BURNSIDE

Summary Statement for the Ashfield-Colborne-Wawanosh Pit
ARA Licence Application for a Class 'A' Pit, Above the Water Table

Pt Lot 9, Concession 6 E.D., Township of Ashfield-Colbourne-Wawanosh, Huron County

Township of Ashfield-Colborne-Wawanosh
82133 Council Line, R.R. #5
Goderich ON, N7A 3Y2

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R.J. Burnside & Associates Limited
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October 2025
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Distribution List

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0	Yes	Yes	Ministry of Natural Resources (MNR), Aggregates Section (ARAapprovals@ontario.ca)
0	Yes	Yes	Township of Ashfield-Colborne-Wawanosh (ACW)

Record of Revisions

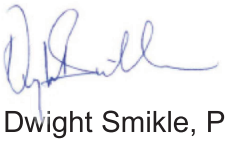
Revision	Date	Description
1	October 17, 2025	Initial Submission to MNR

R.J. Burnside & Associates Limited

Report Prepared By:

Caitlin Fergusson, P.Eng.
Project Engineer
CF/GT/DS:tp

Report Reviewed By:



Dwight Smikle, P.Geo.
Vice President - Hydrogeology

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Supporting Reports

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Maximum Predicted Water Table Assessment, prepared by R.J. Burnside & Associates Limited, dated December 2023

Stage 1-2 Archaeological Assessment, prepared by TMHC Inc., dated May 2025

Level 1 and Level 2 Natural Environment Report, prepared by R.J. Burnside & Associates, dated October 2025

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1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by the Township of Ashfield-Colborne-Wawanosh (Township) to prepare a licence application in support of a Class 'A' Pit, Above Water Table, as required under the Provincial Standards of the Aggregate Resources Act (ARA). The application is for a new municipally owned pit, the Ashfield-Colborne-Wawanosh (ACW) Pit, that will extract sand and gravel above the water table within the Township. Extraction is proposed in three phases within a total licence area of approximately 16.6 ha.

The licence area is located on Part Lot 9, Concession 6 E.D., Township of Ashfield-Colborne-Wawanosh, Huron County, southwest of the Glens Hill Road and Halls Hill Line intersection (Figure 1). The licence area is located on a 100-acre (40.47 ha) property, zoned as General Agricultural (AG1) and Natural Environment (NE1) (Figure 2). The proposed aggregate extraction area is primarily limited to the Agricultural Zone east of the Nine Mile River and covers an area of approximately 14.1 ha. The Huron County Official Plan designates this portion of the property as extractive, the area surrounding the river as natural environment, and the area west of the river as agriculture.

The proposed licence area is currently cultivated agricultural land, and it is proposed the extraction area will be returned to agricultural use upon final rehabilitation. Upon licence approval, the maximum amount of aggregate to be removed in any calendar year is 100,000 metric tonnes.

2.0 Site Considerations

2.1 Planning and Land Use

The property is currently vacant with no buildings or structures. About half of the property is cultivated agricultural land with the remaining portion of the property consisting of the Nine Mile River and tree cover. The surrounding land use is primarily agriculture and forested areas. The Ashfield Pit (Licence #4720) and Ashfield Landfill Site are immediately east of the Site.

The Huron County Official Plan designates the east portion of the property as extractive, the middle portion as natural environment and the west portion as agriculture. This Plan, with the licence area highlighted, is included as Figure 1. Currently the licence area is zoned as General Agriculture (AG1), with a small portion zoned as Natural Environment (NE1), by the Township's Zoning By-Law (11-2024 and 43-2024). The adjacent lands are zoned as Natural Environment (NE1), Disposal (DS), Extractive Resource (ER1) and General Agriculture (AG1). A Zoning By-law amendment application will be submitted in conjunction with the ARA licence application to change the zoning of the licence area to Extractive Resources (ER1).

The licence area is within the Nine Mile watershed of the Maitland Valley Conservation Authority (MVCA). The MVCA Regulation Limit may extend slightly beyond the licence area boundary on the west side. The property is located within a Significant Groundwater Recharge Area (SGRA)

and a Highly Vulnerable Aquifer (HVA). Maitland Valley Source Protection Area policies apply to the site.

Aggregate deposits such as the one underlying the licence area are to be protected and utilized. Section 4.5 of the 2024 Provincial Planning Statement (PPS) states: "*As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible.*" There are existing pits located in the vicinity of the proposed licence area. The proposed pit would provide sand and gravel for Township operations including road maintenance, construction and winter sand application.

The licence boundary is outside the 'prime agricultural areas' identified in the Oak Ridges Moraine Conservation Plan, Greenbelt Plan, Growth Plan for the Greater Golden Horseshoe, and the Niagara Escarpment Plan. Therefore, an Agricultural Impact Assessment has not been included in the licence application. Additional details on the land class are included below.

2.2 Canada Land Inventory

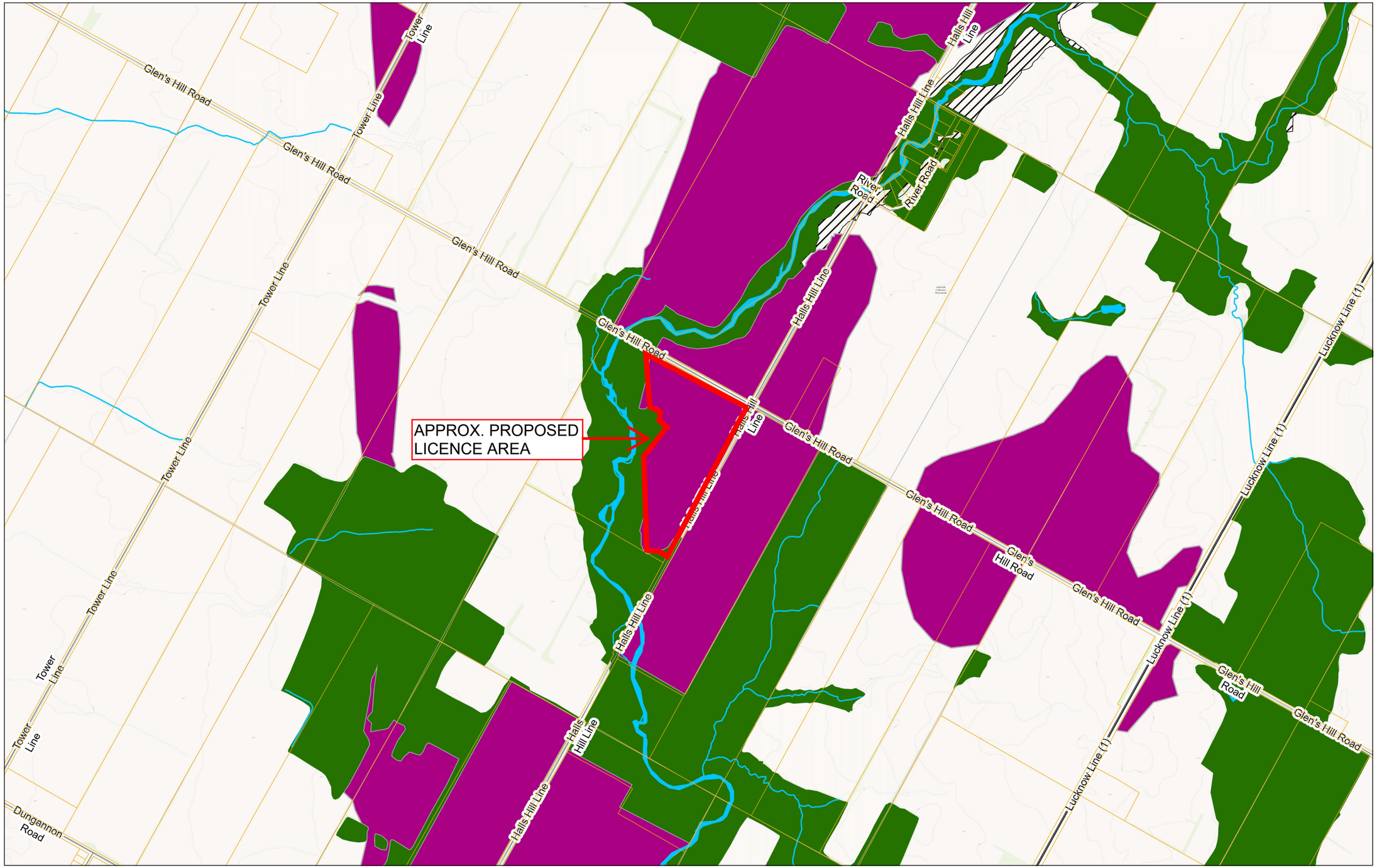
The proposed licence area is located within an area that is predominately a farming community with some existing licensed pit operations located to the north, east, and south. The Canada Land Inventory (CLI) system "Soil Capability Classification for Agriculture" is the recognized system in Ontario for classifying mineral soils according to their inherent capability for agriculture. The best soils, with no significant limitations for crop use, are designated Class 1. Soils designated in Class 2 to Class 6 have decreasing capability for common field crops. Classes 1, 2, 3 and 4 are considered capable of sustained use for cultivated field crops. Classes 5 and 6 are considered capable only for perennial forage crops. Class 7 soils have no agricultural capability. Subclasses are used to identify specific limiting factors for each class.

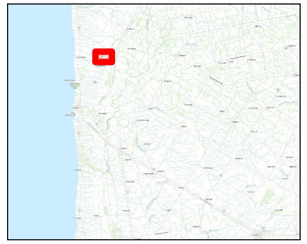
According to the CLI, the licence area soils are mapped as Class 2 with moderate limitations for crops which include low fertility (F) and moisture limitations (M). Figure 3 illustrates the available CLI mapping for the area. Once extraction is complete, the licence area is to be restored to agricultural use.

2.3 Source Water Protection

The proposed licence area is within the Maitland Valley Source Protection Area. There are no Wellhead Protection Areas (WHPAs) mapped on or within 500 m of the property. A HVA and SGRA are mapped as occurring across the licence area. Figure 4 illustrates the MECP Source Protection Information Atlas mapping for the area. As illustrated in Figure 4, most of the proposed licence area, as well as lands to the north, east and south, are mapped as a HVA and SGRA. It is interpreted that the HVA and SGRA mapping is a result of the surficial sand and gravel that occurs in the area. The proposed licence is for extraction above the water table and no site-specific source water protection policies are applicable, therefore no source protection measures are required.

FIGURE 1: HURON COUNTY OFFICIAL LAND USE DESIGNATIONS





Legend

- Parcel Fabric
  - Condominium
  - Road Allowance
  - Parcel
- Lots and Concessions
- MTO Connecting Links
- Road Centreline
  - Provincial Highway
  - County Road
  - Municipal Road
  - Private Road - Not Urban
  - Private Road - Urban
  - Road - Not within Huron
- Watercourse
- Waterbody
- Municipal OP Landuse
  - 1) Settlement Areas; Urban; Village
  - 7) Open Water; Open Water Enviro
  - 35) Flood Plain
  - 31) Wetlands
  - Natural Environment
  - 5) Natural Environment - Limited Pr
  - 6) Extractive; Extractive Resources Mineral Aggregates; Pits / Quarries 22) Proposed Mineral Aggregates
  - 8) Urban Natural Environment
  - 9) Parkland; Parks & Open Space; Residential Park 3) Marginal Agriculture; Non-Prime
  - Agriculture
  - 10) Existing Landfill; Existing or Aba
  - 11) Airport; Airport Commercial
  - 12) Commercial; Commercial \ Indu Commercial Shopping Centre; Core
  - 13) Community Facility
  - 14) Group Commercial
  - 15) Harbour Industrial
  - 16) Highway Commercial

1: 20,000

Notes

1,016.0 0 508.00 1,016.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

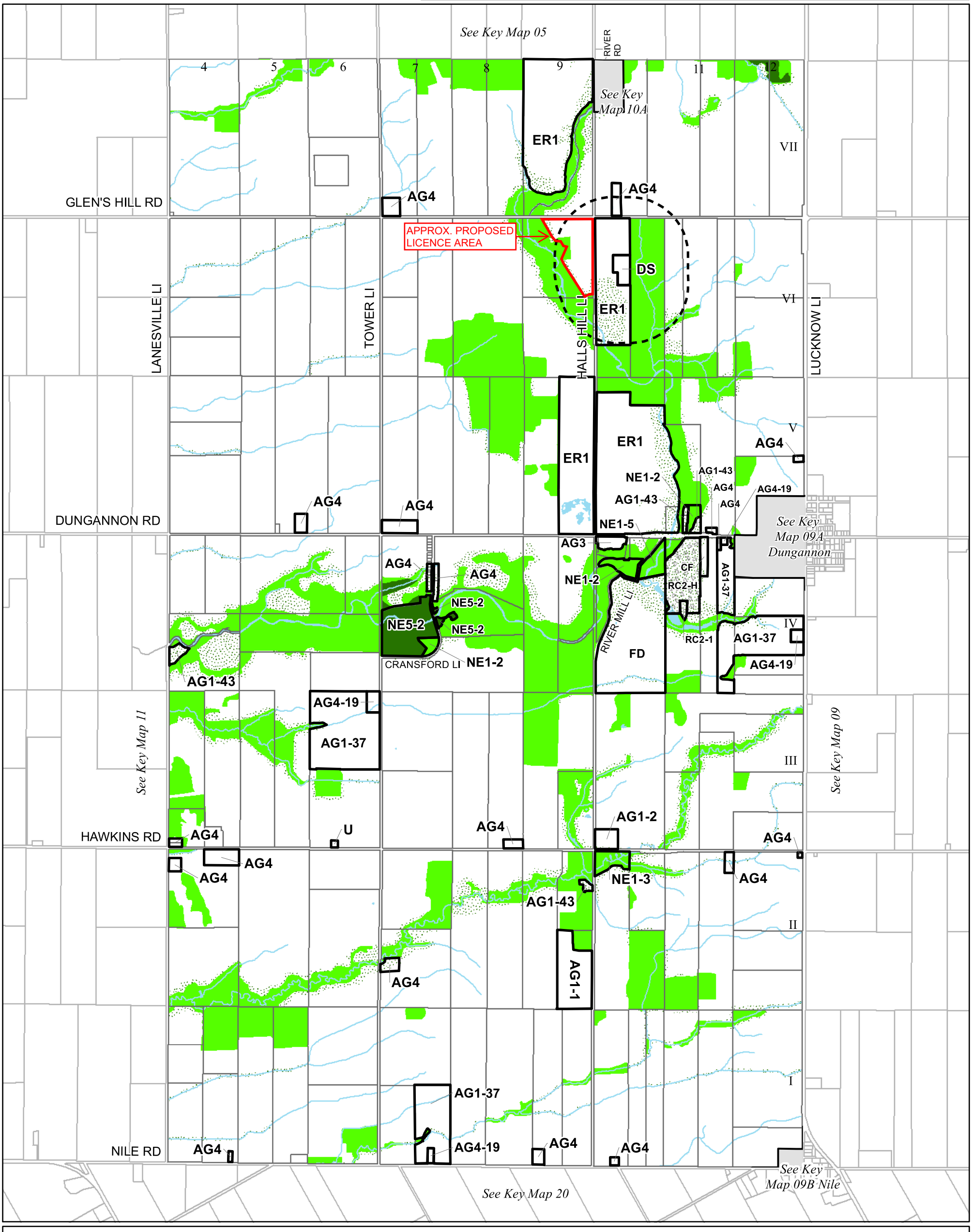
This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Township of Ashfield-Colborne-Wawanosh
Zoning By-Law
Key Map 10

Amendments

Revision Date: July 02, 2024



AG1 Zone (unless otherwise noted)
Holding Zone
Zone - NE1
Zone - NE5
Conservation Authority Regulated Lands
Watercourse
Waterbody
500 m Buffer
Property Boundary

