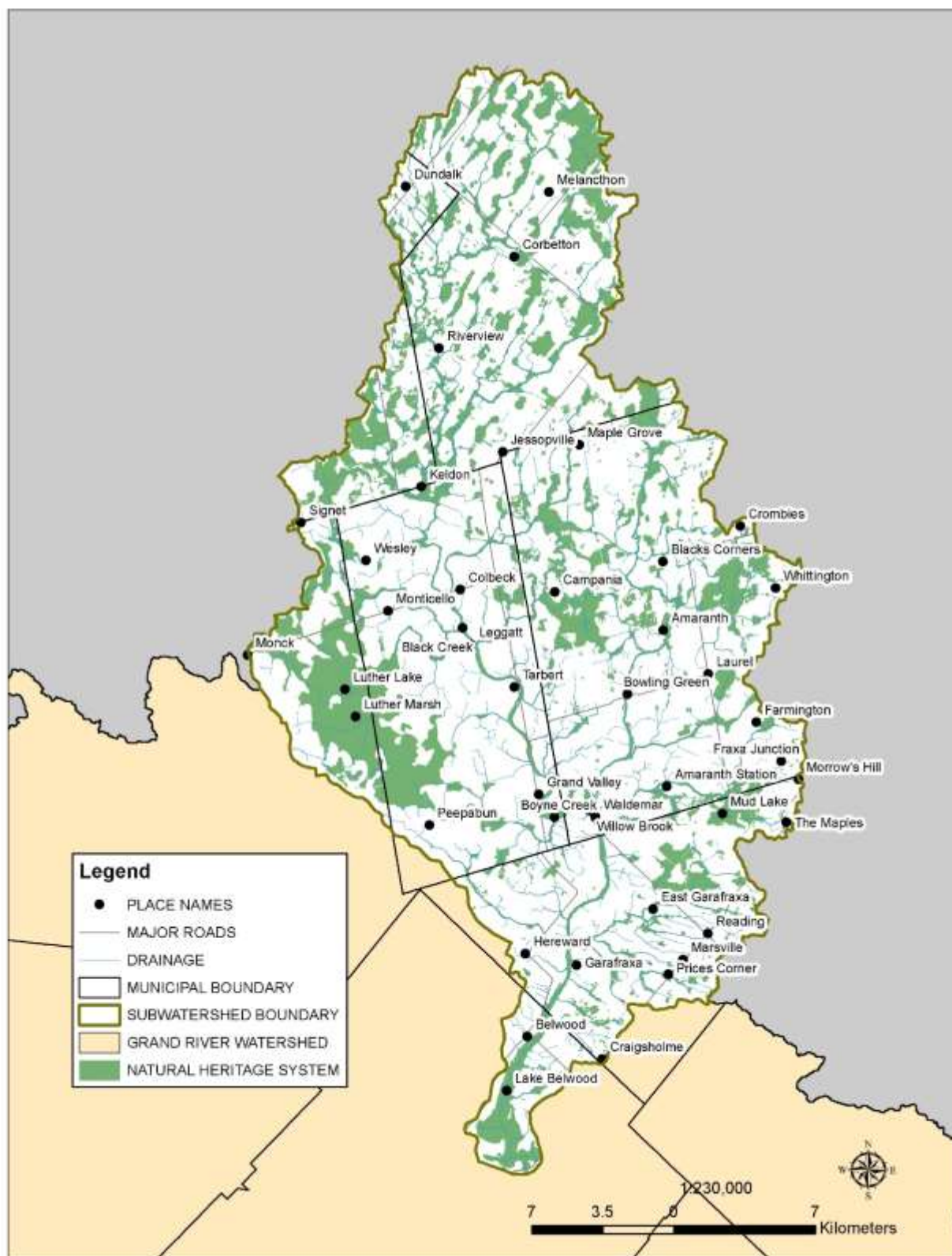


Figure 14. Core Natural Areas and Linkages within the Upper Grand River Subwatershed

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Appendix A

Key to Species Conservation Ranks and Status

**Provincial rank as assigned by the Natural Heritage Information Centre,
Ontario Ministry of Natural Resources and Forestry**

SX (Presumed Extirpated) - Species is believed to be extirpated from Ontario. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. Equivalent to “Regionally Extinct” in IUCN Red List terminology.

SH (Possibly Extirpated) - Known from only historical records but still some hope of rediscovery. There is evidence that the species may no longer be present in Ontario but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for unsuccessfully but not thoroughly enough to presume that it is no longer present in the province.

S1 (Critically Imperiled) - At very high risk of extirpation in Ontario due to very restricted range, very few populations or occurrences (usually fewer than 5), very steep declines, severe threats, or other factors.

S2 (Imperiled) - At high risk of extirpation in the province due to restricted range, few populations or occurrences (usually fewer than 20), steep declines, severe threats, or other factors.

S3 (Vulnerable) – At moderate risk of extirpation in Ontario due to a fairly restricted range, relatively few populations or occurrences (usually fewer than 80), recent and widespread declines, threats, or other factors.

S4 (Apparently Secure) - At a fairly low risk of extirpation in Ontario due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 (Secure) - At very low or no risk of extirpation in Ontario due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

SNA (Not Applicable) – A conservation status rank is not applicable because the species is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species or ecosystems (see Master et al. 2012, Appendix A, p. 70 for further details).

SU (Unrankable) - Currently unrankable in Ontario due to lack of information or due to substantially conflicting information about status or trends.

Breeding Qualifiers

B (Breeding) - Conservation status refers to the breeding population of the species in the province

N (Non-breeding) – Conservation status refers to the non-breeding population of the species in the province.

Provincial status in accordance with Endangered Species Act, 2007, O. Reg. 139/14, s.2

Extirpated - A wildlife species that no longer exists in Ontario.

Endangered - A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

Threatened - A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

Special Concern - A species with characteristics that make it sensitive to human activities or natural events.

Data Deficient - A species for which there is insufficient information for a provincial status recommendation.

Not At Risk - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

**Federal status in accordance with Species at Risk Act 2002, Schedules 1-3,
as assigned by Environment Canada**

Extinct - A wildlife species that no longer exists in the wild in Canada.

Endangered - A wildlife species facing imminent extirpation or extinction in Canada.

Threatened - A wildlife species that is likely to become Endangered in Canada if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern - A wildlife species that may become Threatened or Endangered in Canada because of a combination of biological characteristics and identified threats.

Data Deficient - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

Not At Risk - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.



Nith River Subwatershed

Natural Heritage Characterization Report

Version 1.0



October 2020

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1.0 Introduction

The Nith River subwatershed drains approximately 1,128 km² of land within the west-central portion of the Grand River watershed. The subwatershed comprises portions of the Townships of Mapleton (Wellington County), Wellesley, Wilmot, and North Dumfries (Region of Waterloo), Perth East (Perth County), Blandford-Blenheim (Oxford County), and a small portion of Brant County (see Figure 1). Communities located here include the Towns of Ayr, Baden, New Dundee, New Hamburg, Plattsville, and Wellesley. The headwaters of the Nith River are located at the extreme north end of the subwatershed in Mapleton Township. The river flows in a southeasterly direction and joins the Grand River in the Town of Paris. A very small portion of the west side of Kitchener is contained within this subwatershed. The subwatershed contains smaller portions of the City of Waterloo and the City of Cambridge, which are mostly located to the east. The City of Brantford is located to the southeast of the subwatershed. Like many other areas within the Grand River watershed, agricultural land use is prevalent within this subwatershed. Portions of the Nith River are navigable by canoe or kayak.

The following report provides comprehensive information and mapping on the natural heritage features and functions that characterize the Nith River subwatershed. The information contained in this report is intended to complement and be read in conjunction with related watershed-wide management plans completed by the GRCA, including the Fisheries Management Plan (GRCA & OMNR 1998, 2001, 2004), the Watershed Forest Plan (GRCA 2004), and the Water Management Plan (GRWMP 2014).

The report is based on existing information and mapping that was readily available from the following digital or hardcopy sources:

- eBird, Cornell Lab of Ornithology (Sullivan et al. 2009)
- Fisheries and Oceans Canada (Aquatic Species at Risk Mapping, Status Reports, Recovery Plans)
- Grand River Characterization Report (GRCA 2008)
- Grand River Information Network (GRCA 2018)
- Grand River Fisheries Management Plan (GRCA & OMNR 1998, 2001, 2004)
- Grand River Watershed Integrated Water Budget Report (GRCA 2009)
- Grand River Watershed Forest Plan (GRCA 2004)
- Grand River Water Management Plan (GRWMP 2014)
- Natural Heritage Information Centre, Element Occurrence Database (NHIC 2013)
- Ontario Ministry of Natural Resources and Forestry, Wetland Evaluation Records (1984-2011)
- Ontario Ministry of Natural Resources and Forestry, Area of Natural and Scientific Interest Records (1979-1980)

Additional background information on the natural heritage features and functions within the Nith River subwatershed can be found in the following planning studies:

- Alder Creek Watershed Study and Upper Strasburg Creek Subwatershed Plan Update (CH2MHill & North-South Environmental Inc. 2008)
- Upper Cedar Creek Scoped Subwatershed Study (Matrix Solutions Inc. et al. 2019)

- Northwest Paris Environmental Impact Study (NRSI 2014)
- Natural Environment Level 1 & 2 Report and Hydrogeological Assessment for Aggregate License Application. Hallman Pit. (Dance Environmental Inc. 2019, Harden Environmental 2019)

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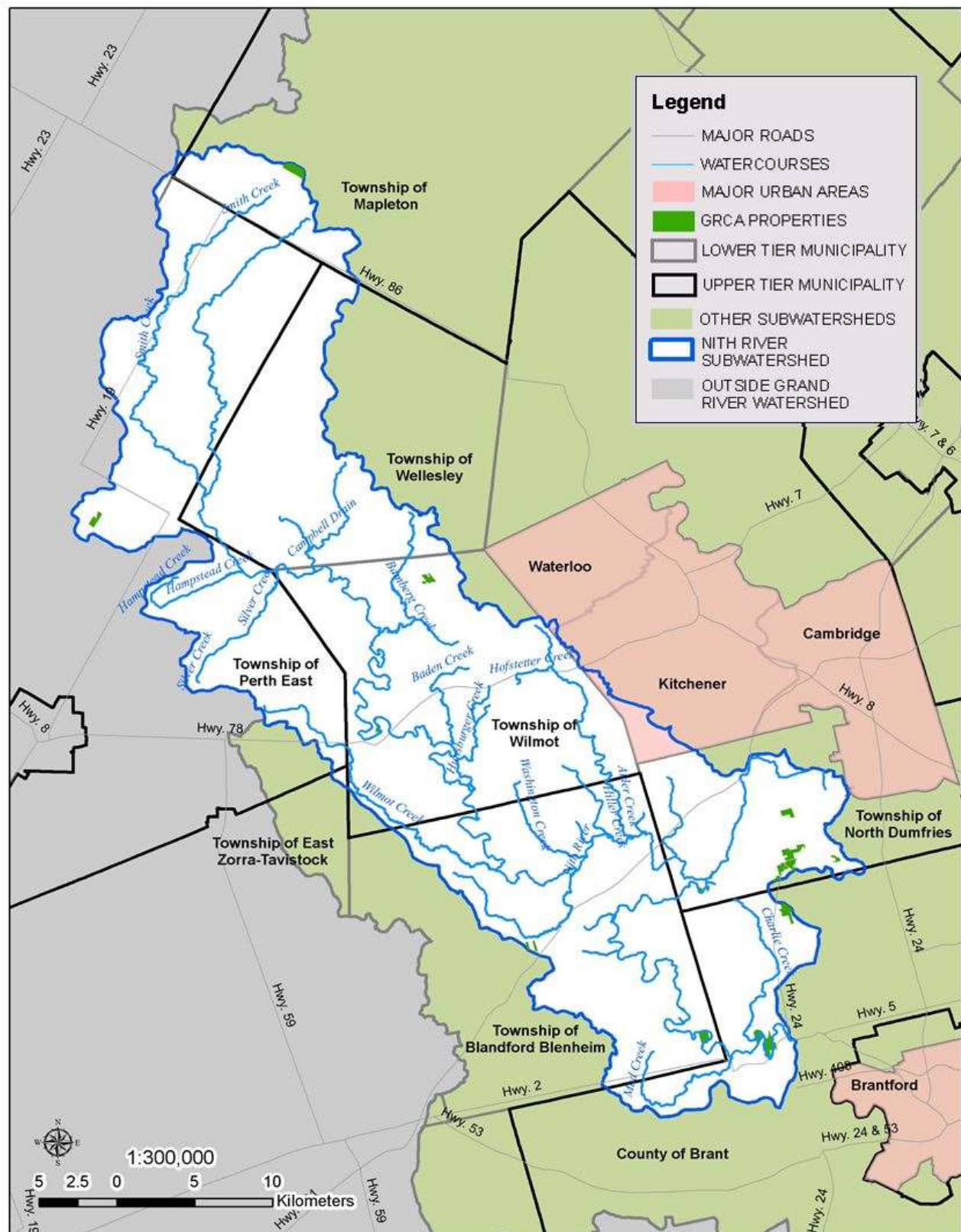


Figure 1. Nith River Subwatershed Study Area

2.0 Physical Characteristics

The following subsections describe the physical characteristics of the Nith River subwatershed. The combination of climate, surficial geology, and hydrogeological conditions influence the types and distribution of plant and animal species that are found within this subwatershed.

2.1 Climate

The Nith River subwatershed, like other portions of southern Ontario, is characterized by a humid continental climate with large seasonal differences of warm and humid summers to cold or very cold winters. The Nith River subwatershed is part of the Huron Slope Climate Zone, which is characterized by higher than average rainfall and snowfall accumulations. Moisture is picked up by winds blowing across Lake Huron and condenses as snow or rain on these slopes. The average annual temperature is about 6°C – 7°C. Winter-like conditions last five months, from November to March, spring conditions from April to May, summer conditions from June to September, and fall conditions persist in October (GRCA 2008). Regional climate-averaged data were obtained from Environment Canada's nearest weather station at Woodstock for the 30 year period of 1981-2010 (see Figure 2). During this 30 year period, the average annual daily temperature was 7.8°C and the average total annual precipitation (rainfall and snowfall) was 969 mm.

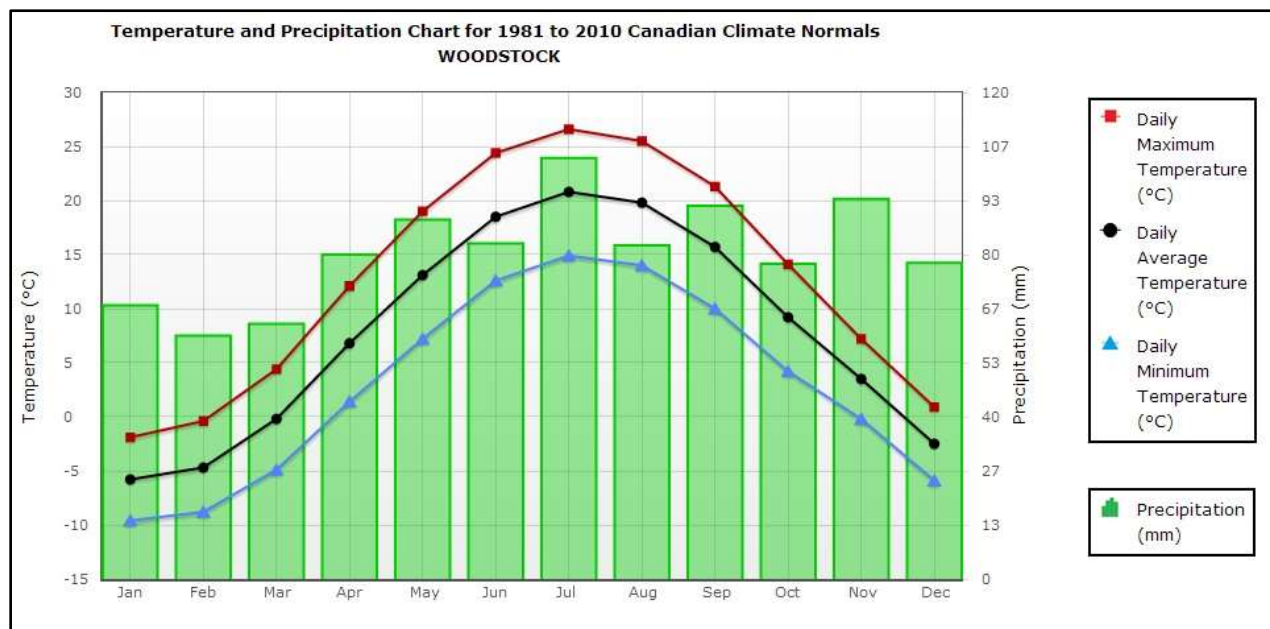


Figure 2. Environment Canada Climate Data, Woodstock Weather Station

2.2 Physiography and Surficial Geology

The Nith River subwatershed comprises portions of 6 distinct physiographic regions that reflect unique combinations of glacial history, surficial landform, soils, and drainage. The 3 predominant physiographic regions are the Stratford Till Plains, Waterloo Hills (aka Waterloo Moraine), and the Horseshoe Moraines. The Oxford Till Plain, Mount Elgin Ridges, and Norfolk Sand Plain are less extensive and are minimally represented in the southwest sections of the subwatershed, as illustrated in Figure 3.

The Stratford Till Plain dominates the upper subwatershed, which is characterized as generally level and poorly drained with silty clay rich soils. The Waterloo Moraine spans the central portions of the subwatershed. The moraine is an irregular tract of gently to rolling topography consisting of sand hills, gravel terraces and swamp valleys occupying a total area of 600 km² (Bajc 2014). The soils within this region are well-drained. The lower subwatershed is dominated by the western flank of the Horseshoe Moraines Complex, which includes the Macton, Milverton, and Easthope moraines. These moraines contain large sand and gravel deposits. Owing to the presence of these moraines, approximately 28% of the subwatershed is characterized as hummocky (GRCA 2019a). However, the primary surficial material over most of the hummocky areas is composed of low permeability materials of Tavistock/Mornington Till (GRCA 2009). Small portions of the Oxford Till Plain, which have soils that are considered to be well drained, the Mount Elgin Ridges, which comprise imperfectly drained clay or silty clay ridges with deposits of sand and silt, and a very small portion of the Norfolk Sand Plain containing coarse sands and silts, exist along the southwestern margin of the subwatershed (see Figure 3).

The surficial geology of this area is composed of four main surficial deposit types: Stratford Till, Tavistock/Mornington Till, Port Stanley Till, and tills that make up the Waterloo Moraine, as illustrated in Figure 4. These till units were deposited during glacial ice retreats approximately 15,000 years ago after the deposition of the Horseshoe Moraine complexes. The upper subwatershed is dominated by low permeability Tavistock/Mornington Till, which is considered to be poorly drained silty clay till and is interspersed with ice contact deposits. Along the western margin of the subwatershed, Stratford Till is composed of fairly uniform, brown, calcareous sandy silt till with minimal gravel deposits, and is considered poorly drained. Within the lower sections of the subwatershed, Port Stanley Tills are described as a stiff clayey silt to silt till, generally ranging in thickness from 1 to 6 m, whereas the till deposits of the Horseshoe Moraine consist of fine- to medium-textured sand with localized accumulations of gravel and isolated lenses of muddy glaciolacustrine sediments. Sand deposits are associated with the Norfolk Sand Plain whereas ice contact and outwash and spillway deposits comprise well-bedded sands and gravels.

The entire Nith River subwatershed is underlain by dolomite, mudstone and shale of the Salina Formation. Narrow bands of the cream and tan to grayish-tan dolomite of the Bass-Islands Bertie Formation, and the gray and grayish-brown dolomite, limestone and nodular chert of the Bois-Blanc Formation, subcrop along the western edge of the subwatershed (GRCA 2008).

Overburden thickness refers to the thickness of unconsolidated sediment cover between the ground surface and the top of the bedrock surface. The degree of thickness varies substantially throughout the subwatershed as shown on Figure 5. This variation reflects bedrock surface features such as deep bedrock valleys that have been carved out and subsequently infilled with sediment. For example, large accumulations of glacial till material form the Waterloo and Horseshoe moraines. In the headwater region, overburden thickness is fairly uniform but ranges between 25m and 50m in thickness. Overburden thickness increases throughout the remaining portions of the subwatershed and especially along the eastern edge where the Waterloo moraine deposits and the Buried Dundas Bedrock Valley are present.

2.3 Soils

Major soil deposits within the subwatershed differ significantly between the upper subwatershed and the lower subwatershed, as illustrated on Figure 6. The upper subwatershed is dominated by poorly drained clayey tills and silty clay, while the lower subwatershed is composed of a mixture of clayey silt, silt and deposits of sand and gravel associated with outwash channels and spillways. The variable soil types and quaternary deposits have a direct effect on surface water and groundwater features. Hydrology and hydrogeological characteristics are discussed in Section 2.4 below.

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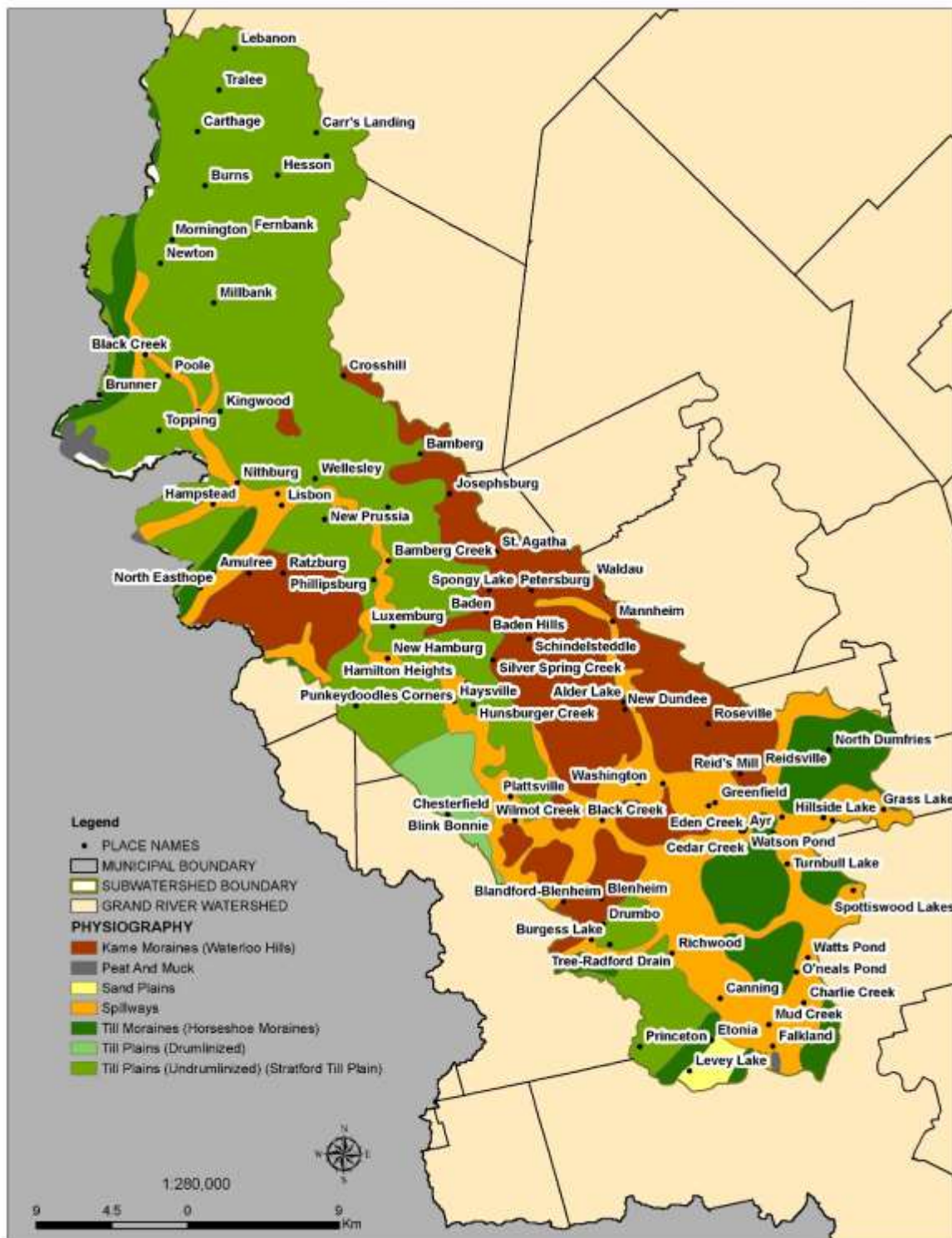


