Piperville Municipal Transformer Station

Final Environmental Study Report

Hydro Ottawa Limited

Type of Document:
Final ESR

Project Name:
Piperville Municipal Transformer Station

Project Number:
OTT-22017543-A0

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January 11, 2024

Executive Summary

Hydro Ottawa recognizes the importance of a reliable supply of electricity to its customers, and routinely evaluates the reliability and capacity of the electricity distribution system. Hydro Ottawa has assessed the electrical supply needs in the southeast end of the City of Ottawa and, due to a significant load growth, has determined that there is a need to construct a new Municipal Transformer Station (MTS).

The proposed station will receive electrical energy from a 230 kV transmission line in the existing Hydro One Networks Inc. transmission corridor (HONI Corridor) and convert this energy to lower voltages so that it can be distributed through Hydro Ottawa's electrical systems to homes and businesses in the communities of Carlsbad Spring. The new station is required by 2026 and will improve the reliability of supply to the area. Originally, the requirement for a new MTS was identified as a near-term initiative in the Independent Electricity System Operator's (IESO) Ottawa Area Integrated Regional Resource Planning (IRRP) (dated March 04, 2020) process to ensure an adequate and reliable supply of electricity to the region.

The project is subject to provincial Environmental Assessment Act approval, in accordance with the Class Environmental Assessment for Minor Transmission Facilities (Class EA) (Hydro One, 2022). As a part of the Class EA process, Hydro Ottawa Limited notified local residents and stakeholders through newspaper ads and direct mailings. As a part of the public open house sessions, the first in April 2023, and the second in November 2023, two public information sessions; one online and one in person, were organized to provide details of the study and to receive input from interested parties on the proposed sites. The public comments that were received were evaluated and incorporated into the analysis and become part of this Environmental Study Report.

Three potential sites for the new substation were evaluated based on the Ministry of Environment, Conservation, and Parks (MECP) environmental screening criteria, technical feasibility, and economic considerations. All sites evaluated were in proximity to the existing HONI Corridor and the available connection points for the 230kV line. It is the conclusion of this study that the lot located at 5134 Piperville Road and is the best available location for the new substation within the study area. No significant environmental concerns exist at the site, no species at risk were identified inhabiting this location and no archeological findings were made during the Stage 1 and Stage 2 assessments.

The predominant negative impact identified was visual aesthetic on the immediate adjacent neighbours. In consultation with these neighbours, they each identified tree screening as their preferred mitigation measures, and this will be incorporated into the station design.

This Final Environmental Study Report describes the technical and environmental studies undertaken on behalf of Hydro Ottawa Limited for this project.

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List of Acronyms / Abbreviations

AAQC - Ambient Air Quality Criteria

ANSI - Area of Natural and Scientific Interest

Class EA – Class Environmental Assessment for Minor Transmission facilities, 2022

Cm – centimeter

°C - Degree Celsius

DR – Demand Response

EA – Environmental Assessment

EA Act - Environmental Assessment Act

EASR - Environmental Activity and Sector Registry

ECCC – Environment and Climate Change Canada

EE – Energy Efficiency

EIS – Environmental Study Report

EMR – Electromagnetic Radiation

ESA report– Environmental Site Assessment report

ESA – Endangered Species Act, 2007

ESR – Environmental Study Report

HONI and Hydro One – Hydro One Networks Inc.

Hydro Ottawa – Hydro Ottawa Limited

IESO – Independent Electricity System Operator

IRRP – Integrated Regional Resources Plan

km – Kilometer

km^2 – Square kilometer

kV - Kilovolt

m – Meter

m^2 – Square meter

masl – Meters Above Sea Level

MNRF – Ministry of Natural Resources and Forestry

MECP – Ministry of Environment, Conservation & Parks

MTCS - Ministry of Tourism, Culture and Sport

MTS – Municipal Transformer Station

NCC – National Capital Commission

NPV – Net Present Value

NW – Non-Wires

LIO – Land Information Ontario

OBM – Ontario Base Mapping

PPS - Provincial Policy Statement

Project Team – Hydro One and Hydro Ottawa

PTTW – Permit to Take Water

SNCA – South Nation Conservation Authority

SAR – Species at Risk

SARA – Species at Risk Act

SCGT – Simple Cycle Gas Turbines

TS – Transformer Station

Working Group - IESO, Hydro One, and Hydro Ottawa

WWIS – Water Well Information System

1 Introduction and Background

This Class EA Environmental Study Report was prepared on behalf of Hydro Ottawa Limited in support of their plan to construct a new municipal transformer station in the southeast end of the City of Ottawa. This report has been prepared in accordance with the Class Environmental Assessment for Minor Transmission Facilities (Class EA) (Hydro One, 2022).

1.1 Project Proponent

Hydro Ottawa Limited, a subsidiary of the Hydro Ottawa Holding Inc., which is wholly owned by the City of Ottawa, is the third largest municipal electricity distribution company in the province. Hydro Ottawa is responsible for the safe, reliable delivery of electricity to more than 359,000 residential and business customers in the City of Ottawa and the village of Casselman.

As a community company, Hydro Ottawa Limited is committed to delivering value to the customers they serve through providing reliable, affordable service. Hydro Ottawa has consistently maintained one of the most reliable electricity distribution networks in Ontario. At the same time, industry comparisons have also shown that Hydro Ottawa is one of the most efficient electricity distributors in the province, with operating, maintenance, and administration costs much lower than the provincial average.

The executive management team at Hydro Ottawa Limited includes:

- Bryce Conrad, President and Chief Executive Officer, Hydro Ottawa Limited
- Geoff Simpson, Chief Financial Officer, Hydro Ottawa Limited
- Guillaume Paradis**,** Chief Electricity Distribution Officer. Hydro Ottawa Limited
- Julie Lupinacci**,** Chief Customer Officer, Hydro Ottawa Limited
- Lyne Parent-Garvey, Chief Human Resources Officer, Hydro Ottawa Limited
- Mark Fernandes**,** Chief Information and Technology Officer, Hydro Ottawa Limited

Additional details about Hydro Ottawa Limited can be found at www.hydroottawa.com.

1.2 Need for Undertaking

Hydro Ottawa Limited is the Local Distribution Company that manages the local network of electrical distribution for the City of Ottawa and surrounding areas. The voltage distribution network operates at 4 kV 8 kV, 13.2 kV, 27.6 kV and 44 kV and the network supply is drawn from distribution substations where power transformers step down the transmission voltage of 115 kV and 230 kV to a lower voltage for distribution to residences and businesses. One 230 kV circuit (L24A) extends southeast from Hawthorne TS, a few km south of Highway 417.

A reliable source of electricity is essential to supporting community growth - powering homes, schools, businesses, hospitals and transportation. The existing distribution facilities and equipment serving southeast Ottawa are operating at their planned capacity. A new MTS is needed to improve electricity service reliability and to meet the region's growing electricity demand. In March 2020, the need for a new transformer station was identified in a twenty-year Integrated Regional Resource Plan (IRRP, 2020). The Integrated Regional Resource Plan (Appendix A) is a twenty-year plan that has been developed by a regional planning working group consisting of the Independent Electricity System Operator, Hydro Ottawa and Hydro One.

In their ongoing effort to ensure an adequate and reliable electrical supply to customers, Hydro Ottawa Limited is preparing a plan for its facilities and modifications required to meet this objective. Hydro Ottawa has determined that it is necessary to increase the distribution capacity within the southeast end of Ottawa by adding a new 230/27.6 kV station, to be named Piperville MTS.

The Piperville MTS project is being proposed to support projected growth in electricity demand in the southeast parts of the City of Ottawa in the coming years. The existing Hydro Ottawa station in the area does not have the capacity to supply anticipated future demand in the southeast growth area.

1.2.1 Existing Transformer Stations

Hydro Ottawa Limited operates a substation, Leitrim MS, in the city's southeastern region. This substation has a secondary distribution voltage of 27.6 kV. Leitrim MS serves as a 44/27.6 kV supply station and is linked to a 44 kV feeder originating at Hawthorne TS. It should be noted that the 44 kV feeder limits Leitrim MS's capacity to meet the MW Load Meeting Capability (LMC), which is capped at 22.5 MW (or 25 MVA). The 22.5MW planning capacity of Leitrim MS is set by the size of the substation transformers. The 44 kV feeder out of Hawthorne TS supplying Leitrim MS is near capacity but not the limiting factor. Due to the lack of nearby alternative supply stations, Leitrim MS plays an important role in providing electrical service to Hydro Ottawa customers, extending as far east as the service territory boundary. The Southeast Ottawa area is shown in Figure 1 below.