0 440 880 1,320
Metres

1:31,500

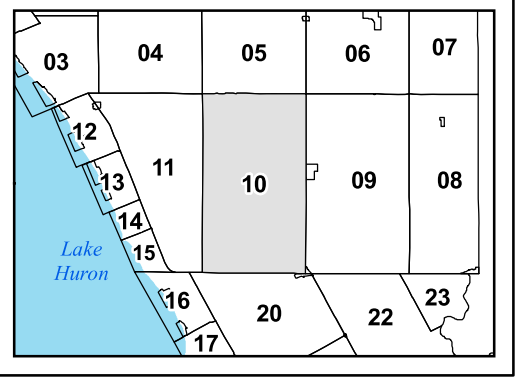
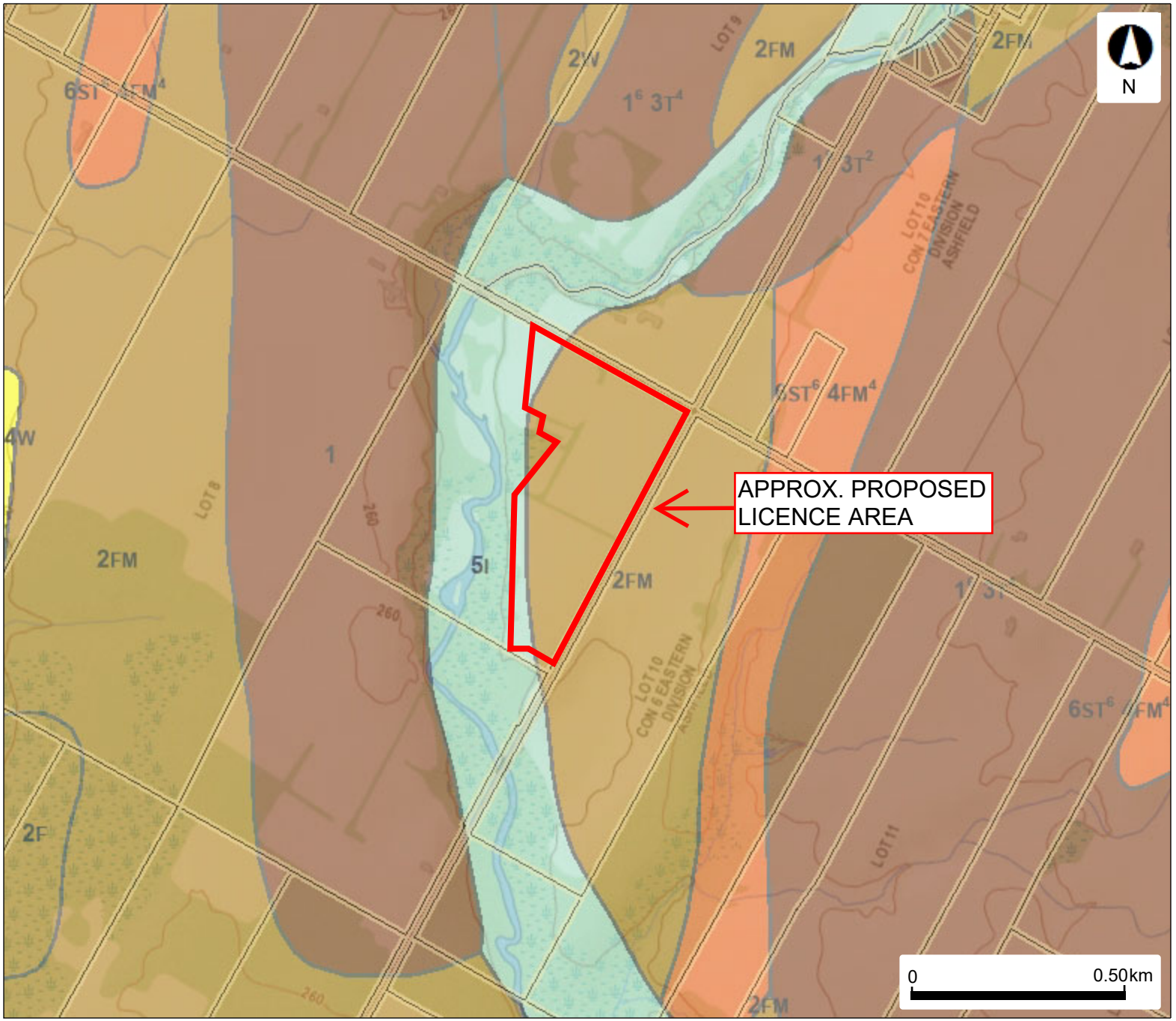


FIGURE 2: TOWNSHIP ZONING

FIGURE 3: CANADA LAND INVENTORY



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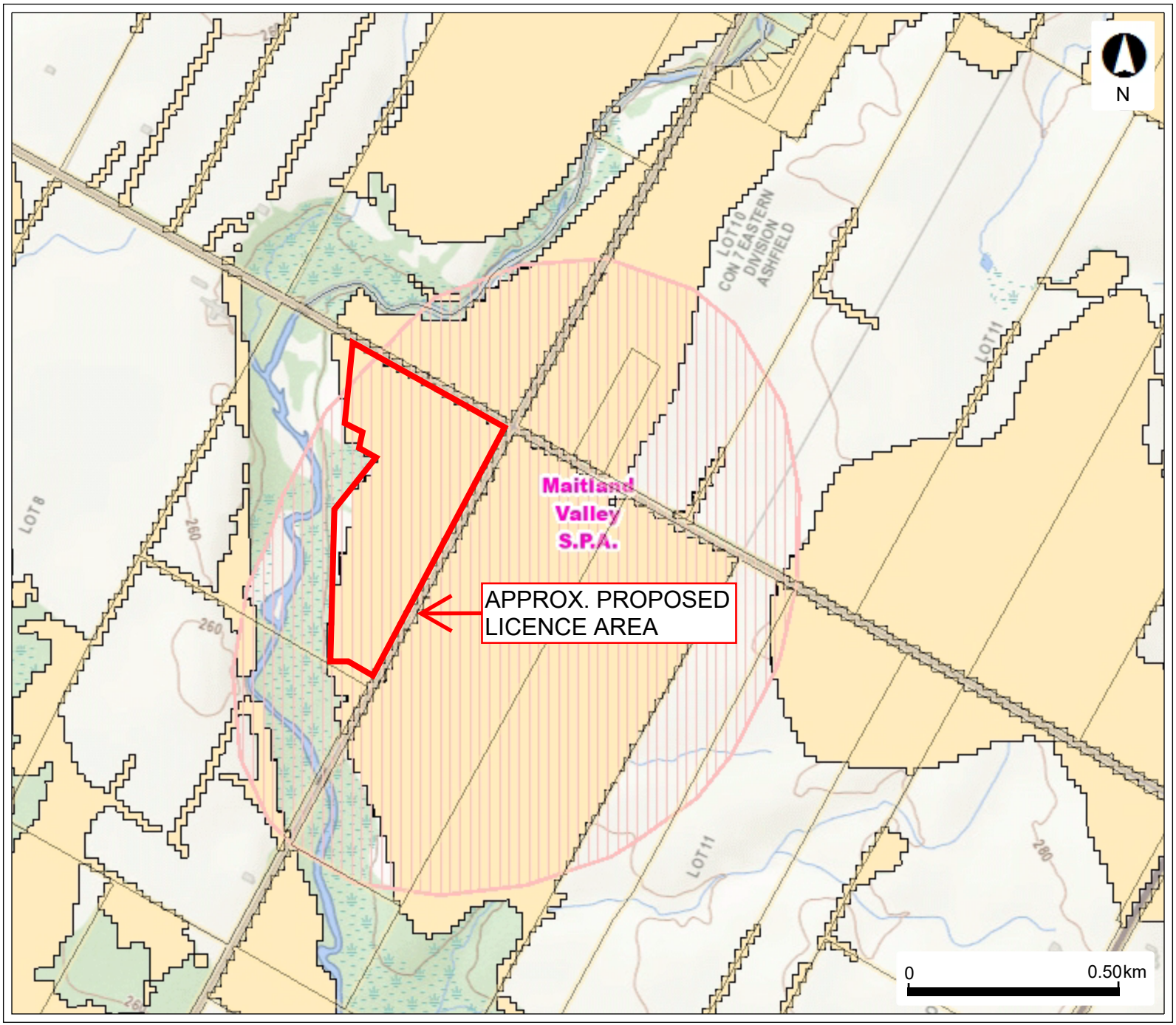
Map Created: 8/18/2025
Map Center: 43.88193 N, -81.60589 W

FIGURE 4: SOURCE WATER PROTECTION



Legend

- Assessment Parcel
- Source Protection Areas
- Highly Vulnerable Aquifers
- Significant Groundwater Recharge Area
  - N/A
  - 0
  - 2
  - 4
  - 6

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3.0 Site Plan and Technical Reports

In accordance with the Aggregate Resources of Ontario Standards, the required drawings and technical reports have been prepared in support of the licence application. All drawings and reports are summarized below and enclosed with the application.

3.1 Site Plan Drawings

Enclosed, in support of this application, are the following drawings:

Drawing 1 of 4: Existing Conditions
Drawing 2 of 4: Operational Plan
Drawing 3 of 4: Progressive and Final Rehabilitation Plan
Drawing 4 of 4: Cross Sections

As illustrated on the plans, the 16.6 hectares east of the Nine Mile River is proposed to be licensed for extraction. Extraction is to be completed in three phases and to a pit floor elevation ranging from 246.5 m asl to 248.5 m asl. Phase 1 includes excavation of aggregate and construction of the internal haul road in the south portion of the licence area. Phase 2 includes the extension of the haul road to the north and extraction in the north portion of the licence area. Phase 3 includes a site plan variance for excavation of aggregate within the eastern licence setback along Halls Hill Line.

3.2 Maximum Predicted Water Table Report

A Maximum Predicted Water Table Report was completed by Burnside to assess the potential adverse effects to groundwater and surface water resources, and their uses, by the proposed extraction The Maximum Predicted Water Table Report also establishes the allowable pit floor elevation to maintain 1.5 m of separation from the established water table. If potential adverse effects are possible, recommendations for monitoring, mitigation and a contingency plan are provided which can be implemented on the Site Plan.

The findings of the Maximum Predicted Water Table Report are as follows:

- The test pit program identified the agricultural field on the property east of the Nine Mile River as an area suitable for aggregate extraction.
- The water table fluctuated by up to 0.5 m after the spring groundwater recharge event.
- The maximum predicted water table elevation across the proposed licence area is 247 m asl at the northeast corner and 245 m asl along the west boundary of the extraction area.
- The maximum depth of extraction ranges from 248.5 m asl at the northeast corner to 246.5 m asl at the west extraction boundary.

The Maximum Predicted Water Table Report recommended the following:

- Groundwater levels should continue to be monitored in the spring after operations begin so the predicted maximum water table elevation can be confirmed and revised, if needed.

It is our understanding this recommended monitoring would occur for a minimum of three years.

3.3 Level 1 and Level 2 Natural Environment Report

A Level 1 and Level 2 Natural Environment Report (NER) was completed by Burnside to assess if there are any significant natural environment features on or within 120 m of the proposed licence area. If negative impacts are possible, recommendations are provided for preventative, mitigative or remedial measures which can be implemented on the Site Plan.

The findings of the Level 1 and Level 2 Natural Environment Report are as follows:

- The most significant natural features occur in association with the Nine Mile River and its forested valleylands.
- The Nine Mile River and forested valleylands provide habitat for breeding birds and can support rare species (i.e., Eastern Wood-peewee). The valleylands may also provide Bald Eagle and Osprey foraging and perching habitat, as well as bat maternity roosting habitat.
- The Nine Mile River and associated riparian wetland provide fish habitat and may support turtle wintering areas, amphibian breeding habitat and marsh breeding bird habitat.
- The valleylands of the Nine Mile River will have a 10 m setback established which will provide adequate protection of the natural areas.
- Provided the listed mitigation measures are adhered to, the proposed development is consistent with all applicable natural heritage policies.

The Level 1 and Level 2 NER provided the following mitigation measures:

- Erosion and sediment control (ESC) fencing shall be installed along the west licence boundary as per Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD).
- The ESC fencing shall be inspected prior to any site excavation to ensure proper installation.
- ESC fencing shall be maintained in place and regularly monitored to ensure proper function especially following snowmelt or heavy rain events.
- ESC fencing may only be removed once all excavation activities are complete and rehabilitation of the extraction area has taken place.
- Stockpiles and extraction faces to be made unusable by bank swallows during the breeding season (July 15 - August 20) by reducing stockpile and face slopes in winter/early spring to 70 degrees or less. Best management practices for the protection, creation and maintenance of bank swallow habitat in Ontario (MNR 2017) are to be employed.

- Trees shall be removed using chainsaws and forestry equipment then turned to mulch. Stumps shall be grinded or removed by excavator.
- Timing window restrictions for vegetation removal should be adhered to (no removals between April 1 – September 30).
- An environmental monitor shall ensure that all equipment entering the construction limits is clean and washed free of dirt, mud, and plant material. contractors shall follow the clean equipment protocol for industry (Halloran et al., 2013).

3.4 Stage 1 and 2 Archaeological Assessment

A Stage 1 and 2 Archaeological Assessment (AA) was conducted by TMHC Inc., to assess the potential for archaeological resources (Stage 1) and the presence of archaeological resources (Stage 2) within the proposed licence area.

The results of Stage 1 AA indicated the property had potential for the discovery of archaeological resources and a Stage 2 pedestrian and test pit survey was completed. Stage 2 AA did not result in the documentation of archaeological resources so no further archaeological assessment was recommended.

3.5 Guideline D-4 Study

A Guideline D-4 Study was completed by Burnside to assess the potential for impacts related to the Ashfield Landfill to affect the proposed extraction. The Township's Official Plan requires a D-4 Study for any proposed development within 500 m of an active or closed landfill site.

The Guideline D-4 Study concluded that groundwater, surface water, landfill gas and nuisance impacts from the active Ashfield Landfill are not currently affecting the proposed licence area.

The Guideline D-4 Study recommended the following:

- A qualified person should review the conclusions and recommendations presented in future Landfill Monitoring Reports in the context of the ACW Pit. The review would consider if Landfill conditions have changed and present an existing or potential future groundwater, surface water or landfill gas impact to the ACW Pit.
- Pit operations will not include washing or extracting aggregate below the water table. If this is not the case, impacts of future pit operations such as installation of wash ponds, settling ponds, water supply wells, or aggregate extraction below the water table will need to be assessed in the context of the Landfill.
- As a precaution, any proposed buildings on the pit property should be equipped with methane gas detectors or equipped with proper ventilation to prevent gas build up in enclosed spaces.

4.0 Aggregate Quality and Quantity

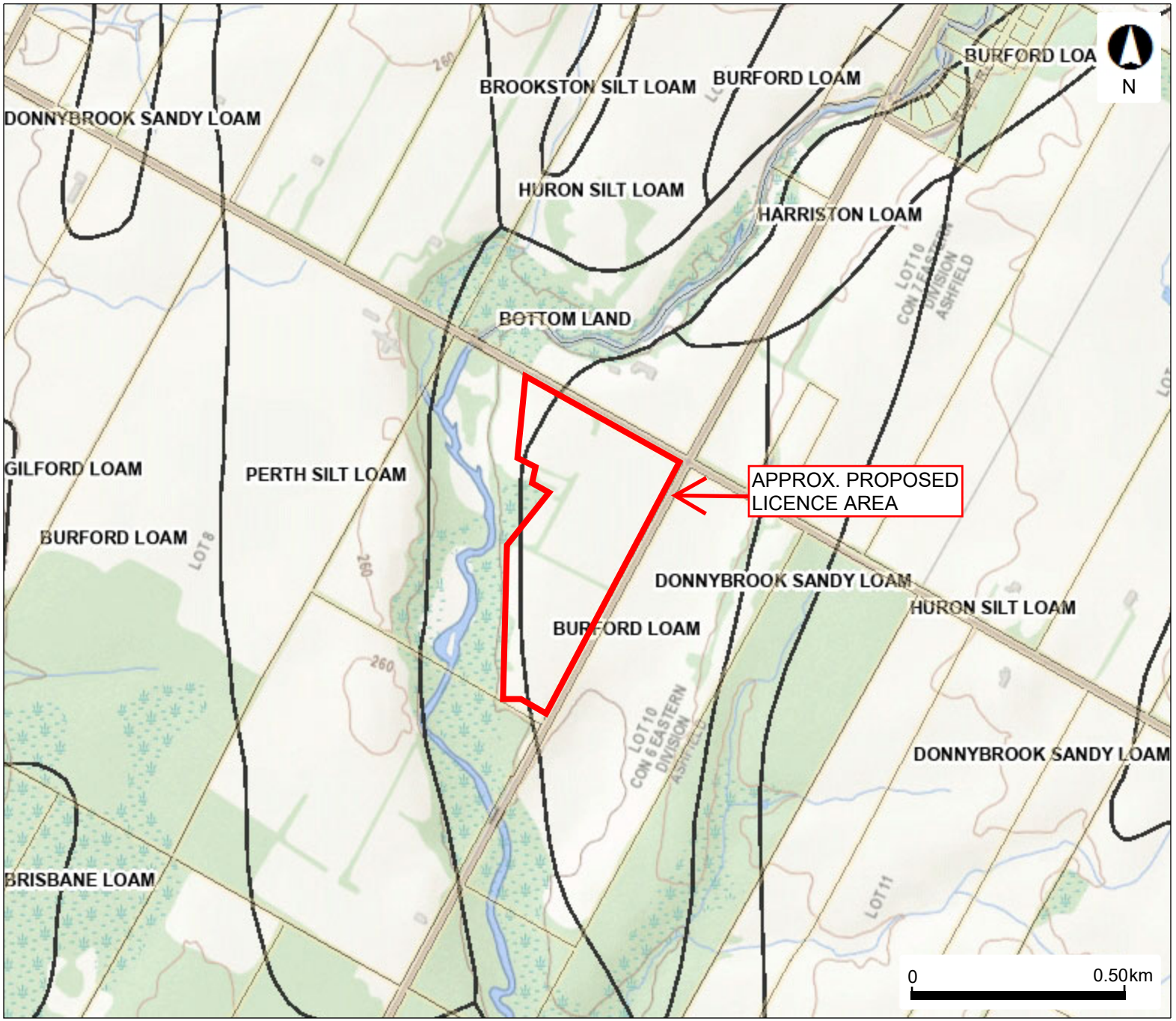
A test pit program was conducted in December 2021 for the proposed extraction area to assess the location, as well as quantity and quality of recoverable aggregate. Based on observations, it was concluded that the full extent of aggregate materials was not reached in the test pits. Three boreholes were drilled in October 2022 to evaluate the extent of the deposit and install monitoring wells. The boreholes reported sandy gravel from 0.3 to up to 12 m below ground surface underlain by a silty sand and gravel for the remaining borehole depth. The test pit and borehole logs were used to create two schematic geological cross-sections of the proposed licence area. These cross-sections, and a map showing the location of the test pits and monitoring wells, are provided in the Maximum Predicted Water Table Assessment. The locations are also shown on Drawing 1 of 4, Existing Conditions.