Figure 3. Physiography within the Nith River Subwatershed

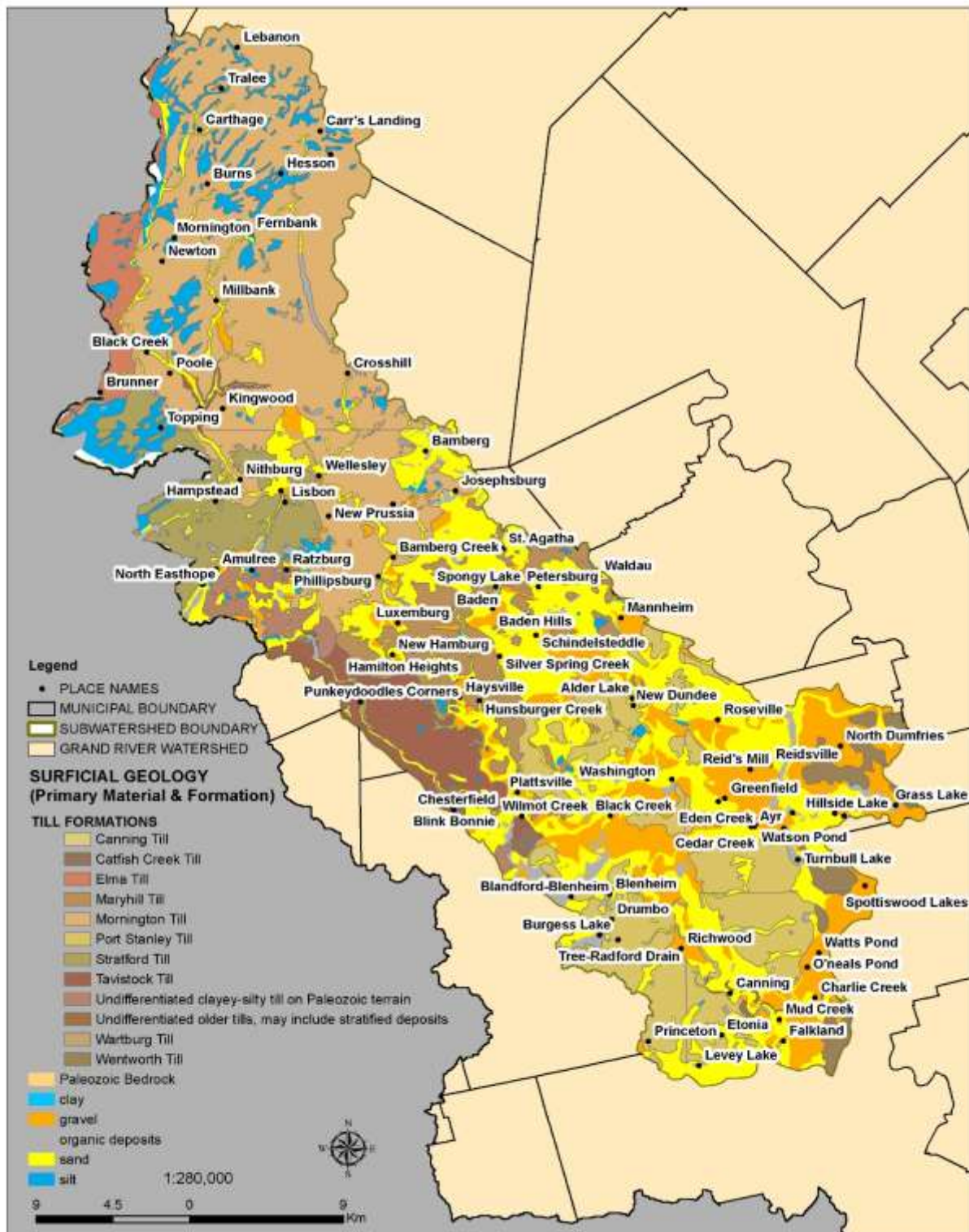


Figure 4. Surficial Geology within the Nith River Subwatershed

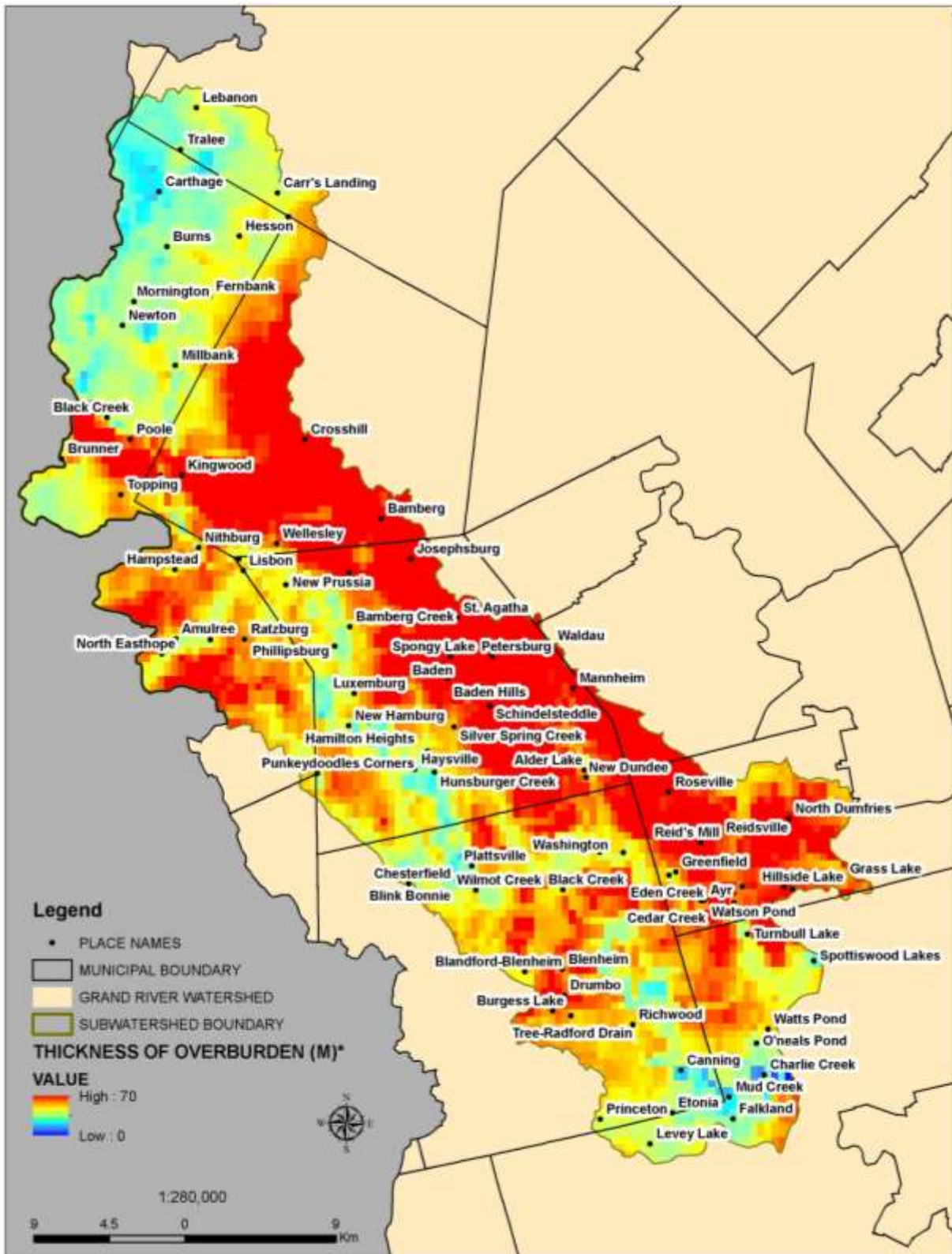


Figure 5. Overburden Thickness within the Nith River Subwatershed

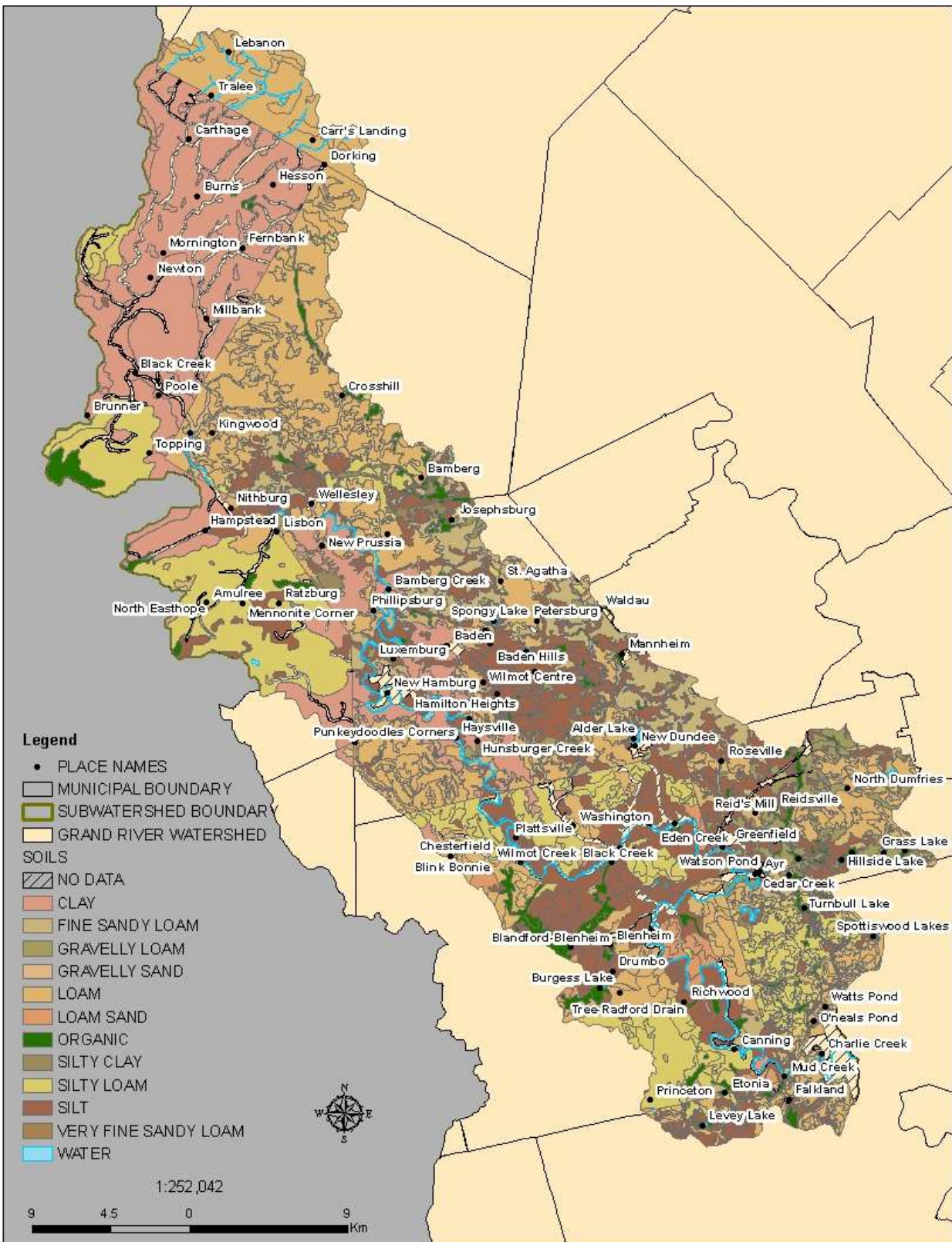


Figure 6. Soils within the Nith River Subwatershed

2.4 Hydrology and Hydrogeology

The Nith River is the largest uncontrolled tributary of the Grand River and, as such, is prone to spring flooding and very low flows during the drier summer months. Surface drainage density is high as compared to other major subwatersheds. Major tributaries include Alder Creek, Cedar Creek, Charlie Creek, Smith Creek, and Wilmot Creek. The flow regime is largely influenced by high surface runoff within the upper portions of the subwatershed, and increased groundwater inputs as the river flows through the lower portion of the subwatershed. This results in two distinct flow characteristics within the subwatershed. Upper sections are characterized by large volumes of runoff but very little infiltration, and very modest or no summer flows. Lower sections are characterized by substantial groundwater discharge as the river flows past the southern edge of the Waterloo moraine, resulting in improved baseflows during the summer months (GRCA 2009).

Groundwater recharge varies considerably across the subwatershed, with low amounts of recharge estimated in the upper subwatershed and increasing rates estimated within central and southern areas. Modelled estimates of groundwater recharge are illustrated on Figure 7. The highest modelled recharge to the groundwater system (in excess of 400 mm/year) occurs within areas containing well-drained tills that make up the Waterloo and Horseshoe moraines as well as in areas containing sand and gravel-rich outwash deposits associated with till moraines located throughout the lower portions of the subwatershed. Minimal recharge occurs throughout the upper portion of the subwatershed, which is dominated by the poorly drained Stratford Till Plain. The high clay and silt content impedes surface water movement into the deeper groundwater system. The west central portion of the subwatershed also has little recharge owing to the presence of the Stratford and Oxford Till Plains.

Modelled estimates of groundwater discharge are shown on Figure 8. The highest relative rates of groundwater discharge occur along Alder Creek and Cedar Creek, which contain cold water fish communities. Groundwater discharge most often occurs where the water table intersects the land surface, typically in lowland or valley areas where watercourses and wetlands are present. Down-gradient wetlands are sustained primarily by discharge. Wetlands in more elevated areas can occur within depressions of hummocky terrain collecting surface runoff but can also be sustained by local groundwater discharge (Blackport et al. 2009).

Annual precipitation across the subwatershed averages approximately 945 mm/yr, consistent with the Grand River watershed average of 935 mm/yr. Recharge and runoff values differ significantly between the upper and lower subwatershed. In upper sections, average annual runoff is 345 mm/yr, which is considerably higher than the Grand River watershed runoff average of 260 mm/yr. Average annual groundwater recharge is 145 mm/yr, which is lower than the Grand River watershed recharge average of 180 mm/yr. In lower sections, average annual runoff is 155 mm/yr., which is considerably lower than the upper subwatershed and the Grand River watershed average. Average annual recharge is 285 mm/yr, considerably higher than the upper subwatershed and Grand River watershed averages. These hydrological and hydrogeological characteristics influence the type and sensitivity of ecological features found throughout this subwatershed. Key ecological features and their functions are discussed in Sections 3 and 4 below.

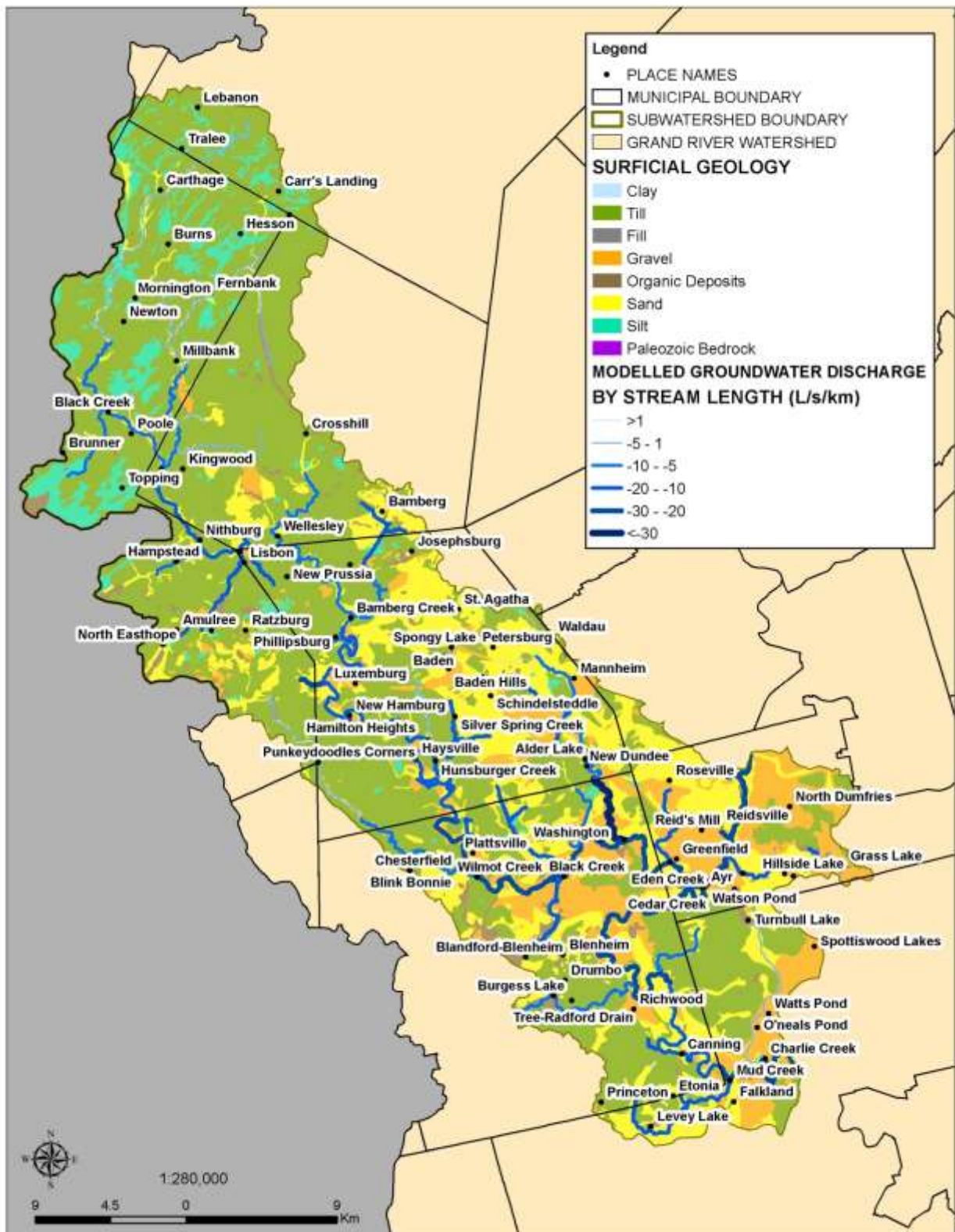


Figure 8. Modelled Groundwater Discharge within the Nith River Subwatershed

3.0 Aquatic Ecology

3.1 Overview

The Nith River drains approximately 1,128 km² of land on the west side of the Grand River watershed. The main stem of the river flows through a narrow spillway of alluviums, gravels, and cobbles before joining the Grand River upstream of Brantford in the town of Paris. The main river channel is highly entrenched and thus isolated from its floodplain. Riverbanks are also highly unstable. These conditions have limited spawning habitat for certain fish species such as northern pike. Several small private dams and artificial ponds situated along smaller tributaries have also impacted aquatic habitat and fish communities. Upper reaches of the river are influenced by high rates of surface runoff and support warm water fish communities, whereas the lower reaches of the Nith and several first order tributaries are influenced by groundwater discharge, which provides conditions favorable for cold water fish species such as brown trout and rainbow trout.

Upper portions of the subwatershed are characterized by extensive surface drainage, heavy agricultural use, and large livestock populations, all of which contributes to sediment and nutrient runoff into local watercourses and marginal water quality. Phosphorus levels are consistently above the provincial water quality objective of 0.030 mg/L in the upper Nith (GRCA 2019b). Surficial geology within this area is characterized by clayey to silty/clayey soils that provide little infiltration and promotes sediment and nutrient laden surface runoff, particularly where vegetation is lacking. Consequently, most first order tributaries are intermittent, flashy, and can exhibit extremely low baseflows. Groundwater discharge tends to be localized and restricted to areas with deep gravel deposits.

Lower portions of the subwatershed between the Town of Plattsville and the confluence with Grand River in Paris are characterized by a more complex surficial geology. Extensive moraines, sandplains and glacial spillways result in complex drainage patterns and high amounts of groundwater flow toward watercourses. Higher rates of groundwater discharge provide more stable baseflow, cooler temperatures, and a higher quality fish community consisting of sensitive, cold water species such as brook trout, brown trout and rainbow trout. Vegetation communities within riparian areas are patchy to absent in some areas but are more prevalent in other areas and help buffer watercourses from adjacent land uses.

3.2 Watercourse Review

Watercourses are classified by the Ontario Ministry of Nature Resources and Forestry based on assessments of the temperature regime and the composition of the fish community within specific reaches. Waterbodies may be classified as cold, cool or warm. Thermal regime is determined using measures of water temperature and/or inferred from knowledge of the existing fish or invertebrate community present. Cold water tributaries are those which contain cold water fish species such as native brook trout, brown trout, and/or mottled sculpin.

Watercourses may also be classified as potential cold water habitat if the mean summer water temperature is less than 19°C. Cool water tributaries are characterized by average summer water temperatures of between

19°C and 25°C and a fish community consisting of Esocids (e.g. northern pike) and Percids (e.g. darters, walleye, yellow perch). Warm water tributaries are characterized by average summer water temperatures in excess of 25°C and a fish community consisting of Centrarchids (bass and sunfishes) and more tolerant fish species such as carp and bullheads.

Approximately 28% of the watercourses within the subwatershed have been classified by OMNRF based on assessments of temperature regimes and fish communities within specific reaches. Of the currently assessed watercourses, a majority are currently classified as warm water fish habitat, as indicated in Table 1 below.

Table 1. Summary of Stream Classifications as Determined by the OMNRF

Watershed	Cold Water (km)	Cool Water (km)	Unassigned Water* (km)	Warm Water (km)	Total Classified (km)	Total Watercourse Length (km)	Not Classified (km)	% Not Classified
Grand River	1,011	666	1,483	2,668	4,345	11,329	6,984	62%
Nith River and its tributaries	171	2	264	293	466	1,680	1,214	72%

*Assessed by Ontario Ministry of Natural Resources and Forestry but no thermal regime assigned

Thermal classifications along watercourse and documented aquatic survey locations and dates are illustrated in Figure 9. This figure provides an overall indication of existing data gaps and deficiencies within the Nith River subwatershed. Data gaps appear to be limited to small geographical areas.

Within the upper sections of the subwatershed, mixed water tributaries include Baden Creek, Bamberg Creek, Firella Creek, and Hunsberger Creek. Warm water tributaries supporting more tolerant fish species include Amulree (Silver) Creek, Black Ash Creek, Hampstead Creek, and Smith Creek. Mill ponds located in Baden, New Hamburg, and Wellesley are a physical barrier for most fish species. These artificial reservoirs have contributed to the warm water thermal regime downstream (GRCA and OMNR 1991, 2004).

Within the lower sections of the subwatershed, cold water tributaries include Cedar Creek, Falkland Creek, Hiller Creek, Washington Creek, and Wolverton Creek. Mixed water tributaries include Alder Creek, Black Creek, and Eden Creek. Warm water tributaries include Charlie Creek and Wilmot Creek. Mill ponds are located along Alder Creek in New Dundee (Alder Lake) and along Cedar Creek in Ayr (Jedburgh Pond and Watson Pond).

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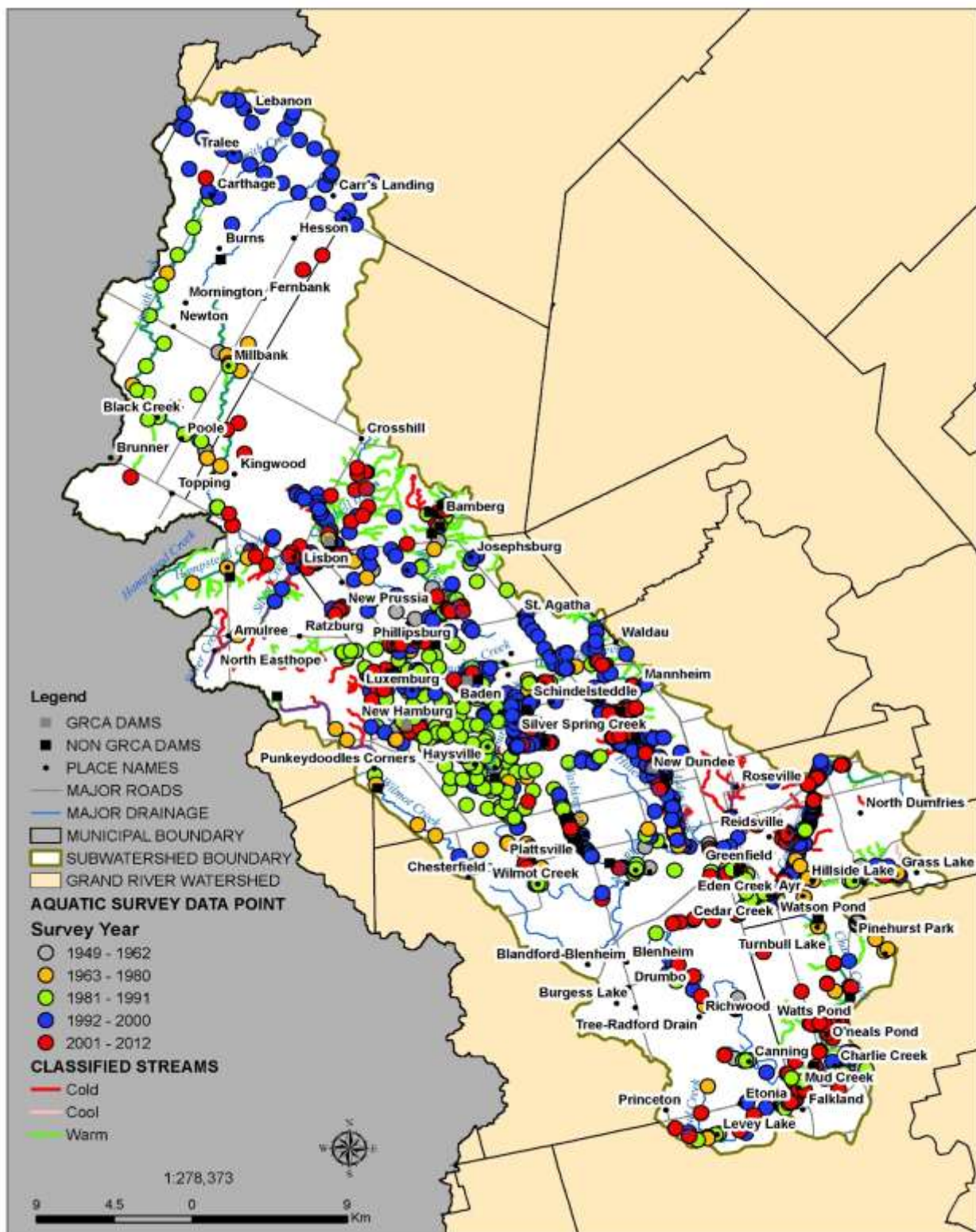


Figure 9. Aquatic Survey Locations and Thermal Regimes within the Nith River Subwatershed

3.3 Municipal Drains

Several watercourses have been converted to municipal drains and currently have status and are maintained under the Drainage Act. Municipal drains can vary in length and quality. Municipal drains measure 506 km in total length and are classified by Fisheries and Oceans Canada (DFO) based on flow regime, thermal regime, and fish community composition. A summary of total drain length by drain type for the entire subwatershed is provided in the box below:

B/E Class (Permanent flow, warm water, sensitive species present) = 57 km
C Class (Permanent flow, warm water, no sensitive species present) = 108 km
D Class (Permanent flow, cool/cold water, sensitive species present) = 14 km
F Class (Intermittent flow) = 67 km
T Class (Tile Drain) = 31 km
NR Class (Not Rated) = 229 km

Drainage density is much higher in the upper portions of the subwatershed, above New Hamburg. The following named watercourses have been partially converted to drains within the upper subwatershed:

- Amulree Creek, Baden Creek, Bamberg Creek, Black Creek, Mud Creek, Black Ash Creek, Smith Creek, Washington Creek, Wilmot Creek.

Campbell Drain (Firella Creek) flows into Wellesley Pond, which is owned and operated by the GRCA, and continues downstream below the dam before it joins the Nith River.

Within the lower subwatershed below New Hamburg, the following watercourses have been partially converted to municipal drains:

- Alder Creek, Charlie Creek, Falkland Creek, Hunsberger Creek

3.4 Dams and Reservoirs

The GRCA owns and maintains 5 dams throughout the Nith River subwatershed. Another 30 dams are privately owned. These dams are listed below and are shown on Figure 9 above. Dams not owned by the GRCA are sorted by major tributary.