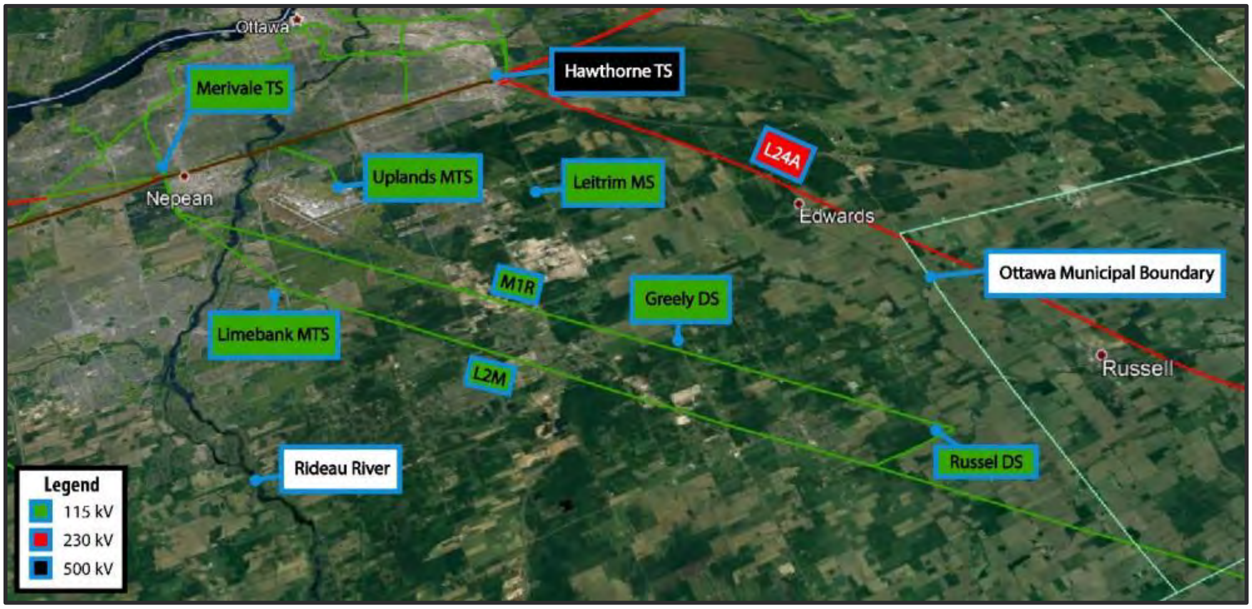

Figure 1 : Transmission System Layout in the Southeast Ottawa Area

The table below lists all the stations nearby the study area and their respective voltages:

Table 1 : Stations Near the Study Area

Station Name	Voltage
Hawthorne TS	44 kV
Leitrim MS	44/27.6 kV

1.2.2 Capability of Existing Facilities

The current 10-days Limited Time Rating (LTR) of the Leitrim MS facility is 22.5 MW assuming that the largest transformer is out of service.

1.2.3 Summer Peak Load Forecasts for the Existing Facilities

The demand for electricity is often at its peak during the summer months. The summer peak load forecasts for the existing Leitrim MS facility in the southeast end of the City of Ottawa are included in the IRRP.

1.2.4 Station Capacities at Leitrim MS and Hawthorne TS

The Leitrim MS serves as a supply station with a voltage of 44/27.6 kV and is linked to a 44 kV feeder from the Hawthorne TS. The Load Meeting Capability (LMC) of the Leitrim MS is limited to 25 MVA, which is equivalent to 22.5 MW. This facility serves Hydro Ottawa customers up to 15 kilometers to the east, reaching the service territory boundary. Notably, there are no other supply stations nearby.

The electric planning projections for the Leitrim MS, included an estimate of the expected demand for the Leitrim MS. This estimate includes Hydro Ottawa effort to reallocate loads to the Uplands MTS and Limebank MTS, which are in the southeast, west of the Leitrim MS. However, by 2020, the planning forecast predicted that demand at the Leitrim MS, the most southeasterly of the stations, exceeds the station's LMC by 4.2 MW in 2022, 20.8 MW in 2030, and 33.5 MW in 2037. This forecast indicates a significant increase in demand for electricity in the coming years, surpassing the current Load Meeting Capability of Leitrim MS.

Situated on the eastern edge of central Ottawa, Hawthorne TS is a transformer station with a voltage rating of 230/44 kV. It is essential to the provision of electrical services to Hydro Ottawa and Hydro One clients. It is noteworthy that a station expansion initiative that was first suggested as part of the 2015 IRRP was completed in 2019. The outcome of this expansion project was a significant increase in Hawthorne TS's Load Meeting Capability (LMC), which is currently 158 MVA (142 MW).

By 2028, the IRRP forecasting model predicts that Hawthorne TS's demand will match the increased LMC. It is crucial to recognize that this projection is largely influenced by the overloading at the Leitrim MS station. If Leitrim MS's overloading problems are resolved and reduced, Hawthorne TS's forecast will continuously remain within the set LMC boundaries for the duration of the forecast.

To address this anticipated overload, Hydro Ottawa is considering constructing a new substation in the area to meet the growing demand and ensure reliable power supply for customers in the future.

Developments since the publication of the IRRP are in line with the 2020 forecasts, and the need for a new station continues to exist.

1.3 New Transformer Station Description

1.3.1 General

Figure-2 below illustrates a typical 230 kV transformer station plan. The station elements include:

- A transmission line connection to the existing HONI Corridor 230 kV circuits;
- A switchgear and control building.

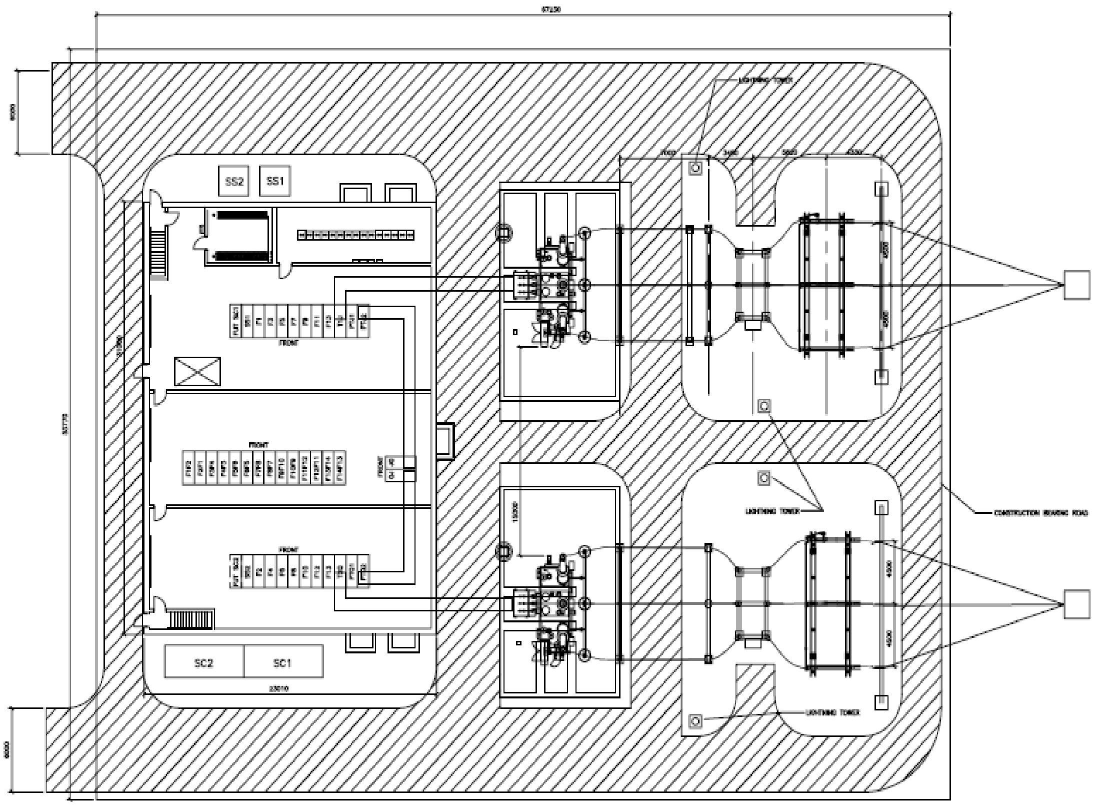

Figure 2 : Typical 230 kV Transformer Station Plan

1.3.2 Transmission

The station will accommodate a dual, three-phase overhead supply tap (i.e., three conductors and an overhead ground wire). The final tap arrangement is to be designed and installed by HONI and tap structures will be in the HONI Corridor.