The Soil Survey of Huron County (Report No. 13 of the Ontario Soil Survey), as shown in Figure 5, depicts the dominant soil type of the proposed licence area to be Burford Loam, which is described as poorly sorted gravelly outwash with slightly irregular topography and semi-frequent stones at the surface.

The proposed pit is located within a sand and gravel resource area of Primary Significance as identified by the Aggregate Resources Inventory of Huron County in Aggregate Resources Inventory Paper (ARIP) 177. The Ontario Geological Survey map, ARIM 177 – 1A, is included as Figure 6 with the proposed licence area outlined. As shown in Figure 6, the proposed licence boundary is within deposit number 9, which includes the existing pits to the east and north of the proposed pit. Deposit number 9 is a glaciofluvial outwash deposit described as having more than 35% gravel content, thickness of greater than 6 m with more than 106,000 tonnes/ha, and no known aggregate quality limitations.

Extrapolating from Table 3 of ARIP 177, the proposed pit could have up to 1.5 million tonnes of aggregate resources given an extraction area of 14.1 ha. The results of the site investigation substantiate the existence of a significant quantity of good quality aggregate material warranting a licence for the property. Aggregate extraction across the licence area would generally consist of an excavation depth of 7 m to 9 m for removal of sand and gravel. Based on the available site information, it is estimated that there could be approximately 850,000 m^3 (1.45 million metric tonnes) of aggregate resources to extract within the licence boundary. Therefore, the resource could potentially be extracted over a 14.5 year period based on an annual extraction limit of 100,000 metric tonnes.

FIGURE 5: SOIL SURVEY OF HURON COUNTY



Legend

- Assessment Parcel
- Soil Name Label

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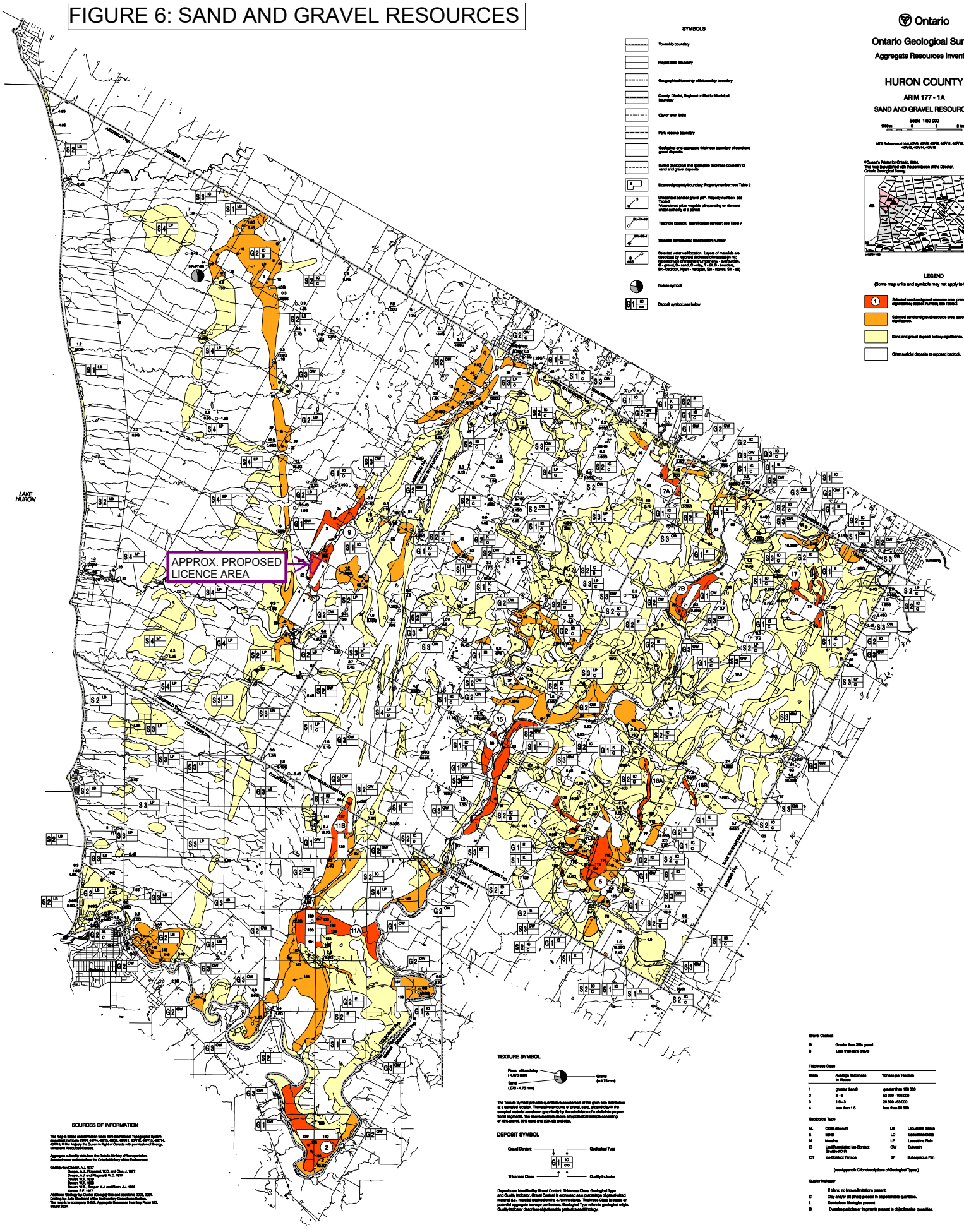
FIGURE 6: SAND AND GRAVEL RESOURCES



5.0 Haul Roads

The primary entrance is halfway along the length of the licence boundary on Halls Hill Line. A secondary entrance is near the south end of the licence boundary on Halls Hill Line. Both entrances are in line with the adjacent pit's entrances. Using the primary entrance, a 6 m wide haul road will be constructed along the east excavation setback parallel to Halls Hill Line. After exiting the pit, trucks will either travel on Halls Hill Line north to Glens Hill Road or south to Dungannon Road.

6.0 Progressive and Final Rehabilitation

Progressive rehabilitation of the extraction area will be undertaken in three phases as pit operations progress. All phases (1, 2, and 3) will be restored to agricultural use. Rehabilitation of each phase will commence upon the complete extraction of the respective phase and be completed within two years of commencement. All topsoil and subsoil originating from the extraction area shall be retained and used in rehabilitation. As the limits of extraction are reached, the side slopes shall be progressively rehabilitated with a 3:1 side slope for natural or agricultural use.

The proposed final land uses will be a combination of Natural Environment and Agricultural. Both are compatible with the surrounding existing land uses. The rehabilitated Natural Environmental areas of tree plantings will have a random mixed native tree and shrub plantings of various sizes creating wildlife habitat and animal movement corridors. The rehabilitated agricultural area will be returned to productivity.

The following notes are taken from the Progressive and Final Rehabilitation Plan (Drawing No. 3 of 4) and address the details of the rehabilitation for this site.

Rehabilitation

- Rehabilitation slopes shall be established by backfilling with onsite overburden or poorer quality aggregate to establish a 3:1 (horizontal : vertical) slope.
- Areas of the pit floor will be covered with available overburden and subsoil. The pit faces will have a 150 mm depth of topsoil. The pit floor will have 300 mm depth of topsoil. All topsoil shall be seeded with Simcoe County Native Seed Mixture 8150 with cover crop compatible for the soil conditions such as agricultural oats or winter wheat grain, sown at 55 kg/ha.
- The slopes at the limit of extraction will be established by pushing material down or backfilling with excess material. The slopes will be roughly graded prior to placement of topsoil.
- The tree and shrub planting will follow all final slope rehabilitation in relation to the pit operation. Areas within the licence boundary, except for agricultural areas, will then have random mixed native tree and shrub plantings of various sizes, such as, but not limited to, cedar, poplar, maple, staghorn sumac, red-osier and grey dogwood and ninebark, placed at a rate of 2100 trees/shrubs per ha.

- Any trees or vegetation that dies or is damaged shall be replanted using native and locally sourced stock appropriate to the local climate and growing zone.
- 5 ft (min) tree shelters are recommended to be installed on all deciduous trees to protect from deer.
- In areas where grass has not been established, it will be re-seeded in the spring of the subsequent year and maintained until it is self-sustaining.
- In areas where trees have failed to grow, they will be replanted the following season and maintained until they are self-sustaining.

7.0 Conclusions

The site plan drawings and technical reports prepared for this application demonstrate the proposed operation has addressed potential impacts on natural features and surrounding land uses while maximizing the use of the aggregate material in the Township of Ashfield-Colborne-Wawanosh. The report has outlined and included the following reports and summary statements in line with the Aggregate Resources Act:

- Maximum Predicted Water Table Report
- Level 1 and Level 2 Natural Environment Report
- Stage 1 and 2 Archaeological Assessment
- Agricultural classification of the proposed pit as Class 2
- Existing zoning and land use of the proposed pit is Natural Environment and Agricultural. The land use designation (Huron County Official Plan) of the proposed pit is extractive.
- A Zoning By-law amendment application will be submitted in conjunction with the ARA licence application to change the zoning of the licence area to Extractive Resources (ER1).
- The aggregate is high quality sand and gravel material with an approximate quantity of 850,000 m³, providing economic benefit to the local economy and Township.
- Haul routes along Halls Hill Line within existing licenced pit areas
- Progressive and final rehabilitation plans for the site and adjacent lands.

Based on the studies and summary statement, a Class ‘A’ Pit Licence for above water table aggregate extraction of up to 100,000 tonnes annually is recommended for the site.

BURNSIDE
[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Curricula Vitae

Guideline D-4 Study	Alex Maenza Kim Hawkes
Maximum Predicted Water Table Assessment	Alex Maenza Dave Hopkins
Stage 1-2 Archaeological Assessment	Matt Severn Matthew Beaudoin
Level 1 and Level 2 Natural Environment Report	Sarah Yoshida Kevin Butt

Profession

Hydrogeology

Education

B. Sc Geology, Acadia University, Wolfville, NS 2016

Earth Resource Technician, Sir Sandford Fleming College, Lindsay, ON 2014

Professional Societies

Association of Professional Geoscientist of Ontario

Employment Record

Hydrogeologist, R.J. Burnside & Associates Limited (2018-Present)

Geotechnician, Golder Associates Limited (2016-2018)

Citizenship

Canadian

Languages

English

Alex Maenza, B.Sc., P.Geo.

Alex is a licensed Professional Geoscientist (P.Geo.) working with the Contaminant Hydrogeology Group for R.J. Burnside & Associates Limited. The primary responsibilities in his role include the coordination and oversight of projects for the Contaminant Hydrogeology Group. His role has allowed him to gain skills and experience for a wide variety of projects.

Since starting at Burnside, Alex has worked on a wide array of geological and hydrogeological investigations. He has experience in Phase One and Phase Two environmental site assessments (ESA's), excess soils studies, landfill assessment and monitoring, designated substance surveys (DSS), rural development, onsite sewage disposal, wetland impact and aggregate resource studies. Alex is involved in all stages of the project, from proposal to preliminary investigations, fieldwork and final reporting.

Project Experience

Environmental Site Assessment

Alex is responsible for organizing and conducting Phase One and Two ESAs for the Contaminant Hydrogeology Group. Reports are completed in accordance with the requirements of Ontario Regulation (O.Reg.) 153/04, as amended and Canadian Standards Association (CSA) Standard Z768-01.

Phase One ESA, Yonge Street, Richmond Hill, Ontario (2024)

Conducted a Phase One ESA at a gas station to identify potential contamination. Responsible for coordinating fieldwork, research, data evaluation and report review.

Phase Two ESA, Herbert Street, Elmira, Ontario (2024-Ongoing)

Conducted a Phase Two ESA at an industrial property to identify potential contamination. Responsible for coordinating fieldwork, research, data evaluation and report review.

Phase One and Two ESA, Arthur Street North, Elmira, Ontario (2023-Ongoing)

Conducted a Phase One and Two ESA at a commercial property to identify and delineate contamination from historic land use. Responsible for coordinating fieldwork, research, data evaluation and report review.

Phase One and Two ESA, Sherman Ave, Hamilton, Ontario (2023-2024)

Conducted a Phase One and Two ESA at an industrial property to identify and delineate TCE contamination. Coordinate monitoring program to assess installed treatment system. Responsible for coordinating fieldwork, research, data evaluation and report review.

Phase One and Two ESA, Todd Road, Georgetown, Ontario (2021)

Conducted a Phase One and Two ESA at an industrial facility to identify and delineate contamination. Responsible for records review, research, sample collection, data evaluation and report preparation.

Phase One ESA, Bennett Street East, Goderich, Ontario (2021)

Conducted a Phase One ESA at an automotive shop to identify potential contamination. Responsible for records review, research, data evaluation and report preparation.

Phase One ESA, Victoria Ave, Listowel, Ontario (2021)

Conducted a Phase One ESA at a retirement facility to identify potential contamination. Responsible for records review, research, data evaluation and report preparation.

Phase One ESA, Josephine Street, Wingham, Ontario (2021)

Conducted a Phase One ESA at an automotive parts supplier facility to identify potential contamination. Responsible for records review, research, data evaluation and report preparation.

Excess Soil Investigation

Assessment of Past Uses and Soil Characterization Report, Clearview, Ontario (2023-2024)

Conducted an APU and Soil Characterization report for the clean out of two stormwater management ponds to identify potential contamination and manage generated excess soils. Responsible for records review, research, soil sampling, data evaluation and report preparation and review.

Landfill Monitoring

Alex was previously responsible for organizing and conducting the compliance monitoring and annual reporting for several landfill sites in Ontario. Reports are completed to the Ontario Ministry of the Environment, Conservation and Parks 2010 Monitoring and Reporting Technical Guidelines.

Blanshard and Downie Landfill, South Perth, Perth County, Ontario (2018-2023)

Monitoring and annual reporting for two municipal landfills.

Ashfield, West Wawanosh and Old Ashfield Landfills, Ashfield-Colborne-Wawanosh, Huron County, Ontario (2018-2023)

Monitoring and annual reporting for three municipal landfills.

Wingham and East Wawanosh Landfills, North Huron, Huron County, Ontario (2018-2023)

Monitoring and annual reporting for two municipal landfills.

Blyth-Hullett Landfill, Central Huron, Huron County, Ontario (2018-2023)

Monitoring and annual reporting for a municipal landfill.

Morris Landfill, Morris-Turnberry, Huron County, Ontario (2018-2023)

Monitoring and annual reporting for a municipal landfill.

Landfill Hydrogeology

Alex has been involved in numerous municipal and private landfill projects including assessing site geology and hydrogeology; providing hydrogeological support for engineering designs; and investigating off-site impacts.

Hydrogeology Assessment, St. Marys Landfill, St. Marys Ontario (2022)

Conduct fieldwork for assessment of landfill expansion including well installation, water level monitoring, and permeability testing.

Hydrogeology Assessment, Wahnapitae First Nation, Ontario (2018-2023)

Conduct assessments of existing landfill and potential offsite impact for first nation community. Design landfill closure monitoring plan.