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GRCA DAMS

Baden Dam	Waterloo Region	Wilmot	Baden Creek
New Dundee Dam	Waterloo Region	Wilmot	Alder Creek
New Hamburg Dam	Waterloo Region	Wilmot	Nith River
Upper Ayr Dam	Waterloo Region	North Dumfries	Cedar Creek
Wellesley Dam	Waterloo Region	Wellesley	Firella Creek

NON-GRCA DAMS

Unnamed Dam	Waterloo Region	Wilmot	Alder Creek
Huron Road Dam	Waterloo Region	Wilmot	Alder Creek
Country Garden Campground	Waterloo Region	Wilmot	Alder Creek Tributary
German Canadian Hunting & Fishing Club	Waterloo Region	Wilmot	Alder Creek Tributary
Brewery Street Dam	Waterloo Region	Town of Baden	Baden Creek Tributary
Unnamed Dam	Waterloo Region	Wellesley	Bamberg Creek
Camp Bamberg	Waterloo Region	Wellesley	Bamberg Creek Tributary
Lakeview Lane Dam	Waterloo Region	Wellesley	Bamberg Creek Tributary
Unnamed Dam	Waterloo Region	Wellesley	Bamberg Creek Tributary
Lower Ayr (Watson Dam)	Waterloo Region	Village of Ayr	Cedar Creek
Highway 24 A Dam	Brant County	South Dumfries	Charlie Creek
Nith Road Dam	Brant County	South Dumfries	Charlie Creek Tributary
Camp Ganadaoweh 2	Brant County	South Dumfries	Charlie Creek Tributary
Camp Ganadaoweh 1	Brant County	South Dumfries	Charlie Creek Tributary
Unnamed Dam	County of Perth	Perth East	Hamstead Creek Tributary
Holiday Beach Trailer Park	Waterloo Region	Wilmot	Hunsburger Creek
Unnamed Dam	Waterloo Region	Wilmot	Hunsburger Creek
Wilmot Center Missionary Church	Waterloo Region	Wilmot	Hunsburger Creek Tributary
Howling Dam	Waterloo Region	Wilmot	Hunsburger Creek Tributary
Unnamed Dam	Oxford County	Blanford-Blenheim	Nith River
Unnamed Dam	Perth County	Perth East	Nith River
Greenfield Dam	Waterloo Region	North Dumfries	Nith River
Concordia Farm	Waterloo Region	Wilmot	Nith River Tributary
Unnamed Dam	Waterloo Region	Wilmot	Nith River Tributary
Foxwood Green	Waterloo Region	Wilmot	Nith River Tributary
Unnamed Dam	Waterloo Region	Wilmot	Nith River Tributary
Unnamed Dam	Oxford County	Blandford-Blenheim	Washington Creek

Unnamed Dam	Oxford County	Blandford-Blenheim	Washington Creek
Unnamed Dam	Perth County	Perth East	Wilmot Creek
Unnamed Dam	Waterloo Region	Wilmot	Wilmot Creek

Most dams are considered barriers to fish movement but in some cases the reservoirs on the upstream side are stocked with fish to provide recreational fishing opportunities. Dams owned by the GRCA in this subwatershed do not provide flood control or base flow augmentation functions but do provide limited recreational opportunities. However, these dams have also negatively impacted water quality and the fish communities that occupy these waterbodies. GRCA dams are discussed below.

Baden Dam is situated along a warm water tributary of Baden Creek and is considered a barrier to fish movement. The reservoir is periodically stocked with brown trout and rainbow trout. The GRCA provides limited access for public fishing. Aquatic surveys have occurred upstream and downstream of the reservoir and within the reservoir itself.

New Dundee Dam is a barrier to fish. The reservoir and creek provide warm water habitat whereas the section of Alder Creek below the dam is considered cold water habitat that supports brook, brown, and rainbow trout as well as silver shiner, a Provincially and Federally threatened species. Unlike the reservoir, which supports tolerant and invasive species such as common carp, brown bullhead, and white sucker, a relatively diverse fish community can be found below the dam. In 2019, Koi Herpesvirus (KHV) was determined to be the cause of a large carp die-off. According to the OMNR, KHV was probable introduced to Ontario waters via the hobby fish trade. KHV affects carp, koi, and goldfish only.

New Hamburg Dam is located along a section of the Nith River that contains a diverse fish community. Walleye are known to spawn downstream of the dam and range as far upstream as Milverton as a result of the addition of a vertical slot fishway in 1989-1990 and the possible introduction of adult fish by anglers. Silver shiner, a threatened species, occurs below the dam, which marks the upstream end of the species' range within this river system. The vertical slot fishway is intended to provide upstream access for non-jumping fish species, though it remains unclear whether smaller fishes such as silver shiner are able to get past this structure. Downstream of the dam are two weirs that partially block fish movement upstream to access the fishway, which is currently operated under a tri-party agreement between the Township of Wilmot, OMNRF, and GRCA. The fishway is closed during the winter months to avoid accumulation of debris during the winter and spring freshet. As soon as possible in the spring, the GRCA's dam maintenance staff open the fishway, which is subsequently closed at the beginning of June to allow more water to flow over the weir and to provide a more desired aesthetic "waterfall" effect.

Two dams, one owned by the GRCA, are situated along the lower reaches of Cedar Creek, a cold water tributary of the Nith River. Rainbow trout in the Nith River are able to get past the privately owned **Lower Ayr Dam** and into Watson Pond, but are not able to get past the **Upper Dam** and into Jedburgh Pond, both of which are owned by the GRCA. Watson Pond is also stocked with brown trout annually by the OMNRF for public

angling. Brook trout are known to spawn above the Upper Mill Pond. Two aquatic Species at Risk, black redhorse and silver shiner, are also known to occur within this section of the Nith River.

Wellesley Dam is located along Firella Creek (aka Campbell Drain) and is considered a barrier to fish movement. Historically, the impoundment contained largemouth and smallmouth bass but now contains fewer, tolerant species such as native sunfish and invasive carp. Consequently, the reservoir provides modest fishing opportunities. A community park surrounds the reservoir, which is being considered for minor modifications such as shoreline enhancements.

Another remnant dam structure listed in the inventory above is located on the GRCA's Reinhart Property in Ayr. The Nith River control structure was decommissioned by the GRCA several years ago and is no longer considered a barrier to fish movement. The property is passively managed by the GRCA. The suitability of this watercourse for migratory rainbow trout is being assessed by Trout Unlimited Canada.

3.5 Aquatic Communities

According to unpublished data obtained from the OMNRF, a total of 60 fish species representing 34 genera have been recorded throughout the Nith River and its tributaries, including 3 Salmonids, 5 species of redhorse (*Moxostoma* sp.), and 8 Percids (see Table 2). Fish communities are particularly diverse within the main stem of the Nith River, where the majority of the species can be found. Top predators in warm and cool waters include game species such as smallmouth and largemouth bass, northern pike, and walleye, whereas brown trout, brook trout, and rainbow trout tend to inhabit colder waters. Brown trout and rainbow trout, 2 introduced species, can be found in the main stem of the Nith River and the mouth of larger tributaries.

Walleye and muskellunge were stocked in the Nith River during the 1930s and smallmouth bass were stocked throughout the subwatershed between 1928 and the late 1950s (GRCA and OMNR 2001). A small but viable population of walleye exists in the Nith. Anecdotal reports of muskellunge suggest that this species may also be present in low numbers.

According to unpublished data obtained from DFO, 18 mussel species representing 18 genera have been recorded within the Nith River and its tributaries. Twelve aquatic species found within the subwatershed, 5 fishes and 7 mussels, are considered to be significant at the provincial level. These species are listed in Table 2 and are discussed below.

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Table 2. Aquatic Species Recorded Within the Nith River and its Tributaries

Common Name	Scientific Name	Provincial Rank ¹	Provincial Status ²	Federal Status ³	Thermal Preference ^{4,5}
FISHES					
American Brook Lamprey	<i>Lathenteron appendix</i>	S3			Coldwater
Rainbow Trout	<i>Oncorhynchus mykiss</i> *	SNA			Coldwater
Brown Trout	<i>Salmo trutta</i> *	S5			Coldwater
Brook Trout	<i>Salvelinus fontinalis</i>	S5			Coldwater
Northern Pike	<i>Esox lucius</i>	S5			Coolwater
Central Mudminnow	<i>Umbra limi</i>	S5			Coolwater
Northern Hog Sucker	<i>Hypentelium nigricans</i>	S4			Warmwater
Northern Redbelly Dace	<i>Chrosomus eos</i>	S5			Coolwater
Spotfin Shiner	<i>Cyprinella spiloptera</i>	S4			Warmwater
Common Carp	<i>Cyprinus carpio</i> *	SNA			Warmwater
Brassy Minnow	<i>Hybognathus hankinsoni</i>	S5			Coolwater
Striped Shiner	<i>Luxilus chrysocephalus</i>	S4			Coolwater
Common Shiner	<i>Luxilus cornutus</i>	S5			Coolwater
Redfin Shiner	<i>Lythrurus umbratilis</i>	S4			Coolwater
Northern Pearl Dace	<i>Margariscus nachtriebi</i>	S5			Coolwater
Hornyhead Chub	<i>Nocomis biguttatus</i>	S4			Coolwater
River Chub	<i>Nocomis micropogon</i>	S4			Coolwater
Golden Shiner	<i>Notemigonus crysoleucas</i>	S5			Coolwater
Emerald Shiner	<i>Notropis atherinoides</i>	S5			Coolwater
Blackchin Shiner	<i>Notropis heterodon</i>	S4			Coolwater
Blacknose Shiner	<i>Notropis heterolepis</i>	S5			Coolwater
Silver Shiner	<i>Notropis photogenis</i>	S2S3	Threatened	Threatened	Warmwater
Rosyface Shiner	<i>Notropis rubellus</i>	S4			Coolwater
Sand Shiner	<i>Notropis stramineus</i>	S4			Warmwater
Mimic Shiner	<i>Notropis volucellus</i>	S5			Coolwater
Bluntnose Minnow	<i>Pimephales notatus</i>	S5			Warmwater
Fathead Minnow	<i>Pimephales promelas</i>	S5			Warmwater
Blacknose Dace	<i>Rhinichthys atratulus</i>	S5			Warmwater
Longnose Dace	<i>Rhinichthys cataractae</i>	S5			Coolwater
White Sucker	<i>Catostomus commersonii</i>	S5			Coolwater
Silver Redhorse	<i>Moxostoma anisurum</i>	S4			Coolwater
Black Redhorse	<i>Moxostoma duquesnei</i>	S2	Threatened	Threatened	Coolwater
Golden Redhorse	<i>Moxostoma erythrurum</i>	S4			Coolwater
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	S5			Coolwater
Greater Redhorse	<i>Moxostoma valenciennesi</i>	S3			Warmwater
Creek Chub	<i>Semotilus atromaculatus</i>	S5			Coolwater
Central Stoneroller	<i>Campostoma anomalum</i>	S4			Coolwater
Black Bullhead	<i>Ameiurus melas</i>	S4			Warmwater
Yellow Bullhead	<i>Ameiurus natalis</i>	S4			Warmwater
Brown Bullhead	<i>Ameiurus nebulosus</i>	S5			Warmwater
Stonecat	<i>Noturus flavus</i>	S4			Warmwater
Brook Stickleback	<i>Culaea inconstans</i>	S5			Coolwater
Rock Bass	<i>Ambloplites rupestris</i>	S4			Coolwater
Green Sunfish	<i>Lepomis cyanellus</i>	S4			Warmwater
Pumpkinseed	<i>Lepomis gibbosus</i>	S5			Warmwater
Bluegill	<i>Lepomis macrochirus</i>	S5			Warmwater
Northern Sunfish	<i>Lepomis peltastes</i>	S3	Special Concern	Special Concern	Warmwater
Smallmouth Bass	<i>Micropterus dolomieu</i>	S5			Warmwater
Largemouth Bass	<i>Micropterus salmoides</i>	S5			Warmwater
Greenside Darter	<i>Etheostoma blennioides</i>	S4			Coolwater
Rainbow Darter	<i>Etheostoma caeruleum</i>	S4			Coolwater
Iowa Darter	<i>Etheostoma exile</i>	S5			Coolwater
Fantail Darter	<i>Etheostoma flabellare</i>	S4			Coolwater
Least Darter	<i>Etheostoma microperca</i>	S4			Warmwater
Johnny Darter	<i>Etheostoma nigrum</i>	S5			Coolwater
Yellow Perch	<i>Perca flavescens</i>	S5			Coolwater
Blackside Darter	<i>Percina maculata</i>	S4			Coolwater

Walleye	<i>Sander vitreus</i>	S5			Coolwater
Mottled Sculpin	<i>Cottus bairdii</i>	S5			Coolwater
Slimy Sculpin	<i>Cottus cognatus</i>	S5			Coldwater
MUSSELS ⁶					
Creek Heelsplitter	<i>Lasmigona compressa</i>	S5			n/a
Creepers	<i>Strophitus undulatus</i>	S5			n/a
Cylindrical Papershell	<i>Anodontoides ferussacianus</i>	S4			n/a
Eastern Elliptio	<i>Elliptio complanata</i>	S5			n/a
Elktoe	<i>Alasmodonta marginata</i>	S3			n/a
Fat Mucket	<i>Lampsilis siliquoidea</i>	S5			n/a
Flutedshell	<i>Lasmigona costata</i>	S5			n/a
Fragile Papershell	<i>Leptodea fragilis</i>	S4			n/a
Giant Floater	<i>Pyganodon grandis</i>	S5			n/a
Kidneyshell	<i>Ptychobranchus fasciolaris</i>	S1	Endangered	Endangered	n/a
Mucket	<i>Actinonaias ligamentina</i>	S3			n/a
Plain Pocketbook	<i>Lampsilis cardium</i>	S4			n/a
Rainbow	<i>Villosa iris</i>	S2S3	Special Concern	Special Concern	n/a
Slippershell	<i>Alasmodonta viridis</i>	S3			n/a
Spike	<i>Elliptio dilatata</i>	S5			n/a
Threeridge	<i>Amblema plicata</i>	S4			n/a
Wabash Pigtoe	<i>Fusconaia flava</i>	S2S3			n/a
Wavy-rayed Lampmussel	<i>Lampsilis fasciola</i>	S1	Threatened	Special Concern	n/a

Sources: ¹ Natural Heritage Information Centre, ² Provincial Endangered Species Act (2007), O. Reg. 139/14, s.2, ³ Federal Species at Risk Act 2002, Schedules 1-3, ⁴ Eakins (2015), ⁵ GRCA 1998, ⁶ DFO unpublished data. Checklist order follows Scott and Crossman (1998); *denotes an introduced species

3.6 Aquatic Species at Risk

Six aquatic Species at Risk (3 fishes and 3 mussels) found in the subwatershed are considered to be at risk in Ontario and/or Canada and are legally protected under the Provincial Endangered Species Act and/or Federal Species at Risk Act (see Table 2 above). With the exception of Kidneyshell, which is considered extirpated in the Grand River watershed, all of these are still present and are discussed briefly below. Range mapping for federally-listed aquatic species at risk can be obtained from Fisheries and Oceans Canada (DFO 2019).

Black Redhorse belongs to the sucker family (Catostomidae) and has recently (2002-2003) been collected at almost all known historic sites and several new sites within the Grand River watershed. The species has been collected as recently as 2005 in the Nith River and is found from Haysville downstream to confluence with the Grand River. Historically, it was also found in Hunsburger Creek. The species inhabits pools and riffle areas of medium-sized rivers and streams that are usually less than two metres deep (COSEWIC 2005 2015a).

Northern Sunfish is a small, colorful member of the sunfish family (Centrarchidae) that inhabits shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds, with sandy banks or rocky bottoms. Northern sunfish prefer to be near aquatic vegetation where they can avoid strong currents. Although it occurs in shallow, vegetated, warm waterbodies, the species is intolerant of siltation and sedimentation and, as such, is considered an indicator of good water quality. Major threats include siltation and turbidity resulting from agricultural and other human development, as well as invasive aquatic species, such as round goby and rusty crayfish. Its spatial distribution is relatively small and probably very patchy (COSEWIC 2016, COSSARO 2016). The COSEWIC status report suggests the species was last collected in the Nith River in 1949. The species was collected more recently (2007 and 2008) in the lower Grand River.

Silver Shiner was first discovered in the lower reach of the Nith River in 1949, and has been collected on a number of occasions since then, most recently in 2017. The species is usually found in medium to large river systems, in deep riffles, or pools adjacent to riffles. Deteriorating water quality (turbidity, pollution and impoundments) have been responsible for population declines in Ohio. Stream gradient appears to have limited the species' distribution in the Grand River watershed to sections with a gradient between 0.3 and 5.7 m/km. (COSEWIC 2011).

Rainbow mussels were first recorded in the Nith River in 1935 near Ayr. There are numerous records of fresh and weathered shells (mostly from shoreline searches) further suggesting that this river system sustains widespread populations. In river systems, the species can be found in or near riffles and along the edges of emergent vegetation. It is generally found in areas with moderate to strong current over a mixture of cobble, gravel, sand, and occasionally mud. The species is most abundant in clean, well-oxygenated reaches at depths of less than 1 meter. The combined impacts of urbanization and agriculture threaten the species through sediment and nutrient loading, changes to natural water flow ("flow regimes") from dams and channel alterations, contaminants and toxic substances, habitat alterations as well as any activity that threatens the species' host fishes (COSEWIC 2006, COSEWIC 2015b, DFO 2011).

Wavy-rayed Lampmussel was first recorded from the Nith River in 1971 and are generally found in a 30-km stretch of the Nith River between Drumbo and the confluence with the Grand. Live animals were found during sampling events in 1998 and 2007. The species prefers medium to large streams and rivers with areas of stable sand and gravel substrates, and is typically found in and around riffles with clear water and steady flows. The main factor limiting for this species throughout its range is probably the availability of clean, silt-free, riffle, aquatic habitat (COSEWIC 2010).

4.0 Terrestrial Resources

4.1 Wetlands

Wetlands are defined by the Province as:

"lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the ground surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. Periodically soaked or wet lands being used for agricultural purposes, which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition."

A significant wetland area is identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using the Wetland Evaluation System, as amended from time to time (OMNR 2010, OMNRF 2014).

Wetlands are identified and mapped by the OMNRF and the GRCA using orthoimagery and other data sources. Wetland boundaries are verified in the field on a case by case basis, usually as part of a Scoped Environmental Impact Study.

Wetlands cover approximately 6,481 hectares, or 6%, of the Nith River subwatershed. Wetland cover in this subwatershed is well below the Grand River watershed average of 9.5% but is meeting the federal subwatershed target of 6% (see Environment Canada 2013). A majority of the mapped wetlands in this subwatershed (4,894 ha or 76%) have been evaluated by the Ontario Ministry of Natural Resources and Forestry. Currently, 3,747 hectares or 58% of all mapped wetland is classified as Provincially Significant Wetland (PSW) and another 1,138 hectares or 18% of all mapped wetland is classified as Non-Provincially Significant. Approximately $\frac{3}{4}$ of all evaluated wetland is considered provincially significant (see Table 3).

A list of all evaluated wetland complexes, including the total size of the wetland complex and the wetland area within this subwatershed, is provided in Tables 4 and 5. The geographic extent of evaluated and unevaluated wetlands within this subwatershed is illustrated in Figure 10. Generally, wetlands occur throughout the subwatershed but tend to be smaller and more isolated from each other within the upper half of the subwatershed as compared to wetlands in the lower half of the subwatershed. Unlike the upper reaches of the Nith River, the lower Nith River and many of its tributaries, such as Alder Creek, Cedar Creek, and Eden Creek, are buffered by wetlands. Many wetlands are associated with upland forests, which are discussed in Section 4.2 below.

Summaries for evaluated wetlands are provided below and are based on information contained in Ontario Wetland Evaluation Records obtained from MNRF District Offices as well as current mapping information available on the Grand River Information Network (GRCA 2018).

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Table 3. Wetland Cover within the Nith River Subwatershed

Total Wetland Cover (mapped by GRCA and/or OMNRF)	6,481 ha or 65 km ² (6% of subwatershed area)	
Evaluated wetland cover expressed as a percentage of total subwatershed area	Provincially Significant Wetland	3,747 ha or 3%
	Non-Provincially Significant Wetland	1,138 ha or 1%
	Total Evaluated Wetland	4,886 ha or 4%
Evaluated wetland cover expressed as a percentage of total wetland area	Provincially Significant Wetland	3,747 ha or 58%
	Non-Provincially Significant Wetland	1,138 ha or 18%
	Total Evaluated Wetland	4,886 ha or 76%
Percentage of Evaluated Wetland that is Provincially Significant	77%	

Table 4. Provincially Significant Wetlands within the Nith River Subwatershed

	Total Complex Area (Ha)	Wetland Area within Subwatershed (Ha)	Date of Last Evaluation and/or OWES Edition Used
Central Whiteman's/Horner Creek Complex	3,492	868	1991, OWES 2 nd Edition
Roseville Swamp Cedar Creek Wetland Complex	628	328	1984, OWES 2 nd Edition
Sunfish Lake Laurel Creek Wetland Complex	844	325	2003, OWES 3 rd Edition
Bannister Wrigley Sudden Tract Wetland Complex	303	303	1988, OWES 3 rd Edition
Ellice Swamp	1,129	280	1985, OWES 2 nd Edition
Turnbull Lake Charlie Creek Wetland Complex	222	222	1986, OWES 2 nd Edition
Phillipsburg Swamp	210	210	2003, OWES 3 rd Edition
Levy Lake Mud Creek Wetland	210	203	1985, OWES 2 nd Edition
Upper Alder Creek Wetland Complex	173	173	2003, OWES 3 rd Edition
Wolverton Wetland Complex	171	171	N/A
Burgess Lake Swamp	173	157	2011, OWES 3 rd Edition
Lower Alder Creek Swamp	83	83	N/A
Greenfield Swamp	79	79	1995, OWES 2 nd Edition
Whitemans Creek Kenny Creek Wetland Complex	2,082	66	2000, OWES 3 rd Edition
Spottiswood Pinehurst Lake Wetland Complex	100	65	1986, OWES 2 nd Edition
Haysville Wetland Complex	49	49	2003, OWES 3 rd Edition
Firella Creek Swamp	48	48	2002, OWES 3 rd Edition
Cedar Creek Tributary Wetland Complex	39	34	2007, OWES 3 rd Edition
Spongy Lake Wetland Complex	30	30	2003, OWES 3 rd Edition
Little Turnbull Lake Wetland	16	16	1985, OWES 2 nd Edition
Milroy Lake Wetland	13	13	1994, OWES 2 nd Edition
New Hamburg Oxbow Wetland Complex	12	12	2003, OWES 3 rd Edition
Petersburg Swamp	11	11	2003, OWES 3 rd Edition
Gads Hill Swamp South Wetland	452	1	1994, OWES 2 nd Edition

Table 5. Non-Provincially (Locally) Significant Wetlands within the Nith River Subwatershed

	Total Complex Area (Ha)	Wetland Area within Subwatershed (Ha)	Date of Last Evaluation and/or OWES Edition Used
Silver Spring Creek Hunsburger Creek Wetland Complex	131	131	2003, OWES 3 rd Edition
Nith River Headwaters Wetland Complex	104	104	2003, OWES 3 rd Edition
Phillipsburg Southeast Wetland Complex	98	98	2003, OWES 3 rd Edition
Silver Creek Wetland Complex	77	77	1994, OWES 2 nd Edition
West Paris River Swamp	73	73	1988, OWES 2 nd Edition
Crosshill West Wetland Complex	54	54	2003, OWES 3 rd Edition
Canning Swamp	49	49	N/A
Wellesley West Wetland Complex	9	9	2003, OWES 3 rd Edition
St Agatha West Wetland Complex	41	41	2003, OWES 3 rd Edition
Linwood Southwest Wetland Complex	4	4	2003, OWES 3 rd Edition
Nithburg Swamp	30	30	2003, OWES 3 rd Edition
Dorking South Wetland Complex	27	27	2003, OWES 3 rd Edition
Prothonotary Pond Wetland	25	25	1985, OWES 2 nd Edition
Alder Lake Marsh	24	24	2003, OWES 3 rd Edition
Waldau East Wetland Complex	24	24	2003, OWES 3 rd Edition
Berletts Corners South Wetland Complex	24	24	2003, OWES 3 rd Edition
Shakespeare Avon Wetland Complex	71	23	1986, OWES 2 nd Edition
Washington Creek West Wetland Complex	22	22	2003, OWES 3 rd Edition
Middle Alder Creek Wetland Complex	22	22	2003, OWES 3 rd Edition
Crosshill Moraine 3 Wetland Complex	19	19	2003, OWES 3 rd Edition
Josephsburg South Wetland Complex	17	17	2003, OWES 3 rd Edition
Wellesley East Wetland Complex	16	16	2004, OWES 3 rd Edition
Lower Alder Creek Wetland Complex	15	15	2003, OWES 3 rd Edition
Baden East Wetland Complex	12	12	2003, OWES 3 rd Edition
St Agatha Wetland Complex	12	12	2003, OWES 3 rd Edition
Millbank East Wetland Complex	11	11	2003, OWES 3 rd Edition
Kingwood Northeast Wetland Complex	10	10	2003, OWES 3 rd Edition
Kingwood North Wetland Complex	10	10	2003, OWES 3 rd Edition
Nith River 1 Wetland	10	10	2003, OWES 3 rd Edition
New Prussia Southeast Wetland Complex	9	9	2003, OWES 3 rd Edition
Baden Southwest Wetland Complex	9	9	2003, OWES 3 rd Edition
Princeton Wetland	8	8	1987, OWES 2 nd Edition
Strasburg 3 Wetland Complex	8	8	2003, OWES 3 rd Edition
Haysville North Wetland Complex	7	7	2003, OWES 3 rd Edition
Kingwood East Wetland Complex	6	6	2003, OWES 3 rd Edition
New Hamburg South Wetland Complex	5	5	2003, OWES 3 rd Edition
Hiller Creek Wetland Complex	5	5	2003, OWES 3 rd Edition
Nith River 2 Wetland Complex	5	5	2003, OWES 3 rd Edition
Wilmot Creek 1 Wetland	4	4	2003, OWES 3 rd Edition
Schindelsteddle South Wetland Complex	3	3	2003, OWES 3 rd Edition

Nith River 3 Wetland Complex	3	3	2003, OWES 3 rd Edition
Trussler Road Wetland Complex	2	2	2003, OWES 3 rd Edition
Plattsville North Nith River Wetland Complex	2	2	2003, OWES 3 rd Edition
Waldau Central Wetland Complex	1	0.5	2003, OWES 3 rd Edition
Brunner Wetland Complex	35	0.29	1987, OWES 2 nd Edition