1.3.3 Switchgear and Control Building

A building is required for the new station to house the 27.6 kV switchgear, protective relaying and control facilities. The building is typically operated remotely. The design of the structure will be conventional concrete wall, single story with a basement.

1.3.4 Feeder Egress

For reasons of security and aesthetics, feeder egress will be designed for below grade duct or direct buried installations for a considerable distance from the station. The 27.6 kV feeder cables will reach system locations where they can be linked to currently installed aerial circuits.

1.4 Alternatives to the undertaking

The identification and assessment of alternatives to the proposed project are required by the EA Act and the Class EA procedure. These stand-in solutions offer functionally unique approaches to meeting the project's fundamental needs. The standards of economic viability, environmental soundness, and technical feasibility must be met by these substitutes.

Alternatives to the undertaking were explored by the IESO, Hydro One, and Hydro Ottawa during the development of the Ottawa Area IRRP 2020 and by the Hydro One, IESO, and Hydro Ottawa and Hydro Hawkesbury during the development of Grater Ottawa – Regional Infrastructure Plan 2020. The following alternatives are reviewed and addressed in Section 5.

Alternative 1: Do nothing

Alternative 2: New Dual Element Spot Network (DESN) at Hawthorne TS

Alternative 3: Expanding Leitrim MS or Supplying a New 44 kV/27.6 kV Station from Hawthorne TS

Alternative 4: Non-Wires Alternatives

Alternative 5: New Station on Circuit L24A (Piperville MTS)

1.5 Approval Process and Regulatory Requirements

1.5.1 Environmental Assessment Act Approval

The Class EA process falls under the *Ontario Environmental Assessment Act* and is an effective way of ensuring that transmission projects that have a predictable range of effects are planned and carried out in a manner which is environmentally acceptable.

Following a consultation process with members of the public, government agencies and municipalities, First Nations and Métis communities, a draft Environmental Study Report (ESR) is made available for stakeholder review and comment for a specific period of time (30 calendar days).

Hydro Ottawa will respond to, and make best efforts to, resolve any issues raised during the review period. If no issues are raised during the review period, Hydro Ottawa will finalize the ESR and file it with the Ministry of the Environment, Conservation and Parks (MECP). The project will be considered acceptable and may proceed as outlined in the ESR.

Section 16 Requests

The Environmental Assessment Act, as amended through the COVID-19 Economic Recovery Act, 2020, allows a person with concerns pertaining to potential adverse impacts to Aboriginal or treaty rights, that have not been addressed through the Class Environmental Assessment process to request under Section 16 of the Environmental Assessment Act (EAA) that the Minister make an order requiring an Individual EA) or that conditions be imposed on the project. Such requests must be addressed in writing to the Minister of Environment, Conservation and Parks, as well as to the Director of the Environmental Assessment Branch, and received.

1.5.2 Other Permits, Licences and Approvals

In addition to the required approval under the *Ontario Environmental Assessment Act*, various other provincial and municipal approvals may be required. Some of the other potential permit, licence, approval and compliance requirements include, but are not necessarily limited to: Certificate of Approval under the *Ontario Environmental Protection Act* for noise levels; Certificate of Approval under the *Ontario Water Resources Act* for site drainage; Ontario Energy Board approval; Independent Electrical System Operator approval; Ontario Building Code permits and compliance with local municipal by-laws.

Hydro Ottawa will contact appropriate regulatory agencies to ensure that the proposed project meets applicable requirements and that approvals are obtained as necessary.

2 Class EA Process

The proposed project is subject to approval under the provincial Environmental Assessment Act (EAA) approval, in accordance with the Class Environmental Assessment for Minor Transmission Facilities (Class EA) July 2022.

This is a process mandated by the Ministry of the Environment, Conservation and Parks (MECP), which ensures a framework for involving municipal and provincial ministries/agencies, interested organizations and individuals. This Environmental Study Report (ESR) has been completed as part of the Class EA process.

This Class EA study has determined the preferred location for the proposed station, based on the site with most advantages and fewest disadvantages. Among the factors considered were agricultural resources, appearance of the landscape, biological resources, forestry resources, heritage resources, human settlement, mineral resources and recreational resources. Each potential site was also assessed based on technical constraints and economics.

The class EA process is illustrated in Figure 3.

2.1 Stakeholders Notification

This project was formally announced to the public in March 2023, via notification letters sent to local residents, Indigenous communities and groups, local conservation authority, City of Ottawa, community association and Ministry of the Environment, Conservation & Parks via electronic mail and was posted on the Hydro Ottawa website at the same time. The public was also notified via electronic mails and project website advertisements of the public open house sessions (POHSs) held in April 2023 and November 2023 respectively. The stakeholder notifications can be found in Appendix B.

Following the completion of the draft ESR, Hydro Ottawa will notify all interested parties, including interest groups, Indigenous and First Nations communities and group, potentially affected individuals and directly impacted municipal, provincial, and federal government officials and agencies. The final notification will ensure that all relevant stakeholders are informed of the draft ESR's completion and have an opportunity to review and provide feedback. This inclusive approach aims to promote transparency and collaboration in decision-making, allowing for a thorough assessment of potential impacts and considerations from various perspectives.

All relevant feedback received during the review period for the draft Environmental Study Report (ESR) will be incorporated into the initial draft following the conclusion of the review period. Next to that, the final version of the report will be made public on the project's official website, and an additional copy will be archived at the Hydro Ottawa office. Finally, the completed report will be formally submitted to the Ministry of Environment, Conservation, and Parks (MECP) Environmental Approvals Branch (EAB) for official filing.