Peer Review Twin Creeks Environmental Centre, Walpole Island First Nation, Ontario (2018-Ongoing)

Conduct peer review of existing landfill and leachate treatment monitoring reports.

Hydrogeology Assessment, Sagamok Anishnawbeck First Nation, Ontario (2019-2021)

Conduct assessment of existing landfill at first nation community.

Hydrogeology Assessments, Shibogama First Nation Council, Kingfisher Lake and Kasabonika Lake First Nations (2018-2019)

Conduct assessments of existing landfills and potential new landfill sites at two first nation communities.

Offsite Contamination Investigation Downie Landfill, Township of Perth South, Ontario (2018-2023)

Investigate extent of landfill impact in groundwater and identify off-site contamination attenuation zone.

Offsite Contamination Investigation Wingham Landfill, Township of North Huron, Ontario (2018-2023)

Investigate extent of landfill impact in groundwater and identify off-site contamination attenuation zone.

Landfill Operator Training

Marmora and Lake Landfill, Marmora and Lake, Hastings County, Ontario (2023)

Provide training for landfill operators on ECA requirements and landfilling best practices.

Morris Landfill, Morris-Turnberry, Huron County, Ontario (2022)

Provide training for landfill operators on ECA requirements and landfilling best practices.

Designated Substance Survey

DSS, Sutton Street, Kincardine, Ontario (2021)

Conducted DSS for the renovation of a commercial facility to identify potential presence of designated or hazardous substances such as lead, asbestos and mold. Responsible for site visit, sampling, data evaluation and report preparation.

Onsite Sewage Disposal Systems

Alex has been involved in studies with a variety of sewage solutions to determine the impacts of existing or proposed onsite systems. The studies were used to determine ECA or OBC compliance and aid the development of proposed designs.

Compliance Monitoring for ECA, Slovenski Park, Puslinch, Wellington County, Ontario (2022-Ongoing)

Surface water and effluent monitoring and annual report to assess impact of onsite sewage system at cultural centre.

Compliance Monitoring for ECA, Rockton Elementary School, Rockton, Hamilton, Ontario (2022-Ongoing)

Groundwater monitoring and annual report to assess impact of onsite sewage systems at elementary school.

Compliance Monitoring for ECA, Beckley Beach, Sherbrooke, Halimand County, Ontario (2021-Ongoing)

Groundwater monitoring and annual report to assess impact of onsite sewage systems at cottage community.

Compliance Monitoring for ECA, Stanley Park, Erin, Wellington County, Ontario (2018-Ongoing)

Groundwater and surface water monitoring and annual report to assess impact of three onsite sewage systems at mobile home community. Installation of monitoring wells for newly installed septic systems.

Monitoring Plan Modifications for ECA, Pike Lake, Minto, Wellington County, Ontario (2019)

Installation of monitoring wells to monitor a newly installed septic system to meet ECA requirements. Decommission of old monitoring wells used to assess replaced system.

Rural Development

Nitrate Impact Assessment, Vanneck United, Vanneck, Ilderton, Ontario (2022-2023)

Nitrate groundwater and wetland impact assessment to determine maximum capacity for a daycare development with onsite sewage treatment.

Nitrate Impact Assessment, Feairs Drive, Southgate, Grey County, Ontario (2021)

Nitrate groundwater impact assessment to determine maximum number of lots for a proposed residential development with onsite sewage treatment.

Nitrate Impact Assessment, Maitland Ridge Estates, Morris-Turnberry, Huron County, Ontario (2019-2021)

Nitrate surface water impact assessment to determine maximum number of lots for a proposed residential development with onsite sewage treatment.

Nitrate Impact Assessment, Graceland, Morris-Turnberry, Huron County, Ontario (2019)

Nitrate surface water impact assessment to determine maximum number of lots for a proposed residential development with onsite sewage treatment.

Nitrate Impact Assessment, Mary Street, Morris-Turnberry, Huron County, Ontario (2018-2021)

Nitrate groundwater impact assessment for nitrate concentration at lot line to determine the maximum number of lots for a proposed residential development with onsite sewage treatment.

Municipal Drainage

Hydrogeologic Study, Blyth Creek Municipal Drain, Township of Morris-Turnberry, Ontario (2019-2020)

Assessed the impact of alterations of open agricultural drain on the water levels in an existing wetland.

Hydrogeologic Study, Cathers Municipal Drain, Township of Howick, Ontario (2018-2020)

Assessed the impact of alterations of open agricultural drain on the water levels in an existing wetland.

Aggregate Extraction

Aggregate Resource Evaluation, Proposed Ashfield Pit, Township of Ashfield-Colbourne-Wawanosh, Ontario (2022-2023)

Determine depth to water table, depth and extent of granular material at a proposed gravel pit site.

Aggregate Pit Closure Plan, Stanley Avenue Pit, Niagara Falls, Ontario (2022-Ongoing)

Amend site boundaries and closure plan, and identify required work to facilitate aggregate license surrender.

Aggregate Resource Evaluation, Proposed Kairshea Pit, Township of Huron-Kinloss, Ontario (2019-2023)

Determine depth to water table, depth and extent of granular material at a proposed gravel pit site.

Below Water Table License Amendment, Kinloss Pit, Township of Huron-Kinloss, Ontario (2019-2023)

Determine depth to water table, depth and extent of granular material below water table, and assess potential impacts to groundwater and surface water resources at existing above water table gravel pit site.

Kim Hawkes, P.Eng., B.E.S., QP_{ESA}

Project Role

Project Manager / Data Management QA/QC

Education

B.A. Sc., Civil Engineering, Water Resources Option, University of Waterloo, 1992

B.E.S. (H), Environment and Resources Studies, University of Waterloo, 1988

40 Hour Health and Safety Course for Hazardous Waste Operations OHSA

Short Course: Advanced Techniques for Evaluating & Quantifying Natural Attenuation, National Groundwater Association, November 2010

Short Course: Construction Dewatering, National Groundwater Association November 2012

Professional Societies

Professional Engineers Ontario

National Groundwater Association

Employment Record

Project Engineer R.J. Burnside & Associates Limited (2000-Present)

Project Engineer, STANTEC Consulting Ltd. (formerly Terraqua Investigations Ltd.) (1996-2000)

Project Engineer, Jagger Hims Ltd. (1990-1996)

Assistant Environmental Planner, Union Gas Limited (1989)

Kim is a Project Engineer with 33 years of hydrogeological and environmental experience. She is involved with a wide variety of hydrogeological and environmental projects ranging from Regional Groundwater Management Studies to Environmental Impact Assessments for landfills and on-Site sewage treatment systems. Her involvement covers all aspects of these projects throughout eastern Canada including remote First Nation communities. Kim completes detailed hydrogeological investigations including septic loading and well interference assessments for proposed residential / commercial developments; hydrogeological impact assessments for proposed / expanding quarry and gravel pit applications. She also completes hydrogeological assessments for proposed, existing, expanding, and closed landfill sites. Her involvement ranges from proposals, project planning and management, field sampling and testing, data analysis, reporting, attendance at public meetings and technical support for Municipal staff on various issues involving peer review, litigation, and expropriation. She has also completed Phase 1, 2 and 3 level Environmental Site Assessment (ESA) studies with strict, short-term deadlines for residential, commercial / industrial and institutional properties. She oversees and plans all project aspects including drilling, sampling, reporting, and selecting remedial measures for fuel and solvent impacted properties.

Kim oversaw most aspects of the Regional Groundwater Management Studies for 9 municipalities within Dufferin and Wellington Counties. Her involvement included project coordination for individual studies and between study areas; information transfer and collation; reporting; presentations to council members and stakeholders; public consultation and attendance at community events; as well as planning / attending public open houses, presenting study findings and sharing information with stakeholders and consultants.

Landfill Compliance Monitoring and Reporting

Hydrogeological Aspects, Landfill Site Assessments, Municipality of North Perth, Ontario (2002-Ongoing)

Project Manager, the project began with a detailed Geological and Hydrogeological Assessment of all three landfill sites in the municipality as input for the Waste Management Strategic Plan to determine sustainable waste management strategies for North Perth. Field investigations included residential well sampling, drilling, monitoring well network installation, gas probe installation, water quality sampling and testing as well as landfill gas monitoring. The outcome of the Strategic Plan resulted in the closure of the Listowel Landfill site, interim closure of the Wallace landfill site, and the detailed design and construction of the Elma Landfill site. Special hydrogeological considerations were integrated into the realignment of the Hanna drain that formerly transected the Elma Landfill site. Contaminant Attenuation zone lands were secured downgradient of the Elma site to ensure a sustainable, long-term strategy for the municipality. A leachate collection system was installed at Listowel. Ongoing annual groundwater and surface water monitoring continues at all three sites in accordance with their environmental Compliance Approvals. Remedial Action Plans have also been developed as needed to assess and address groundwater and surface water impacts.

Annual Landfill Monitoring and On-going Consultation, Mono Landfill, Ontario (2000-Ongoing)

Project Manager involving annual monitoring at the Town of Mono landfill site. Monitoring includes inspection of landfill site conditions, litter control, groundwater and surface water sampling to assess compliance with Reasonable Use Policy Guidelines and detailed methane gas monitoring.

The monitoring well network has been upgraded on several occasions to better assess conditions near the property boundary as filling progressed. Involvement includes attendance at Municipal staff and council meetings as well as technical support to legal counsel for contaminant attenuation zone acquisition.

Hydrogeological Aspects, Landfill Expansion, Town of Perth, Ontario (2014-Ongoing)

Project Manager, the project initially involved an overview of landfill options within the Municipal boundaries to meet future waste disposal needs. The process resulted in a decision to expand the existing site, rather than develop a new one. Previous monitoring reports and contingency plans were peer reviewed for the existing Perth Landfill site followed by detailed hydrogeological investigations to further assess site conditions in the context of the expansion and provide technical support for site design. Field investigations included residential well sampling, drilling, monitoring well installation, water quality sampling and testing, landfill gas monitoring as well as rehabilitating the leachate collection system pumps to improve performance. The expansion has undergone an Environmental Screening Assessment and will proceed with detailed design under the Environmental Protection Act. Annual groundwater and surface water monitoring continues in accordance with the Environmental Compliance Approval for the site as well as correspondence with review agencies. Recommendations have been made to the MOECC to update future monitoring requirements to better suit future use of the site.

Landfill Site Assessments

Peer Review, Hydrogeological Aspects, Clean Harbors Landfill Site (2020-2021)

A technical review of the Clean Harbors Environmental Services 2019 Annual Landfill Report was completed. The 2019 report (prepared for Clean Harbors Canada Inc. (CH) for their Lambton Facility) was reviewed from a hydrogeological perspective on behalf of Walpole Island First Nation (WIFN) and comments were provided.

Hydrogeological Aspects, Landfill Site Assessments, Municipality of West Perth, Mitchell, Ontario (2005-2013)

Project Manager involving Detailed Geological and Hydrogeological Assessments that were completed at all five landfill sites in the municipality in support of the Waste Management Strategic Plan for West Perth. Field investigations included site walk overs with the MOECC technical support team, well inventory surveys, drilling, monitoring well network installation, gas probe installation, water quality sampling, and testing as well as landfill gas monitoring. The outcome of the Strategic Plan resulted in the closure of two sites (Hibbert and Fullarton), interim closure of a third site (Logan) and the detailed design of the remaining two (Mitchell Domestic and Mitchell Industrial). Hydrogeological input was required both as part of the detailed design process and annual monitoring in compliance with site Environmental Compliance Approvals. Assessment included existing and future landfill impacts, contingency measures and remedial strategies. Remedial Action Plans were also developed as needed to assess and address groundwater and surface water impacts. Involvement included technical support for acquisition, expropriation of contaminant attenuation zones, attendance at public meetings and open houses, liaison with MOECC staff, and nearby landowners.

Landfill Study, Timiskaming First Nation, Timiskaming, Quebec (2009-2010)

Project Coordinator; this closure design study of the Timiskaming First Nation Landfill Site delineated the extent of waste, assessed the condition of the monitoring well network, and surveyed the fill area and the immediate vicinity of the site. Soil and groundwater conditions were interpreted as well as future monitoring needs. On-site soils were evaluated as a source of fill cover material.

Landfill Site Monitoring, Closure Design Study and Transfer Station Design, Curve Lake First Nation, Curve Lake, Ontario (2000-2005)

Project Coordinator; Groundwater monitoring was completed for several years at the existing landfill site to determine whether the site was having adverse impacts on groundwater resources. A more recent study was completed to close the existing landfill site and develop it as a transfer station. This study included communication with adjoining municipalities and local haulers to determine the best waste management option for the community as well as closure details and transfer station layout. The transfer station has been constructed and is currently in use.

D-4 Studies - Land Use On or Near Landfills and Dumps

D-4 Environmental Site Assessment of Various Private properties adjacent to Closed Landfill Sites, Ontario (Ongoing)

Project Manager; Evaluations have been completed for several private properties in various communities across Ontario within 500 m of existing and former landfill sites. The studies were triggered by real estate transactions or proposed development on those private lands. Available hydrogeological information was reviewed, and site inspections were conducted. The purpose was to determine whether the landfill had the potential to impact those private lands taking into consideration groundwater, surface water, landfill gas, vermin, vectors, visual odours, and noise impacts.

D-4 Environmental Site Assessment of two closed Port Albert Landfill Sites, Township of Ashfield, Colborne, Wawanosh, Ontario (2020-2021)

Project Manager; the project involved a desktop evaluation of available hydrogeological information for two closed Port Albert landfill sites. The Township wanted to reduce land use restrictions for properties within 500 m of the closed landfill sites. Areas potentially impacted by leachate migration, surface water impacts, methane gas migration or other nuisance impacts were identified. Restrictions on lands outside of these potential impact zones were thereby relaxed and the Zoning By-laws adjusted accordingly.

D-4 Environmental Site Assessment of Stayner Closed Landfill Site, Township of Clearview, Ontario (2019-2021)

Project Manager; the project involved a desktop evaluation of available hydrogeological information for the closed Stayner landfill site. The Township wanted to reduce land use restrictions for properties within 500 m of the closed landfill site. Areas potentially impacted by leachate migration, surface water impacts, methane gas migration or other nuisance impacts were identified. Restrictions on lands outside of these potential impact zones were thereby relaxed and the Zoning By-laws adjusted accordingly.

D-4 Study, Aces Waste Management, Bracebridge, Ontario (2017)

A Hydrogeology Study (D-4 Study) was required, by the Town of Bracebridge, to obtain a zoning amendment for a waste diversion and recycling facility. The Study determined whether the property could potentially be affected by three closed landfill sites located within 500 m. The potential for groundwater, surface water, landfill gas impacts were assessed as well as other potential nuisance impacts such as noise, litter, dust and vectors.

D-4 Study, Sunray Group of Hotels, Orillia, Ontario (2017)

A Hydrogeology Study (D-4 Study) was required, by the Town of Orillia, for the redevelopment application being made to convert the existing building into a retirement home and build a modern six-storey hotel and conference centre as well as a stand-alone restaurant at the front of the property. The Study determined whether the property could potentially be affected by an active Landfill sites, and a closed landfill site located within 500 m. The potential for groundwater, surface water, landfill gas impacts were assessed as well as other potential nuisance impacts such as noise, litter, dust and vectors.

Hydrogeology

Hydrogeological Study for a Proposed Condominium Complex, Harbour Road, Oshawa (2018-2021)

Completed a Hydrogeological Study to comply with City of Toronto Hydrological Review Guidelines. The Study assessed groundwater and surface water conditions, estimated dewatering needs, potential impacts of construction below the water table and long-term drainage to the storm sewer system. The Study involved drilling, sampling and testing monitoring wells. Automatic water level recording devices were placed in selected monitoring wells and at Montgomery Creek to assess seasonal water level changes and groundwater surface water interactions for a 1-year period.

Site Servicing Study, Dorset, Ontario, (2020-Ongoing)

A Hydrogeological Study was completed to assess potential groundwater and surface water impacts of a proposed commercial re-development project. The study involved assessing on-site soil and groundwater conditions, impacts from the existing sewage treatment system, and providing technical support for the design of a treatment system to suit future development concepts. A preliminary assessment was completed to assess groundwater resources relative to water supply requirements for the proposal.

Hydrogeological Component of Environmental Impact Assessments, CR90 Reconstruction, County of Simcoe, Midhurst, Ontario (2002-Ongoing)

Hydrogeological support was provided for various County road reconstruction projects including County Road 90 widening from Angus to Barrie. This project included door to door well inventory survey, documentation of preconstruction conditions, compilation of geological and hydrogeological information, water quality and/or quantity testing, assessment of potential impacts, identification of areas/wells at risk of being affected by reconstruction, and development of remedial options.