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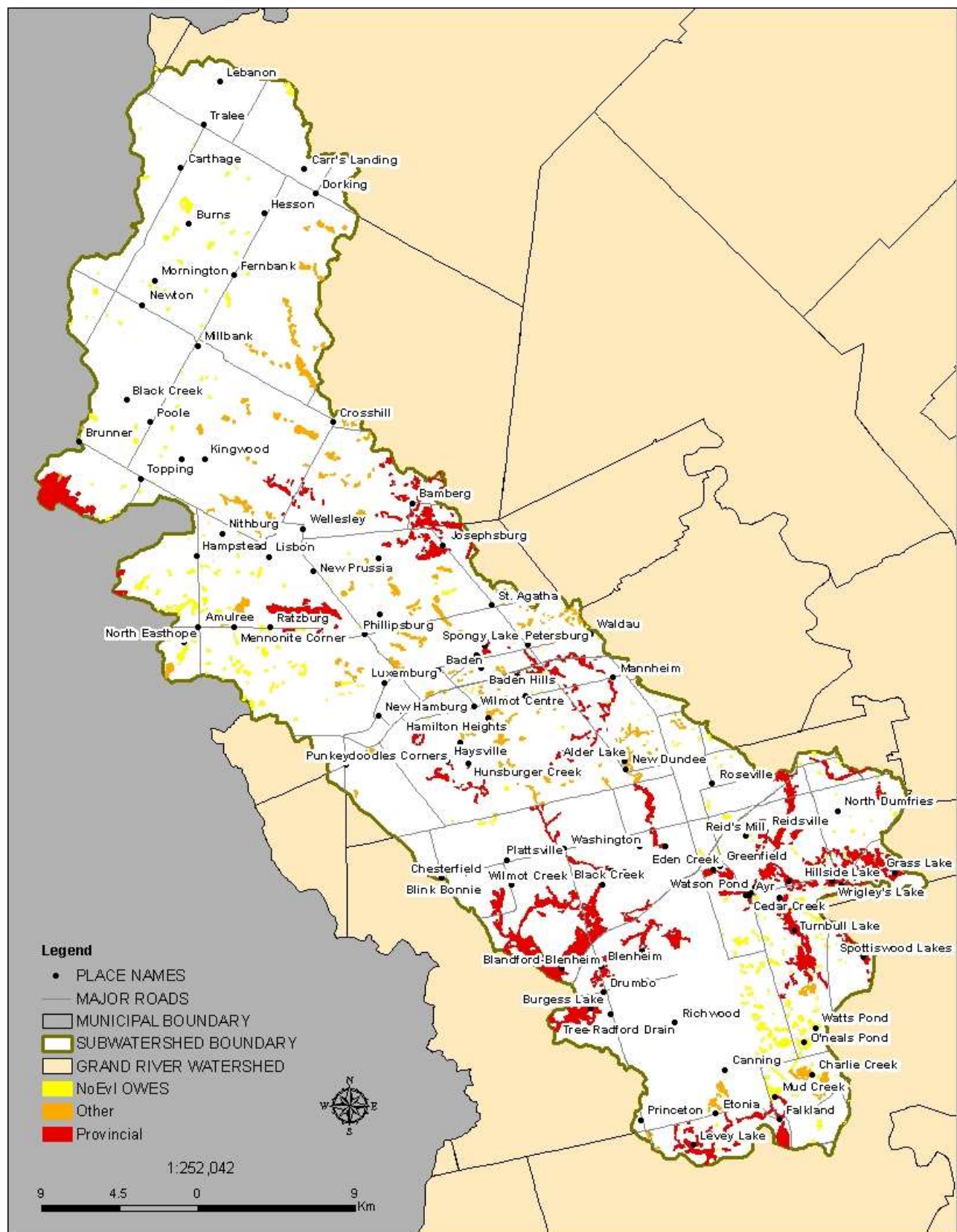


Figure 10. Extent of evaluated and unevaluated wetlands within the Nith River subwatershed

Provincially Significant Wetlands

4.1.1 Central Whitemans-Horner Creek Wetland Complex

Located in Blandford-Bleinheim Township (Oxford County), only 868 of the total 3,492 hectares of the complex occurs within the Nith River subwatershed. The remaining portions occur within the Whitemans Creek subwatershed area. Narrow strips of riparian wetland occur within the floodplain of Washington Creek whereas remaining portions are associated with Black Creek, a tributary of the Nith River. The wetland complex comprises swamp (89%), marsh (8%), fen (2%), and bog (1%) communities that are situated on mineral (45%) and organic (55%) soils. The wetlands are hydrologically connected by surface water to each other or to open water.

Provincially significant species recorded in this wetland complex include snapping turtle, eastern hognose snake, eastern ribbonsnake, Blanding's turtle, Louisiana waterthrush, Acadian flycatcher, king rail, least bittern, and large whorled pogonia (*Isotria verticillata*). Furbearers include muskrat, beaver, mink, and red fox. The GRCA owns 21 hectares of swamp on the south side of Black Creek and Township Road 8.

4.1.2 Roseville Swamp Cedar Creek Wetland Complex

Located in North Dumfries Township, roughly half of this wetland complex drains toward Cedar Creek, which flows south toward the Nith River. The remaining half located north of Roseville Road drains north toward Blair Creek and the Middle Grand River. The wetland area comprises swamp communities primarily with smaller amounts of marsh. Much of the wetland is situated on organic soils. The wetland is bisected by Highway 401 and a rail road line. A variety of disturbances have been documented within the wetland, including utility corridors (hydro and gas), channelization, drainage, and filling. Provincially significant species recorded here include snapping turtle. Furbearers recorded here include muskrat, beaver, mink, and coyote.

4.1.3 Sunfish Lake Laurel Creek Wetland Complex

Located in Wellesley and Wilmot Townships (Region of Waterloo), less than half of this wetland complex drains toward the Nith River. Wetland units within this subwatershed are closely associated with Bamberg Creek whereas other units are relatively isolated and drain internally. More than half of this complex (about 56%) drains toward Laurel Creek and the Middle Grand River and a smaller portion (about 5%) drains toward the Conestogo River. The entire complex consists of 109 evaluated wetland units ranging from 0.25 to 83 ha in size and comprising swamp (84%) and marsh (16%) communities. Bog conditions were observed in the Bamberg area but are not accounted for in the scoring. The wetland is situated on clay loam soils. Flood attenuation, water quality improvement, and groundwater recharge are considered important functions. Field investigations and environmental impact studies were completed in the 1980s by researchers at the University of Waterloo and Queen's University. Portions of the wetland are also designated as regionally significant Environmentally Sensitive Policy Areas (ESPAs) by the Region of Waterloo. Technical reports are available for Sunfish Lake (ESPA #10), Bamberg Swamp (ESPA #7), and Shaeffer Woods Swamp (ESPA #17) (see RMOW 1985). More

recently, environmental impact studies have been undertaken to support residential and commercial development in adjacent areas. The GRCA owns 34 ha of mixed swamp and forest within the Josephburg Tract.

4.1.4 Bannister Wrigley Sudden Tract Wetland Complex

This wetland complex covers 303 ha of land within North Dumfries Township in the Region of Waterloo. The complex consists of 6 individual wetland units that comprise swamp (51%), marsh (46%), fen (2%), and bog (1%) communities. Organic soils cover approximately 87% of the wetland area, whereas mineral soils cover 13% of the complex area. Carbon storage is predicted to be high given the extent of organic soils throughout the complex. The wetland units in this complex are mostly palustrine (having permanent or intermittent surface outflow only) whereas other wetland units have defined surface water inputs and outputs. Only 5% of the complex is considered hydrologically isolated. Open water accounts for about 19% of the total evaluated wetland area. Bannister Lake and Wrigley Lake represent the 2 largest water bodies, whereas Fair Lake and Grass Lake are two of the smaller water bodies. Discharge potential was not assessed at the time of the evaluation. The contributing drainage area is approximately 1,675 ha in size and is characterized by undulating or hilly topography, forested areas, active and abandoned agricultural land, pasture land, and floodplain. A few key sites within the wetland complex are popular destinations for recreation such as hiking, birding, and fishing. Approximately 1/3 of the complex area is owned and managed by the GRCA and the Region of Waterloo.

The open water areas are considered provincially significant waterfowl staging and molting areas. Waterfowl breeding habitat at these sites is also considered significant within the ecodistrict, whereas fish spawning and nursery habitat is considered locally significant.

4.1.5 Ellice Swamp

Only 280 ha of this 1,129 ha wetland complex occurs within the Nith River subwatershed. A majority of the complex area is located within the Thames River watershed. Portions located within the Nith River sub basin comprise deciduous swamp communities and organic soils. Several municipal drains intersect this wetland and provide spawning habitat for northern pike. Snapping turtle was recorded here historically.

4.1.6 Turnbull Lake Charlie Creek Wetland Complex

This wetland covers 222 ha of land in North Dumfries Township (Region of Waterloo) and Brant County. Turnbull Lake outlets toward Charlie Creek, which flows south toward the Nith River. The Gillies Drain (unrated) provides enhanced drainage toward the southern limits of this complex. Several unevaluated wetlands totaling approximately 28 ha are situated in close proximity and appear to be hydrologically connected to this PSW complex. The complex consists of a mix of treed and shrubby swamp (83%) and shallow marsh (17%) communities. Approximately 70% of the evaluated complex is covered by organic soils. Local disturbances include roads, channelization of watercourses, enhanced drainage, water pollution, and informal recreational trails. One provincially significant plant species (pignut hickory) and 2 regionally rare plant species (swamp

white oak and squawroot) are known to occur here. Great blue heron was reported to be nesting here in 1978 but the current status of the heronry is unknown. The wetlands and adjacent woodlands are considered regionally significant (RMOW 1985).

4.1.7 Phillipsburg Swamp

This large, deciduous swamp area occurs on both sides of Wilmot Easthope Road, which separates Perth East and Wilmot Township in the Region of Waterloo. Seven wetland units make up this complex, which comprises swamp communities primarily. Much of the complex (90% of the total area) is situated on organic soils and 10% is situated on clay loam soils. The swamp represents the headwaters of an unnamed tributary, which flows north toward Nith River. Several smaller and isolated wetlands are considered unevaluated but are located in close proximity of this PSW. Surveys in 1987, 1990, and 1991 confirmed the presence of a breeding colony of great blue herons. The current status of this breeding colony is unknown.

4.1.8 Levy Lake Mud Creek Wetland

This PSW complex is split between the Nith River and Whitemans Creek subwatersheds but is largely contained within the former. The evaluated complex is made up of 7 individual wetlands that comprise swamp (80%) and marsh (20%) communities, with between 51 and 100% of the complex consisting of mature trees. More wetland area has been added to the complex since the original wetland evaluation was completed in 1985. The wetland is situated on organic soils primarily. Several regionally significant plant species have been recorded here. The marsh areas were once considered an active feeding area for colonial waterbirds but were not considered significant for waterfowl staging or breeding.

4.1.9 Upper Alder Creek Wetland Complex

This PSW complex consists of 60 individual wetlands that are all situated within Wilmot Township (Region of Waterloo). The wetland comprises deciduous and coniferous swamp communities, which account for 97% of the total complex area, and a few marsh areas, which account for 3% of the complex. The wetlands are situated on clay/loam and organic soils. Several wetland units are closely associated with Hofsetter Creek and Alder Creek, whereas other wetlands lack a surface water inlet or outlet and are considered hydrologically isolated. Groundwater discharge potential is inferred to be relatively high owing to the presence of surface marl deposits, seeps, and iron precipitates. Groundwater recharge is inferred to be relatively moderate based on the soil types and presence of isolated, palustrine, and riverine wetland units.

4.1.10 Wolverton Wetland Complex

This PSW complex is situated entirely within the Blandford-Blenheim (Oxford County) section of the Nith River subwatershed and is closely associated with 3 main tributaries, including Wolverton Creek. Wetland units in this complex are scattered across a large area of Blandford-Blenheim Township and occupy an area roughly between Drumbo and Highway 401.

4.1.11 Burgess Lake Swamp

A majority (157 ha or 90%) of this 173 ha PSW complex occurs within the Blandford-Blenheim (Oxford County) section of the Nith River subwatershed, with the balance occurring in the Whitemans Creek subwatershed. This swamp is one of many wetlands that were integrated with the Central Whiteman's/Horner Creek PSW Complex. The mapping indicates that this complex extends from Gobles Road east toward Burgess Lake, which outlets to a municipal drain, which flows east toward the Nith River.

4.1.12 Lower Alder Creek Swamp

This 83 ha PSW complex is situated in Blandford-Blenheim Township (Oxford County). All of the wetland units within this complex lie within and adjacent to the Alder Creek floodplain below the New Dundee Dam and are well vegetated with trees and shrubs. As such, the wetland provides an important erosion control function. Information contained in the wetland evaluation record is based on field work completed in 1988, 1995-1996, and 2003. According to the OWES records, the complex is made up of 4 wetland units, all situated on clay/loam soil. Swamp communities account for 77% of the complex area and marsh areas account for 23%. Discharge potential is inferred to be relatively high based on the wetland type (swamp and marsh), the presence of seeps, and because the wetland is located within 1 km of a major aquifer (i.e. Waterloo Moraine). Groundwater recharge is inferred to be relatively moderate.

4.1.13 Greenfield Swamp

This 79 ha PSW complex consists of 13 individual wetland units along the Nith River corridor between Trussler Road and Nith Road in North Dumfries Township. Because of its position on the landscape, this riparian wetland is considered important for erosion control. According to the wetland evaluation record, swamp areas represent 63% of the complex area and marsh communities represent 8%. However, based on the most recent air photos, deciduous swamp communities appear to represent at least 70% of the total complex area. Smaller amounts of marsh are interspersed throughout the swamp and tend to occur within floodplain areas. A significant amount of this wetland complex is contained on the GRCA's Reinhart Property whereas smaller portions are found on the GRCA's Rear Land Property, which is located farther downstream in the Town of Ayr. Groundwater discharge potential is inferred to be relatively moderate. Furbearers recorded in this complex include muskrat, beaver, opossum (per A. Timmerman), and bobcat (per D. Coulson). Recreational activities taking place within this wetland include hunting and fishing. Provincially and nationally significant species recorded here include green dragon and black redhorse. Regionally significant species are also reported to occur here, including several plants (*Carex cristatella*, *C. laevivaginata*, *Calystegia spithamea*, *Epilobium leptophyllum*, and *Potamogeton pectinatus*) and alder flycatcher.

4.1.14 Whitemans Creek Kenny Creek Wetland Complex

A very small portion (66 ha out of the 2,082 total ha) of this wetland complex occurs within the Nith River subwatershed. Much of the complex occurs within the neighboring Whiteman's Creek subwatershed. Additional details are contained within the Whiteman's Creek Subwatershed Natural Heritage Characterization Report.

4.1.15 Spottiswood Pinehurst Lake Wetland Complex

About two thirds (65 ha out of the 100 total ha) of this wetland complex occurs within the Nith River subwatershed with the balance occurring within the Middle Grand River subwatershed. Significant portions of this complex are contained within Pinehurst Lake Conservation Area, which also spans the subwatershed divide. The wetland complex is roughly 25% swamp, 74% marsh, and 1% bog. Soil coverage is 20% clay and silt loams and 80% undesignated soil. Much of the wetland lacks a well-defined surface water inlet or outlet and as such is considered hydrologically isolated. Groundwater discharge potential is inferred to be low owing to a lack of seepage, distinct seeps, and iron precipitates. Groundwater recharge potential and carbon storage is inferred to be high owing to the extent of organic soil throughout this complex. The total catchment area of the wetland is about 7 km² and is characterized by undulating or hilly topography and a variety of land cover and land use types, including row crops, pasture land, active and abandoned agricultural land, deciduous and coniferous forest, open lakes, fence rows with cover or shelterbelts, and floodplain.

4.1.16 Haysville Wetland Complex

This 49 ha PSW complex is situated entirely within the Wilmot section of the Nith River subwatershed. Much of the wetland is confined to the floodplain of the Nith River, whereas smaller amounts are contained within the floodplain of Hunsberger Creek. A full wetland evaluation record was not available for this wetland.

4.1.17 Firella Creek Swamp

This 48 ha PSW complex is situated within Wellesley Township (Region of Waterloo). The complex consists of 20 individual wetland units ranging in size from 0.25 to 14 ha. Several wetland units are associated with Firella Creek and the Campbell Drain. Swamp communities account for 93% of the total complex area and shallow marsh areas account for 7%. Much of the wetland (94% of the total complex area) is situated on organic soils with smaller portions occurring on clay/loam and sandy soils. The wetland is deemed to be important for short term water quality improvement given its location within a largely agricultural landscape. Groundwater discharge potential is inferred to be relatively moderate given the presence of seeps, undulating topography in adjacent areas, and the size of the wetland relative to its catchment area (645 ha). Groundwater recharge potential is also inferred to be moderate. Regionally significant species observed here include beaked sedge (*Carex utriculata*), skunk current (*Ribes glandulosum*), and roundleaf goldenrod (*Solidago patula*).

4.1.18 Cedar Creek Tributary Wetland Complex

This 39 ha PSW complex is situated within North Dumfries Township (Region of Waterloo). The complex consists of 9 individual wetlands ranging in size from 0.44 to 7 ha. The wetlands are closely associated with an eastern branch of Cedar Creek. The entire wetland area is situated on sandy soil. Swamp communities account for 64% of the total wetland area and marsh communities represent 36% of the wetland. The wetland is deemed to be important for short term water quality improvement given its location within a largely agricultural and urbanizing landscape. At least one provincially significant species has been recorded here, namely sharp-fruited rush (*Juncus acuminatus*). Regionally significant species are also known to occur here, including several sedge

species (*Carex comosa*, *C. tribuloides*, *C. lacustris*, *C. stricta*, and *C. scoparia*), eastern manna grass (*Glyceria septentrionalis*), and water horehound (*Lycopus uniflorus*). Portions of the wetland complex are part of a regionally significant Environmentally Significant Policy Area #54 (Barrie Tract).

4.1.19 Spongy Lake Wetland Complex

This 30 ha PSW complex is situated within Wilmot Township and consists of 2 isolated wetland units that are underlain by clay/loam or fibric (organic) soils. The complex comprises swamp (42%), marsh (38%), fen (17%), and bog (2%) communities. Because there is no surface water outlet, the wetland is important for flood attenuation and groundwater recharge. Disturbances include a utility corridor and horse trails. The site is routinely visited by undergraduate and graduate students enrolled at the University of Waterloo. Locally significant plant species include sweet flag (*Acorus calamus*), beaked sedge (*Carex rostrata*), sundew (*Drosera intermedia*), pink pyrola (*Pyrola asarifolia*), pitcher plant (*Sarracenia purpurea*), buckbean (*Menyanthes trifoliata*), large cranberry (*Vaccinium macrocarpon*), and stemless lady-slipper (*Cypripedium acaule*).

4.1.20 Little Turnbull Lake Wetland

This 16 ha PSW complex is located southeast of Ayr in North Dumfries Township (Region of Waterloo) and consists of 2 isolated wetland units underlain by organic soils. The wetland contains swamp (53%), marsh (37%), and bog (10%) communities. Approximately 30% of the wetland is represented by open water. Several locally significant plant species have been recorded here, including one-sided pyrola (*Pyrola secunda*), round-leaved pyrola (*P. rotundifolia*), pitcher plant (*Sarracenia purpurea*), buckbean (*Menyanthes trifoliata*), large cranberry (*Vaccinium macrocarpon*), round-leaved sundew (*Drosera rotundifolia*), and buttonbush (*Cephalanthes occidentalis*). Locally significant animals recorded here include bullfrog (*Lithobates catesbeiana*) and bog copper butterfly (*Lycaena epixanthe*). Traditionally, the site was visited by the University of Waterloo Ecology Lab, the K-W Field Naturalists (Waterloo Nature), and the Hamilton Field Naturalists.

4.1.21 Milroy Lake Wetland

Located in North Dumfries Township (Region of Waterloo), this 13 ha PSW complex consists of 4 isolated wetland units that comprise swamp (35%), marsh (62%), and bog (3%) communities. Open water can account for as much as 90% of the wetland at any given time. The wetland contains organic soils primarily (80% humic/mesic or fibric) and sandy soils (20%). Given the lack of any surface water outlet and the size of the wetland relative to its catchment area (115 ha), the wetland is considered important for flood attenuation. The wetland is also inferred to be moderately important for water quality improvement and highly important for groundwater recharge. Traditionally, the site has been visited by the University of Waterloo Ecology Lab, Waterloo Nature (formerly the K-W Field Naturalists), and the Waterloo Region District School Board.

4.1.22 New Hamburg Oxbow Wetland Complex

Located within Wilmot Township (Region of Waterloo), this 12 ha PSW complex consists of 4 individual wetland units that comprise swamp (82%) and marsh (18%) communities. The wetland contains clay/loam (87% of the

total area) and organic (13%) soils. Groundwater recharge potential is inferred to be high given that the wetlands are either isolated or palustrine. The wetland is also considered important for flood attenuation and short term water quality improvement. Locally significant species recorded here include Tuckerman's sedge (*Carex tuckermanii*), brisly sedge (*C. comosa*), and bugleweed (*Lycopus uniflorus*).

4.1.23 Petersburg Swamp

Located in Wilmot Township (Region of Waterloo), this 11 ha PSW complex consists of 2 isolated wetland units that comprise swamp (86%) and bog (14%) communities. The wetland contains clay/loam (70% of the total area) and organic (30%) soils. This wetland is considered important for flood attenuation and groundwater recharge, as well as short term water quality improvement. At least one regionally significant plant species has been recorded here, namely dragon's-mouth (*Arethusa bulbosa*). Locally significant species recorded here include bog rosemary (*Andromeda glaucophylla*), bog willow (*Salix pedicellaris*), and leatherleaf (*Chamaedaphne calyculata*).

4.1.24 Gads Hill Swamp South Wetland

This 452 ha PSW complex occurs mostly outside of the Grand River watershed. Only 1 ha occurs within the Nith River subwatershed. Located within Perth East Township, this mostly deciduous swamp is closely associated with Hampstead Creek, also known as Satchell Drain, and provides flood and nutrient attenuation, which contributes to short term water quality improvements.

Non-Provincially or Locally Significant Wetlands

4.1.25 Silver Spring Creek Hunsburger Creek Wetland Complex

A wetland evaluation record was not available from the OMNRF, Guelph District Office.

4.1.26 Nith River Headwaters Wetland Complex

Located in Wellesley Township (Region of Waterloo), this 104 ha swamp complex consists of 12 individual wetland units that occur along both banks of a northwest flowing tributary of the Nith River (aka George Brenner Drain) and which range from 1.2 ha to 61 ha in size. The wetland contains clay/loam soils. The wetland provides flood and erosion control, and hence contributes to short term water quality improvements but provides less nutrient attenuation than similar riparian wetlands given a lack of organic substrates. Locally significant species recorded here include swamp fly honeysuckle (*Lonicera oblongifolia*) and soft rush (*Juncus effusus*).

4.1.27 Phillipsburg Southeast Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 61 ha swamp complex consists of 10 wetland units (0.34-19 ha) that are closely associated with 4 eastern tributaries of the Nith River. The wetland contains clay/loam (49% of the total area) and organic (51%) soils. The wetland provides flood and erosion control, and hence contributes to short term water quality improvements but provides less nutrient attenuation than similar

riparian wetlands given a lack of organic substrates. Groundwater recharge potential is inferred to be high. At least one provincially significant species, green dragon (*Arisaema dracontium*), has been recorded here.

4.1.28 Silver Creek Wetland Complex

Located in Perth East Township, the evaluated wetland complex consists of 2 individual swamp units measuring 26 ha and 52 ha. Much of the wetland contains mature trees but shrub communities are also present. Both wetland units are closely associated with Silver Creek (aka Amulree Creek) and its associated floodplain. Several unevaluated wetland units are located within 750 m of the complex. The evaluated complex contains clay/loam (39%) and organic (61%) soils. The wetland provides flood and erosion control, nutrient attenuation, and also contributes to short term water quality improvements.

4.1.29 West Paris River Swamp

Located on the west side of Paris in Brant County, this wetland complex consists of several riverine wetlands along the banks of Charlie Creek and the Nith River. The complex comprises swamp (82%) and marsh (18%) communities that are growing and clay/loam/silty soils (50%) and organic (50%) soils. The wetland provides flow stabilization and augmentation, erosion control, nutrient attenuation, and also contributes to short term water quality improvements.

4.1.30 Crosshill West Wetland Complex

Located in Wellesley Township (Region of Waterloo), this complex consists of 4 individual swamp units (1.13 - 41 ha), the largest of which is hydrologically isolated from the rest of the complex. The wetland contains clay/loam soils and, although it provides flood and erosion control, it provides less nutrient attenuation than other wetlands owing to the lack of organic soils. The wetland also contributes to short term water quality improvements along an unnamed tributary of the Nith River. Groundwater recharge potential was inferred to be high in this wetland.

4.1.31 Canning Swamp

Wetland evaluation not available from the Aylmer District MNRF.

4.1.32 Wellesley West Wetland Complex

Located in Wellesley Township (Region of Waterloo), this complex consists of 2 individual swamp units totaling 9.4 ha. Both wetlands are associated with an unnamed tributary of the Nith River. A third and unevaluated wetland (1.25 ha) is located in close proximity to this complex. The wetlands are situated on clay/loam soils. The wetland provides flood and erosion control, nutrient attenuation, and also contributes to short term water quality improvements. Groundwater recharge potential is inferred to be high.

4.1.33 St. Agatha West Wetland Complex

Located in Wilmot Township (Region of Waterloo), the mapped complex consists of 6 individual wetland units totaling 41 ha. One additional wetland unit is mapped by the OMNRF and the GRCA but is not part of this complex according to current mapping. The wetlands are all swamp communities situated on clay/loam soils, and they are located at the headwaters of St. Agatha Creek, a known brook trout spawning area. The wetland provides flood and erosion control, nutrient attenuation, and also contributes to short term water quality improvements. Groundwater recharge potential is inferred to be moderate to high. Locally significant plant species reported here include striped coral root (*Corallorhiza striata*), early coral root (*C. trifida*), creeping snowberry (*Gaultheria hispidula*), kidneyleaved violet (*Viola renifolia*), and moonseed (*Menispermum canadense*).

4.1.34 Linwood Southwest Wetland Complex

Located in Wellesley Township (Region of Waterloo), this complex consists of 5 individual wetland units totaling approximately 4 ha. All but one of the wetlands are located within the Nith River sub basin. The remaining wetland unit is located in the Conestogo River sub basin. The wetlands are all swamp communities situated on clay/loam soils, and they are all contained within one, large woodland located north of Schummer Line. The wetlands are hydrologically isolated and thus provide flood attenuation and groundwater recharge potential.