Class Environmental Assessment Process

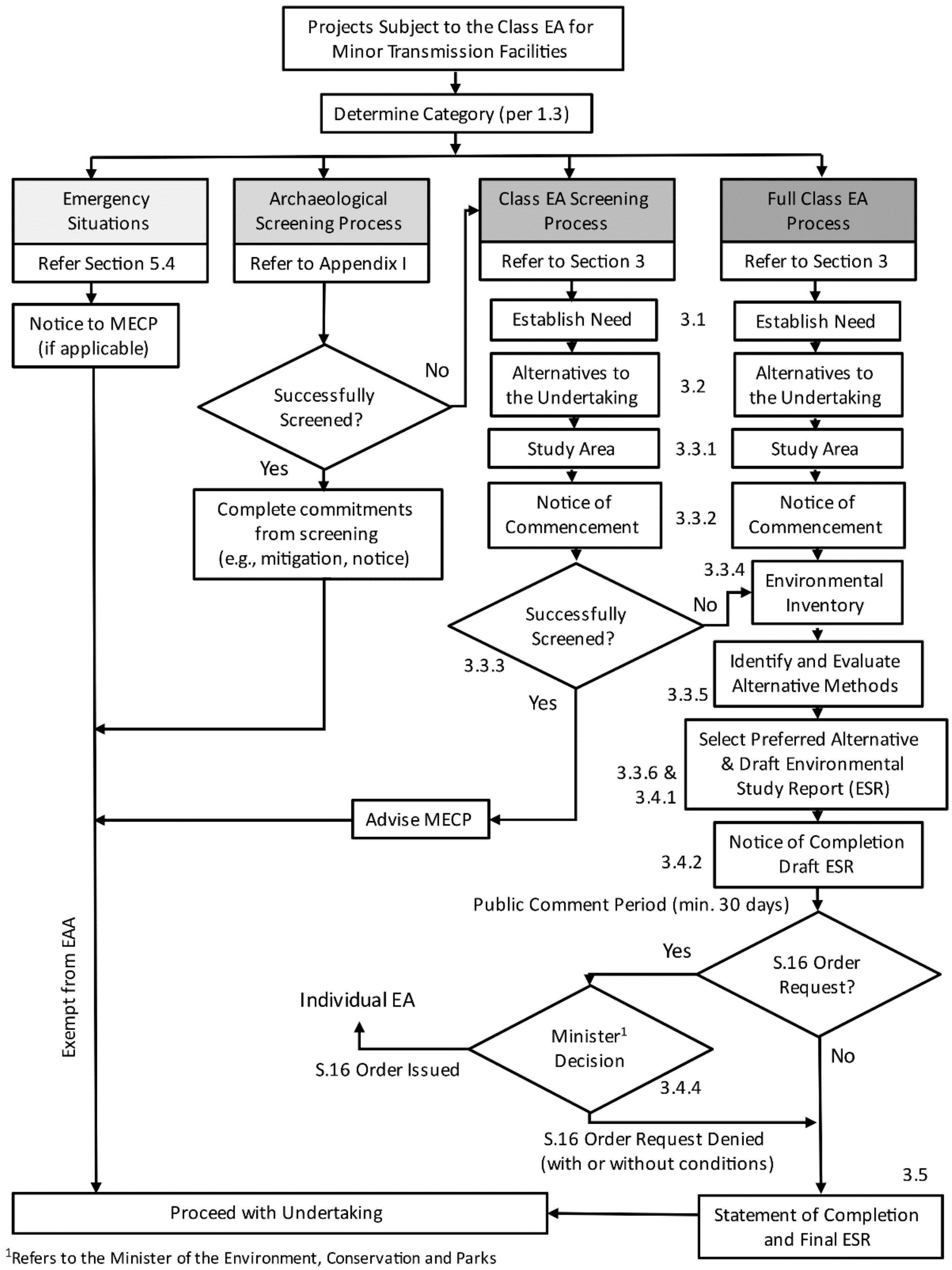

Figure 3 : Class EA Process

2.2 Study Area Description

The study area is defined bounded by Piperville Road to the south, Thunder Road to the west, and Highway 417 to the north and Farmers Way to the east (Figure 4). The study area is linear, with an approximate total length of 5.8 km. The study site has agricultural use, with some residential development along Thunder Road, Piperville Road, Leitrim Road, and Farmers Way. A golf course is located at the north end of the site. The property where the substation is proposed to be built consists of privately owned land where Hydro One has transmission rights through an easement. The topography of the site varies significantly along the existing HONI Corridor, particularly in the vicinity of the creeks that cross the site. The HONI Corridor's reported elevations vary from 70 to 80 meters above sea level (masl) (MNRF, 2022). According to the GeoOttawa mapping, the HONI Corridor includes areas classified under different zoning designations, such as RU (rural areas), O1P (hydro corridor - parks and open spaces), O1A (golf course - parks and open spaces), and EP (environmental protection). It is important to note that the EP zoning designation is mainly limited to a region of land that is roughly 0.5 kilometers in length and is situated between Anderson Road and Leitrim. Notably, the National Capital Commission (NCC) is the owner of this specific land parcel. Figure-3 shows the study area and area of interests.

2.3 Potential Site Locations and Descriptions

The three potential site locations that were considered by Hydro Ottawa Limited along the existing 230kV power transmission corridor (HONI Corridor) for the siting of the new transformer station are shown in Figure 4 below and include the following:

- Site Location 1: Parcel at 3925 Anderson Road;
- Site Location 2: Parcel at 5134 Piperville Road; and
- Site Location 3: Thunder Road.

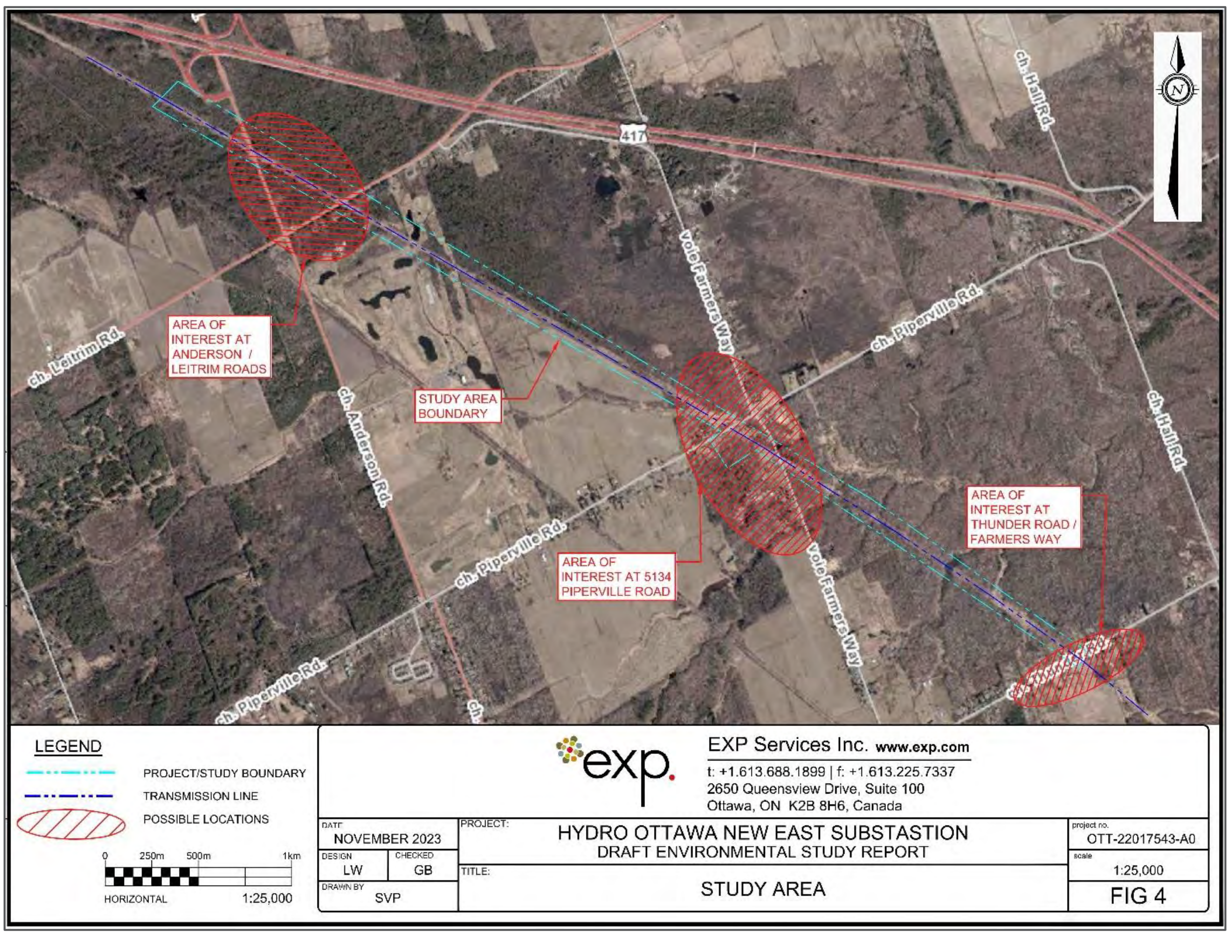

Figure 4 : Study Area

2.3.1 Site Location 1 – Parcel at 3925 Anderson Road

Site location 1 is relatively flat and wooded. The land in this area is a "Natural Link" designation under the NCC's Greenbelt Master Plan (2023). It is bounded by the HONI Corridor to the west, vacant wooded land to the west and Anderson Road to the east.

2.3.2 Site Location 2 – Parcel at 5134 Piperville Road

Site location 2 is relatively flat and wooded. It is bounded by Farmers Way to the east, Piperville Road to the north, residential and agricultural properties to the south and to the west. The site is part of lot 11, concession 8 of the city of Ottawa (formerly Gloucester) of PIN 04325-0218.

2.3.3 Site Location 3 – Thunder Road

Site location 3 is relatively flat and wooded. The land is bounded by Farmers Way to the west, the HONI Corridor to the east, vacant wooded land to the north of Thunder Road, vacant wooded and agricultural lands to the south of Thunder Road, and resident properties on both sides of Thunder Road and Farmers Way.

2.3.4 Potential Site Location

Hydro Ottawa pursued interest in all three potential site locations. Fifteen (15) specific parcels were evaluated and select property owners were contacted. The lot near the intersection of Piperville Road and Farmers Way is optimally suited to meet the project requirements. It was the only viable property available for purchase. Real estate acquisition for this project is only being considered by voluntary participation, with willing sellers; powers of expropriation will not be considered or requested. As such, land rights were secured by Hydro Ottawa and that is the preferred project location.

2.4 Screening Criteria

The three potential sites were evaluated with respect to eight environmental and socio-economic screening criteria including:

- Surface water and groundwater impacts;
- Land impacts;
- Air and noise impacts;
- Impacts of the natural environment of the area;
- Impacts on the local natural resources;
- Socio-economic impacts;
- Heritage and cultural impacts;
- Impacts on local Aboriginal communities; and
- Impacts on others such as any negative environmental effects not covered by the criteria above.

The potential environmental impacts were assessed using the screening criteria outlined in the Ministry of Environment, Conservation, and Parks (MECP) *Guide to Environmental Assessment Requirements for Electricity Projects* (2011). These screening criteria are further described and discussed in Section 6 and Section 8 of this report.

3 Environmental Characteristics of the Study Area

This section is comprised of environmental factors that Hydro One Networks Inc. considers or categories when conducting an environmental inventory for a route or site planning study with respect to Section 3.3.4 of the Class EA for Minor Transmission Facilities (Hydro One, July 2022).