Interference Study, Moreau Parkway, Township of Tiny (2016)

A Hydrogeological Assessment was completed to determine whether the construction of a drainage ditch was increasing water levels around the foundation of a nearby home.

Hydrogeological Study for a Proposed Condominium Complex, Don Valley Hotel, Toronto (2015-2016)

Completed a Hydrogeological Study to assess potential groundwater and surface water impacts of a proposed Condominium Complex. The study involved drilling, sampling and testing monitoring wells, Automatic water level recording devices were placed in the monitoring wells to assess seasonal water level changes for a 1-year period.

Peer Review and Technical Support for Hydrogeological Aspects of Development Applications for Township of King (2012-Ongoing)

Provide peer review and support for hydrogeological aspects of various land development applications including residential and commercial applications. Most applicants require zoning changes and are within the Oak Ridge Moraine Conservation Plan jurisdiction or Municipal Wellhead Protection Areas. Some applications also incorporate Environment Site Assessments for soil and groundwater impacts associated with historical commercial/industrial land use requiring a Ministry of Environment and Climate Change Record of Site Condition.

Peer Review and Technical Support for Hydrogeological Aspects of Development Applications for Town of Whitchurch-Stouffville (2012-ongoing)

Provide peer review and support for hydrogeological aspects of various land development applications including residential and commercial applications. Most applicants require zoning changes; some are within the Oak Ridge Moraine Conservation Plan jurisdiction or Municipal Wellhead Protection Areas. Some applications also incorporate Environment Site Assessments for soil and groundwater impacts associated with historical commercial/industrial land use requiring a Ministry of Environment and Climate Change Record of Site Condition.

Construction Dewatering

Permit to Take Water (PTTW) Applications for various Construction Projects, County of Simcoe and Township of Clearview (Ongoing)

Hydrogeological Assessments were completed for PTTW applications in support of various construction projects throughout Ontario. The projects included CR93 Roundabout (Midland), culvert replacements (CR90), storm sewer outfalls (Balm Beach, Wasaga Beach), sanitary sewer upgrades (Beeton), and various sanitary and watermain upgrades throughout the Township of Clearview (Stayner). These projects included water well inventory surveys, water quality sampling, dewatering estimates, monitoring and mitigation plans and MOE correspondence and coordination to obtain permitting for construction dewatering.

Permit to Take Water (PTTW) Application Oxford County (2020-Ongoing)

A Hydrogeological Assessment was completed for a PTTW application in support of a trunk watermain installation in the near Woodstock, Ontario. The project included watermain installation, several surface water course/culvert crossings, and horizontal drilling beneath a railway crossing. The Assessment included review of geotechnical and published information, dewatering estimates, a monitoring and mitigation plan and agency correspondence and coordination to obtain permitting for construction dewatering.

Permit to Take Water (PTTW) Application Town of South Bruce Peninsula, Bruce County (2019-Ongoing)

A Hydrogeological Assessment was completed for a PTTW application in support of Berford Street (Highway 6) reconstruction in Wiarton, Ontario. The project included the installation of sanitary sewer, watermain, storm sewer, oil grit separator. The Assessment included review of geotechnical and published information, source water protection considerations, potential sources of contamination, groundwater quality testing, hydraulic conductivity testing, dewatering estimates, a monitoring and mitigation plan and agency correspondence and coordination to obtain permitting for construction dewatering.

Permit to Take Water (PTTW) Application Halton Region (2018-2019)

A Hydrogeological Assessment was completed for a PTTW application in support of a trunk watermain installation in the Town of Oakville, Ontario. The project included watermain storm and sanitary sewer upgrades, horizontal drilling beneath major roadways a railway overpass and Sixteen Mile Creek. The Assessment included in-situ hydraulic conductivity testing, water level measurements groundwater quality sampling, dewatering estimates, monitoring and mitigation plans and agency correspondence and coordination to obtain permitting for construction dewatering.

Profession

Hydrogeologist

Education

B.Sc., Honours, Earth Sciences
University of Waterloo, 1988

Professional Societies

Association of Professional Geoscientists of Ontario

National Groundwater Association

International Association of Hydrogeologists

Continuing Education

The Waterloo DNAPL Course – DNAPLS in Fractured Rocks and Aquitards

Critical Thinking in the Interpretation of Aquifer Tests

NGWA Short Course – Understanding Migration, Assessment & Remediation of Non-Aqueous Phase Liquids

OSHA 40 Hour Health and Safety Training with Annual 8-hour Refreshers

MOE – Cleanup of Contaminated Sites – Guidelines Best Practices and Pitfalls to Avoid

PSMJ Project Management Bootcamp

Employment Record

Hydrogeologist, R.J. Burnside & Associates Limited (2015-Present)

Hydrogeologist, Neegan Burnside Ltd. (2006-2015)

Hydrogeologist, R.J. Burnside & Associates Limited (1993-2006)

Project Manager, Dames & Moore Canada (1988-1993)

Geologist, Various Mineral Exploration Firms (1984-1987)

Dave Hopkins, B.Sc., P.Geo.

Dave is a Senior Hydrogeologist and since 1988, has led numerous groundwater exploration programs in the public and private sectors throughout Ontario. Dave provides municipal review on hydrogeologic reports prepared in support of development applications for numerous municipalities in Ontario. He also provides consultation on design, implementation and interpretation of groundwater and surface water monitoring programs for various municipal well fields, landfills, and industrial facilities. Dave is responsible for all aspects of project management including negotiations with regulatory agencies, client liaison, proposal preparation, budget control and report QA / QC. Dave has also completed numerous GUDI and Source Water Protection Studies and was selected as a GUDI reviewer for the MECP.

Groundwater Monitoring Programs

Annual Groundwater Monitoring Program, Region of Waterloo, Ontario (2004-Present)

Project Manager for annual water quality / quantity monitoring program which involves monthly water level collection from about 650 wells and water quality sampling of close to 250 wells. The project includes the submission of 38 biennial reports to comply with the PTTW's for the various well fields. A water quality monitoring report is submitted to the Region every two years.

Annual Groundwater Monitoring Program, Region of Durham, Ontario (2012-Present)

Provides QA/QC for annual water quality/quantity monitoring program which involves monthly water level collection from over 115 wells and water quality sampling of 50 wells. Annual reports are submitted to the MECP to ensure compliance with the PTTW's for each well field.

Water Quality Sampling Greenbrook Wellfield and Former Kitchener Landfill, Kitchener, Ontario (2004-Present)

Project manager for initial assessment of water quality due to 1,4-dioxane detection in Greenbrook municipal wells. Currently provides QA/QC for compliance driven water quality sampling of over 80 wells to evaluate the impact of the former Kitchener landfill.

Annual Groundwater Monitoring Program, Mohawk Raceway, Milton Ontario (2006-Present)

Project Manager for annual water level monitoring program which includes water level collection from on-site wells, stream bed piezometers and nearby domestic wells.

Annual PTTW Monitoring, Sheridan Nurseries, Norval Ontario (2008-Present)

Project manager for annual water level program requited by PTTW. Responsible for well investigation program and construction and testing of irrigation well.

Annual Municipal Well Summary and Monitoring Report, Orangeville, Ontario (2008-2015)

Burnside was contracted to perform a review of the Annual well summary and monitoring report for the Town of Orangeville, specifically to examine compliance with PTTW conditions and to determine whether there were environmental impacts noted.

Water Supply / Well Head Protection / Source Water Protection

Mansfield PTTW Monitoring, Township of Mulmur, Ontario (2022-Ongoing)

Senior review support for the PTTW monitoring work for several on-site production wells.

Source Water Protection Projects – Various Municipalities (2006-Present)

Project Manager for completion of Tier 1 water quality risk assessments for seven studies. Involved in Tier 3 Quantity Study for Orangeville.

Water Supply Master Plan, Village of Grand Valley (2018-2021)

Completed exploration, testing and permitting for a new 26 L/s bedrock municipal well. Completed GUDI study and necessary work pursuant to Section 34 of the Clean Water Act (2006) approvals.

New Well EA, Sunderland Ontario (2017-2022)

Selected three areas for exploration and well testing to secure long term supply.

New Municipal Well, Village of Colgan, Ontario (2005-2015)

Completed testing of a new 15 L/s municipal well located on the Oak Ridges Moraine.

Replacement Wells-Villages of Drumbo and Bright, Ontario (2008-2011)

Documented the design, construction, and testing of replacement wells.

GUDI Studies-G4 and H4, Cambridge, Ontario (2010)

Completed GUDI studies for two existing production wells which included well testing, LPC and MPA interpretation.

Groundwater Investigation, Tillsonburg, Ontario (2009)

Completed hydrogeologic study and selected six sites for test drilling and testing.

Irrigation Well, Sheridan Nurseries, Norval, Ontario (2008)

Developed new groundwater irrigation supply for a large nursery in Norval, Ontario. Project involved ongoing liaison with local residents.

Town of Orangeville GUDI Well Assessment and Upgrades, Orangeville, Ontario (2005-2006)

Project evaluated the status of five well fields in the Town of Orangeville and provided recommendations for well rehabilitation, decommissioning, and upgrades. Analyses completed included well videos and step tests. Project resulted in recommendations for sustainable pump rates at various wells.

New Municipal Well, Springford, Ontario (2004)

Selected site and documented construction and testing of new well.

Village of Shallow Lake, Shallow Lake, Ontario (2003-2010)

Involved in Wellhead Protection Study for Village of Shallow Lake Municipal Wells.

Provincial Groundwater Studies, Ontario (2000-2005)

Secured Provincial Water Protection Funding for several municipalities. Actively involved in 11 wellhead protection studies.

First Engineers Reports, Various Municipalities, Ontario (2001)

Completed hydrogeological assessments for several First Engineer's Reports.

EA for Water Supply, Town of Orangeville, Ontario (1997)

Environmental assessment for new water supply, Town of Orangeville. Selected locations and completed exploratory drilling as part of the assessment of using groundwater for future water supply.

Transmetro Well (Orangeville Well 12) Construction and Testing, Town of Orangeville, Ontario (1995-1997)

Documented construction of large diameter bedrock production well. Long term test was completed to assess impacts on Dudgeon wells and Monora Creek.

Montgomery (Orangeville Wells 9A/9B) Construction and Testing, Town of Orangeville, Ontario (1993-1994)

Completed long term pumping test to assess impacts on groundwater gradients and surface flow in Mill Creek.

Landfills

Rotary Park Annual Monitoring Program, Town of Orangeville, Ontario (2022-Ongoing)

Technical support for the program which includes the collection of groundwater levels, groundwater quality samples, and surface water quality samples from on-site monitoring locations.

East Luther and Amaranth Landfill Sites, Ontario (Ongoing)

Responsible for preparation of annual reports.

Senior Review of Annual Reports, Various Locations, Ontario (Ongoing)

Provides review of annual reports.

Environmental Assessment to Expand the Biggars Lane Landfill, Phase 3, Ontario (2016-2020)

Developed a workplan to comply with the hydrogeological investigation recommended in Phase 2 of the ESA. Provided input during the field activities to ensure the necessary information was obtained. Responsible for senior level QA / QC for the hydrogeological report documenting the investigation of the site.

Assessment of Ponded Water in Phase IV, Biggars Lane Landfill, Ontario (2019)

Assisted the County in evaluating options for dealing with flooding of the unfilled portion of Phase IV cell at the site. Provided the County with 6 options for dealing with the leachate generated by the water in contact with the waste.

Biggar's Lane Landfill Site, Township of Brantford, Brantford Township, Ontario (1988-1993)

Responsible for hydrogeological investigation in support of an EPA Part V application for continued use of the site. Prepared annual monitoring reports for several years.

Peer Reviews

Hydrogeology Peer Reviewer, Tiny Township, Region of Durham, Region of Waterloo, Town of Mono, Townships of Amaranth, East Garafraxa, Clearview, Guelph / Eramosa and Mapleton, Ontario (Ongoing)

Provides peer review of hydrogeological reports prepared in support of development applications. Issues evaluated include water balance, water taking (MECP D-5-5), dewatering, on-site septic systems (MECP D-5-4) and water table elevation.

Proposed Hidden Quarry, Rockwood, Ontario (2016-2024)

Provided peer review of hydrogeological reports prepared for a proposed below the water table quarry in a residential area without municipal services. Provided expert testimony at LPAT.

Proposed Aggregate Expansions, Tiny Township, Ontario (Ongoing)

Provided peer review of hydrogeological reports and associated PTTW/ECA applications prepared for proposed expansions of existing quarries.

Proposed Expansion of Existing Aggregate Operation, Durham Region (2015)

Retained by Durham Region to review hydrogeology and EIS for expansion of two existing aggregate operations, one of which is located on the Oak Ridges Moraine. Issues included the need to maintain existing wetlands onsite and protect nearby domestic wells. David coordinated the noise, EIS, air quality and hydrogeology reviews.

Infrastructure

Sideroad 26/27 Reconstruction EIS and Environmental Review Tribunal, Clearview Township, Clearview, Ontario (2014-2022)

Burnside was retained by the Township of Clearview to provide technical support related to a road improvement Environmental Impact Study (EIS). The site was located in a highly sensitive environment (Niagara Escarpment) and was subject to several layers of environmental permitting. The Hydrogeology team completed installation of stream bed piezometers along specific stream reaches and collection of groundwater data (levels and temperature) established existing conditions and evaluation of potential impacts relating to future road improvements. The Hydrogeology work was peer reviewed by Andy Hims, P.Eng, P.Geo., with Dave Hopkins retained to provide expert testimony on behalf of the Township.

Structure 2027 Replacement, Township of Melancthon, Ontario (2017)

Technical support for the replacement of Structure 2027, replaced with Burnside's Barefoot Box Culvert™ that is designed to create groundwater upwellings within cold water streams to support Brook Trout spawning.

CREDENTIALS

MCM Professional License P1093

EDUCATION

MA, Western University, 2023
BA, York University, 2012

CONTACT

Phone
519-661-9028

Email
msevern@tmhc.ca

Website
www.tmhc.ca

MATTHEW SEVERN

Archaeology Project Lead – Transportation Projects

Matthew has been involved in Ontario archaeology for over a decade, gaining extensive experience participating in, directing, and managing numerous archaeological surveys across all stages of assessment. These surveys have spanned Ontario, often involving complex field methods and time-sensitive deadlines. In addition to his fieldwork Matthew has built and maintains respectful relationships with numerous Indigenous communities frequently seeking their insight and perspectives. Beyond the field, Matthew has catalogued and analysed various Indigenous artifacts and authored numerous archaeological reports in accordance with the requirements of the Ministry of Citizenship and Multiculturalism.

Matthew earned a Master's Degree from Western University in 2023. His masters research focused on two Woodland period sites east of Sarnia. In 2024, Matthew served as Vice President of the Ontario Archaeological Society – London Chapter and is also a member of the Canadian Archaeological Association.