4.1.35 Nithburg Swamp

According to the wetland evaluation record, this 30 ha wetland complex consists of 16 individual wetland units ranging in size from 0.16 to 10 ha. However, current mapping obtained from the Province indicates that the complex consists of many more wetland units in two separate subcatchments. Many of these wetlands are associated with three unnamed tributaries of the Nith River. Located in Perth East Township, the wetland complex comprises swamp (86%) and marsh (14%) communities, which are situated on clay/loam (79%), sand (11%), organic (9%) soils. This riparian wetland provides flood and erosion control, nutrient attenuation, and also contributes to short term water quality improvements. Groundwater discharge potential is inferred to be moderate whereas groundwater recharge potential is inferred to be high. A breeding colony of great blue herons was observed here in 1994 by students attending the University of Waterloo. The status of this breeding colony is unknown.

4.1.36 Dorking South Wetland Complex

Located in Wellesley Township (Region of Waterloo), this 27 ha wetland complex consist of 5 individual wetland units ranging from 2 to 9.6 ha in size. The wetland complex comprises swamp communities that are situated on clay/loam soils. The wetlands provide flood control, nutrient attenuation, and also contributes to short term water quality improvements but are not considered important for erosion control as they are not situated along a permanent watercourse. Recharge potential is inferred to be high.

4.1.37 Prothonotary Pond Wetland

This 25 ha wetland is located just west of Pinehurst Road in Paris and at the headwaters of a small tributary of Charlie Creek. The wetland comprises swamp (78%) and marsh (22%) communities that are situated on humic/mesic (90%) and clay/loam (10%) soils. The wetland provides flood control, is considered a long term nutrient trap, and also contributes to short term water quality improvements. Groundwater recharge and discharge potential is inferred to be high given the lack of a defined surface water inlet and owing to the presence of seeps in the wetland. Great blue herons have nested here historically. The presence and status of any nesting colony remains unknown. Waterfowl staging is known to occur here but is not considered significant. The habitat here is not considered suitable for waterfowl breeding.

4.1.38 Alder Lake Marsh

Located in Wilmot Township (Region of Waterloo), this 25 ha wetland complex consists of 6 evaluated wetland units ranging from 0.08 to 22.5 ha in size. Wetland units less than 0.5 ha have been included within this complex as they provide protection of significant values and corridor connections for wildlife movement. The wetland comprises marsh (88%) and swamp (12%) communities that are situated on clay/loam (96%) and humic/mesic (6%) soils. Open water represents between 25% and 75% of the complex area. The wetland is inferred to be important for erosion control and short term water quality improvement. Groundwater discharge potential is deemed to be relatively high based on the presence of seeps and marl deposits, because the wetland is located close to a major aquifer, and given the size of the wetland relative to its catchment area (7,077 ha). A low to moderate level of hunting, fishing, and nature-based recreational activities take place within the wetland. The trophic status of Alder Lake was studied in the past (see Grey 1987 in OWES record). Although waterfowl staging is known to occur, it is not considered significant. Fish spawning and nursery habitat in the wetland is considered to be locally significant.

4.1.39 Waldau East Wetland Complex

Located in Wilmot Township and the City of Waterloo, this 24 ha wetland complex consists of a loose cluster of 12 or so wetland units at the headwaters of Alder Creek. The wetland comprises deciduous swamp communities that are situated primarily on clay till and sandy soils. The wetland is inferred to be important for flood attenuation and erosion control. Groundwater recharge potential is considered high. Provincially significant species recorded here include snapping turtle and Emmon's white-tinged sedge (*Carex albicans* var. *emmonsii*). Locally significant species have also been recorded here, including moonseed (*Spiloloma lunilinea*) and Tickerman's sedge (*Carex tuckermanii*).

4.1.40 Berletts Corners South Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 24 ha wetland complex consists of 3 swamp units along an unnamed tributary of the Nith River, which is known to contain rainbow mussel, a species of special concern. The wetland is situated on clay loam soils. The wetland is deemed to be important for flood attenuation and

provides some short term water quality improvement. Groundwater recharge potential is inferred to be high. Winter cover for wildlife is considered locally significant.

4.1.41 Shakespeare Avon Wetland Complex

Located in Perth County, this 71 ha wetland complex consists of 4 wetland units which are partially located within the Nith River subwatershed. Approximately 70% of the complex occurs within the Upper Thames River subwatershed. The complex comprises swamp communities that are situated on clay/loam (35%) and humic/mesic (65%) soils. The wetland is considered important for flood attenuation. Given the hydrogeomorphic characteristics of the wetland units and the extent of organic soils, the wetland provides short and long term water quality improvement. Given the extent of organics within this wetland, carbon storage is considered moderate.

4.1.42 Washington Creek West Wetland Complex

The wetland evaluation record was not available from the OMNRF, Aylmer District Office.

4.1.43 Middle Alder Creek Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 22 ha wetland complex consists of 9 individual wetland units ranging from 0.26 to 17.5 ha in size. The wetland comprises a mix of swamp (90%) and marsh (10%) communities situated on clay/loam (57%) and humic/mesic (43%) soils. The complex is deemed moderately important for flood attenuation, shoreline erosion control, and short term water quality improvement. Groundwater recharge potential is deemed to be high because surface water discharge is intermittent.

4.1.44 Crosshill Moraine 3 Wetland Complex

Located in Wellesley Township (Region of Waterloo), this wetland complex consists of 15 individual wetland units ranging from 0.2 to 3 ha in size. Vegetation communities and soils were not assessed during this wetland evaluation. A site visit is required to verify the vegetation communities and soil types within these wetlands. The wetland complex is located at the headwaters of Campbell Drain and is deemed to be important for flood attenuation and moderately important for short term water quality improvement. Groundwater recharge potential is considered high.

4.1.45 Josephsburg South Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 17 ha wetland complex consists of 3 individual wetland units along two unnamed tributaries of Bamberg Creek. The wetland comprises swamp communities situated on clay/loam soils. Flood attenuation is deemed to be important. Groundwater recharge potential is inferred to be high. According to the NHIC, snapping turtle is known to occur within the vicinity of this wetland complex.

4.1.46 Wellesley East Wetland

Located in Wellesley Township (Region of Waterloo), this 16 ha wetland consists of a single swamp unit located immediately west of Hackbart Road. Additional information about this wetland evaluation was not available from the MNRF.

4.1.47 Lower Alder Creek Wetland Complex

Located in Wilmot Township (Region of Waterloo) and Blanford-Blenheim Township (Oxford County), this 15 ha wetland complex was evaluated separately by the Guelph and Aylmer Districts. The 15 ha portion within the Guelph District is considered locally significant whereas the 83 ha portion located within the Aylmer District is considered provincially significant. The wetland complex consists of 4 wetland units along the Alder Creek corridor. The wetland comprises swamp (77%) and marsh (23%) communities, which are situated on clay/loam soils. Flood attenuation is considered moderately important and shoreline erosion control is inferred to be high. Groundwater discharge potential is considered moderate given the presence of a few seeps and because the wetland is located in close proximity to a major aquifer. Winter cover for wildlife is considered locally significant. The presence of brook trout in this section of Alder Creek was confirmed in 1988 but not 1996.

4.1.48 Baden East Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 12 ha wetland complex consists of 6 individual wetland units directly or indirectly associated with 2 branches of Baden Creek. The wetland comprises swamp (68%) and marsh (32%) communities, which are situated on clay/loam soils. Flood attenuation is considered important but shoreline erosion control is deemed less important given the lack of trees, shrubs, and emergent vegetation along the watercourses. Groundwater recharge is inferred to be relatively high.

4.1.49 St. Agatha Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 12 ha wetland complex consists of 11 individual wetland units ranging from 0.42 to 3.34 ha in size. Wetland polygons less than 0.50 ha were included in the complex where necessary to protect significant values and provide vital corridor connections for wildlife. All of the wetlands are considered isolated (lacking a surface water inlet and outlet) and are situated on clay/loam soils. The wetland complex comprises swamp (73%) and marsh (27%) communities. Therefore, the wetland is considered important for flood attenuation. However, the wetland is considered moderately important for water quality improvement. Because the wetlands are internally drained, groundwater recharge is inferred to be high. Aside from moonseed (*Menispermum canadense*), there are no known records of locally or provincially significant species within this wetland.

4.1.50 Millbank East Wetland Complex

Located in Wellesley Township (Region of Waterloo), this 11 ha wetland complex consists of 9 individual wetland units ranging in size from 0.18 to 2.09 ha in size. The wetland comprises swamp communities that are situated on clay/loam soils. Flood attenuation is considered important. However, short term water quality

improvement is considered only moderately important. Groundwater recharge is inferred to be high. According to the NHIC, eastern ribbonsnake, a provincially significant species, has been observed within this wetland complex.

4.1.51 Kingwood Northeast Wetland Complex

Located in Wellesley Township (Region of Waterloo), this 11 ha wetland complex consists of 3 individual wetland units, two of which drain toward an unnamed tributary of the Nith River. The wetland comprises swamp (93%) and marsh (7%) communities that are situated on clay/loam soils. The wetland is considered important for flood attenuation and groundwater recharge. The wetland is also inferred to be important for short term water quality improvement.

4.1.52 Kingwood North Wetland Complex

Located in Wellesley Township (Region of Waterloo), this 10 ha wetland complex consists of 3 individual swamp units, all situated on clay/loam soils. The wetland is considered important for flood attenuation and groundwater recharge but is considered moderately important for short term water quality improvement.

4.1.53 Nith River Wetland 1

Located in Wellesley Township (Region of Waterloo), this 10 ha wetland consists of a single unit along the Nith River corridor. The wetland appears to comprise mostly swamp with lesser amounts of marsh. Additional detail about the vegetation communities is lacking in the wetland evaluation record. The wetland is situated on clay/loam (61%) and sandy (39%) soil. Given the size of this wetland relative to its catchment area (1,210 ha), flood attenuation is not considered important. However, because of its location along a river corridor, short term water quality improvement is considered important.

4.1.54 New Prussia Southeast Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 9 ha wetland complex consists of 4 individual swamp units, all situated on clay/loam soil. At least one of these wetlands is located along an unnamed tributary of the Nith River whereas the remaining units are considered hydrologically isolated (lacking a surface water inlet or outlet). Flood attenuation, shoreline erosion control, and groundwater recharge are considered to be important.

4.1.55 Baden Southwest Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 9 ha wetland complex consists of 2 wetland units. This wetland was mapped based on a GIS layer obtained from the GRCA. The GRCA wetland mapping has since been revised and currently indicates that the wetland complex consists of 9 individual wetland units ranging in size from 0.01 to 0.6 ha. The wetland complex comprises swamp communities that are situated on clay/loam (95%) and sandy (5%) soils. Flood attenuation, short term water quality improvement, and groundwater recharge are considered to be important functions of the wetland.

4.1.56 Princeton Wetland

Located in Brant County, this 8 ha wetland consists of 4 wetland units that range from 0.41 to 3.0 ha in size. An evaluation record was not available for this wetland. Based on current air photos and related information available to the GRCA, the wetland comprises swamp and marsh communities and is situated on silty loam soils. According to the NHIC, eastern ribbonsnake, a provincially significant species, has been observed within the vicinity of the wetland.

4.1.57 Strasburg Wetland Complex 3

Located in the City of Kitchener, this 8 ha wetland complex consists of 6 evaluated wetland units ranging from 0.45 to 2.12 ha in size. The wetland comprises swamp (90%) and marsh (10%) communities that are situated on clay/loam soil. Flood attenuation, short term water quality improvement, and groundwater recharge are considered to be important functions of the wetland. Locally significant species observed in this wetland include sora, wood duck, water foxtail (*Alopecurus aequalis*), southern manna grass (*Glyceria septentrionalis*), water arum (*Calla palustris*), and silvery sedge (*Carex canescens*). This wetland was evaluated as part of the Alder Creek Watershed and Upper Strasburg Creek Subwatershed Study (see CH2MHill 2008).

4.1.58 Haysville North Wetland

Located in Wilmot Township (Region of Waterloo), this 7 ha swamp is situated on clay loam soil. The wetland is hydrologically connected by surface water to other wetlands, which are located approximately 775 m away. Flood attenuation, short term water quality improvement, and groundwater recharge are considered to be important functions of the wetland.

4.1.59 Kingwood East Wetland Complex

Located in Wellesley Township (Region of Waterloo), this 6 ha wetland complex consists of 5 individual wetland units which are either hydrologically isolated or connected by surface water to other wetlands. The wetland comprises a swamp community that is situated on clay/loam soil. Flood attenuation and groundwater recharge are considered important functions of the wetland. Short term water quality improvement and groundwater discharge are considered moderately important functions.

4.1.60 New Hamburg South Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 5 ha wetland complex consists of 18 isolated swamp units ranging in size from 0.02 ha to 0.22 ha. Wetland units less than 0.5 ha in size were included to protect wildlife movement between these features and because of the close proximity of these wetlands to each other. It is possible that these wetlands are hydrologically connected to Wilmot Creek during extreme flooding events. The wetlands are contained within the same woodland feature. Flood attenuation and groundwater recharge are considered to be important functions of the wetland. Short term water quality improvement and groundwater discharge are considered a moderately important functions.

4.1.61 Hiller Creek Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 5 ha wetland complex consists of 4 individual wetland units ranging from 0.49 ha to 2.8 ha in size. Three wetland units are all contained within the same woodland feature and are inferred to be functionally connected. A fourth wetland unit drains toward Hiller Creek and is also inferred to be hydrologically connected. The wetland area comprises swamp (12%) and marsh (88%) communities that are situated on clay/loam soils. Flood attenuation, short term water quality improvement, and groundwater recharge are considered to be important functions of the wetland.

4.1.62 Nith River Wetland Complex 2

Located in Wellesley (Region of Waterloo) and Perth East (Perth County) Townships, this 5 ha wetland complex consists of 2 swamp units, both draining directly or indirectly toward an unnamed tributary of the Nith River. The wetland is situated on clay/loam soils. Short term water quality and shoreline erosion control are considered important functions. Because these wetlands have intermittent to permanent surface water outlet, groundwater recharge is considered moderately important.

4.1.63 Wilmot Creek Wetland 1

Located in Wilmot Township (Region of Waterloo), this swamp wetland measures just over 4 ha in size and is located almost entirely within the floodplain of Wilmot Creek. The wetland is situated on clay loam. Flood attenuation, short term water quality control, shoreline erosion control, and groundwater recharge are considered moderately to highly important functions.

4.1.64 Schindelstедdle South Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 3 ha wetland complex consists of 2 evaluated marsh units, both of which are considered hydrologically isolated. Both wetlands are situated on clay loam soil. The larger wetland unit contains open water but drains internally. Flood attenuation and groundwater recharge are considered important functions. Because the wetlands are isolated from any nearby watercourses, short term water quality improvement is considered moderately important. Both wetlands are surrounded by a variety of habitats, including active and abandoned agricultural land and forests. Habitat within the wetland is suitable for waterfowl breeding. Pied-billed grebe, a locally significant species, was observed here during the breeding season. In addition, eastern painted turtle nesting activity was observed during a study to assess the impacts of a proposed above water aggregate application (see Dance Environmental Inc. 2019, Harden Environmental Services Limited 2019).

4.1.65 Nith River Wetland 3

Located in Wellesley Township (Region of Waterloo), this 3 ha swamp wetland is situated along an unnamed tributary of the Nith River and as such is hydrologically connected to these watercourses. The wetland is situated on clay soil. Flood attenuation, short term water quality improvement, and groundwater recharge are

considered important functions. According to the NHIC, snapping turtle has been observed within the vicinity of this wetland.

4.1.66 Trussler Road Wetland Complex

Located in Wilmot Township (Region of Waterloo), this 2 ha wetland complex consists of 3 evaluated wetland units, which are all greater than 0.5 ha in size. Four unevaluated wetlands less than 0.5 ha in size are located within 750 m of this complex and could potentially be added to this complex to protect wildlife movement between these features. The wetland units are all contained within a single and much larger woodland feature. The wetland comprises swamp (79%) and marsh (21%) communities that are situated on clay loam soil. Because the wetland units are not hydrologically connected to any nearby watercourses, short term water quality improvement is considered moderately important. Flood attenuation and groundwater recharge are considered important. According to the NHIC, the marsh areas are considered suitable for swamp darter whereas the woodland is considered suitable for cerulean warbler. Both species are considered provincially significant.

4.1.67 Plattsville North Nith River Wetland Complex

Located in Wilmot Township (Region of Waterloo), this wetland complex originally consisted of 6 evaluated wetland units ranging from 0.37 to 2.7 ha in size. Wetland units less than 0.5 ha in size were included in this complex to protect significant local values, including wildlife movement corridors between wetland features, and because their close proximity to each other. According to the current map layer, a single, 2 ha wetland unit is mapped as being part of the evaluated complex. The evaluated wetland areas mapped within the immediate area are not reconciled with the GRCA's wetland mapping. Wetland units in this area comprise swamp communities primarily with lesser amounts of marsh. The wetlands are hydrologically connected by surface water to the Nith River. Flood attenuation, erosion control, short term water quality improvement, and groundwater recharge are all considered important functions that contribute to the hydrological significance of this wetland complex. This section of the Nith River contains black redhorse and silver shiner, 2 federally and provincially protected Species at Risk. Provincially significant plant species observed within the vicinity of this wetland include green dragon (*Arisaema dracontium*) and Carey's sedge (*Carex careyana*).

4.1.68 Waldau Central Wetland Complex

According to the provincial mapping layer, this wetland complex consists of 5 evaluated wetland units ranging from 0.05 to 0.274 ha in size. All of the wetland units are hydrologically isolated from each other but are part of the same woodland feature. A wetland evaluation record was not available for this complex and it is possible that the wetland units in this complex were formerly part of the Waldau East Wetland Complex (see above).

4.1.69 Brunner Wetland Complex

Located in Perth County, only a fraction (0.29 ha) of this wetland complex is located within the Grand River Watershed. The remaining portions are located within the Upper Thames River watershed.

4.2 Woodlands

Woodlands are defined by the Province as treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products (OMMAH 2020). Woodlands can include forests, woodlots, plantations, and swamps. Woodlands vary in their level of significance at the local, regional and provincial levels. Woodlands may be delineated and mapped in accordance with Ontario Forestry Act protocols or in accordance with the Ecological Land Classification System for Southern Ontario definition of “forest” (see Lee et al. 1998).

The woodland layer used in this subwatershed analysis was derived from the Southern Ontario Land Resource Information System (SOLRIS). Classification of woodlands into smaller ELC vegetation types was not within the scope of the current analysis. The terms woodland and forest are used interchangeably in this report. Interior forests are defined as those portions of the woodland in excess of 100 m from the woodland edge. Woodlands cover 14,559 hectares or approximately 13% of the Nith subwatershed, which is among the lowest forest cover levels in the Grand River watershed. Only the Upper Middle Grand has less forest cover (12%). Approximately 1,568 hectares, or 11% of the total forested area within the Nith subwatershed, is considered interior forest (see Table 6 & Figures 11 and 12).

Table 6. Woodland Cover within the Nith River Subwatershed

Subwatershed Area	112,800 ha or 1,128 km ²
Total Forest Cover	14,559 ha or 146 km ² (13% of subwatershed area)
Interior Forest Cover (100 metres from edge)	1,568 ha or 16 km ² (11% of total forest cover and 1.4% of subwatershed area)
Jurisdictions where significant woodland has been identified and mapped	Brant County, Perth County, Region of Waterloo, City of Kitchener

Woodlands in the Nith River subwatershed tend to be small and isolated from each other, a pattern that is particularly evident in the northern portion of the subwatershed. Woodland connectivity is evident in some areas owing to the historical practice of leaving woodlots at the back of farm lots. Connectivity improves marginally in the central and lower portions of the subwatershed and is most apparent along watercourses and within floodplains, where mature swamps occur. Many forests in this area are closely associated with large wetland complexes. A large forest and swamp complex can be seen along the western edge of this subwatershed. Forest areas are closely associated with Ellice Swamp and the nearby Gads Hill Swamp. The vast majority of other forests in this subwatershed that are large enough to contain interior forest tend to be associated with wetland complexes.

Large woodlands in the Amulree, Wellesley, Crosshill, St. Clements, Bamberg, Josephsberg, St. Agatha, and Phillipsburg areas tend to be dominated by sugar maple, beech, and hemlock, and provide a variety of habitat

for significant wildlife species, including area-sensitive birds and bats. Small low-lying kettle depressions occurring in the generally upland woodlands are usually covered by soft (red or silver) maple, whereas larger kettles at St. Clements and Bamberg are bog like, with numerous plant species occurring on acidic soils such as black spruce, Labrador tea, and many orchids (GRCA 2004).

The Province identifies significant woodlands as an area that is ecologically important in terms of features such as species composition, age of trees and stand history. A significant woodland may also be functionally important due to its contribution to the broader landscape, because of its location, size, and/or the amount of forest cover in the planning area. A significant woodland may also be economically important owing to site quality, species composition, or past management history. Significant woodlands may be identified using standardized criteria established by the Province (see OMNR 2010, MMAH 2020).

According to the Region of Waterloo's Official Plan, forests greater than 4 ha and Waterloo Regional Forests are identified as Core Environmental Features. Significant woodlands are defined as those that are greater than 4 ha, consist of primarily native species of trees, and meet the woodland criteria outlined in the Regional Woodland Conservation By-law.

According to Perth County's Official Plan, woodland areas greater than 1 ha are considered significant and are designated as "Natural Resources" in the plan. The 1 ha criterion is based on contiguous woodland area and not based on property ownership. Significant woodlands are mapped in the County's 2018 Natural Heritage Systems Study. The County's study also recommends that any woodland within 100 m of a woodland greater than 1 ha and woodlands that contain or are within 30 m of a watercourse, or that is situated within or contiguous to a significant valleyland should also be considered significant.

The City of Kitchener assessed woodland significance within individual neighborhoods or planning communities. According to the City's Natural Heritage System Background Report (City of Kitchener 2014), all woodlands are considered significant in planning communities having less than 5% cover. The minimum size threshold increases in areas containing higher woodland cover. Where woodland cover is between 5 and 10%, woodlands greater than 2 ha and less than 4 ha are considered locally significant. Where woodland cover is greater than 10%, woodlands greater than 4 are considered locally significant.

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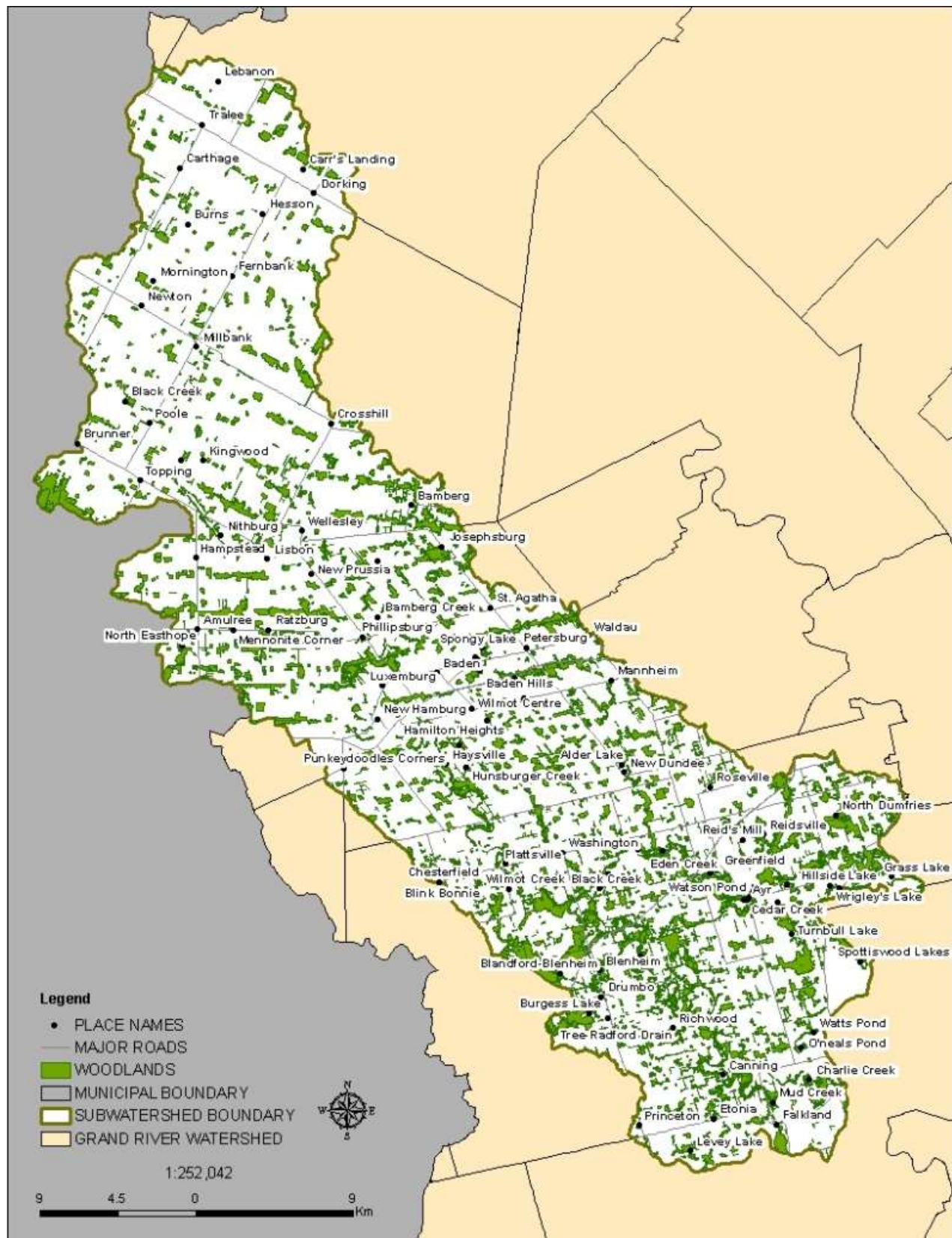


Figure 11. Woodland Cover within the Nith River Subwatershed (includes treed wetlands)



Figure 12. Interior Forest within the Nith River Subwatershed (includes treed wetlands)

According to the County of Brant Official Plan, woodlands “means treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels” (Section 7.0, County of Brant Official Plan). Woodlands and vegetation communities are identified as a constraint to development and are illustrated in Schedule C of the County’s Official Plan. Woodlands and vegetation communities include treed areas, woodlots, or forested areas, including:

- i. Provincially significant woodlands, as defined in Section 7.0 of this Plan;
- ii. Areas that are located in urban settlements and are at least 2 ha in size;
- iii. Areas that are located in the agricultural area and are at least 4 ha in size; or,
- iv. Areas that contain rare, threatened or endangered species and their habitat.