3.1 Study Area Location

The existing HONI Corridor is approximately 5.8 km long and runs southeast from the Highway 417 Anderson Road off-ramp to just south of Thunder Road, in Carlsbad Springs, Ontario. The HONI Corridor is located approximately 12 km southeast of the Ottawa River and is surrounded by agricultural, forested, residential, urban and open space (e.g., golf course) areas. However, according to GeoOttawa mapping, the study area overlays RU (rural), O1P (hydro corridor - parks and open space), O1A (golf course - parks and open space), and EP (environmental protection) zoned areas. The EP zoned area appears to exist only on a 0.5 km stretch of land between Leitrim and Anderson Road, which is owned by the National Capital Commission (NCC). Based on a review of historical aerial photographs, historical maps, and other records, it appears that the study area was developed as a hydro transmission corridor, circa 1957.

The property where the substation is proposed to be built consists of privately owned land where Hydro One has transmission rights through an easement. The property adjacent to 5134 Piperville Road is subject to a transmission easement. The topography of the study area varies significantly along the HONI Corridor, particularly in the vicinity of the creeks.

3.2 Study Area Agricultural Resources

The HONI Corridor is surrounded by agricultural, forested, residential, urban and open space (e.g., golf course) areas. Based on the EIS and ESA, there are no significant agricultural resources presence in the study area.

3.3 Study Area Forestry Resources

Based on available Natural Heritage Mapping, forested areas are present surrounding the HONI Corridor (MNRF, 2022). Roadside field visits of the HONI Corridor were carried out in October 2022 and a review of recently available aerial photographs were used to determine vegetation cover across the HONI Corridor. Generally, the HONI Corridor appears to be cleared of all significant vegetation (i.e., trees) such as not to interfere with Hydro One operations. There do however appear to be several areas across the HONI Corridor where grass, wildflower, and/or shrub-like vegetation cover exists. As such, the productivity of the land or its use for forestry harvesting would not be impacted by the proposed Project.

3.4 Study Area Archaeological and Cultural Heritage Resources

This section considers built heritage resources, cultural heritage landscape and archaeological resources. For the proposed project, a Stage 1 archaeological assessment as well as Stage 2 archeological assessments were completed. Stage 1 and 2 archaeological assessments were undertaken for the project by Past Recovery Archaeological Services Inc.

3.4.1 Stage 1

The Stage 1 archaeological assessment undertaken was following Standards and Guidelines for Consultant Archaeologists (Ministry of Citizenship and Multiculturalism 2011).

The background research results that were compiled suggest that there is potential for significant archaeological resources to exist in the study area. Consequently, it was advised that: The portions of the study area that have been determined to exhibit archaeological potential should be subject to Stage 2 archaeological assessment prior to the initiation of future below-grade soil disturbances or other alterations.

There was a mixture of an active field and other non-agricultural lands within the study area; all portions identified as exhibiting archaeological potential should therefore be assessed by means of a pedestrian survey or shovel test pit survey conducted at 5 m intervals, as appropriate.

A copy of the stage 1 archaeological assessment is provided in Appendix C.

3.4.2 Stage 2

The Stage 2 archaeological assessment then undertaken was following Standards and Guidelines for Consultant Archaeologists (Ministry of Citizenship and Multiculturalism 2011), based on the recommendation of the Stage 1 assessment.

The Stage 2 archaeological assessment consisted of a shovel test-pit survey at 5 m intervals across all portions of the study area determined to exhibit archaeological potential; the remaining areas were either judgmentally tested as being seasonally wet or not tested as being low and permanently wet. No archaeological resources were found over the course of this assessment.

As the Stage 2 property survey did not result in the identification of any archaeological resources requiring further assessment or mitigation of impacts, no further archaeological assessment of the study area was required.

A copy of the stage 2 archaeological assessment is provided in Appendix C.

3.5 Human Settlements

The land use within the study area mostly consists of HONI Corridor - open parks and space and rural residential and environmentally protected areas. There are no buildings present on the site. There are 14 transmission towers present along the HONI Corridor.

Most of the residential settlements are along the Leitrim Road, Pipersville Road, Farmers Way and Thunder Road. The desktop review, no schools, hospitals in the study area. There is a park called “Ludger Landry Park” off Piperville Road and a golf course off Anderson Road.

3.6 Mineral Resources

As per the findings of the terrestrial field studies and the examination of the MNRF LIO database, the study area does not contain any operational quarries or aggregate pits.

3.7 Study Area Natural Environment Resources

3.7.1 Physical Environment

3.7.1.1 Study Area Physiology and Drainage

Review of the background mapping information suggests that on a regional scale the study area is underlain by Pleistocene overburden sediments comprised of sand, gravelly sand and gravel deposited as nearshore and beach deposits on the east side of the study area, and silt and clay deposited under quiet water basin environment on the west side of the study area. The overburden deposit forms a thin veneer over the bedrock in the area. This thin veneer of Pleistocene overburden material is underlain by the Paleozoic shale and limestone of Georgian Bay formation bedrock.

The Smith Gooding Municipal Drain runs through HONI Corridor about 70 meters north of Piperville Road. The municipal drain drains to an unnamed tributary of Bear Brook Creek in the southeast. Between Farmers Way and Thunder Road, four branches of an unnamed tributary of Bearbrook Creek run through the property. Bear Brook Creek is about 1.3 kilometers east of the proposed substation site's southern end. Ramsay Creek is about 0.8 km west of the north end of the substation site. The study area to the north of Leitrim Road is in the Greenbelt.

3.7.2 Atmospheric Environment

3.7.2.1 Climate

The City of Ottawa is in the Great Lakes/St. Lawrence climate region and has humid continental weather (ECCC, 2018a). This section's information is based on data from the Ottawa Macdonald-Cartier International Airport meteorological station (Climate Identifier ID 6106000). The data presented in this section is based on 1981-2010 Climate Normal data.

3.7.2.2 Temperatures

The climate normal mean annual temperature at the Ottawa Macdonald-Cartier International Airport meteorological station is 6.4 degree Celsius. The climate normal daily average temperature varies between -10.3 degree Celsius (January) and 21.0 degree Celsius (July). Extreme climate normal temperatures range from -36.1 degree Celsius (February) to 37.8 degree Celsius (August). The climate normal frost-free period is from May 1 to October 6 (159 days).

3.7.2.3 Precipitation

Precipitation is distributed throughout the four seasons, with snowfall typical from November to April, and rainfall typical from May to November. Climate normal days with precipitation is 163 days per year.

The climate normal monthly precipitation varies between 54.3 millimetres (mm) (February) and 92.8 mm (June). The climate normal total annual precipitation is 943.4 mm. On average, over the course of a year snowfall represents 223.5 centimeters (cm) of precipitation while rainfall represents 758.2 mm. The climate normal extreme daily rainfall volume ranges from 36.3 mm (December) to 135.4 mm (September). Extreme daily snow falls ranges from zero to 40.6 centimetres (March).

3.7.2.4 Wind

Based on five consecutive years of data, (January 1, 1996 - December 31, 2000), winds primarily blow from the southwest and northwest with an average wind speed of 3.25 meter per second (m/s).

3.7.2.5 Air Quality

Air quality criteria used for assessing ambient air quality in the study area includes provincial criteria, and federal standards and objectives where provincial criteria are not available. Specifically, the MECP has issued guidelines related to ambient air concentrations, which are summarized in Ontario's Ambient Air Quality Criteria (AAQC) which are applied to CO, NO2, SPM, PM10, and SO2 (MECP, 2018a). Contaminants which do not have an AAQC, namely PM2.5, are compared to the Canadian Ambient Air Quality Standards (CAAQS).

During the site visit, no air emission stations were discovered.

3.7.3 Study Area Bedrock Geology

According to an analysis of the background mapping data, the study area is underlain, on a regional scale, by Pleistocene overburden sediments consisting of silt and clay deposited under quiet water basin environments on the west side of the study area and sand, gravelly sand, and gravel deposited as nearshore and beach deposits on the east side. Based on data retrieved from the MECP well records, the overburden deposit forms a thin veneer with an average thickness of 22.7 m, considering the water found depths and soil types encountered within the drilled well's depths. In the region where the bedrock valley has been identified, the overburden soil thickness is higher. The Pleistocene overburden is underlain by Carlsbad Formation Paleozoic shale and dolomitic limestone.

The bedrock identified in the area based on a review of the OBM database and the MECP Water Well Record database is Carlsbad Formation shale and dolomitic limestone. According to a review of MECP water well records, the bedrock surface is fractured and confined by overburden soils rich in clay and silts, and it is a major source of drinking water in the area.

3.7.4 Study Area Surficial Geology

According to a review of Ontario Geological Survey base mapping information, the surficial geological material on a regional scale is composed of Pleistocene glaciomarine deposits of sand, gravelly sand, and gravel deposited nearshore to beach environment and silt and clay deposited deep quiet water environment.