HIGHLIGHT OF RECENT PROJECTS

Matthew provided project management support, as well as various report writing and artifact analysis tasks for the following selection of projects relevant to the current scope of work:

Ministry of Transportation

- Highway 3 Widening, Leamington, Stage 1-4: Project Management Support, Field Director, Report Writer and Researcher, Artifact Analyst
- Highway 60 Bridge Replacements: Madawaska and Opeongo Rivers, Madawaska, Stage 1 and Stage 2: Field Director, Report Writer and Researcher, Project Management Support
- Fountain Street and Highway 401 Kitchener, Stage 1-2: Project Management Support, Report Writer
- Highway 401 and Dorchester Road Interchange Improvements, Stage 1-3: Project Management Support, Report Writer, Artifact Analyst

Aggregate Pit Projects

- Proposed Aggregate Pit Glens Hill Road, Dungannon Stage 1-2: Project Manager
- Cunningham Pit Expansion – Carlow Pit, Bothwell. Stage 1-2: Project Manager
- Proposed Washington Aggregate Pit, Township of Blandford-Blenheim, Stage 1-2: Project Manager (In progress)
- Paton-Sims Aggregate Pit, Middlesex County, Stage 1-2: Project Manager

RECENT WORK EXPERIENCE

Archaeology Project Lead
TMHC
2024-Present

Archaeology Specialist
TMHC
2023-2024

Field Director / Report Writer
TMHC
2016 - 2022

Field Archaeologist
D.R. Poulton & Assoc.
2015 - 2016

Field Technician
Golder Assoc.
2013 - 2015

PROFESSIONAL AFFILIATIONS

Ontario Archaeological Society (OAS)

Canadian Archaeological Association (CAA)

Municipal EA Projects

City of London Windemere-Adelaide Multi-Use Pathway, Stage 1-2: Project Manager
Pearson Engineering Structure D-007 Rehabilitation Township of Georgian Bluffs, Stage 1: Project Manager
County Road 46 Improvement Project, Essex County, Stage 1: Project Manager

Municipal Level Projects

City of London Gibbons Park Pathway Improvements Stage 1-2: Field Director, project management support
City of London Kensal Park Improvements Stage 4 Avoidance and Protection: Report Writer, project management support
Town of Tecumseh, Tecumseh Hamlet Residential Development Stage 1-2: Field Director

PRESENTATIONS

2023 Severn, Matthew "The Call of the Lake: Lake Wawanosh as a Place to Return To." Ontario Archaeological Society Symposium, Southampton, ON

STAKEHOLDER AND COMMUNITY SERVICE

Ontario Archaeological Society

2024 London Chapter Vice President

2023 Organizer, Conference on Maawnjidwin: 50 Years of Gathering, Where Yesterday Meets Tomorrow

Western Anthropology Graduate Society

2020 Graduate Student Representative on the Anthropology Faculty Council

CREDENTIALS

Professional MCM License, P324

EDUCATION

PhD, Western University, 2013

MA, Memorial University, 2009

BA, Memorial University, 2005

ROLE

Senior Professional

CONTACT

Phone
519-641-7222

Email
mbeaudoin@tmhc.ca

Website
www.tmhc.ca

MATTHEW BEAUDOIN

Principal, Manager of Archaeological Assessments

Over the course of his career, Matthew has supervised over 900 archaeological assessments in Ontario, including Stages 1-4, under a variety of regulatory triggers including provincial and municipal Environmental Assessments, Green Energy projects, development projects under the *Planning Act*, and as due diligence process. Matthew has extensive experience managing large and complex archaeological projects in conjunction with other disciplines, specialists, and Indigenous communities. Matthew's speciality is finding innovative solutions for large and complex projects that have a large number of stakeholders, interest groups, and descendent communities.

During his career, Matthew has conducted extensive field research and artifact analysis on Indigenous and 19th century sites from Labrador and Ontario. Matthew's role at TMHC has involved background research, community consultation, report production, project management, and corporate management. Matthew's special interests include the policies and history of archaeology, 19th century Indigenous archaeology, early Black settlement in Ontario, and the history of beer and brewing.

HIGHLIGHT OF RECENT PROJECTS

Supervised over 9**00** archaeological assessments (Stages 1 through 4) throughout Ontario. Work completed under *Planning Act*, *Green Energy Act*, *Environmental Assessment Act* and as due diligence processes.

Municipal EA Projects

King Edward and Bishopsgate Road Improvements, Brant County, Stages 1-4
Simcoe County CR 21 and CR56 Roundabout, Stage 1-2
Twenty Mile Road, Niagara Region, Stage 1 and Stage 2
Soper's Bridge Replacement, Bruce County, Stage 1-2
NW Sanitary Services, St. Thomas, Stage 1
North Street Widening, Tillsonburg, Stage 1-2
Blackbridge Road, Cambridge, Stage 1-3
Rapids Parkway Expansion, Sarnia, Stage 1
Cleaver Rd and Governors Rd, Brantford, Stage 1
Riverside Dam, Cambridge, Stage 1-3
Victoria St Pumping Station, London, Stage 1-2
Thames Valley Parkway Richmond to Adelaide, Stage 2 and 4
Hyde Park and Sunningdale Roundabout Stage 1-2
London Bus Rapid Transit, Stage 2
Blackbridge Rd Cambridge, Stage 1-2 assessment
Southdale and Wickerson Road Improvements, Stage 2-4

RECENT WORK EXPERIENCE

Principal
TMHC Inc.
2019-present

Manager – Archaeological Assessments
TMHC Inc.
2016-present

Project Manager/Senior Archaeologist
TMHC Inc.
2010-2016

Staff Archaeologist
TMHC Inc.
2008-2010

PROFESSIONAL AFFILIATIONS

Canadian Archaeological Association (CAA)

Ontario Archaeological Society (OAS)

Society for American Archaeology (SAA)

Society for Historical Archaeology (SHA)

Ontario Historical Society (OHS)

Council for Northeast Historical Archaeology (CNEHA)

World Archaeology Congress (WAC)

Linear Infrastructure

Liquids Line 10 Stage 1-4
Scugog Island Servicing Hwy 7 Stage 1-2
Saugeen F. N. Servicing Stage 1-3
Stratford Reinforcement Stage 1
Cherry to Bathurst Replacement Stage 1
Chippewas of the Thames F.N. Servicing Stage 1-2
Metrolinx Hurontario Crossing Stage 1
Line 9 Finch Avenue West Stage 1-2
Imperial Oil Limited – Waterdown to Finch, Stage 1-4

STAKEHOLDER CONSULTATION AND COMMUNITY SERVICE

Ontario Archaeological Society

2017 Current Volunteer for Indigenous Community Monitor Training Programs
2017 Organizer, Ontario Archaeological Society Conference on Indigenous Issues: Nations United
2016 Director

Museum of Ontario Archaeology

2014-2016 Preservation of the Lawson Iroquoian Village Committee

Canadian Archaeological Association

2014 National Conference Organizing Co-Chair
2012-2014 Student Committee

Various

2014 Public Guide, War of 1812 Celebrations, Tecumseh Park, Chatham

SELECTED PUBLICATIONS

2021 The Struggle to Identify Nineteenth-Century Indigenous Sites in CRM. In *Unearthing Indigenous Presence*, edited by T. Schneider and L. Panich. University Press of Florida.
2019 *Challenging Colonial Narratives: Nineteenth-Century Great Lakes Archaeology*. University of Arizona Press.
2017 A Tale of Two Settlements: Consumption and the Historical Archaeology of Native and Newcomers in the 19th-Century Great Lakes Region. In *Indigenous Peoples and Foreign Things: Archaeologies of Consumption in the Americas*, edited by C. Cipolla. University of Arizona Press.
2016 Archaeologists Colonizing Canada: The Effects of Unquestioned Categories. *Archaeologies*, 12(1):7-37.

Profession

Ecologist

Education

Bachelor of Sciences, Environmental Sciences (Ecology); University of Guelph, 2018

Graduate Certificate, Ecosystem Restoration; Niagara College, 2019

Additional Certifications

Assessing Headwater Drainage Features (HDF), 2023

Ontario Wetland Evaluation System (OWES) Certification, 2022

Destination Conservation Amphibian and Reptile Identification and Monitoring Training, 2022

Class 2 Backpack Electrofishing License, 2021

Royal Ontario Museum Minnow Identification course, 2020

Environmental Land Classification Training (ELC), 2018

Royal Ontario Museum Fish Identification course, 2018

Ontario Benthos Biomonitoring Network Certified, 2017

Employment Record

Ecologist, R.J. Burnside & Associates Limited (2021-Present)

Junior Ecologist, EcoTec Environmental Consultants Inc. (2019-2021)

Aquatic Resources Technician and Technologist, Hamilton Conservation Authority (2018-2019)

Inland Lakes Assistant, Ministry of the Environment and Parks (2017)

Sarah Yoshida, B.Sc. (Env.), G. CERT ER

Sarah is an ecologist with over five years of experience in the environmental industry. In her role as an ecologist at Burnside, Sarah is responsible for delivering natural heritage studies, assessing, and analyzing development impacts on environmental and natural heritage features, preparing developing mitigation plans, and species at risk permitting. Sarah has worked on a variety of projects including capital works projects, private development, drainage works, and first nations infrastructure projects throughout Ontario, including the Greater Golden Horseshoe Area, Huron and Gray Counties, Eastern Ontario (Leeds and Grenville, Prince Edward County), and Northern Ontario. Prior to her work in private consulting, Sarah gained experience in the public sector conducting biological inventories and monitoring at the Ontario Ministry of Environment, Conservation and Parks (MECP) and Hamilton Conservation Authority. Sarah's technical experience includes coordinating and conducting terrestrial and aquatic field surveys including the following: vegetation inventories, wetland evaluation, SAR identification and inventories, aquatic habitat assessments, fish and fish habitat surveys, significant wildlife habitat surveys, benthic invertebrate monitoring, and herpetofauna surveys. Sarah has also provided natural heritage reviews on behalf of Municipalities and First Nations communities. Sarah has a strong background in terrestrial and aquatic ecology, road ecology, and a passion for ecosystem restoration. Sarah balances fieldwork with strong analytical skills to contribute to all phases of project delivery.

Project Experience

Private Property Development

245 Oakland Road Environmental Impact Study, Innovative Planning Solutions Inc., Scotland, Ontario (2022-Present)

As a member of the ecology team, Sarah assisted with the production of an environmental impact study (EIS) to accompany a development application for the construction of residential subdivision. For this project, Sarah conducted the natural heritage surveys including a spring botanical inventory, turtle basking surveys, turtle nesting surveys, aquatic habitat characterization, headwater drainage feature assessments, bat maternity habitat characterization surveys.

Northeast Industrial Park Environmental Impact Study, 2729902 Ontario Inc., Woodstock, Ontario (2022-Present)

As a member of the ecology team, Sarah assisted with the production of an environmental impact study (EIS) to accompany a development application for the construction of an industrial park complex. For this project, Sarah conducted the natural heritage surveys including Environmental Land Classification (ELC), a three-season botanical inventory, turtle basking surveys, aquatic habitat characterization, headwater drainage feature assessments, bat maternity habitat characterization surveys, bat exit surveys, calling amphibian surveys, and wildlife habitat characterization. Sarah is working with the Burnside engineering team to provide recommendations on project buffers, significant wildlife habitat offsetting measures, and landscape restoration measures.

646 Highway 6 Environmental Impact Study, Marz Homes, Caledonia, Ontario (2022-Present)

As a member of the ecology team, Sarah assisted with the production of an environmental impact study (EIS) to accompany a development application for

the construction of a residential subdivision. For this project, Sarah conducted the natural heritage surveys including ELC, botanical inventories, and wildlife habitat characterization.

183 Industrial Boulevard (St. George Propane Facility) Environmental Impact Study, Parkland Corporation, St. George, Ontario (2021)

As a member of the ecology team, Sarah assisted with the production of an environmental impact study (EIS) to accompany the site plan application and Conservation Authority permit application for the St. George Facility Expansion. For this project, Sarah assisted with the natural heritage studies including ELC surveys, botanical inventories, wildlife habitat characterization, and wetland boundary delineation. The ecology team worked with the Burnside engineering team to provide recommendations for appropriate setbacks and mitigation measures to reduce impacts to an adjacent wetland feature.

5224 6th Line Scoped Environmental Impact Study, Private Landowner, Erin, Ontario (2020)

Sarah acted as project manager and field staff for this project. Sarah conducted all the natural heritage studies associated with this project including wetland boundary delineations, breeding bird point counts, and botanical inventories. Sarah also provided recommendations on project setback and buffer limits and other mitigation measures for site grading and construction activities.

Natural Heritage Evaluation for Property Development for 18527 Horseshoe Hill Road, Private Landowner, Caledon, Ontario (2019)

As a member of the ecology team, Sarah delineated and classified ecologically distinct areas within the property limits of for 18527 Horseshoe Hill Road using the Ontario ELC protocol, determining if suitable maternal roosting habitat or foraging habitat was present within the development limits. Following habitat characterization studies, Sarah assisted with bat exit surveys of potential roost trees and presence/absence surveys. Following the completion of these studies, Sarah provided recommendations for mitigation measures to reduce impacts on both SAR and non-SAR bats during the construction process. These field studies were conducted as a part of land development applications for the Credit Valley Conservation Authority.

Municipal Class Environmental Assessments

Oxford Road 19 Class EA, County of Oxford, Ontario (2022-Present)

Terrestrial ecologist responsible for the terrestrial assessment required as a part of the Class C Municipal Class Environmental Assessment for future road widening. Undertook field surveys to characterize the terrestrial habitats including ELC surveys within120 m of the existing right-of-way (ROW) that may be impacted by road improvements.

Aylmer Industrial Manufacturing Park Class EA, Town of Aylmer, Aylmer, Ontario (2022-Present)

Terrestrial ecologist responsible for the terrestrial assessment required as a part of the Class B Municipal Class Environmental Assessment to develop the Aylmer Industrial Manufacturing Park (AIM). Responsible for completing ELC surveys, botanical inventories, amphibian call surveys, and American Badger den surveys.

Municipal Class EA - Regional Road 43 (Bridge Street) and Adjacent Roads, Niagara Region, Niagara Falls, Ontario (2022-Present)

Ecologist responsible for the assessment of natural heritage features required as a part of the Class C Municipal Class Environmental Assessment for future road widening and active transport improvements. Undertook a desktop review of existing features and review of previously completed field studies to determine natural heritage features that may be impacted by the proposed road improvement.

Peer Reviews

Municipal Peer Reviews – Ecology and Natural Heritage, Various Clients, Southern Ontario (2021-Present)

Sarah has provided peer reviews on behalf of numerous municipalities throughout southern Ontario for ecological and natural heritage reporting for private development projects to ensure conformity with land use policies including Municipal by-laws, Municipal and Regional Official Plans (OPs), and the Provincial Policy Statement (PPS). The primary types of projects reviewed include scoping Environmental Impact Studies (EISs) Terms of Reference (TOR), full and scoped EISs, and Natural Heritage Evaluations (NHEs).

Sarah assists with ecological reviews on behalf of the following municipalities:

- Clearview Township (2023-Present)
- Durham Region (2023-Present)
- King Township (2023-Present)

- Township of Melancthon (2023-Present)
- Town of Grand Valley (2023-Present)
- Township of Amaranth (2023-Present)
- Town of Whitchurch-Stouffville (2023-Present)
- Township of Guelph Eramosa (2021-Present)
- Township of Melancthon (2023-Present).

First Nation Peer Reviews – Ecology and Natural Heritage, Walpole Island First Nation, various locations, Ontario (2021-Present)

Sarah has completed numerous peer reviews of ecological reporting on behalf of the Walpole Island First Nation for numerous projects including:

- St. Clair Transmission Line, southwestern Ontario (2023)
- PowerCo EV Battery Project, St. Thomas, Ontario (2023)
- Enbridge Gas Ridge Landfill Gas Pipeline Renewable Natural Gas, Chatham-Kent, Ontario (2022)
- Enbridge Gas Panhandle Regional Expansion Project, Municipalities of Lakeshore and Leamington, and the Town of Kingsville, Ontario (2022)
- Enbridge Dawn-Corunna Project, St. Clair Township, Ontario (2022)
- Hydrogen Ready Power Plan Project, St. Clair Township, Ontario (2022)
- Enbridge Coveny and Kimball-Colinville Well Drilling Project, Lambton County, Ontario (2021)
- Enbridge Gas 2022 Storage Enhancement Project, St. Clair Township, Ontario (2021)
- Hydro One Chatham to Lakeshore 230 KV Transmission Line Class Environmental Assessment, southwestern Ontario (2021)
- Waste Management Twin Creeks Landfill Optimization, Township of Warwick, Ontario (2021).

Ecological Restoration

Naftels Creek Dam Removal – Maitland Valley Conservation Authority, Goderich, Ontario (2023)

As the terrestrial ecologist, Sarah reviewed the pond conditions for turtles and other terrestrial species presence for mitigation and completed the technical reports and LIRA permit application along with MVCA/MNRF coordination.

Dungannon Pond Removal – Maitland Valley Conservation Authority, Dungannon, Ontario (2023)

As the terrestrial ecologist, Sarah reviewed the pond conditions for turtles and other terrestrial species presence for mitigation and completed the technical reports and LIRA permit application along with MVCA/MNRF coordination.

Transit Experience

Lakeshore West GO Rail Corridor, Grascan Construction Ltd., Greater Toronto Area and Halton Region, Ontario (2021-2023)

Sarah assisted with the development of the Environmental Management Plan (EMP) on behalf of Grascan Construction Limited. Acted as the Environmental Monitor responsible for compliance to the Environmental Protection Plan related to vegetation removals along the Lakeshore West rail corridor. Sarah was also responsible for completing all necessary migratory bird nesting sweeps and wildlife sweeps throughout the duration of the project.

Stouffville GO Rail Corridor, Grascan Construction Ltd., Greater Toronto Area, Ontario (2021-2022)

Sarah assisted with the development of the Environmental Management Plan (EMP) on behalf of Grascan Construction Limited. Acted as the Environmental Monitor responsible for compliance to the Environmental Protection Plan related to vegetation removals along the Stouffville rail corridor. Sarah was also responsible for completing all necessary migratory bird nesting sweeps and wildlife sweeps throughout the duration of the project.