A significant woodland would be “ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. Significant woodlands will be identified in accordance with criteria recommended by the Province (County of Brant 2012).

Significant woodlands have not been identified or mapped by the County of Oxford, which has roughly 12% woodland cover. However, the Official Plan does recognize that significant woodlands are characterized by the Province on the basis of:

- the size of the feature;
- the occurrence of other significant features;
- the provision of important *ecological functions* such as biodiversity, linkage, buffering, or water quality;
- the composition, age, or site quality results in a feature which is uncommon to the County; and
- *woodland* economic and social values.

The County’s Natural Heritage Study (County of Oxford 2006) also lists the following ecological criteria to help identify and map significant woodlands:

- Woodlands that contain rare species or Species at Risk
- Woodlands that include provincially designated Life Science Areas of Natural and Scientific Interest or ANSIs
- Woodlands that contain Provincially Significant Wetlands or Locally Significant Wetlands
- Woodlands within 150m of designated, non-wetland habitats in the Official Plans (e.g. Life

- Science ANSIs, ESAs, and other protected areas) or within 750m of designated wetland habitats in the Official Plan (e.g. PSWs and LSWs)
- Woodlands greater than 10ha in size
- Woodlands with interior habitat (i.e. a woodland must be greater than 4 ha and contain woodland habitat more than 100 from its edge)
- Woodland patches that contain an open watercourse or are within 50 m of an open watercourse.

Significant woodlands may also overlap or be contiguous with Provincially or Locally Significant Wetlands (see Section 4.1 above) or provincially designated Areas of Natural and Scientific Interest (ANSIs), which are discussed in the following section.

4.3 Areas of Natural and Scientific Interest

These natural areas are defined by the Province as “an area of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.” The best representative sites outside of national parks, provincial parks, or conservation reserves are considered to be provincially significant ANSIs. Other sites that are considered to be the next best examples of a representative ecological or geological unit, landform, or community are identified as regionally significant or locally significant ANSIs (OMNR 2010).

Twenty eight (28) ANSIs designated by the OMNRF are represented within the Nith River subwatershed area. Seven of these are provincially significant ANSIs, and 21 have been designated as a regionally significant ANSIs. ANSIs are summarized in Table 7 and are illustrated in Figure 13.

Summaries for each ANSI are provided below and are based on information obtained from the OMNRF.

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Table 7. ANSIs Represented Wholly or Partially within the Nith River Subwatershed

ANSI Name	ANSI Type	Significance	Total Size (ha)	Total Area within Grand River Watershed (ha)	Total Area within Nith River Subwatershed (ha)
Alps Woods	Life	Provincial	119	119	119
Amulree-Wellesley Kames	Earth	Regional	1	1	1
Baden Hills Kames	Earth	Regional	2	2	2
Bamberg Swamp and Bog Lake	Life	Regional	51	51	51
Bannister and Wrigley Lake	Life	Regional	70	70	70
Brunner Spillway	Earth	Regional	103	43	43
Cottrel Lake Esker	Earth	Regional	490	490	325
Cranberry Bog	Life	Provincial	41	41	41
Crosshill Complex	Life	Regional	236	236	55
Dorking North Woodlot	Life	Regional	86	86	82
Easthope Moraine	Earth	Regional	1	1	1
Ellice-Huckleberry Swamp	Life	Regional	875	325	325
Gads Hill Moraine	Earth	Regional	1	1	1
Grand River Forests	Life	Provincial	921	921	3
Hungry Hill	Life	Regional	108	108	108
Ingersoll Moraine Outwash Fan	Earth	Regional	4	4	4
Ingersoll Moraine	Earth	Provincial	741	741	244
Little Turnbull Lake	Life	Regional	20	20	20
McCrone Lake	Life	Regional	19	19	19
Nith River Forest	Life	Regional	164	164	164
Phillipsburg Forest	Life	Regional	212	212	212
Phillipsburg Swamp	Life	Regional	270	270	270
Pinehurst Lake Kettles	Earth	Provincial	125	125	59
Roseville Swamp	Life	Regional	285	285	50
Spongy Lake Bog	Life	Provincial	91	91	91
Spottiswood Lakes	Life	Provincial	142	142	104
St. Agatha Beech-Maple Forest	Life	Regional	70	70	70
Sudden Tract	Life	Regional	148	148	148

4.3.1 Alps Woods

Located approximately 4 km southwest of Cambridge, Alps Woods is characterized by short steep hills with intervening low-lying wet areas. The woodland consists of two large blocks of forest that are situated on top of a strongly rolling kame moraine formed by two closely aligned ridges of the Galt-Paris moraine. Local relief exceeds 30 m in some areas. Valley bottoms contain small, intermittent drainage channels but the moisture regime is not suitable to support wetland communities. The woodland is surrounded by agricultural fields.

The primary feature of the ANSI is the forest, which is dominated by plants characteristic of upland sites in the southern deciduous forest region known as the Carolinian zone. Tree species include red and white oak, black cherry, shagbark hickory, and provincially rare pignut hickory, which are all relatively common throughout this forest. In addition, white ash, red maple, and sugar maple are found throughout the forest. Sixteen different forest stands were documented here as well as a small white pine plantation and thicket communities.

Owing in part to steep topography, the forests have remained relatively undisturbed and the habitat sufficiently diverse to support a variety of breeding birds, including area-sensitive species such as hooded Warbler. Historically, Cerulean warbler and Acadian flycatcher nested here. Provincially and regionally significant plants can still be found here.

4.3.2 Amulree-Wellesley Kames

The Amulree-Wellesley Kames is a regionally significant earth science ANSI. A report for this ANSI is currently not available.

4.3.3 Baden Hills Kames

The Baden Hills Kames is a regionally significant earth science ANSI. Located approximately 18 km west of Kitchener, the site includes a group of four kames reaching over 500 m in height. The physiography rather than the vegetation is most noteworthy here. The whole area has been subjected to grazing and plantation planting. Approximately 56% of the ANSI has natural vegetation. The remaining area of the ANSI is either plantation or pasture.

4.3.4 Bamberg Swamp and Bog Lake

The Bamberg Swamp and Bog Lake is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.5 Bannister and Wrigley Lake

The Bannister and Wrigley Lake is a regionally significant life science ANSI. The lakes are located approximately 15 km southwest of Cambridge. The lakes are two of the largest, shallow water lakes in Waterloo Region. Both lakes and portions of the surrounding land are owned by the Grand River Conservation Authority. Historically, the lakes were managed as a baited wildlife area to support breeding and migrating waterfowl. This

area is a well known staging area for migratory ducks. The lakes are fed annually by spring runoff and are connected to each other by a culvert.

4.3.6 Brunner Spillway

The Brunner Spillway is a regionally significant earth science ANSI. A report for this ANSI is currently not available.

4.3.7 Cottrel Lake Esker

The Cottrel Lake Esker is a regionally significant earth science ANSI. This esker was deposited by meltwaters from the Wentworth ice sheet which moved out of the Lake Ontario basin. It consists of a simple esker ridge and other ablation features associated with the formation of the Tillsonburg Moraine. The ANSI lies adjacent to a licensed pit. The eastern and western portions of the esker are considered to be of primary significance as a sand and gravel resource.

4.3.8 Cranberry Bog

The Cranberry Bog is a provincially significant life science ANSI. This wetland is located in a roughly semi-circular kettle hole situated on a kame and outwash plain. The kettle is bordered by surficial deposits of kame gravel on the north and east and outwash gravel on the south. The wetland community has changed dramatically over time. Much of the bog vegetation is either no longer present or in decline. Some of the vegetation changes may be related to cultural eutrophication caused by runoff of organic and inorganic materials (i.e. fertilizers and soil) from adjacent fields. In addition, the wetland is increasingly at risk of invasive species, primarily common reed grass (*Phragmites australis*).

4.3.9 Crosshill Complex

The Crosshill Complex (Forest) is a regionally significant life science ANSI. Topography across the area is interesting and is characterized by kame hills that are associated with the Waterloo moraine. Soils in the area are classified as Bennington sandy loams, Huron clay loams and mucks. The area represents a remarkable example of forest vegetation occurring on moraine hills. All of the higher ground supports a forest consisting of sugar maple, American beech, eastern hemlock, and black cherry. Except for black cherry, all of the other species are common species. American witch-hazel is common in the shrub and understory layers.

Mature swamp can be found in poorly drained hollows. The community was previously dominated by American elm but this species has declined significantly, leading to open patches in the forest canopy. Tree species that have since filled in portions of these gaps include red maple, swamp birch, black ash, black willow, eastern hemlock (on hummocks), eastern white cedar, and dogwoods.

4.3.10 Dorking North Woodlot

The Dorking North Woodlot is a regional life science ANSI. A report for this ANSI is currently not available.

4.3.11 Easthope Moraine

The Easthope Moraine is a regionally significant earth science ANSI. A report for this ANSI is currently not available.

4.3.12 Ellice-Huckleberry Swamp

The Ellice-Huckleberry Swamp is a regionally significant life science ANSI. The landscape is characterized by a wet peatland that has formed in a broad, shallow basin underlain by clay beds. The site is situated on the south side of the Milverton moraine and west of the Mitchell moraine. Data sheets from the 1971 International Biological Program recorded 4 different vegetation communities across the ANSI. Vegetation communities include wet mesic closed mature deciduous swamp, wet mesic semi-open deciduous swamp forest, wet semi-open mixed swamp shrubland, and wet semi-open peatland heath.

4.3.13 Gads Hill Moraine

The Gads Mill Moraine is a regionally significant earth science ANSI. A report for this ANSI is currently not available.

4.3.14 Grand River Forests

Grand River Forests is a provincially significant life science ANSI comprising 790 ha of contiguous natural area along an 18 km stretch of the Grand River from the Cambridge city limits to approximately 4 km north of Paris. Situated along the eastern flank of the Horseshoe Moraines, the site occupies a narrow outwash terrace of the Grand River which is composed of gravel and sand derived from the Galt and Paris moraines. The ANSI is dominated by Wentworth Till consisting of 48% sand, 10% clay and 41% carbonates, and provides an ideal substrate for the release of groundwater from local aquifers. A complex series of river terraces and groundwater seepage zones have created organic deposits and in some localized cases open calcareous seepage areas.

The Grand River Forest offers the best representation of a largely unbroken, naturally vegetated riverine corridor in the Horseshoe Moraines Spillway physiographic region in site District 7E-6 and is one of the best forested valley systems in southern Ontario. A very good representation of mature ridge and seepage slope woods, river terrace woodland, wet meadow, submerged aquatics and hanging fen communities can be seen here. High plant species richness (over 700 vascular plants) is complemented by a high diversity of breeding birds and herpetofauna. The Grand River and adjacent wetland areas support stable populations of queensnake, a provincially and nationally threatened species. This section of the Grand River also provides critical habitat for aquatic Species at Risk.

4.3.15 Hungry Hill

The Hungry Hill is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.16 Ingersoll Moraine Outwash Fan

The Ingersoll Moraine Outwash Fan is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.17 Ingersoll Moraine

The Ingersoll Moraine contains the humocky topography associated with a moraine deposited by the oscillating retreat Lake Erie ice lobe during the Port Bruce Stadial (15,000 to 14,000 B.P.). The Ingersoll Moraine is the oldest and best developed of 3 moraines found within an area between Dorchester, Norwich, and Woodstock. A glacial re-entrant is located just north of the termination point of the esker. This same location developed a melt-water channel, known today as Horner Creek. The moraine is capped by Port Stanley Till. This site is of key importance for the interpretation of the Erie ice lobe activities in the Woodstock area. The sequence of features emphasize and illustrate erosional (meltwater channel in a glacial re-entrant) and depositional (moraine, esker, outwash) glaciofluvial processes. Although the Erie ice lobe moraines are not well developed, they are still important to the interpretation of the deglaciation of the area. Features chosen for representation of the Erie ice lobe deposits are best displayed at this location.

4.3.18 Little Turnbull Lake

The Little Turnbull Lake is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.19 McCrone Lake

The McCrone Lake is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.20 Nith River Forest

The Nith River Forest is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.21 Phillipsburg Forest

The Phillipsburg Forest is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.22 Phillipsburg Swamp

The Phillipsburg Swamp is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.23 Pinehurst Lake Kettles

Pinehurst Lake Kettles is a provincial earth science ANSI located in Pinehurst Lake Conservation Area, which is owned and operated by the Grand River Conservation Authority. The 125 ha area comprises wet and dry

kettles in a typical pitted outwash setting within the vicinity of the Galt-Paris Moraine. The kettles were likely formed during the retreat of the Erie-Ontario ice lobe some 14,000-15,000 years ago. Pinehurst Lake is an excellent example of a kettle lake in this setting. The outwash deposits in the Pinehurst area are considered to be of tertiary significance. Therefore, they are not considered to be important sand and gravel resource areas.

4.3.24 Roseville Swamp

Roseville Swamp is a regionally significant life science ANSI. A report for this ANSI is currently not available. This wetland complex associated with the ANSI was evaluated as a provincially significant wetland by the OMNRF (see section 4.1.2 above).

4.3.25 Spongy Lake Bog

Spongy Lake Bog is a provincially significant life science ANSI. The ANSI consists of a small shallow kettle lake with deep peat formations along the shores. The lake is surrounded by high hills that are covered by pine and spruce plantations. Precipitation and surface runoff sustain the lake.

An exceptional diversity of plant communities occurs here, including northern bog species considered rare in southwestern Ontario. One of the dominant tree species is eastern white cedar. Other tree species include tamarack, lesser amounts of white pine, and the occasional black spruce. About 30 m of dense red osier dogwood occurs between the cedar community and the lake. On higher ground, northwest of the lake, is a sugar maple forest with many regenerating maple trees.

The bog has historically been used by local naturalists and university students. The bog is owned by the University of Waterloo and is also designated a regionally significant Environmentally Sensitive Policy Area by the Region of Waterloo.

4.3.26 Spottiswood Lakes

Spottiswood Lake is a provincially significant life science ANSI consisting of a series of intermittent ponds between a repeating pattern of long, narrow, high, steep-sided sand hills, located 10 km southwest of Cambridge. The 163 ha area generally lacks surface drainage but there is one small spring-fed stream emerging from the valley slopes to the northeast. The steep slopes are vegetated with Great Lakes-St. Lawrence hardwood species such as sugar maple, white ash and beech along north facing aspects. On southern and westerly aspects, the forest cover is distinctly Carolinian with shagbark hickory, pignut hickory, black oak, white oak, red oak, and red maple forming the major compositional elements. The kettle depressions are dominated by dogwood–buttonbush–poison sumac thickets and silver maple-American elm-black ash swamp. A kettle depression at the southeast corner is surrounded by leatherleaf-water willow-sphagnum bog fringe. One small kettle has developed into an open bog dominated by tamarack and leatherleaf. The area also supports a small natural prairie perched upon a sand ridge in the southeast corner of the main Spottiswood Lake. The larger open lakes at the south end support shallow and deep water submerged aquatic communities,

emergent marsh, and shrub dominated marshes. The quality of the area is outstanding and there has been minimal disturbance to the main lakes and only minor disturbance in the form of maple sugar operations and selective harvesting. A cottage at Long Lake has been removed. All-terrain vehicle use appears to be minimal. Some minor encroachment of estate residential homes has occurred toward the east side of the ANSI.

The Grand River Conservation Authority owns the northwest portion of the ANSI. Pinehurst Lake Conservation Area is managed as a recreational camping area primarily but also offers passive recreation and sport fishing.

4.3.27 St. Agatha Beech-Maple Forest

The St. Agatha Beech-Maple Forest is a regionally significant life science ANSI. A report for this ANSI is currently not available.

4.3.28 Sudden Tract

The Sudden Tract is a regionally significant life science ANSI. The tract of land contains moraines covered by a maple-beech forest. Mature swamp and shallow marsh areas are found in low lying areas. Red pine plantations occur in drier areas. More than 412 vascular plant species have been recorded at Sudden Tract, including many regionally rare species and a few that are provincially rare, including pignut hickory and Hill's oak. The majority of plant species observed here are characteristic of many mature upland forests of southern Ontario. However, some species such as shagbark hickory have Carolinian or savannah affinities.

The area is very popular with local naturalists and birders. Over 160 bird species have been recorded here (eBird 2020). The Sudden Tract forest is owned by the Region of Waterloo and one of several regional forests located within this municipality. This site features a well-used and maintained trail system.

4.4 Significant Valleylands

Valleylands are defined by the Province as natural areas that occur in a valley or other landform depression that has water flowing through or standing for some period of the year. A *significant* valleyland is ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or *natural heritage system* (OMMAH 2020). Technical guidelines for the identification of significant valleylands are outlined in Section 8 of the Natural Heritage Reference Manual (OMNR 2010). Valleylands may be identified at a course level based on a landscape level review of topography, floodplain, erosion slopes, watercourses, woodlands, and wetlands. Some valleylands are more well-defined than others. For example, steep valleylands with flows occurring overland through incised streams and rivers are more well-defined than valleylands where flows originate from springs, seepage zones or wetlands. Well-defined valleylands can be delineated along a stable top-of-bank whereas less well-defined valleylands can be delineated using a combination of proxy boundaries such as riparian zones, flood hazard limits, the meander belt of the watercourse, and/or the highest elevation of seasonal inundation (OMNR, 2010).

According to the Region of Waterloo Official Plan, “Environmentally Significant Valley Features are natural features within a Significant Valley that consist of:

1. At least one of the following:
 - a) River channel; or
 - b) *Environmentally Significant Discharge Areas* or *Environmentally Significant Recharge Areas*; or
2. Both of the following ecological features:
 - a) Habitat of regionally significant species of flora or fauna;
 - b) Natural area, such as a *woodland* of one to four hectares in extent, *floodplain* meadow or *wetland*, which consists primarily of native species; or
3. Any one of (b) above plus any one of the following Earth Science features:
 - a) River terrace;
 - b) Esker;
 - c) Cliff or steep slopes;
 - d) Oxbow;
 - e) Confluence with significant watercourse draining a watershed greater than 5 km²;
 - f) Regionally *significant* Earth Science *Area of Natural and Scientific Interest*; or
 - g) Fossil bed.”

Portions of the Nith River are currently designated as significant valleyland by the Region of Waterloo (see Map 4, Greenlands Network in Regional Official Plan).

According to the Oxford County Official Plan, significant *valleylands* are represented by the outer limits of the following features:

- the lands associated with a Regulatory Flood Plain, or a *Floodway* and *Flood Fringe* in the case of a Two Zone Flood Plain, or
- a Fill Zone established by a Conservation Authority with jurisdiction

The Nith River corridor is considered a significant valleyland (see Schedule C-1, County of Oxford Official Plan).

Other municipalities have identified significant valleylands but these do not appear to extend into this subwatershed (see Perth County 2018, City of Kitchener 2014).

The Nith River provides significant surface water functions, including water conveyance, attenuation, storage, and release. Springs, seepage areas, and wetlands associated with the Nith River, Cedar Creek, and Alder Creek, and other smaller tributaries (e.g. Eden, Hampstead, Mud, Silver, Smith, Washington, and Wilmot Creeks) also provide significant groundwater recharge and discharge functions, as discussed previously in Section 2.3 (Hydrology and Hydrogeology) of this report.

Further analysis is required to confirm to what extent the provincial criteria are met within this subwatershed. Field reconnaissance, including ecological, geotechnical, and fluvial geomorphic analyses, may be required to identify and map significant valleylands more precisely within this subwatershed area.

4.5 Significant Species

According to the best information available to the GRCA, a total of 50 provincially significant species tracked by the Province (19 plants, 11 birds, 7 mussels, 5 reptiles, 4 fishes, 2 amphibians, 1 butterfly, and 1 damselfly species) have been recorded within the Nith River subwatershed assessment area (see Table 8). Of these tracked species, 25 species have been formally assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO) and are afforded legal protection in accordance with Ontario's Endangered Species Act (ESA). Twenty-four (24) species have been assessed separately by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are afforded legal protection in Canada in accordance with the Species at Risk Act (SARA).

Several species documented by the NHIC have not been observed within the last 20 years and are likely extirpated from this area. It is also conceivable that there has been a lack of recent survey work or reporting and that some of these species, especially obscure plants and invertebrates, are still present within this watershed where the habitat is considered suitable.

A subwatershed checklist of significant species and their conservation status as of 2020 is presented in Table 8 below. Additional information and range maps for provincially listed Species at Risk may be found on the List of Species at Risk in Ontario, which is maintained by the Ontario Ministry of Environment, Conservation, and Parks (OMECIP 2019). Brief summaries for Aquatic Species at Risk are provided in Section 3.6 of this report.

Table 8. Provincially Significant Species Recorded within the Nith River Subwatershed

Common Name	Scientific Name	Provincial Rank ¹	Provincial Status ²	Federal Status ³	Source	Last Known Observation	Suitable Habitat Present
Plants							
American Chestnut	<i>Castanea dentata</i>	S2	Endangered	Endangered	NHIC 2013	PRE-1989	Yes
American Ginseng	<i>Panax quinquefolius</i>	S2	Endangered	Endangered	NHIC 2013	2000	Yes
American Gromwell	<i>Lithospermum latifolium</i>	S3	No Status	No Status	NHIC 2013	1997	Yes
Appendaged Waterleaf	<i>Hydrophyllum appendiculatum</i>	S2	No Status	No Status	NHIC 2013	1960	Yes
Black Ash	<i>Fraxinus nigra</i>	S4	No Status	Threatened ⁴	GRCA 2019	2019	Yes
Bristly Buttercup	<i>Ranunculus hispidus</i> var. <i>hispidus</i>	S3	No Status	No Status	NHIC 2013	1992	Yes
Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	S3	Special Concern	Special Concern	NHIC 2013	2004	Yes

Carey's Sedge	<i>Carex careyana</i>	S2	No Status	No Status	NHIC 2013	1997	Yes
Forked Panic Grass	<i>Dichanthelium dichotomum</i>	S2	No Status	No Status	NHIC 2013	1903	?
Green Dragon	<i>Arisaema dracontium</i>	S3	Special Concern	Special Concern	NHIC 2013	2002	Yes
Hairy Bugseed	<i>Corispermum villosum</i>	S1S3	No Status	No Status	NHIC 2013	1998	Yes
Northern Pin Oak	<i>Quercus ellipsoidalis</i>	S3	No Status	No Status	NHIC 2013	1998	Yes
Oil-field Toadflax	<i>Nuttallanthus canadensis</i>	S1	No Status	No Status	NHIC 2013	1979	?
Pignut Hickory	<i>Carya glabra</i>	S3	No Status	No Status	NHIC 2013	1987	Yes
Pygmy Pocket Moss	<i>Fissidens exilis</i>	S1	Special Concern	Special Concern	NHIC 2013	1995	Yes
Quill Spike-rush	<i>Eleocharis nitida</i>	S2S3	No Status	No Status	NHIC 2013	1994	Yes
Side-oats Grama	<i>Bouteloua curtipendula</i>	S2	No Status	No Status	NHIC 2013	1957	?
Soft-hairy False Gromwell	<i>Onosmodium molle ssp. hispidissimum</i>	S2	No Status	No Status	NHIC 2013	1970	?
Striped Cream Violet	<i>Viola striata</i>	S3	No Status	No Status	NHIC 2013	1997	Yes
Odonata							
Swamp Darner	<i>Epiaschna heros</i>	S2S3	No Status	No Status	NHIC 2013	PRE-1941	Yes
Herpetofauna							
Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	Threatened	Threatened	NHIC 2013	2003	Yes
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	S3	Special Concern	Special Concern	NHIC 2013	1978 - ?	Yes
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	S2	Endangered	Threatened	NHIC 2013	2006	Yes
Jefferson x Blue-spotted Salamander	<i>Ambystoma hybrid pop. 1</i>	S2	No Status	No Status	NHIC 2013	1989	Yes
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	No Status	Threatened ⁴	Dance 2019	2019	Yes
Milksnake	<i>Lampropeltis triangulum</i>	S3	Special Concern	Special Concern	NHIC 2013	1985	Yes
Queensnake	<i>Regina septemvittata</i>	S2	Endangered	Endangered	NHIC 2013	1988	Yes
Birds ⁴							
Acadian Flycatcher	<i>Empidonax virescens</i>	S2S3B	Endangered	Endangered	NHIC 2013	1994	Yes
Black Tern	<i>Chlidonias niger</i>	S3B	Special Concern	Not At Risk	eBird 2020	1984	?
Cerulean Warbler	<i>Dendroica cerulea</i>	S3B	Threatened	Endangered	NHIC 2013	1990	Yes
Hooded Warbler	<i>Wilsonia citrina</i>	S3B	No Status	No Status	eBird 2020	2015	Yes
King Rail	<i>Rallus elegans</i>	S3B	Endangered	Endangered	NHIC 2013	1990	Yes
Least Bittern	<i>Ixobrychus exilis</i>	S4B	Threatened	Threatened	eBird 2020	2017	Yes
Loggerhead Shrike	<i>Lanius ludovicianus</i>	S2B	Endangered	Endangered	eBird 2020	1972	No
Louisiana Waterthrush	<i>Seiurus motacilla</i>	S3B	Threatened	Threatened	eBird 2020	1985	Yes
Prairie Warbler	<i>Dendroica discolor</i>	S3B	Not At Risk	Not At Risk	eBird 2020	2013	Yes
Short-eared Owl	<i>Asio flammeus</i>	S2N,S4B	Special Concern	Special Concern	eBird 2020	2017	Yes
Yellow-breasted Chat	<i>Icteria virens</i>	S2B	Endangered	Endangered	eBird 2020	2015	Yes
Butterflies							
Purplish Copper	<i>Lycaena helloides</i>	S3	No Status	No Status	NHIC 2013	1977	Yes
Fishes							
Black Redhorse	<i>Moxostoma duquesnei</i>	S2	Threatened	Threatened	NHIC 2013	1977	Yes
Greater Redhorse	<i>Moxostoma valenciennesi</i>	S3	No Status	No Status	NHIC 2013	1997	Yes
Northern Sunfish	<i>Lepomis peltastes</i>	S3	Special Concern	Special Concern	COSEWIC 2016	2008	Yes
Silver Shiner	<i>Notropis photogenis</i>	S2S3	Threatened	Threatened	NHIC 2013	2000	Yes
Mollusks							
Elktoe	<i>Alasmodonta marginata</i>	S3	No Status	No Status	DFO 2015	1998	Yes
Mucket	<i>Actinonaias ligamentina</i>	S3	No Status	No Status	DFO 2015	1995	Yes
Kidneyshell	<i>Ptychobranhus fasciolaris</i>	S1	Endangered	Endangered	DFO 2015	1997	Yes
Rainbow	<i>Villosa iris</i>	S3	Special Concern	Special Concern	DFO 2015	1997	Yes
Slippershell	<i>Alasmodonta viridis</i>	S3	No Status	No Status	DFO 2015	1998	Yes
Wabash Pigtoe	<i>Fusconaia flava</i>	S3	No Status	No Status	DFO 2015	1918	?
Wavy-rayed Lampmussel	<i>Lampsilis fasciola</i>	S1	Threatened	Special Concern	DFO 2015	2007	Yes

¹ Natural Heritage Information Centre 2013, ² Endangered Species Act 1997, O. Reg. 139/14, s. 2, ³ Federal Species at Risk Act 2002 (Schedules 1-3), ⁴ Assessed by COSEWIC but has not been given legal status (not currently listed on Schedule 1), ⁵ Includes breeding and non-breeding species

4.6 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) is identified by the Province as a natural heritage area for the purposes of implementing Section 2.1 of the Provincial Policy Statement (PPS). The Natural Heritage Reference Manual (OMNRF 1999, 2010) and the Significant Wildlife Habitat Technical Guide (OMNRF 2000) were prepared by the Ontario Ministry of Natural Resources and Forestry to assist planning authorities and others involved in land use planning and the protection of natural heritage systems in the Province. According to the SWHTG, wildlife is described as “all wild mammals, birds, reptiles, amphibians, fishes, invertebrates, plants, fungi, algae, bacteria and other wild organisms” (Ontario Wildlife Working Group 1991).