The proposed site is underlain by Pleistocene glaciomarine deposits of silt and clay deposited beneath a basin and quiet water environment. The proposed site is in the physiographic region of central lowlands, with the dominant feature identified as sand plains in the Ontario Base Mapping database.

Based on a review of MECP well record data, a north-south oriented bedrock valley (paleo-channel) feature has been identified. The valley is occupied by glaciomarine and marine deposits of silt and clay, which are typically deposited in deep and quiet water environments. The site is underlain by a clay-rich overburden deposit of approximately 25 m depth.

3.7.5 Surface Water Resources

The Bear Brook Quaternary Watershed encompasses most of the study area. The HONI Corridor's northernmost section, north of Anderson Road, is part of the Grande Presqu'île - Ottawa River Quaternary Watershed. The Bear Brook Grande Presqu'île - Ottawa River Watersheds are both part of the Tertiary South Nation River - Lower Ottawa River Watershed, Secondary Lower Ottawa River Watershed, and Primary Great Lakes - St. Lawrence River Watershed (MNRF PMU, 2022).

Many unevaluated wetlands are observed in the vicinity of the HONI Corridor, according to available Natural Heritage Mapping (MNRF, 2022), but none are mapped within the study area corridor itself.

Several watercourses cross the study area at various points. Several areas along the HONI Corridor appear to be regulated by the South Nation Conservation Authority (SNCA). The SNCA must approve any proposed development, interference, or alteration within a regulated area. Prior to beginning any work within wetland areas, hazardous lands, or regulated areas, the SNCA must be consulted and approved (SNCA, 2020).

The Smith Gooding Municipal Drain runs through the HONI Corridor about 70 meters north of Piperville Road. The municipal drain drains to an unnamed tributary of Bear Brook Creek in the southeast. Between Farmers Way and Thunder Road, four branches of an unnamed tributary of Bearbrook Creek run through the property. Bear Brook Creek is about 1.3 kilometers east of the proposed substation site's southern end. Ramsay Creek is about 0.8 km west of the north end of the substation site. The HONI Corridor is in the Greenbelt to the north of Leitrim Road.

During a meeting with SNCA in March 2023, from a desktop review SNCA confirmed that no watercourse appears to be affected by the footprint of the proposed facility at the preferred location. Moreover, no floodplain overlay has been observed in the vicinity of the proposed facility. This will be confirmed at the detailed design stage.

3.7.5.1 Groundwater Levels and Use

MECP water well records (WWR) within approximately 1500 m of the study area were searched and 196 wells were identified. The locations of some wells may not be accurate; however, the information provides a general understanding of the hydrogeology within the search area.

The major aquifer in the area confined by the overburden material is limestone bedrock. Some of the wells recorded as test holes (Well IDs: 1528445, 1528446, 1528447, and 1528448) indicate that water found depths at these wells are less than 1 m and that all these wells are 3 m or less in depths completed in the glaciomarine deposit, but these deposits are not expected at the site. Of the Fifty-four (54) water supply wells have been completed, with eighteen (18) completed in overburden and twenty-one (21) completed in bedrock. There are no details for the fifteen (15) wells completed in overburden or bedrock. The overburden wells' water depth ranges from 1.8 mbgs (81.1 masl elevation) at Well ID - 1527515 to 64.4 mbgs (12.8 masl elevation) at Well ID - 1501573. The water found depth in bedrock wells ranges from 24.6 mbgs (41.7 masl elevation) to 68.6 mbgs (12.6 masl elevation).

3.7.5.2 Groundwater Quality

Total suspended solids (TSS) will need to be treated because the nature of construction excavation is expected to result in a high load of TSS in the groundwater pumped from the study area.

3.7.6 Special Nature Areas or Significant Area of Natural and Scientific Interest

Special or designated natural areas are identified by federal or provincial agencies. The MNRF assigns ANSIs based on the existence of distinctive natural landscapes or features currently in existence that satisfy certain requirements as having life or earth science values related to preservation, research, or instruction. Municipalities can achieve this through legislation, policies, or approved management plans. These are the areas have special or unique values, which lead to conservation land initiatives. Such locations may have a variety of ecological, recreational, and aesthetically pleasing features and functions highly valued. From the environmental site assessment, it was confirmed that there are no ANSI within the study area.

3.7.7 Natural Heritage Features

3.7.7.1 Terrestrial Environment & Vegetation Cover

According to available Natural Heritage Mapping, forested areas surround the study area. (MNRF, 2022). Englobe conducted roadside field visits of the HONI Corridor in October 2022, and the vegetation cover across the region was determined using a review of recently available aerial photographs. The study area in general appears to have been cleared of all significant vegetation (i.e., trees) not to obstruct Hydro One operations. However, there appear to be several areas along the HONI Corridor with grass, wildflower, and/or shrub-like vegetation cover.

3.7.7.2 Wildlife

During the roadside Site visits along the HONI Corridor, no wildlife was observed. Because only roadside observations along the HONI Corridor were made, and habitat types were identified throughout the HONI Corridor. Although unconfirmed, habitat types include wildflower/meadow, wetland, and open space areas based on aerial photography and observations from roadside visits.

3.7.7.3 Species at Risk Screening

The NHIC database map is divided into 1km^2 grid squares across Ontario, and it lists known natural heritage features and SAR occurrences. Based on available NHIC mapping, the following natural/wildlife concentration areas were identified near the HONI Corridor:

- Anderson Road Natural Area;
- Leitrim Road (North of Hwy 417) Natural Area;
- Ramsayville Hemlock Forest; and
- Mixed Water Nesting Colony Wildlife Concentration Area.

Within the grid, observations of Wood Thrush, Snapping Turtle, Black Ash, and Butternut were made squares superimposed on the Site; however, the precise location of these observations cannot be confirmed. The observations could be in relation to other areas nearby. According to the NHIC records, there is the possibility of the above-mentioned SAR being at or near the Site. There is potential for the above-mentioned SAR to be at or in the vicinity of the Piperville site.

To address this potential for SAR, biologists from Englobe conducted follow up surveys for the SAR birds and bats outlined in Table 2, Section 2.5.2.2, of the EIS report (Appendix C). Bird point count surveys were conducted during three (3) mornings with suitable weather conditions. In addition, bat acoustical monitoring during three evenings with suitable weather conditions was also conducted in areas with potential bat habitat to determine if SAR bats are present. The EIS report was updated following the completion of surveys.

- Three (3) Bird Point count surveys were completed, and no SAR birds or nesting birds were discovered.
- Evening exit surveys were conducted using handheld acoustical monitoring and night vision goggles, and no SAR bats were found. Several non-SAR bat species were discovered, but none were observed leaving potential treed habitat (i.e. snag trees).
- Two (2) stationary acoustical monitors were installed on the site, one in the forest and one in the meadow. Acoustical monitoring was carried out over the course of five (5) evenings. During one evening in the meadow, three SAR calls were received. This was most likely one SAR bat foraging while passing through the Site. Several other non-SAR bat species were discovered.
- During the survey events, no additional SAR fauna or flora were observed.

3.7.7.3.1 Aquatic Species at Risk

No SAR or SAR critical habitat has been mapped within the HONI Corridor based on the Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Map.

3.7.7.3.2 Ontario Breeding Bird Atlas

According to available mapping records for SAR, the study area includes Least Bittern, Common Nighthawk, Whip-poor-will, Chimney Swift, Eastern Wood-Pewee, Bank Swallow, Barn Swallow, Wood Thrush, Canada Warbler, Bobolink, Eastern Meadowlark are among the species found in 18VR62. as well as the Evening Grosbeak. The exact location of these observations was not confirmed due to the presence of approximately 100 km^2 grid squares overlaying the Site. According to records from the Ontario Breeding Bird Atlas, the above-mentioned SAR may be present at or near the Site.

3.7.7.3.3 Ontario Butterfly Atlas

Based on available mapping, SAR observation records in the overlaying grid squares (18VR52 and 18VR62) include the Monarch Butterfly. It is to be noted, although the above records were observed within the two approximately 100 km^2 (each) grid squares overlaying the Site, the exact location of these observations was not confirmed. Based on the Ontario Butterfly Atlas records, there is the potential for the above-listed SAR to be present at or in the vicinity of the Site.

3.7.7.3.4 Ontario Reptile and Amphibian Atlas

Based on available mapping, SAR observation records in the overlaying grid squares (18VR52 and 18VR62) include Blanding's Turtle, Midland Painted Turtle, Snapping Turtle, and Western Chorus Frog. It is to be noted that the exact location of these observations was not confirmed. Based on the Ontario Reptile and Amphibian Atlas records, there is the potential for the above-listed SAR to be present at or in the vicinity of the Site.