Malton GO Station Track and Station Upgrades, Grascan Construction Ltd., Malton, Ontario (2021-2023)

Acted as one of the Environmental Monitor responsible for compliance to the Environmental Protection and Sediment and Erosion Control Plan related to upgrades of the Kitchener Rail Corridor between Wice and Airway (Carlingview Drive to Torbram Road) to address increased servicing demands through bi-directional service.

Metrolinx Species at Risk Due Diligence, Metrolinx, Mississauga and Halton Region, Ontario (2021-2022)

Completed field investigations to characterize potential species at risk habitat as a part of due diligence surveys for three properties located at 2082 Queensway Drive (Burlington), 547 Trafalgar Road (Oakville), and 2390 Argentia Road (Mississauga). Completed subsequent Barn Swallow nest and kiosk monitoring at 2082 Queensway Drive.

Aggregate Resources

Kinloss Pit License Amendment, Township of Huron Kinloss, Kinloss, Ontario (2021-2023)

Contributed to the development of the Nature Environment Report required under the Aggregate Resources Act for the amendment to expand operations within the Kinloss gravel pit located on Grey Ox Avenue between Lockart Street and Paradise Lake Street in the Township of Huron-Kinloss, Bruce County, Ontario. Undertook field surveys to characterize the terrestrial habitats including ELC surveys, botanical inventory, amphibian call count surveys, and leaf-off bat surveys. Significant environmental resources were present on, and adjacent to, the proposed above- water table quarry, including a provincially significant wetland, significant wildlife habitat, significant woodlands habitat of endangered species and other provincially rare species.

Huron-Kinloss Gravel Extraction - Kairshae Avenue, Township of Huron Kinloss, Kinloss, Ontario (2021-2022)

Contributed to the development of the Nature Environment Report required under the Aggregate Resources Act for as a part of an application for a Category 7, Class B Pit Above Water Table under the *Aggregate Resource Act.* Undertook field surveys to characterize the terrestrial habitats within the licensing area. Completed surveys include ELC surveys, botanical inventory, amphibian call count surveys, and leaf-off bat surveys. Significant environmental resources were present on, and adjacent to, the proposed above- water table quarry, including a provincially significant wetland, significant wildlife habitat, significant woodlands habitat of endangered species and other provincially rare species. Assessed potential impacts to existing natural heritage features and outlined mitigation measures to prevent any negative impacts

Endangered Species Act (ESA) Permit Monitoring

Grey Ratsnake Habitat Construction and Monitoring, Ministry of Transportation, Counties of Leeds and Grenville, Ontario (2019-2020)

Sarah acted as a member of the field staff for this project where she conducted monitoring of 15 thermoregulation sites and 15 egg-laying sites. This monitoring was carried out as a part of habitat offsetting measures set out in an ESA Permit related to improvements to Highway 15 from 0.3 km south of Big Hill Road northerly 23.6 km to 1.07 km south of Leeds and Grenville Road 42.

Wildlife Passage Monitoring for MTO-4015-E-0040, Ministry of Transportation, Kingston, Ontario (2019-2020)

Sarah reviewed wildlife passage monitoring data to determine wildlife passage use by species at risk turtles and other non-target species. Sarah also assisted with reviewing the effectiveness of wildlife exclusion fencing adjacent to the wildlife crossing structure. This monitoring was carried out as a part of habitat offsetting measures set out in an ESA Permit related to improvements to Highway 15 from 0.3 km south of Big Hill Road northerly 23.6 km to 1.07 km south of Leeds and Grenville Road 42.

Aquatic Ecology

Fish Relocations, Various Clients, Central, Southern, Southwestern, and Eastern Ontario (2019-Present)

Sarah has conducted over 50 fish relocations across southern and eastern Ontario for MTO and municipal infrastructure projects using a variety of equipment including seine nets, backpack electrofishing units, and dip nets. Sarah has also completed fish relocations in species at risk habitat, stormwater ponds, and salmonid habitat.

Thousand Island National Park Rare Fish Survey, Parks Canada, Gananoque, Ontario (2020)

Sarah assisted with surveys for three species at risk fish species (Grass Pickerel, Pugnose Shiner, and Bridle Shiner) within Brooker's Creek Pond and wetland complex on Grenadier Island. During these studies, Sarah evaluated the environmental conditions within Brooker's Creek to determine if suitable habitat was present for all species and identified next steps and critical considerations for future fisheries studies in the area.

Aquatic Resources Technician/Technologist, Hamilton Conservation Authority, Ontario (2018-2019)

Sarah held the position of aquatic resources technician and aquatic resources technologists during the summers of 2018 and 2019. During this time, Sarah led benthic invertebrate field surveys, assessed stream physical processes and structure, and characterized fish communities and fish habitat for over fifteen watercourses throughout the HCA watershed.

Environmental Inspection & Monitoring – Ministry of Transportation & Municipal Roads

MTO 2016-2013 - Highway 400 Willow Creek Bridge, Dufferin Construction, Barrie, Ontario (2019-2020)

Sarah acted as one of the environmental monitors who helped facilitate environmental compliance during construction activities at Willow Creek Bridge. Duties during Sarah's involvement with this project, she conducted erosion and sediment control inspections, dewatering monitoring, turbidity monitoring, streamflow monitoring, wellpoint monitoring, and fish relocation services.

MTO 2018-2003 - Highway 400 and Line 6, Toronto Zenith Contracting Limited, Innisfil, Ontario (2019-2020)

Sarah acted as one of the environmental monitors during construction activities including culvert installations and road rehabilitations. Duties during Sarah's involvement with this project, she conducted erosion and sediment control inspections, wildlife relocations, and fish relocation services.

Limestone Creek Channel Reconstruction, Milton, Ontario (2019)

Sarah assisted senior staff members with daily environmental monitoring during the reconstruction of a degraded stretch of Limestone Creek. Sarah's duties during this project included incidental fish and wildlife removals, turbidity monitoring, and erosion and sediment control inspections.

Drainage Works

Species at Risk Project Registration, County of Brant, Brant, Ontario (2022-Present)

Member of the ecology team responsible for completion of a Species at Risk (SAR) Mitigation Plan for Drainage Works and project registration on behalf of Brant County. Reviewed candidate SAR habitat that may be found along all municipal drains within the County that could be impacted by routine drainage maintenance projects. Completed a review of site conditions in areas identified in the background review as requiring additional investigation. Responsible for the development of species-specific mitigation plans.

Casey Drain, Township of Wainfleet, Wainfleet, Ontario (2022-Present)

Ecologist responsible for completion of a Species at Risk (SAR) Mitigation Plan for Drainage Works and project registration on behalf of the Town of Waifleet. Reviewed candidate SAR habitat that may be found along the Thompson-Collinson Municipal Drain that could be impacted by routine drainage maintenance projects. Completed a review of site conditions in areas identified in the background review as requiring additional investigation. Responsible for the development of species-specific mitigation plans.

Thompson-Collinson Municipal Drain, Municipality of South Bruce, South Bruce, Ontario (2022-2023)

Ecologist responsible for completion of a Species at Risk (SAR) Mitigation Plan for Drainage Works and project registration on behalf of the Municipality of South Bruce. Reviewed candidate SAR habitat that may be found along the Thompson-Collinson Municipal Drain that could be impacted by routine drainage maintenance projects. Completed a review of site conditions in areas identified in the background review as requiring additional investigation. Responsible for the development of species-specific mitigation plans.

Municipal Drain 21, Municipality of Kincardine, Kincardine, Ontario (2021-2022)

Completed a terrestrial habitat assessment of 1,950 m of Municipal Drain 21. Works completed included terrestrial habitat characterization (ELC, botanical inventory, wildlife habitat characterization), review of species at risk habitat, and assessed of potential impacts and mitigation measures associated with the realignment of 850 m of open drain and the enclosure of 1,100 m of drain. Prepared a Technical memo outlining the existing conditions, anticipated impacts to the adjacent wetland, and proposed mitigation measures to support the permit application to the Saugeen Valley Conservation Authority.

Kincardine – Kinloss Municipal Drain Branch "A" Enclosure, Ontario (2022)

Completed a terrestrial habitat characterization study (ELC, wildlife habitat characterization), review of species at risk habitat, and assessed potential impacts and mitigation measures associated with the enclosure of 350 m of drain. Prepared a Technical memo outlining the existing conditions, anticipated impacts to downstream habitats, and proposed mitigation measures to support the permit application to the Saugeen Valley Conservation Authority.

Profession

ISA Certified Arborist with TRAQ Certification

Years of Experience

Total Years of Similar Experience: 24

Years with Burnside: 10

Education

Ecosystem Restoration, Post Graduate Program, Niagara College, 2000

Bachelor of Environmental Science (with Honours), University of Guelph, 1998

Butternut Health Assessment

Tree Risk Assessment Qualified, International Society of Arboriculture

Ontario Wetland Evaluation System (OWES), Ministry of Natural Resources

Ecological Land Classification, Ministry of Natural Resources

Certified Seed Collector, Ministry of Natural Resources

Tree Appraisal, International Society of Arboriculture

First Nation Cultural Sensitivity Awareness

Continuing Education

Continuing Arborist Training (2002-Present)

Professional Societies

International Society of Arboriculture

Field Botanists of Ontario

Employment Record

ISA Certified Arborist & Terrestrial Ecologist, R.J. Burnside & Associates Limited (June 2014-Present)

Terrestrial Ecologist, ISA Certified Arborist, Aboud & Associates Inc. (May 2000-June 2014)

Kevin Butt, B.Sc. (Env)., Eco. Rest. Cert.

Kevin has 24 years of experience working in the environmental industry, preparing natural heritage and tree studies throughout southern Ontario. These studies have been completed for both public and private clients and range in scale from single residential lots to major road corridor and multi-developer block plans. Study deliverables include environmental impacts studies, arborist reports, tree risk assessments, tree appraisals, preservation plans, ravine stewardship plans and mitigation designs. Kevin has liaised with government and review agencies, property owners and their agents and the general public through the approval stages, including project initiation and scope determination, public information centres, submission of materials, implementation assistance, construction supervision and monitoring.

Public and Institutional Sector Development

Transit

New King-Liberty GO Station Environmental Support, Kiewit Corporation, ON (2023-Present)

Burnside was retained by Kiewit Corporation to prepare environmental documentation to support construction work of a new station as part of the SmartTrack network connecting GO Train service to TTC. Burnside prepared management plans for air quality, noise and vibration, designated substances, excess materials and waste, dewatering, contamination, wildlife and tree protection and erosion & sediment control, as well completing monitoring compliance reports. Kevin was the environmental manager for the project who coordinated Kiewit Corporation and Burnside Subject Matter Experts and oversaw the monitoring program staff and coordinated resolution as required.

Aurora GO Station Environmental Support, Grascan Construction, ON (2023-Present)

Burnside was retained by Grascan Construction to prepare environmental documentation to support construction work that involved platform extension and noise barriers at the existing station. Burnside prepared management plans for air quality, noise and vibration, designated substances, excess materials and waste, dewatering, contamination, wildlife and tree protection and erosion & sediment control, as well completing monitoring compliance reports. Kevin was the environmental manager for the project who coordinated Grascan and Burnside Subject Matter Experts and oversaw the monitoring program staff and coordinated resolution as required.

Lansdowne to Black Creek Fourth Track Environmental Support, Grascan Construction, ON (2022-Present)

Burnside was retained by Grascan Construction to prepare environmental documentation to support construction work that involved installing tracks and noise barriers and improvements to Bloor Station. Burnside prepared management plans for air quality, designated substances, excess materials and waste, dewatering, contamination, wildlife and tree protection and erosion & sediment control, as well completing monitoring compliance reports. Kevin was the environmental manager for the project who coordinated Grascan and Burnside Subject Matter Experts and oversaw the monitoring program staff and coordinated resolution as required.

Barrie Corridor Rail Expansion TPAP and Design, Metrolinx, ON (2015-2020)

Metrolinx retained Burnside and Hatch to complete the detailed work established in the approved a Transit Project Assessment Process (TPAP) Environmental Assessment for the first phase of the expansion of GO Train service between Toronto and Aurora. Kevin was responsible for overseeing and carrying out the arborist investigations and contributing to the ecological studies, reporting, and permitting, including Butternuts.

New Caledonia GO Station, Metrolinx/GO Transit, Toronto, ON (EA/RCD 2014 to 2020, RFP Present)

The project scope included a TPAP Environmental Assessment (completed in 2016), Detailed Design and Construction Phase Services for the proposed Caledonia GO Station. Burnside was retained by Metrolinx to be part of a design team for this new station proposed along the GO Barrie rail corridor. A number of design components were components of the investigation including realignment of the existing track, grading for future track, a new platform and canopy. Kevin was responsible for overseeing and carrying out the arborist investigations and contributing to the ecological studies, reporting, permitting, and contributing to the Environmental Schedule.

Danforth GO Station Expansion, Metrolinx, Toronto, ON (2017-2021)

Burnside was retained to carry out detailed design of the Station Expansion Project to allow for rail expansion to meet the service upgrades for the Regional Express Rail (RER) program. The multi-disciplined design scope includes existing platform rehabilitation, extension of the existing west tunnel to meet future track configuration, new east pedestrian tunnel, improved pathway, and trail connections along the south limit of the site, Electrical/CCTV/PA improvements and a proposed Kiss and Ride area and associated pavilion. Ultimately, design documents associated with the Danforth GO project are to be consolidated into a larger Build-Finance opportunity. Burnside arborists completed a comprehensive inventory of trees within the station property and corridor as well as on City of Toronto parklands and road rights-of-way immediately adjacent to the station. An arborist report, which included data and drawings coordinated with Burnside's engineers, was prepared for submission to the City.

Georgetown GO Accessibility Improvements, Station Rehabilitation and Layover Reconfiguration, Metrolinx, ON (2014-2023)

Metrolinx retained Burnside to complete a feasibility study, detailed design, provide tender and construction phase services for rehabilitating/upgrading the existing layover, new track alignments, heritage station building to accommodate current accessibility standards as well as reconstructing the site to include new grade-separated pedestrian rail crossings, demolition of the existing platforms and replacement with two new island platforms, new snow melt system, new electrical/communications building and parking reconstruction. Kevin was responsible for overseeing and carrying out the arborist investigations and contributing to the ecological studies and reporting.

Municipal

Centre Wellington Public Works Yard Site Development in Fergus, RDHA (Prime) / Township of Centre Wellington, ON (2022-Present)

The Township retained the services of RDHA as Prime Architect and Burnside as a key subconsultant (with full engineering and landscape architecture services) to develop a 20-acre site located at 965 Gartshore Street in Fergus, ON to serve as the future location of a new municipal operations centre and works yard. The Township required the services of a Consulting team to provide all the required site surveys, studies, investigations, reports and concept design for the site plan, access routes, grading, parking, storm water management, servicing, utilities, and site layout including the Operations Centre facility and works yard, and the associated cost estimates. The work also included re-zoning of the 965 Gartshore Street site from A – Agricultural to M1 / M2 – Industrial to accommodate the Operations Centre and works yard. Additionally, the work included investigating the existing house on this site to determine if it is recommended to be re-used as part of the future Operations Centre. The overall goal of this scope of work was to complete foundational tasks to transition seamlessly into the detailed design phase of the project. Kevin was the arborist and ecology lead for this project.

Eighth Line Municipal Class EA, Town of Halton Hills, ON (2020-2023)

Schedule C MCEA to determine needs for transportation corridor improvements along 10.5 km of Eighth Line from Steeles Avenue to Maple Avenue. Eighth Line is presently a two-lane arterial roadway with both urban and rural cross-sections and traverses a variety of adjacent lands uses, six major watercourses and several environmentally sensitive features. Kevin was responsible for overseeing the terrestrial ecological components of the project and coordinating resolution with Credit Valley Conservation and Halton Conservation Authority staff to achieve approval of the EA.

Georgetown South New Watermains & Wastewater Mains, Town of Halton Hills (Georgetown), Halton Region, ON (2020-2024)

Burnside was retained by the Region to carry out detailed design of new watermains and wastewater mains in the south part of Georgetown. Burnside arborists conducted a complete tree inventory, arborist report and tree preservation plan in accordance with Town and Region standards. Tree Preservation was coordinated with the design team to revise lateral connections including lining existing laterals, placing new lateral locations to reduce impacts to existing trees where possible, reducing grading limits by making steeper slopes and installing tree protection fencing. Tree removal was discussed based on trenchless and open cut methods and tree replacement requirements were calculated for trees impacted on lands owned by the Region of Halton, and Town of Halton Hills. Trees impacted on privately-owned lands were appraised based on the aggregate DBH. Tree protection fencing was inspected regularly during the construction phases to ensure compliance and tree protection. Kevin was responsible for overseeing the arborist report and tree protection reporting and compliance monitoring for ESC and tree protection measures.