The Province defines *wildlife habitat* as:

“areas where plants, animals, and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle, and areas which are important to migratory or non-migratory species.”

Wildlife habitat is considered *significant* where it is:

“ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System. Criteria for determining significance may be recommended by the Province but municipal approaches that achieve or exceed the same objective may also be used” (PPS 2020).

The 4 general categories of SWH identified by the Province are listed and defined in Table 9 below.

Subcategories of SWH are defined in greater detail in the SWHTG (OMNRF 2000). Habitat and species criteria are outlined in Ecoregion Schedules (OMNRF 2015ab). Candidate SWH is identified according to the Ecological Land Classification (ELC) System for Southern Ontario (see Lee et al. 1998). SWH is confirmed only when target species are known to be present within specific ELC habitat types.

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Table 9. Significant Wildlife Habitat Categories and their Definitions. Specific criteria for sub-categories are outlined in the Significant Wildlife Habitat Technical Guide and Ecoregion Schedule 6E (see OMNRF 2000, 2015).

Category	Definition
Seasonal Concentration Areas <ul style="list-style-type: none"> ➤ Waterfowl Stopover and Staging Areas ➤ Shorebird Migratory Stopover Areas ➤ Raptor Wintering Areas ➤ Bat Hibernacula ➤ Bat Maternity Colonies ➤ Turtle Wintering Areas ➤ Reptile Hibernacula ➤ Colonial Nesting Bird Habitats ➤ Deer Winter Congregation Areas 	<p>These areas contain large numbers or concentrations of 1 or more wildlife species annually and usually at certain times of the year, sometimes within relatively small areas. Examples include deer wintering areas, breeding bird colonies, and hibernation sites for reptiles, amphibians, and bats.</p>
Rare Vegetation Communities <ul style="list-style-type: none"> ➤ Cliff and Talus Slopes ➤ Alvars ➤ Old Growth Forests ➤ Savannah ➤ Tallgrass Prairie <p>or</p> Specialized Habitat for Wildlife <ul style="list-style-type: none"> ➤ Waterfowl Nesting Areas ➤ Bald Eagle and Osprey Nesting, Foraging and Perching Habitat ➤ Woodland Raptor Nesting Habitat ➤ Turtle Nesting Areas ➤ Seeps and Springs ➤ Amphibian Breeding Habitat ➤ Area-sensitive Bird Breeding Habitat 	<p>Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. Rare vegetation species and communities are identified by the Natural Heritage Information Centre using a ranking procedure developed by The Nature Conservancy. Some wildlife species require large areas of suitable wintering and breeding habitat for their long-term survival. Wildlife populations also tend to decline when habitat becomes fragmented and reduced in size. The more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife.</p>
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species) <ul style="list-style-type: none"> ➤ Marsh Breeding Bird Habitat ➤ Open Country Bird Breeding Habitat ➤ Shrub/Early Successional Bird Breeding Habitat ➤ Terrestrial Crayfish 	<p>This habitat includes wildlife species that are listed as Special Concern, are ranked as being rare, that are declining, or are featured species. Such habitats do not include habitats of Endangered or Threatened species as identified by the Endangered Species Act 2007.</p>
Animal Movement Corridors <ul style="list-style-type: none"> ➤ Amphibian Movement Corridors ➤ Deer Movement Corridors 	<p>These areas tend to be elongated areas used by wildlife to move from one habitat to another. They are important to ensure genetic diversity within populations, to allow seasonal migration of animals (e.g. deer moving from summer to winter range), and to allow animals to move throughout their home range from feeding areas to cover areas. Animal movement corridors function at different scales often related to the size and home range of the animal. For example, short, narrow areas of natural habitat may function as a corridor between amphibian breeding areas and their summer range, while wider, longer corridors are needed to allow deer to travel from their winter habitat to their summer habitat.</p> <p>Identifying the most important corridors that provide connectivity across the landscape is challenging because of a lack of specific information on animal movements. There is also some uncertainty about the optimum width and mortality risks of corridors. Furthermore, a corridor may be beneficial for some species but detrimental to others. For example, narrow linear corridors may allow increased access for raccoons, cats, and other predators. Also, narrow corridors dominated by edge habitat may encourage invasion by weedy generalist plants and opportunistic species of birds and mammals. Corridors often consist of naturally vegetated areas that run through more open or developed landscapes. However, sparsely vegetated areas can also function as corridors. For example, many species move freely through agricultural land to reach natural areas. Despite the difficulty of identifying exact movement corridors for all species, these landscape features are important to the long-term viability of certain wildlife populations.</p>

The identification of core natural heritage features such as significant wetlands, ANSIs, and other locally significant woodlands has facilitated the identification of Significant Wildlife Habitat. In addition, areas that contain provincially significant species (see Table 8 in Section 4.5) would also be considered SWH. A full and detailed assessment of SWH is beyond the scope of this report. However, it is worth noting that SWH is increasingly identified as part of the subwatershed planning process and through municipal-based natural heritage inventories and assessments.

Great blue heron breeding colonies were identified and mapped by the Province in 2005, one in Nithburg Swamp and the other in the Phillipsburg Swamp. The status of these breeding colonies is not known.

Candidate SWH identified within the subwatershed include Seasonal Concentration Areas (i.e. waterfowl stopover and staging areas), habitat for Bat Maternity Colonies, Turtle Wintering Habitat, Reptile Hibernaculae, Specialized Wildlife Habitat (e.g. turtle nesting areas), and Habitat for Species of Conservation Concern (Dance Environmental Inc. 2019, NRSI 2014).

5.0 Natural Heritage System Summary

The Province defines a natural heritage system as “a system made up of natural heritage features and areas which are linked by natural corridors and which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems. These systems can include lands that have been restored and areas with the potential to be restored to a natural state (OMMAH 2020). Section 2.1.2 of the Provincial Policy Statement further states that *“the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.”* This report provides information and mapping that may help local planning authorities, including the GRCA, meet this policy objective.

Natural heritage features identified and mapped within the Nith River subwatershed include the following:

- 1,680 km of watercourse, of which 171 km is classified as cold water, 2 km is classified as cool water, and another 293 km is classified as warm water habitat by the Province
- 6,481 ha total wetland cover, of which 4,886 ha is evaluated, 3,747 ha is provincially significant, and another 1,595 ha remains unevaluated
- 14,559 ha of forest, including 1,568 ha of interior forest habitat
- 28 Life Science and Earth Science Areas of Natural and Scientific Interest totalling 2,682 ha
- 50 provincially significant species, including 25 Provincially-listed and 24 Federally-listed Species at Risk

Provincially and municipally designated natural heritage areas as well as properties owned and managed by the GRCA are illustrated in Figure 13. Provincially designated areas identified on this map include Provincially

Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs). Municipally designated areas include Environmentally Sensitive Policy Areas (ESPAs) in the Region of Waterloo and Environmental Protection Zones (EPZs) in Oxford County.

A more connected natural heritage system that incorporates aquatic, wetland, and terrestrial features is illustrated on Figure 14. This map is a composite image of the following GIS layers:

- Wetlands, watercourses, and floodplains identified and mapped by the GRCA
- Woodlands identified and mapped by the OMNRF

The natural heritage system within the Nith River Subwatershed consists of several small to medium-sized natural areas that are in some cases connected to each other by river and creek valleys. Core natural features within the upper portions of this subwatershed are highly fragmented by agricultural areas, gravel pits, and small rural communities in the Baden, New Dundee, and New Hamburg areas.

Figure 14 excludes Provincially designated Earth Science ANSIs as well as habitats such as grasslands and meadows, which have not been uniformly inventoried or mapped in the watershed but which may provide critical or supporting functions such as groundwater recharge and habitat for grassland species of conservation concern.

A comparison of Figure 13 and 14 demonstrates that provincially designated areas capture only a portion of the natural heritage system and by themselves are insufficient to protect the full suite of hydrological and ecological functions that are present across this landscape. The mapping presented does not identify areas that have been deemed locally significant by various municipalities and that may also be afforded some level of protection. The mapping also does not identify critical buffer zones that may provide supporting ecological or hydrological functions. The mapping does not identify significant groundwater recharge areas and other natural hazard areas (e.g. erosion slopes) that have been mapped by the GRCA and which may contribute to the overall importance of the natural heritage system.

The core areas and linkages illustrated in Figure 14 may be augmented over time as information gaps are filled and as natural areas are restored or enhanced through regulatory action and a variety of voluntary stewardship efforts. Additional areas may also be added following the identification of Species at Risk habitat or Significant Wildlife Habitat adjacent to these core natural areas and linkages.

Additional information and mapping relevant to the identification of natural heritage systems at a municipal level may be found elsewhere (see City of Kitchener 2014, County of Oxford 2006, County of Perth 2018, RMOW 2015).

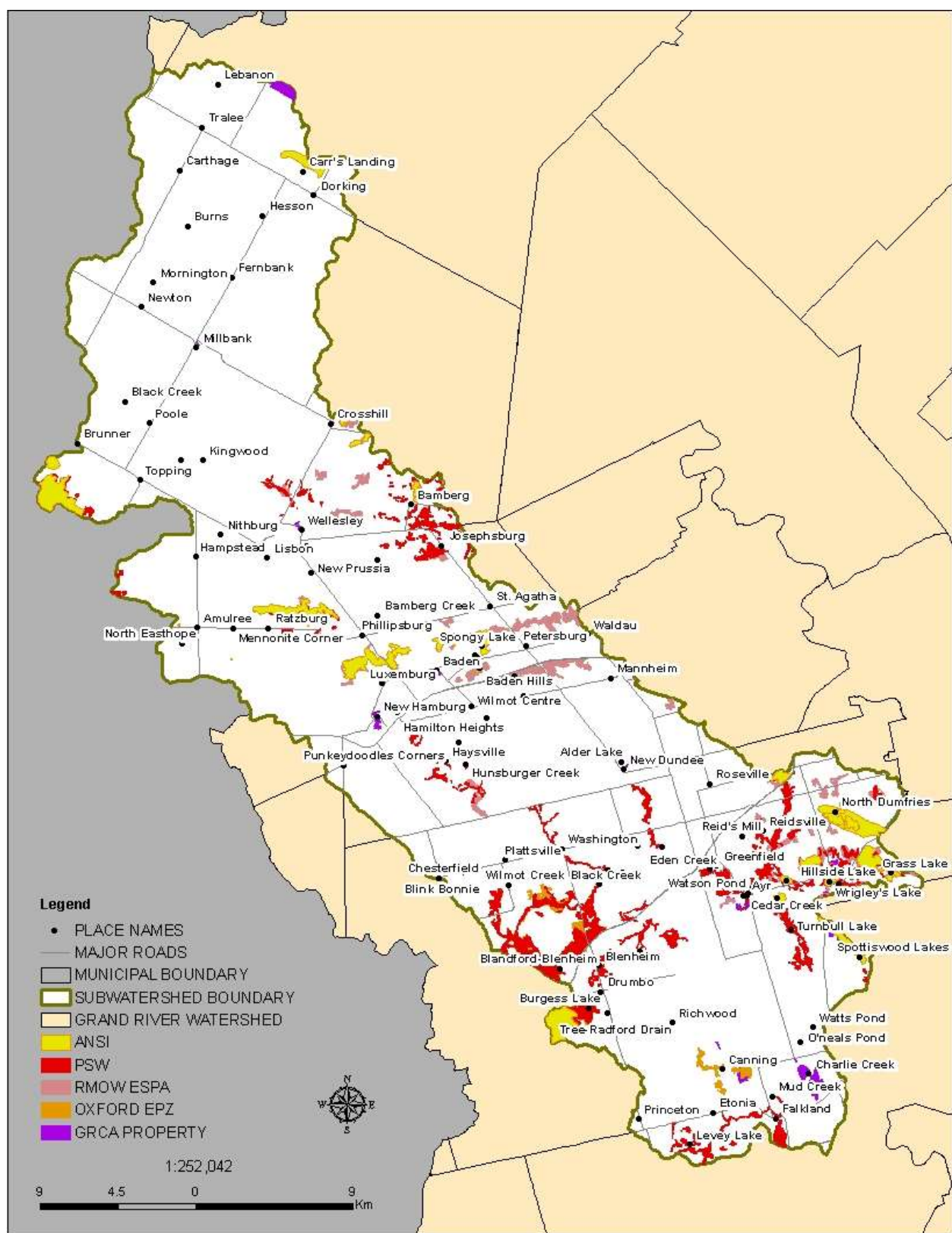


Figure 13. Designated Natural Heritage Areas in the Nith River Subwatershed

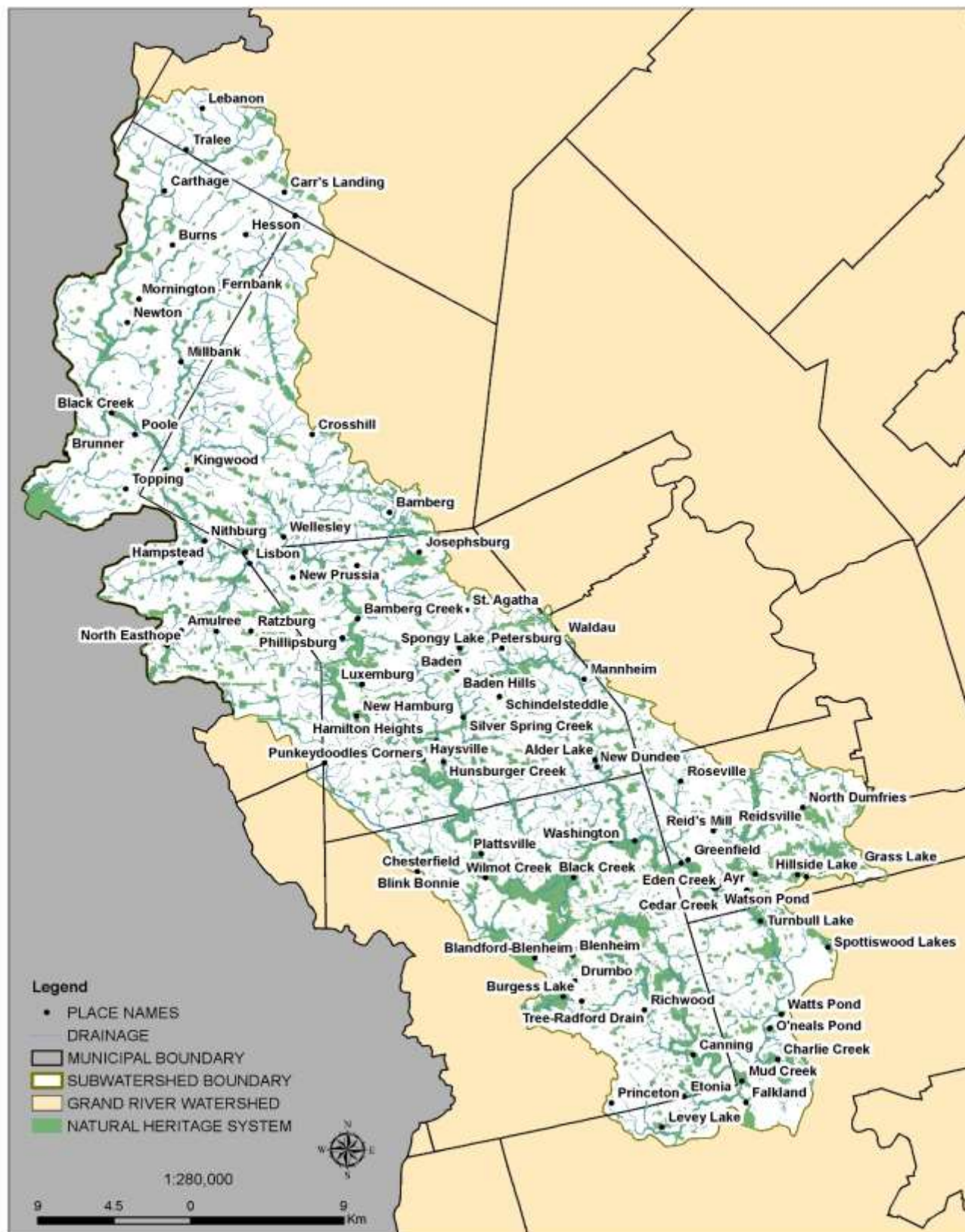


Figure 14. Core Natural Areas and Linkages within the Nith River Subwatershed

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Appendix A

Key to Species Conservation Ranks and Status

**Provincial (Sub-national) rank as assigned by the Natural Heritage Information Centre,
Ontario Ministry of Natural Resources and Forestry**

SX (Presumed Extirpated) - Species is believed to be extirpated from Ontario. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. Equivalent to “Regionally Extinct” in IUCN Red List terminology.

SH (Possibly Extirpated) - Known from only historical records but still some hope of rediscovery. There is evidence that the species may no longer be present in Ontario but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for unsuccessfully but not thoroughly enough to presume that it is no longer present in the Province.

S1 (Critically Imperiled) - At very high risk of extirpation in Ontario due to very restricted range, very few populations or occurrences (usually fewer than 5), very steep declines, severe threats, or other factors.

S2 (Imperiled) - At high risk of extirpation in the Province due to restricted range, few populations or occurrences (usually fewer than 20), steep declines, severe threats, or other factors.

S3 (Vulnerable) – At moderate risk of extirpation in Ontario due to a fairly restricted range, relatively few populations or occurrences (usually fewer than 80), recent and widespread declines, threats, or other factors.

S4 (Apparently Secure) - At a fairly low risk of extirpation in Ontario due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 (Secure) - At very low or no risk of extirpation in Ontario due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

SNR, Not Ranked – Status not yet assessed in Ontario

SU (Unrankable) - Currently unrankable in Ontario due to lack of information or due to substantially conflicting information about status or trends.

Breeding Qualifiers

B (Breeding) - Conservation status refers to the breeding population of the species in the Province

N (Non-breeding) – Conservation status refers to the non-breeding population of the species in the Province.

Provincial status in accordance with Endangered Species Act, 2007, O. Reg. 139/14, s.2

Extirpated - A wildlife species that no longer exists in Ontario.

Endangered - A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

Threatened - A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

Special Concern - A species with characteristics that make it sensitive to human activities or natural events.

Data Deficient - A species for which there is insufficient information for a provincial status recommendation.

Not At Risk - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Federal status in accordance with Species at Risk Act 2002, Schedules 1-3, as assigned by Environment Canada

Extinct - A wildlife species that no longer exists in the wild in Canada.

Endangered - A wildlife species facing imminent extirpation or extinction in Canada.

Threatened - A wildlife species that is likely to become Endangered in Canada if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern - A wildlife species that may become Threatened or Endangered in Canada because of a combination of biological characteristics and identified threats.

Data Deficient - A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

Not At Risk - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.



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October 22nd, 2020

The Right Honourable Rod Phillips
Minister of Finance
Frost Bldg S 7th Floor
7 Queen's Park Cres, Toronto M7A 1Y7

Dear Mr. Phillips:

Re: Assessing Aggregate Resource Properties

This letter will confirm support of the Council of the Township of South-West Oxford of County of Wellington Resolution dated September 24th, 2020 from the Administration, Finance and Human Resources Committee including that:

That South-West Oxford Council does not consider the revised criteria for assessment of aggregate resource properties as a fair method of valuation for these properties; and

That South-West Oxford Council believes there is a need to review the current assessment scheme for aggregate resource properties to address the inequity of property values; and

That South-West Oxford Council hereby calls upon the Province to work with the Municipal Property Assessment Corporation to address the assessment issue so that aggregate resource properties are assessed for their industrial value; and

That South-West Oxford Council direct the Clerk to provide a copy of this motion to the Ministers of Finance; Municipal Affairs and Housing; and Natural Resources and Forestry; and to AMO, ROMA, and all Ontario municipalities and local MPP(s).

Yours truly,

Julie Forth, Clerk
Township of South-West Oxford

cc. Ministry of Municipal Affairs and Housing;
Ministry of Natural Resources and Forestry;
Association of Municipalities of Ontario;
Rural Ontario Municipal Association;
all Ontario municipalities;
MPP Ernie Hardeman

Resolution



Moved By _____

Agenda
Item 8b

Resolution No.
2020-10-21-322

Last Name Printed Martin

Seconded By _____

Council Date: October 21, 2020


Last Name Printed O'Stander

"Now Therefore Be It Resolved That Northumberland County Council provide support for the resolution adopted by Wellington County regarding Aggregate Resource Property Valuation including that;

- Northumberland County does not consider the revised criteria for assessment of aggregate resource properties as a fair method of valuation for these properties; and
- Northumberland County believes there is a need to review the current assessment process for aggregate resource properties to address the inequity of property values; and
- Northumberland County calls upon the Province to work with the Municipal Property Assessment Corporation (MPAC) to address the assessment issue so that aggregate resource properties are assessed for their industrial value; and

Further Be It Resolved That Council provides a copy of this resolution to the Minister of Finance, the Minister of Municipal Affairs and Housing; the Minister of Natural Resources and Forestry; MPP David Piccini (Northumberland Peterborough South), the Association of Municipalities of Ontario (AMO), and the Rural Ontario Municipal Association (ROMA), all Ontario municipalities."

Recorded Vote
Requested by _____
Councillor's Name

Carried 
Warden's Signature

Deferred _____
Warden's Signature

Defeated _____
Warden's Signature

Resolution



Moved By _____

Agenda
Item 8a

Resolution No.
2020-10-21-321

Last Name Printed Cane

Seconded By _____

Council Date: October 21, 2020

Last Name Printed Henderson

"Now Therefore Be It Resolved That Northumberland County Council provide support for the resolution adopted by the Township of Asphodel Norwood regarding their request that:

- a governing body be created to regulate cannabis production; and
- the governing body take a unified approach be taken to land use planning restrictions; and
- the governing body enforce the regulations under the Cannabis Act on behalf of the licencing agency and ensures local authorities are in fact provided with notification of any licence issuance, amendment, suspension, reinstatement, or revocation within their region; and
- the governing body communicates more readily with local governments; and
- the governing body provides local government with more support; and

Further Be It Resolved That Northumberland Council forward this resolution to all municipalities in Ontario, MP Philip Lawrence and MPP David Piccini (Northumberland-Peterborough South), the Minister of Agriculture, Food and Rural Affairs, requesting that legislation be enacted to support local governments with cannabis land use management and enforcement issues."

Recorded Vote
Requested by _____

Councillor's Name

Carried


Warden's Signature

Deferred _____

Warden's Signature

Defeated

Warden's Signature

Resolution



Moved By _____

Agenda
Item 8d

Resolution No.
2020-10-21-324

Last Name Printed Martin

Seconded By _____

Council Date: October 21, 2020

Last Name Printed Came

"Now Therefore Be It Resolved That Northumberland County Council provide support for the resolution adopted by Wollaston Township regarding requesting a review of the Municipal Election Act to with a view to making amendments that allows for reporting of election fraud and ensuring that legislation can be enforced; and

Further Be It Resolved That a copy of this resolution be forwarded to the Honourable Premier Doug Ford, the Minister of Municipal Affairs and Housing, MPP David Piccini (Northumberland Peterborough-South), all Ontario municipalities and the Association of Municipalities of Ontario (AMO)."

Recorded Vote
Requested by _____
Councillor's Name

Carried

Warden's Signature

Deferred _____
Warden's Signature

Defeated _____
Warden's Signature

Resolution



Northumberland
County

Moved By _____

Last Name Printed Martin

Seconded By _____

Last Name Printed Crate

Agenda
Item 8c

Resolution No.
2020-10-21-323

Council Date: October 21, 2020

"Now Therefore Be It Resolved That Northumberland County Council provide support for a letter that the Mayor of the Town of Wasaga Beach sent to the Honourable Premier Doug Ford, regarding her concerns about an unauthorized car rally that was recently held in Wasaga Beach; and

Further Be It Resolved That a copy of this resolution be sent to Premier Ford, the Ministry of the Solicitor General, the Ministry of the Attorney General, MPP David Piccini (Northumberland Peterborough-South), the local OPP Detachment Commander, the Association of Municipalities of Ontario (AMO), and all Ontario municipalities."

Recorded Vote
Requested by _____
Councillor's Name

Deferred _____
Warden's Signature

Carried _____
Warden's Signature

Defeated _____
Warden's Signature

October 21, 2020

Via email: george.cornell@simcoe.ca

Warden George Cornell
1110 Highway 26
Midhurst ON L9X 1N6

Dear Warden Cornell and County Councillors:

Re: Request for Support from Mount St. Louis Moonstone/Skyline Horseshoe Resort and Hardwood Ski & Bike for their efforts to Declare Snowsports, Skiing and Snowboarding, Alpine and Nordic Deemed Essential in Stage 2.