3.7.7.3.5 Ontario Mammals Naturalist Range Maps

Based on available mapping, SAR ranges for Gray Fox, Eastern Small-footed Myotis, Little Brown Myotis, Tricolored Bat, and Northern Myotis overlay the HONI Corridor. Although the above SAR range maps overlay the Site, this does not mean suitable habitat exists on Site.

Table 2 below summarizes potential SAR present within the study area.

Table 2 : Summary of Potential SAR Present within the Study Area

Common Name	Scientific Name	ESA	SARA
Amphibians and Reptiles			
Blanding's Turtle	Emys blandingii	THR	END
Midland Painted Turtle	Chrysemys picta marginata	N/A	SC
Snapping Turtle	Chelydra serpentina	SC	SC
Western Chorus Frog	Pseudacris triseriata	N/A	THR
Birds			
Bank Swallow	Riparia riparia	THR	THR

Barn Swallow	Hirundo rustica	THR	THR
Bobolink	Dolichonyx oryzivorus	THR	THR
Canada Warbler	Cardellina canadensis	SC	THR
Chimney Swift	Chaetura pelagica	THR	THR
Common Nighthawk	Chordeiles minor	SC	THR
Eastern Meadowlark	Sturnella magna	THR	THR
Eastern Whip-poor-will	Antrostomus vociferus	THR	THR
Eastern Wood-Pewee	Contopus virens	SC	SC
Evening Grosbeak	Coccothraustes vespertinus	SC	SC
Least Bittern	Ixobrychus exilis	THR	THR
Wood Thrush	Hylocichla mustelina	SC	THR
Insects			
Monarch	Danaus plexippus	SC	SC
Mammals			
Eastern Small-footed Myotis	Myotis leibii	END	N/A
Gray Fox	Urocyon cinereoargenteus	THR	N/A
Little Brown Myotis	Myotis lucifugus	END	END
Northern Myotis	Myotis septentrionalis	END	END
Tricolored Bat	Perimyotis subflavus	END	END

Plants			
Butternut	Juglans cinerea	END	END
Black Ash	Fraxinus nigra	END as of January 26, 2022; protection deferred for up to 2 years.	N/A

Notes:

END = Endangered, N/A = Not Applicable (Not considered at Risk) , SC = Special Concern , THR = Threatened

3.7.7.3.6 Wetland, Watercourse and Fish Habitat

Based on available Natural Heritage Mapping (MNRF, 2022), an unevaluated wetland and watercourse connecting to the Smith Crowding Municipal Drain (MNRF, 2015) is present in the southeast section of the Piperville Site; however, no significant evidence of a wetland (e.g., standing water, permanent saturated ground, wetland indicator plant species, etc.) or any open water/fish habitat was observed during Englobe's Site visit on October 24, 2022, and several Site visits during August 2023.

No SNCA regulated areas or hazardous lands appear to exist within the Piperville Site boundary based on available mapping (SNCA, 2020); however, they do appear to exist immediately east of the Piperville Site boundary, within HONI Corridor lands.

3.7.7.3.7 Woodland

In accordance with the guidelines outlined in the Significant Wildlife Habitat Technical Guide (OMNR 2000) and the City of Ottawa Significant Woodlands Guideline (2018), the Ottawa East – Bearbrook rural planning area of the Piperville Site demonstrates a forest cover percentage of 29.9%. Upon evaluating this woodland cover percentage and considering the observed characteristics of the site through the rural assessment process, it is evident that the Piperville Site does not satisfy the criteria related to size, ecological function, or distinctive features as required for the classification of significant woodlands. (City of Ottawa; MNRF 2010.)

Although there is some forested area located to the southeast of the Site, it is crucial to note that the Site is predominantly surrounded by agricultural and residential development, as well as roadways. Consequently, it is improbable that the Site would serve as a significant wildlife movement corridor to connect with the larger natural areas mentioned above, especially when more suitable routes are available to the south, where human presence is less extensive.

3.7.8 Study Area Bedrock Geology

According to an analysis of the background mapping data, the study area is underlain, on a regional scale, by Pleistocene overburden sediments consisting of silt and clay deposited under quiet water basin environments on the west side of the study area and sand, gravelly sand, and gravel deposited as nearshore and beach deposits on the east side. Based on data retrieved from the MECP well records, the overburden deposit forms a thin veneer with an average thickness of 22.7 m, considering the water found depths and soil types encountered within the drilled well's depths. In the region where the bedrock valley has been identified, the overburden soil thickness is higher. The Pleistocene overburden is underlain by Carlsbad Formation Paleozoic shale and dolomitic limestone.

The bedrock identified in the area based on a review of the OBM database and the MECP Water Well Record database is Carlsbad Formation shale and dolomitic limestone. According to a review of MECP water well records, the bedrock surface is fractured and confined by overburden soils rich in clay and silts, and it is a major source of drinking water in the area.

3.7.9 Study Area Surficial Geology

According to a review of Ontario Geological Survey base mapping information, the surficial geological material on a regional scale is composed of Pleistocene glaciomarine deposits of sand, gravelly sand, and gravel deposited nearshore to beach environment and silt and clay deposited deep quiet water environment.

The proposed site is underlain by Pleistocene glaciomarine deposits of silt and clay deposited beneath a basin and quiet water environment. The proposed site is in the physiographic region of central lowlands, with the dominant feature identified as sand plains in the Ontario Base Mapping database.

Based on a review of MECP well record data, a north-south oriented bedrock valley (paleo-channel) feature has been identified. The valley is occupied by glaciomarine and marine deposits of silt and clay, which are typically deposited in deep and quiet water environments. The site is underlain by a clay-rich overburden deposit of approximately 25 m depth.

3.8 Study Area Recreational Resources

The study area has recreational resources including, but not limited to the Anderson Links Golf Course bounded between Leitrim Road to the north, Anderson Road to the west, Piperville Road to the south and the HONI Corridor to the east as well as Ludger Landry Park located along Piperville Road on the north side. The study area also has no cycling pathways and roads with cycle lanes.

3.9 Visual and aesthetic resources

This section comprises of the physical appearances of different landscapes and their susceptibility to change due to the imposition of transmission facilities.

Most of the proposed Project is anticipated to be located within an existing, previously disturbed transmission line corridor. However, there are some residences located along Piperville Road that have a view towards the proposed Project.

Based on background reviews, field work and consultation with stakeholders, it was determined that the proposed Project may potentially impact views at three areas within the Study Area including residences along Piperville Road that side onto the existing transmission HONI Corridor.

3.10 Study Area Biological Resources

A Phase One Environmental Site Assessment (ESA) was conducted to support a Class Environmental Assessment (EA) for a proposed municipal transformer station (MTS) in the east end of Ottawa. The Study area consists of the area along the existing HONI Corridor between Highway 417 to the north and Thunder Road to the south, and part of the residential property located at 5134 Piperville Road. The complete report can be found in Appendix C, but the findings are summarized below. There are no Environmentally Significant Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs) or provincially significant wetlands located on or adjacent to parcel off Anderson Road. The property to the north of Leitrim Road is in the Greenbelt. The Geenbelt is an area of biological protection that should be avoided for development.

3.11 Study Area Archaeological Resources

A Stage 1 Archaeological Assessment of the study area, including the three potential sites for the new transformer station, was performed. A Stage 1 Archaeological Assessment is a background review of surficial geology, post-glacial landscape evolution, historical land use, and the present condition of the property. It also reviews the Ministry of Culture data file on archaeological sites and previous archaeological studies in the study area. This Stage 1 assessment uses geographic terrain analysis to estimate the potential for pre-contact archaeological sites, while the potential for historical Euro-Canadian archaeological sites is determined through consideration of land tenure records, historical maps, and aerial photograph interpretation. A licensed archaeologist was commissioned to undertake this assessment and the complete Archeological Stage 1 and 2 Report can be found in Appendix C, but the significant findings are summarized below.

The results of the background research discussed by the archaeological consultant in the Archeological Stage 1 Report indicated that the study area exhibits potential for the presence of significant archaeological resources.

Accordingly, the archeological consultant recommended that the portions of the study area that have been determined to exhibit archaeological potential should be subject to Stage 2 archaeological assessment prior to the initiation of future below-grade soil disturbances or other alterations.

The Stage-2 field assessment was completed on June 6th, 2023, and it was conducted by means of a shovel test pit survey across all parts of the study area determined to retain archaeological potential. It is to be noted that archaeological resources of concern were not discovered during this survey.

3.12 Indigenous Communities

Hydro Ottawa contacted the Kitigan Zibi Anishinabeg, Ottawa Métis Council and the Algonquins of Ontario, in addition to multiple federal and provincial government agencies dealing with aboriginal issues. No specific interests or concerns, from the aboriginal communities, with respect to the study area and three potential sites for the new transformer station have been identified. See Sections 4.1.2 for additional information regarding the indigenous consultation process undertaken for this project.