Dayfoot Street Sanitary Trunk Sewer, Watermain and Associated Works, Town of New Tecumseth, (2020-Present)

Burnside was retained by the Town to carry out detailed design of municipal servicing improvements throughout seven different roadways in Beeton, ON, including the replacement and extension of existing sanitary sewers, watermain upgrades, road, curb, and sidewalk reconstruction. Burnside arborists prepared an arborist report and tree preservation plan including preservation guidelines to incorporate existing trees into the design where possible through prescribed crown raising and grading (cut and fill) by light hand tools to minimize tree impacts.

Dominion Street Bridge and Road Reconstruction, Town of Caledon, ON (2021-2024)

Burnside's detailed design included the creation of cast-in-place concrete retaining walls, soldier pile and lagging retaining wall system. Retaining walls were used in locations where slope reinforcement products could not be utilized due to the steep embankments and property limits. Phase 2 (full depth road reconstruction) and Phase 3 (bridge rehabilitation) are anticipated to be completed in 2024. Project work is to be sequenced over three years, while maintaining access to private residents and to the public, as Dominion Street is a dead-end road and key link to the Bruce Trail. Kevin was responsible for overseeing the arborist report and ecological matters. He was also responsible tor meeting with residents and Town staff in information sessions regarding resident concerns, construction sequencing and ecological protection. He was a subject matter expert for ecological impacts and restoration to mitigate impacts to this sensitive site at the Forks of the Credit.

Bridge Road Reconstruction from Lees Lane to Sherin Drive, Town of Oakville, Oakville, ON (2021-2023)

The preparation of an arborist report and tree preservation plan for the reconstruction of Bridge Road from its present 2-lane rural cross-section to an urbanized 2-lane cross section with on-road bike lanes. The project required the removal of roadside ditches and driveway culverts and adding new storm sewers, concrete curbs, driveway, and boulevard restorations. All trees deemed impacted or recommended for removal are subject to a tree appraisal report.

Major Mackenzie Drive West Watermain Improvements, City of Richmond Hill, ON (2020-2021)

The City retained Burnside to design watermain improvements along Major Mackenzie West from Bathurst Street to Yonge Street. Portions of the existing watermain were proposed to be abandoned while portions were proposed to be replaced with larger diameter sections. Kevin directed the arborist team and completed the assessment of impacts to trees resulting from the proposed construction. While most of the construction was designed to be trenchless, access areas were required adjacent to trees that needed protection measures; otherwise tree removal was needed to accommodate construction. Preparation of a restoration plan in land regulated by TRCA was also required prepared by Kevin.

16th Avenue Trunk Sanitary Sewer Rehabilitation, York Region, ON (2020)

York Region retained Aldea Engineering Services to complete Phase 2 of the 16th Avenue Trunk Sanitary Sewer Rehabilitation project between Hyderabad Lane and Golden Meadow Pond. Kevin was retained as a subcontractor to Aldea to provide an update to the arborist report, including preservation and removal recommendations based on proposed work zones at the east and west limits of the study area. Kevin also prepared a restoration plan to compensate for removed trees as well as seeding for disturbed areas.

County Road 90–Barrie to Angus, County of Simcoe, ON (2011-2019)

The project included preparation of tender documents and contract administration for tree clearing, fencing, utility coordination of utility relocates, and construction of 12.5 km (five phases) of five-lane highway (rural and urban sections), four signalized intersections, five concrete box structures extensions, one railway bridge overpass widening, and one bridge replacement on

County Road 90. The project included pavement and shoulder widening, drainage improvements and upgrades to roadside safety. Kevin assisted with Butternut removal and compensation issues as well as homeowner tree impact issue resolution.

Road and Servicing Design, King Road, Township of King, ON (2017-2020)

The Township of King retained Burnside to complete a design of external road works and servicing on King Road from Keele Street to the Town's new administration. The design of a sidewalk and multi-use trail. Kevin created a restoration plan for TRCA regulated areas that were subject to impacts, including steep slopes and wetland edge encroachments. Use of native seeding and assemblies of native species of trees and shrubs were used to reduce the overall impacts of the development on adjacent natural features.

Environmental Assessment, 7th Line, Innisfil, ON (2018-2019)

The Town of Innisfil retained Burnside to complete a Municipal Class EA Schedule C for the proposed improvements to the 7th Line between the 10th Sideroad and Yonge Street. Impacts to the adjacent Provincially Significant Wetland and locally important treed features were anticipated to redesign the road for safer use and improved stormwater management.

Kevin managed the arborist investigation of the project, prepared a mitigation concept to protect adjacent natural features and assisted with the extensive ecological mapping and reporting associated with the preferred alternative and the associated anticipated impacts.

Storm Sewer Rehabilitation, City of Mississauga, ON (2018-2021)

The City of Mississauga retained Andrews Engineer that collaborated with Burnside to determine impacts and prepare mitigation designs for five existing storm sewers and associated structures. Burnside arborists and ecologists reviewed the existing natural heritage features and trees within the proposed work zones and access routes. Reporting and mapping was prepared to document tree impacts including anticipated injuries and removals. Restoration designs were prepared that included trees, shrubs, and seed mixes to mitigate disturbance to plant communities.

Sanitary Sewer Replacement on Various Streets (Including Joymar Drive), Region of Peel, Mississauga, ON (2017-2023)

Region of Peel retained Burnside to complete the design for the installation of sanitary sewers with lateral connections along existing residential roads within Mississauga. The established neighbourhood had a mix of immature and mature trees requiring protection from potential construction impacts. Kevin oversaw the ecological and arborist components of the comprehensive mapping, inventory, and assessment of trees within the existing road right-of-way and on adjacent private naturalized ravine land that were completed to coordinate with the engineering design.

Trafalgar Road Expansion and South Georgetown Watermain, Region of Halton, Halton Hills, ON (2018-2023)

Halton Region retained Burnside to complete the detailed road expansion and watermain design for approximately 6.5 km of length with an additional 1 km of watermain installation. Kevin was responsible for the detailed tree investigations that determined impacts to over 1,000 trees resulting from the proposed work, including encroachments into a Regionally-owned woodlot and a watercourse. Reporting, data and detailed mapping complimented the other components of the engineering submission. A woodlot edge management plan and riparian restoration plan were also prepared by Burnside tree staff to minimize impacts to the altered natural features. Kevin assisted with ongoing contractor and Regional matters including Phragmites invasive species control planning and tree appraisal.

Peer Review Services

Kevin has carried out peer review services and professional support for the following municipalities as part of the Burnside ecology team:

- Guelph Eramosa Township
- Regional Municipality of Durham
- Township of Amaranth
- Township of Clearview
- Township of Drayton
- Township of East Garafraxa
- Township of King
- Township of Scugog
- Township of Woolwich
- Town of Mono
- Town of Whitchurch-Stouffville
- Town of Wasaga Beach

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix B

Archaeological and Heritage Checklists

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Archaeological Potential

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area may contain archaeological resources i.e., have archaeological potential
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Archaeological assessment

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a licensed consultant archaeologist (see page 4 for definitions) to undertake an archaeological assessment.

The assessment will help you:

- identify, evaluate and protect archaeological resources on your property or project area
- reduce potential delays and risks to your project

Note: By law, archaeological assessments **must** be done by a licensed consultant archaeologist. Only a licensed archaeologist can assess – or alter – an archaeological site.

What to do if you:

- **find an archaeological resource**

  If you find something you think may be of archaeological value during project work, you must – by law – stop all activities immediately and contact a licensed consultant archaeologist

  The archaeologist will carry out the fieldwork in compliance with the *Ontario Heritage Act* [s.48(1)].

- **unearth a burial site**

  If you find a burial site containing human remains, you must immediately notify the appropriate authorities (i.e., police, coroner's office, and/or Registrar of Cemeteries) and comply with the *Funeral, Burial and Cremation Services Act*.

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages when completing this form.

Project or Property Name

Proposed Ashfield-Colborne-Wawanosh Pit

Project or Property Location (upper and lower or single tier municipality)

Part Lot 9, Concession 6 E.D., Township of Ashfield-Colborne-Wawanosh

Proponent Name

Township of Ashfield-Colborne-Wawanosh

Proponent Contact Information

Tom McCarthy, Public Works Superintendent, (519) 524-4669 ext. 209, pws@acwtownship.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

	Yes	No
2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?	☐	☑

If Yes, do **not** complete the rest of the checklist. You are expected to follow the recommendations in the archaeological assessment report(s).

The proponent, property owner and/or approval authority will:

- summarize the previous assessment
- add this checklist to the project file, with the appropriate documents that demonstrate an archaeological assessment was undertaken e.g., MTCS letter stating acceptance of archaeological assessment report

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., environmental assessment document
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Are there known archaeological sites on or within 300 metres of the property (or the project area)?	☐	☑
4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property (or project area)?	☐	☑
5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or project area)?	☐	☑
6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?	☐	☑
7. Has the property (or project area) been recognized for its cultural heritage value?	☐	☑

If Yes to any of the above questions (3 to 7), do **not** complete the checklist. Instead, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment of your property or project area.

If No, continue to question 8.

	Yes	No
8. Has the entire property (or project area) been subjected to recent, extensive and intensive disturbance?	☐	☑

If Yes to the preceding question, do **not** complete the checklist. Instead, please keep and maintain a summary of documentation that provides evidence of the recent disturbance.

An archaeological assessment is not required.

If No, continue to question 9.

	Yes	No
9. Are there present or past water sources within 300 metres of the property (or project area)?	☑	☐

If Yes, an archaeological assessment is required.

If No, continue to question 10.

	Yes	No
10. Is there evidence of two or more of the following on the property (or project area)?	☐	☐

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

If Yes, an archaeological assessment is required.

If No, there is low potential for archaeological resources at the property (or project area).

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

In this context, the following definitions apply:

- **consultant archaeologist** means, as defined in Ontario regulation as an archaeologist who enters into an agreement with a client to carry out or supervise archaeological fieldwork on behalf of the client, produce reports for or on behalf of the client and provide technical advice to the client. In Ontario, these people also are required to hold a valid professional archaeological licence issued by the Ministry of Tourism, Culture and Sport.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may be already in place for identifying archaeological potential, including:

- one prepared and adopted by the municipality e.g., archaeological management plan
- an environmental assessment process e.g., screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s. B.2.]

2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?

Respond 'yes' to this question, if all of the following are true:

- an archaeological assessment report has been prepared and is in compliance with MTCS requirements
  - a letter has been sent by MTCS to the licensed archaeologist confirming that MTCS has added the report to the Ontario Public Register of Archaeological Reports (Register)
- the report states that there are no concerns regarding impacts to archaeological sites

Otherwise, if an assessment has been completed and deemed compliant by the MTCS, and the ministry recommends further archaeological assessment work, this work will need to be completed.

For more information about archaeological assessments, contact:

- approval authority
- proponent
- consultant archaeologist
- Ministry of Tourism, Culture and Sport at archaeology@ontario.ca

3. Are there known archaeological sites on or within 300 metres of the property (or project area)?

MTCS maintains a database of archaeological sites reported to the ministry.

For more information, contact MTCS Archaeological Data Coordinator at archaeology@ontario.ca.

4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property?

Check with:

- Aboriginal communities in your area
- local municipal staff

They may have information about archaeological sites that are not included in MTCS' database.

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or property area)?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, 'adjacent' means 'contiguous', or as otherwise defined in a municipal official plan.

7. Has the property (or project area) been recognized for its cultural heritage value?

There is a strong chance there may be archaeological resources on your property (or immediate area) if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- your municipality
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA), including:
  - individual designation (Part IV)
  - part of a heritage conservation district (Part V)
  - an archaeological site (Part VI)
- subject to:
  - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
  - a notice of intention to designate (Part IV)
  - a heritage conservation district study area by-law (Part V) of the OHA
- listed on:
  - a municipal register or inventory of heritage properties
  - Ontario government's list of provincial heritage properties
  - Federal government's list of federal heritage buildings
- part of a:
  - National Historic Site
  - UNESCO World Heritage Site
- designated under:
  - *Heritage Railway Station Protection Act*
  - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

Part VI – Archaeological Sites

Includes five sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990 (Archaeological Sites) and 3 marine archaeological sites prescribed under Ontario Regulation 11/06.

For more information, check Regulation 875 and Ontario Regulation 11/06.

8. Has the entire property (or project area) been subjected to recent extensive and intensive ground disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- major landscaping – involving grading below topsoil
- building footprints and associated construction area
  - where the building has deep foundations or a basement
- infrastructure development such as:
  - sewer lines
  - gas lines
  - underground hydro lines
  - roads
  - any associated trenches, ditches, interchanges. **Note**: this applies only to the excavated part of the right-of-way; the remainder of the right-of-way or corridor may not have been impacted.

A ground disturbance does **not** include:

- agricultural cultivation
- gardening
- landscaping

Site visits

You can typically get this information from a site visit. In that case, please document your visit in the process (e.g., report) with:

- photographs
- maps
- detailed descriptions

If a disturbance isn't clear from a site visit or other research, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment.

9. Are there present or past water bodies within 300 metres of the property (or project area)?

Water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

Present

- Water bodies:
  - primary - lakes, rivers, streams, creeks
  - secondary - springs, marshes, swamps and intermittent streams and creeks
- accessible or inaccessible shoreline, for example:
  - high bluffs
  - swamps
  - marsh fields by the edge of a lake
  - sandbars stretching into marsh

Water bodies not included:

- man-made water bodies, for example:
  - temporary channels for surface drainage
  - rock chutes and spillways
  - temporarily ponded areas that are normally farmed
  - dugout ponds
- artificial bodies of water intended for storage, treatment or recirculation of:
  - runoff from farm animal yards
  - manure storage facilities
  - sites and outdoor confinement areas

Past

Features indicating past water bodies:

- raised sand or gravel beach ridges – can indicate glacial lake shorelines
- clear dip in the land – can indicate an old river or stream
- shorelines of drained lakes or marshes
- cobble beaches

You can get information about water bodies through:

- a site visit
- aerial photographs
- 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

10. Is there evidence of two or more of the following on the property (or project area)?

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

- **Elevated topography**

  Higher ground and elevated positions - surrounded by low or level topography - often indicate past settlement and land use.

  Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands, or other such features are a strong indication of archaeological potential.

  Find out if your property or project area has elevated topography, through:

  - site inspection
  - aerial photographs
  - topographical maps

- **Pockets of well-drained sandy soil, especially within areas of heavy soil or rocky ground**

  Sandy, well-drained soil - in areas characterized by heavy soil or rocky ground - may indicate archaeological potential

  Find out if your property or project area has sandy soil through:

  - site inspection
  - soil survey reports

- **Distinctive land formations**

  Distinctive land formations include – but are not limited to:

  - waterfalls
  - rock outcrops
  - rock faces
  - caverns
  - mounds, etc.

  They were often important to past inhabitants as special or sacred places. The following sites may be present – or close to – these formations:

  - burials
  - structures
  - offerings
  - rock paintings or carvings

  Find out if your property or project areas has a distinctive land formation through:

  - a site visit
  - aerial photographs
  - 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

- **Resource extraction areas**

  The following resources were collected in these extraction areas:

  - food or medicinal plants e.g., migratory routes, spawning areas, prairie
  - scarce raw materials e.g., quartz, copper, ochre or outcrops of chert
  - resources associated with early historic industry e.g., fur trade, logging, prospecting, mining

  Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Early historic settlement**

  Early Euro-Canadian settlement include – but are not limited to:

  - early military or pioneer settlement e.g., pioneer homesteads, isolated cabins, farmstead complexes
  - early wharf or dock complexes
  - pioneers churches and early cemeteries

  For more information, see below – under the early historic transportation routes.

- **Early historic transportation routes** - such as trails, passes, roads, railways, portage routes, canals.

  For more information, see:

  - historical maps and/or historical atlases
    - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
    - Archives of Ontario holds a large collection of historical maps and historical atlases
    - digital versions of historic atlases are available on the Canadian County Atlas Digital Project
  - commemorative markers or plaques such as local, provincial or federal agencies
  - municipal heritage committee or other local heritage organizations
    - for information on early historic settlements or landscape features (e.g., fences, mill races, etc.)
    - for information on commemorative markers or plaques

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Proposed Ashfield-Colborne-Wawanosh Pit

Project or Property Location (upper and lower or single tier municipality)

Part Lot 9, Concession 6 E.D., Township of Ashfield-Colborne-Wawanosh

Proponent Name

Township of Ashfield-Colborne-Wawanosh

Proponent Contact Information

Tom McCarthy, Public Works Superintendent, (519) 524-4669 ext. 209, pws@acwtownship.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☐	☑

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act.* **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society's "Heritage Directory" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through Ontario Trails.

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