The Council of the Township of Oro-Medonte, at its October 14th Council meeting, passed the following motion with respect to the above-noted matter:

Be it resolved:

that the correspondence dated October 9, 2020 from Sarah Huter, Assistant General Manager, Mount St. Louis Moonstone Ski Resort re: Request for Support from Mount St. Louis Moonstone/Skyline Horseshoe Resort and Hardwood Ski & Bike for their efforts to Declare Snowsports, Skiing and Snowboarding, Alpine and Nordic Deemed Essential in Stage 2 be received.

And whereas on March 11, 2020 the World Health Organization declared COVID-19 a global pandemic;

And whereas the Government of Ontario, County of Simcoe and Township of Oro-Medonte remain in declared state of emergency in response to the COVID-19 pandemic;

And whereas all levels of Government are effectively working collaboratively in response to the evolving COVID-19 situation;

And whereas the Government of Ontario has developed a comprehensive *Framework for Reopening our Province*;

And whereas many low risk outdoor activities were permitted to re-open in Stage 1 and 2 of the *Provincial re-opening framework*;

And whereas the timing of the release of *Stage 3 framework* and Ontario Regulation 364/20 made under *Reopening Ontario(A Flexible Response to COVID-19) Act, 2020* has not fully considered outdoor winter recreation and the operations of Ontario's ski industry;

And whereas Ontario's ski industry generates approximately \$420 million annually to the provincial economy and supports over 14,000 jobs;

And whereas nordic skiing, alpine skiing, snowboarding and snowshoeing provide low risk opportunities and outlets for participation in outdoor based activities that improve physical and mental health and overall well-being;

And whereas the ski industry has developed comprehensive operating plans and established best practices through its *Ski Well, Be Well* program to ensure compliance with regulations and public health directives and reduce the risk of COVID 19 transmission;

And whereas the Township of Oro-Medonte is the proud home to three of Ontario's largest ski resorts, Hardwood Ski and Bike, Horseshoe Resort and Mount St Louis Moonstone which provide significant local, regional and provincial economic benefits.

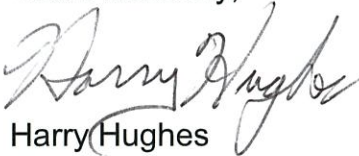
And whereas MPP Downey has advocated on behalf of these businesses.

Now therefore

On behalf of Hardwood Ski and Bike, Horseshoe Resort and Mount St. Louis Moonstone, the Council of the Township of Oro-Medonte hereby respectfully requests that the Government of Ontario consult with the ski industry through the Ontario Snow Resorts Association to review re-opening policy considerations currently impacting the industry.

And Further that a copy of this resolution be sent, under the Mayor's signature, to the County of Simcoe and Ontario municipalities for their consideration.

Yours sincerely,



Harry Hughes

Mayor

/vc

Cc: MPP Doug Downey

MPP Jill Dunlop

MP Doug Shipley

MPP Jim Wilson

Lisa MacLeod, Minister of Heritage, Sport, Tourism and Culture Industries
Council

Shawn Binns, Director Operations & Community Services

Ontario Municipalities



The Corporation of the Township of Huron-Kinloss

P.O. Box 130
21 Queen St.
Ripley, Ontario
N0G2R0

Phone: (519) 395-3735

Fax: (519) 395-4107

E-mail: info@huronkinloss.com

Website: <http://www.huronkinloss.com>

Honourable Doug Ford, Premier of Ontario,
Queen's Park Legislative Building
1 Queen's Park, Room 281
Toronto, ON M7A 1A1
premier@ontario.ca

October 28, 2020

Dear Honourable Doug Ford;

Please be advised the Council of the Township of Huron-Kinloss at its regular meeting held on October 19, 2020 passed the following resolution;

Re: Copy of Resolution #643

Motion No. 643

Moved by: Don Murray Seconded by: Lillian Abbott

THAT the Township of Huron-Kinloss hereby supports the Town of Amherstburg in recommending that Schedule 11 of Bill 108 be amended to remove the powers provided to the Local Planning Appeal Tribunal, retaining authority for hearing certain appeals by the Conservation Review Board; and, to return the authority for final decisions to municipal council's as the elected representative of the communities wherein the property and its features of cultural heritage value exist and FURTHER direct staff to forward a copy of the resolution to the Honourable Doug Ford, Premier of Ontario, the Honourable Lisa McLeod, Minister of Heritage, Sport, Tourism and Culture Industries and the Association of Municipalities of Ontario.

Carried

Sincerely,

Kelly Lush
Deputy Clerk

c.c Honourable Lisa McLeod, Minister of Heritage, Sport, Tourism and Culture Industries and the Association of Municipalities of Ontario.



The Corporation of the Township of Huron-Kinloss

P.O. Box 130
21 Queen St.
Ripley, Ontario
N0G2R0

Phone: (519) 395-3735

Fax: (519) 395-4107

E-mail: info@huronkinloss.com

Website: <http://www.huronkinloss.com>

Honourable Doug Ford, Premier of Ontario,
Queen's Park Legislative Building
1 Queen's Park, Room 281
Toronto, ON M7A 1A1
premier@ontario.ca

October 28, 2020

Dear Honourable Doug Ford;

Please be advised the Council of the Township of Huron-Kinloss at its regular meeting held on October 19, 2020 passed the following resolution;

Re: Copy of Resolution #641

Motion No. 641

Moved by: Jeff Elliott Seconded by: Jim Hanna

THAT the Township of Huron-Kinloss hereby supports Wollaston Township in requesting that the Minister of Municipal Affairs and Housing review the Municipal Elections to play schemes in rural communities where non-residential electors are permitted to participate in elections and provide more clear guidelines to assist Municipal Clerks in defining the voters' list and to ensure there is a clear way to report election fraud and FURTHER directs staff to forward a copy of this resolution to the Right Honourable Doug Ford, Premier of Ontario, the Minister of Municipal Affairs and Housing , the Honourable Steve Clark and all Ontario Municipalities.

Carried

Sincerely,

Kelly Lush
Deputy Clerk

c.c Minister of Municipal Affairs and Housing , the Honourable Steve Clark and all Ontario Municipalities.

NOTICE OF VIRTUAL PUBLIC INFORMATION CENTRE

Town of Orangeville New Municipal Water Supply Municipal Class Environmental Assessment Study

Study Overview

The Town of Orangeville (Town) has identified the need to increase the available water supply to accommodate anticipated growth, and to provide redundancy in the water supply network. The Town has initiated a Schedule B Municipal Class Environmental Assessment (EA) to determine a preferred solution to allow the Town to meet its future water supply capacity requirements.

The Process

The Municipal Class EA process will define the need for an additional water supply, assess the potential impacts of the preferred solution, and identify measures to lessen potential adverse impacts. The Class EA process will also provide members of the public and interested parties with opportunities to provide input at key stages of the study.

We want to hear from you

The Town is hosting a Virtual Public Information Centre (PIC) from October 26th to November 16th, 2020. The purpose of the PIC will be to present project information and gather feedback from the public.

Due to efforts to contain the spread of COVID-19, interested persons are invited to access presentation materials, ask questions, and provide comments online at: https://data.orangeville.ca/apps_public.html

Project information sheets and feedback forms for individuals with limited access to internet will also be available at Orangeville Town Hall (87 Broadway) from October 26th to November 16th, 2020.

Your participation and feedback is important. All comments and questions received from **October 26th to November 16th, 2020** will be part of the final Class EA.

For more information or to be placed on our mailing list, please contact the Project Team at the contacts below.

Irena Kontrec,
Town of Orangeville
ikontrec@orangeville.ca
(519) 941-0440 ext. 2415

Stephen Di Biase, P.Eng.,
Stantec Consulting Ltd.
Stephen.dibiase@stantec.com
(905) 415-6330

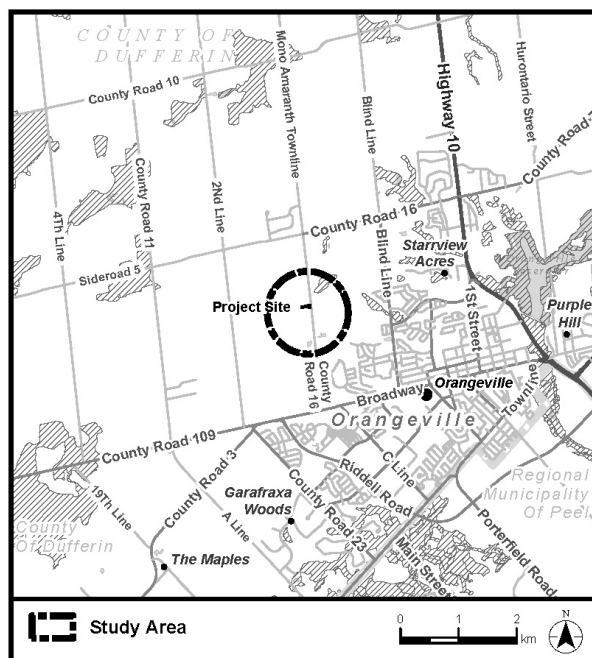


Figure 1: Study Area currently being considered for supply options



October 28, 2020

Ministry of Long-Term Care
400 University Avenue, 6th Floor
Toronto Ontario M7A 1N3

To whom it may concern;

Re: Support of Long Term Care Facility Inspection for the Township of North Glengarry

At the meeting held on October 7, 2020, Council to the Township of Mulmur supported the following resolution - Support of Long Term Care Facility Inspection for the Township of North Glengarry:

The Council of the Township of Mulmur supports the Township of South Glengarry motion dated September 14, 2020. The Township of Mulmur urges the Ontario Government to provide funding to increase the fulltime positions in place of casual and part time labour in long term care homes, and further requests the Ministry of Long-Term Care to enact regular inspections of all long-term care homes.

Respectfully,

A handwritten signature in black ink, appearing to be "Tracey Atkinson", written over a horizontal line.

Tracey Atkinson
CAO/Planner
Township of Mulmur
705-466-3341 Ext 222
tatkinson@mulmur.ca

c.c Township of North Glengarry, Township of Amaranth



The Corporation of

THE TOWNSHIP OF MELANCTHON

157101 Highway 10, Melancthon, Ontario, L9V 2E6

Telephone - (519) 925-5525

Fax No. - (519) 925-1110

Website: www.melancthontownship.ca

Email: info@melancthontownship.ca

September 28, 2020

Dufferin County
55 Zina Street
Orangeville, Ontario
L9W 1E5

Attention: Infrastructure and Environmental Services Committee

Dear Sirs:

Re: Dufferin County CP Rail Trail

At the Committee of the Whole meeting of Council held on September 17, 2020, a discussion was held regarding cycling trails/routes throughout the Township, as a result of a Delegation by Karisa Downey, Economic Development Officer to the Roads Sub-Committee on July 8, 2020.

Staff were directed to send a letter to this Committee to advocate that additional work be done on the CP Rail Trail for the purposes of cycling and walking, so that this beautiful tract of land can be enjoyed by all.

Should you have any questions regarding this matter, please don't hesitate to contact me.

Yours truly,

Denise B. Holmes, AMCT
CAO/Clerk

- c. Karisa Downey, Dufferin County Economic Development Officer
Headwaters Communities in Action



GRAND VALLEY

The Corporation of the Town of Grand Valley

5 Main Street North
Grand Valley, ON L9W 5S6
Tel: (519) 928-5652
Fax: (519) 928-2275

www.townofgrandvalley.ca

REPORT TO COUNCIL

To: Mayor Soloman and Members of Council
Mayor Currie and Members of Township of Amaranth Council
Mayor Gardhouse and Members of Township of East Garafraxa Council

From: Meghan Townsend, CAO/Clerk-Treasurer

Meeting Date: October 27, 2020

Subject: Remembrance Day 2020

Purpose

The purpose of this report is to present the plan for the 2020 Remembrance Day commemoration at the Grand Valley Cenotaph.

Background

In accordance with public health and provincial guidance, we have revised our plans for commemorating Remembrance Day so that a ceremony can go on, with proper precautions in place.

Discussion

In keeping with public health guidance and the practices encouraged by the Royal Canadian Legion, the following items will be changed on November 11, 2020:

- Wreaths will be prepositioned
- Parade to the cenotaph is cancelled
- One local political emcee and one representative from the local Ministerial only
- O Canada will be played through the sound system
- Hymns will be removed from the order of service
- Paper brochures will not be printed
- Advertising of the event in newspapers and social media will not occur
- Pinning poppies to the cross will not take place
- Lunch at the arena is cancelled
- The Honour Roll will be printed and displayed and will not be read aloud

- We will work with the 85 Tornado Squadron for sentinels, playing of the Last Post, Reveille and the Lament, or these songs will be played on the sound system

As usual, Public Works will set up road closures so that Main Street and Amaranth Street are closed just prior to, during and just after the ceremony.

The Ceremony will start at 10:45 a.m.

Recommendation

THAT Council receives Report – Remembrance Day 2020 from the CAO/Clerk-Treasurer of Grand Valley.

Respectfully submitted by,
Meghan Townsend
CAO/Clerk-Treasurer



The Royal Canadian Legion

COL. FITZGERALD (ONT. NO. 233) BRANCH

BOX 141, (7 JOHN ST.)

ORANGEVILLE, ONTARIO L9W 2Z5

Office: 519-942-4895 Club Rooms: 519-942-2077 Fax: 519-942-1352

Email: rcl233@rogers.com

September 16, 2020

2020 ANNUAL POPPY CAMPAIGN


Once again it is that time when we take the opportunity to remind our fellow countrymen of the "Supreme Sacrifice" of the 114,313 Canadians who laid down their lives for the cause of freedom.


The annual distribution of Poppies and Wreaths are The Royal Canadian Legion's only National Appeal for funds, which are held in Trust under strict Government and Legion regulations. Our participation in the Annual Poppy Campaign is our way of showing our appreciation and extending our thanks to Veterans and their dependants. The support of the business community and the many hours of volunteer work are essential to the success of the Campaign.

Enclosed you will find a 2020 Wreath Order Form. We urge you to please return your order by mail the deadline of November 6, 2020, with your cheque made payable to: "Poppy Trust Fund".

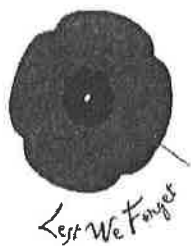
For the first time, spectators will be discouraged from attending in person due to limited space and requirement to physical distance. Due to COVID 19 restrictions wreaths will be preplaced at the Cenotaph by a Legion representative. Acknowledgement of preplaced wreaths will be placed on our website and social media platforms. Those wanting to place the wreath personally can do so after the ceremony concludes. (Date and time to be arranged for pick up wreath from Legion. Please DO NOT arrive at Legion without an appointment)

Thank you in advance for your support and participation in our Poppy Campaign.


Chuck Simpson
2019 Poppy Campaign Chairman
Royal Canadian Legion
Branch 233


Barry Kimber
President
Royal Canadian Legion
Branch 233

"They served till death! Why not we?"



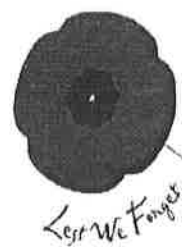
The Royal Canadian Legion

COL. FITZGERALD (ONT. NO. 233) BRANCH

P.O. BOX 141 (7 JOHN ST.)

OFFICE: 519-942-4895 CLUB ROOMS: 519-942-2077 FAX: 519-942-1352

EMAIL: rcl233@rogers.com



2020 REMEMBRANCE PROGRAM WREATH ORDER FORM

No.	Description	Qty.	\$ Cost Price
#20 Wreath	A solid base of green, with seven poppies and maple leaves, two large cycas leaves and a bow of purple ribbon		75.00
#14 Wreath	A background of rich green artificial grass with a cluster of three poppies, two cycas leaves and maple leaves, with a bow of purple ribbon		50.00
#35 Cross	Seven large poppies on rich green foliage with full- coloured maple leaves at the juncture of the cross. Wire stand included		45.00

NAME (Person/Business/School) _____

ADDRESS _____

POSTAL CODE _____ PHONE # _____

EMAIL _____

Amount Enclosed\$ _____ Donation \$ _____

Ribbon \$10.00 _____

Name to be printed on ribbon _____

PLEASE MAKE CHEQUES PAYABLE TO: POPPY TRUST FUND
***ORDERS MUST BE RECEIVED & PICKED UP BY NOVEMBER 6, 2020**

IF DROPPING OFF IN PERSON, PLEASE CALL FIRST TO ARRANGE TIME DUE TO COVID 19 RESTRICTIONS

LEST WE FORGET



ROYAL CANADIAN LEGION
BRANCH 220, SHELBURNE
203 Williams Street, Shelburne, ON L9V 3L6
Phone 519-925-3800 Fax 519-925-0730
Rcl220@bellnet.ca

October 14, 2020

Township of Amaranth
374028 6th Line
Amaranth, ON L9W 0M6

As a past supporter of our organization, we at Branch 220 Shelburne, of the Royal Canadian Legion would like to take this opportunity to thank you for your participation. We would hope that your support would continue during our Poppy Campaign this November. The prices this year: large wreaths \$70.00, small wreaths \$50.00 and crosses \$20.00.

Money received from the Poppy Campaign is deposited in a special account and withdrawals are made to assist veterans and their dependents who find themselves in need. Also, donations are made from this special account to support community projects such as the Hospitals and Dufferin Oaks.

In honour of this special day and time we would ask that all citizens take the time to observe two minutes of silence in recognition of those who gave of themselves then and now.

Please return your cheque made payable to "Shelburne Legion Poppy Fund" together with the completed form below. If you have any questions please call Dean Schroeder at (519) 940-6491 during business hours. Please place orders before November 5, 2020.

Thanking you in advance,

Dean Schroeder

Name _____ Address _____
Phone # _____

Wreaths: #14 Small _____ #20 Large _____ #36 Crosses _____
\$50.00 \$70.00 \$20.00

Cash _____ Cheque _____

Memorial Card to Read: _____

Wreath to be Placed by: _____

Mail To: Royal Canadian Legion
203 William St.
Shelburne, ON L9V 3L6

Lest We Forget, Lest We Forget



REPORT TO COUNCIL 2020-26

TO: Mayor Currie and Members of Council

FROM: Nicole Martin, Acting CAO/Clerk

DATE: November 4, 2020

SUBJECT: Office Closure during the Holidays

Recommendation

That Council accept the Acting CAO/Clerk report 2020-26 and close the office on December 29, 30 and 31 as paid days for staff.

Background

Typically, Council has approved the closure of the office over the Christmas Holiday season. This year Christmas Day falls on a Friday and Boxing Day falls on a Saturday, those two days are the statutory holidays. Staff would be entitled to Monday December 28 off as recognition for the December 26 statutory holiday. Council is being asked to close the office on December 29, 30 and 31 and allow staff to have the time off as paid time off.

Additionally, there are 3 staff members receiving years of service awards this year. It is anticipated that a small staff holiday party will be held on November 26, 2020. (adhering the local Health Department guidelines for gatherings)

Budget Concerns

If staff do not have 2020 vacation time allotment left, it would have to be unpaid time off for those

office staff affected. Council should keep in mind that there are several new staff in the office this year and most would not have paid vacation days available.

The 2020 budget contemplated \$200.00 for staff recognition. There is a 20 years of service award that was not budgeted for in 2020.

Summary

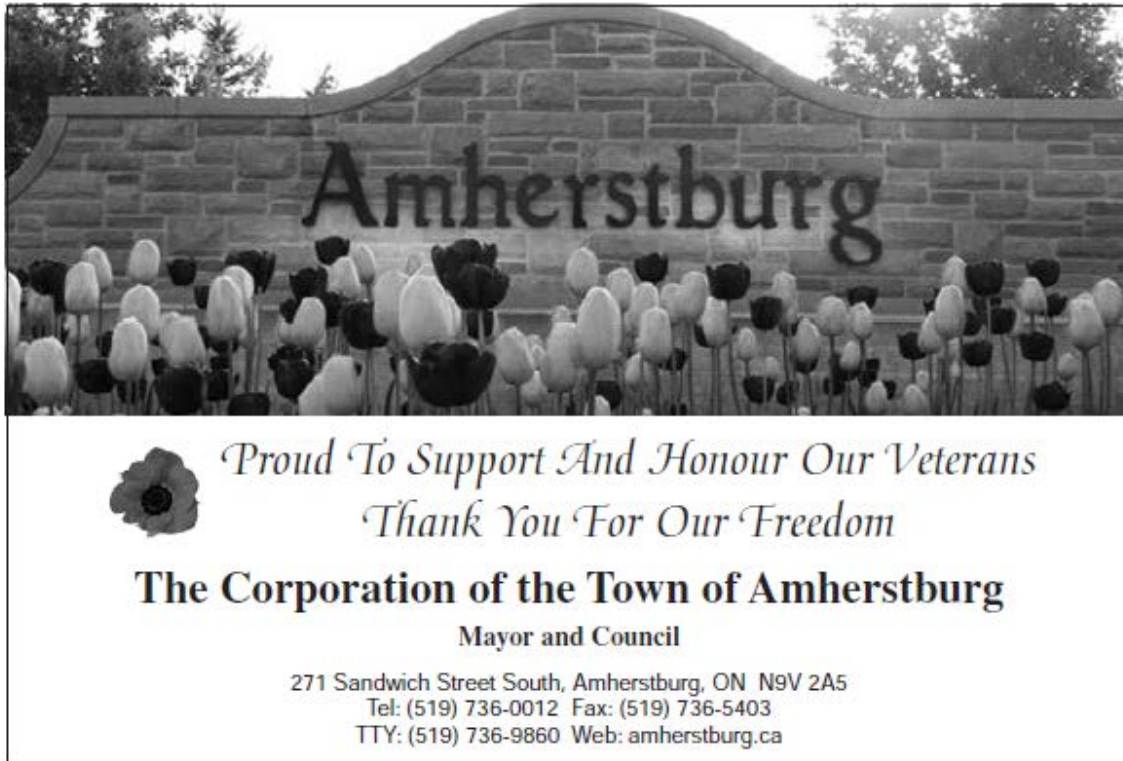
Staff recommends Council approving the closing of the office on December 29, 30 and 31 as paid time off.

Respectfully Submitted,

Nicole Martin
Acting CAO/Clerk

From: [Nancy Matthews](#)
To: [Nicole Martin](#)
Subject: Nicole--- The Royal Canadian Legion Ontario Command- 8th Annual Military Service Recognition Book
Date: Thursday, October 29, 2020 10:28:21 AM
Attachments: [image.png](#)
[Rates.pdf](#)

Thank you for your **very kind** support for our local Veterans! Please allow me to tell you about the Ontario Command Legion's **8th Annual Military Service Recognition Book** to honor and recognize our local Veterans.



This unique remembrance publication includes past and present-day Veterans biographies and photographs. With the help of our Veterans, their families and friends, submissions are collected at local legion branches and our next edition is scheduled for release in **October 2021**, in advance of our Annual Remembrance Day Ceremonies.

It is available for all to see at local legion branches and online at the Ontario Command Legion's website: <http://www.on.legion.ca/remembrance/military-service-recognition-book>. It helps us, and our younger generations, appreciate and never forget the Sacrifices made by our Veterans for the freedoms we enjoy today.

We would sincerely appreciate your organization's support and appreciation for our Veterans by purchasing an advertisement in our next edition.

If you require any additional information, please reply to this email or phone me at our toll free number below.

Thank you for your consideration and/or support.

Sincerely,

Nancy Matthews

***Publication Office/ Advertising Sales Representative
The Royal Canadian Legion Ontario Command***

1-855-241-6967

oncl@fenety.com



This e-mail and any attachment(s) is for authorized use by the intended recipient(s) only. If you are not the intended recipient, you are hereby notified that any review, retransmission, conversion to hard copy, copying, circulation or any other use of this message and any attachments is strictly prohibited. If you are not the intended recipient, please notify the sender immediately and delete this e-mail and any attachment(s). Thank you.



The Royal Canadian Legion Ontario Command

“Military Service Recognition Book”

Dear Sir/Madam:

Thank you for your interest in **The Royal Canadian Legion Ontario Command**, representing **Ontario's Veterans**. Please accept this written request for your support, as per our recent telephone conversation.

The Royal Canadian Legion Ontario Command is very proud to be printing over **10,000 copies** of our 8th annual **“Military Service Recognition Book”**, scheduled for release by October 2021. This unique remembrance publication recognizes and honours our Province's Veterans and helps us fulfill the Legion's role as the **“Keepers of Remembrance”**. Proceeds raised from this annual appeal are also used to support Veterans Transition Programs to help modern day Veterans that suffer from PTSD and other challenges.

The Legion is recognized as one of Canada's largest Veterans Support Organizations and we are an integral part of the communities we serve. This project helps ensure the Legion's continued success. We would like to have your organization's support for this Remembrance project by sponsoring an advertisement space in our **“Military Service Recognition Book.”**

Please find enclosed a rate sheet for your review. Whatever you are able to contribute to this worthwhile endeavor would be greatly appreciated. For further information please contact **Ontario Command Campaign Office** toll free at **1-855-241-6967**.

Thank you for your consideration and/or support.

Sincerely,

**Garry Pond
President**



www.on.legion.ca

The Royal Canadian Legion Ontario Command

“Military Service Recognition Book”

Advertising Prices

<u>Ad Size</u>	<u>Cost</u>	<u>HST</u>	<u>Total</u>
Full Colour Outside Back Cover	\$2,132.74	+	\$277.26 = \$2,410.00
Inside Front/Back Cover (Full Colour)	\$1,853.98	+	\$241.02 = \$2,095.00
2 Page Spread (Full Colour)	\$2,964.60	+	\$385.40 = \$3,350.00
Full Page (Full Colour)	\$1,482.30	+	\$192.70 = \$1,675.00
Full Page 7" X 9.735"	\$1,110.62	+	\$144.38 = \$1,255.00
½ Page (Full Colour)	\$831.86	+	\$108.14 = \$940.00
½ Page 7" X 4.735"	\$646.02	+	\$83.98 = \$730.00
¼ Page (Full Colour)	\$504.42	+	\$65.58 = \$570.00
¼ Page 3.375" X 4.735"	\$415.93	+	\$54.07 = \$470.00
1/10 Page (Full Colour)	\$300.88	+	\$39.12 = \$340.00
1/10 Page (Business Card) 3.375" X 1.735"	\$256.64	+	\$33.36 = \$290.00

H.S.T. Registration # 10686 2824 RT0001

All typesetting and layout charges are included in the above prices.

A complimentary copy of this year's publication will be received by all advertisers purchasing space of 1/10 page and up, along with a Certificate of Appreciation from the Ontario Command.



PLEASE MAKE CHEQUE PAYABLE TO:

The Royal Canadian Legion
Ontario Command
(RCL ON)
(Campaign Office)
P O Box 8055, Station T CSC
Ottawa, ON K1G 3H6