4 Public & Agency Stakeholders Consultation

Consultation is a crucial part of the Environmental Assessment (EA) process to give people who might be interested in or possibly impacted by the proposed Project timely and sufficient information as well as opportunities to participate in the planning process. Through consultation, the proponent can also learn about social, cultural, economic, and environmental factors that are directly relevant to the project under consideration. It also gives them a way to inform and clarify the project's approach and value.

A public and agency stakeholder consultation program was instituted to ensure that the stakeholders were aware of what is being proposed and had an opportunity to provide input before final decisions were made. Hydro Ottawa developed a list comprised of provincial agencies, Indigenous communities, City of Ottawa, local conservation authority, community associations and Industry stakeholders. Moreover, during the review period, input obtained from the public and agency stakeholders will be considered by the study team and incorporated into the project where appropriate.

The consultation process throughout the class EA process is described in greater detail in the following sections, but included the following elements:

- Initial Notification;
- Notice of Commencement - Public Notices (Email, project website);
- Indigenous Communities;
- Provincial Government and Agency Consultation;
- Municipal Government and Local Agencies;
- Potentially affected and Interested Persons and Community Association; and
- Notice of Commencement - Public Open House Sessions (POHS).
- Draft ESR Review Period

4.1 Public Consultation

4.1.1 Initial Notifications

4.1.1.1 Hand-delivered Letters and Emails

To inform the community of the project and announce initial notification, a comprehensive list of stakeholders, refined by Hydro Ottawa, were notified by hand-delivered letters and email, which included the Notice of Commencement and a map of the study area.

4.1.1.2 Project Website

A specific, up-to-date project webpage on Hydro Ottawa's website was created and made accessible to the public. It contained details about the POHSs as well as a copy of the notice of commencement, a list of frequently asked questions, the anticipated project schedule, contact information, and a map of the study area. After the first and second POHS, the site was updated accordingly to include the presentation slides shown at the virtual and in-person sessions.

Project webpage: hydroottawa.com/piperville.

4.1.2 Indigenous Communities

Indigenous communities are subject to the Class EA process's consultation requirements. Notification of the proposed project was sent to the Algonquins of Ontario (AOO), the Ottawa Metis Council, and the Kitigan Zibi Anishinabeg (KZA) First Nation communities and related government agencies. Early in the project planning phase, this preliminary engagement activity was conducted to make sure Indigenous communities could offer feedback at a crucial juncture.

Hydro Ottawa initiated consultation by sending a notice of commencement and invitation to the first public open house via email to AOO and KZA on March 15, 2023, and March 16, 2023, respectively. A follow-up email was sent to AOO and KZA on April 14, 2023, to confirm receipt of the original notice, and reiterate the date and invitation to the public open house. Lastly, the Ottawa Metis Council was notified via email on March 16, 2023. At this time, there has been no response or comment on the project from these communities. Subsequently, the notice of completion and the draft ESR was provided on November 9th, 2023. The project team had not received any comments from the indigenous communities after the end of the review period.

The Piperville Project Team is committed to providing early, ongoing, clear and timely communications as the project continues to develop. A second public open house took place in November 2023, and provided further opportunities for feedback during the consultation process.

4.1.3 Provincial Government and Agencies Consultation

The following significant provincial government organizations were contacted as part of the proposed Project's consultation plan:

- Ministry of Environment, Conservation & Parks (MECP)
- Ministry of Indigenous Affairs (MIA)

By notifying the MECP for the project area of the project, the project team started pre-consultation. To ensure that the provincial government could offer feedback at a crucial juncture in project planning, this initial engagement activity was held early on. On March 16, 2023, Hydro Ottawa sent a project notification letter to government agencies, starting the official consultation process. The Notice of Commencement and an invitation to attend the first POHS were included in the project notification. They also received an invitation to the second POHS.

4.1.4 Municipal government and Agencies Consultation

The following significant municipal government organizations were contacted as part of the proposed Project's consultation plan:

- City of Ottawa; Council and Administration
- City of Ottawa; Department of Planning and Building Services

- South Nation Conservation Authority (SNCA)

Through the Notice of Commencement on March 16, 2023, the project team officially began consulting with the city planning department. On March 10, 2023, project area councilor George Darouze received an email containing the Notice of Commencement and an invitation to the first POHS. On March 27, 2023, members of Hydro Ottawa's project team met with councilor Darouze to provide a presentation and overview of the project. The city of Ottawa, department of planning also received an invitation to the second POHS.

The Notice of Commencement was sent by Hydro Ottawa to the SNCA on March 16, 2023 and April 14, 2023. The email included the notice of commencement and the project study area. Moreover, during a meeting with SNCA in March 2023, from a desktop review SNCA confirmed that no watercourse appears to be affected by the footprint of the proposed facility at the preferred location. Moreover, no floodplain overlay has been observed in the vicinity of the proposed facility. This will be confirmed at the detailed design stage. They also received an invitation to the second POHS.

4.1.5 Potentially affected and Interested Persons and Community Association

Throughout the project, emails were sent to owners of residential, commercial, and industrial properties as well as to nearby residents who might be impacted by the proposed project. To receive updates on the project, the interested parties were also urged by the project team to subscribe to the project email list. The following significant community association was contacted as part of the proposed Project's consultation plan:

- Carlsbad Springs Community Association

At the end of this section, table 3 summarizing the key issues and concerns raised by potentially affected and interested individuals, businesses, and interest groups throughout the consultation process is provided. The table summarizes efforts to address concerns and mitigate potential consequences, as well as commitments made.

Hydro Ottawa met with adjacent property owners to discuss the impact of the project and identified vegetation screening as their commonly preferred mitigation measures.

4.1.6 Public Open House Sessions

The purpose of these Public Open House Sessions (POHSs) is to provide an opportunity to learn more about the project and the Class EA process, as well as provide feedback and discuss questions or concerns with our project team. During EA process, the first POHS was held in the month of April, both virtually and in-person.

First Public Open House Session

On April 20th, 2023, the project team hosted one round of POHS for the proposed project. The virtual session was held on April 20th, 2023, from 12:00 PM to 1:00 PM via GoTo Webinar. While an in-person session was held on the same day from 7:00 PM to 9:00 PM at Anderson Links Golf Course at 4175

Anderson Road in Ottawa. The Anderson Links Golf Course is located approximately 3.8 km northwest of the project study area.

A set of thirteen (13) informative displays in English and French were set up to allow attendees to obtain information about the proposed project and to allow for one-on-one discussions with the project team. The displays are provided in Appendix B and included information about the following:

1. Information on the proposed Project location;
2. How electricity is delivered in the community;
3. Graphics showing the proposed new MTS station and transmission structures;
4. Why the station is necessary?
5. How the project would benefit the community;
6. Project timelines;
7. Summary of the proposed municipal transformer station;
8. Criteria for site/connection selection;
9. Layout map showing study area and proposed site location;
10. Considerations when rebuilding the transmission line;
11. Overview of the need for the proposed Project;
12. Overview of the Class EA process including other approvals;
13. Details on the environmental planning process; and
14. Electro Magnetic Fields.

In total, five residents attended the virtual information session, while 10 residents attended the in-person session. As a result, four surveys/feedback forms were completed after the virtual event concluded. There were no feedback forms completed at the in-person session.

Since the first open house, the project team has received 19 separate email communications from six residents seeking additional information and clarification about the project. These inquiries ranged from requests to be included on the project's mailing list for future communications, to health and radiation concerns, to tree cutting and the location and proximity of the station to existing homes in the area.

At the in-person open house, in addition to the display boards, large table-top maps of the study area were placed on tables in the centre of the room. Discussions centered on what could be expected during the construction phase of the proposed project, as well as the activities and mitigation measures.

Project team representatives included Hydro Ottawa and EXP project managers, community relations representatives, and subject matter experts. All representatives were on hand to answer questions, have discussions with participants, and to listen to participants' input and concerns. Comment forms were also available to provide attendees with the opportunity to record comments and/or concerns and to provide feedback.

Second Public Open House Session

On November 30, 2023, at 12:00 PM, Hydro Ottawa held a virtual session of the second public open house session. Thirteen (13) people attended the virtual session in total, including six (6) panelists—two each from Hydro Ottawa, Hydro One and EXP Services Inc. and seven (7) attendees.

Hydro Ottawa inaugurated the webinar, and the presentation was shared. Recognizing the project's energy partners kicked off the presentation. The necessity of building the station in the southeast of Ottawa was reaffirmed by Hydro Ottawa. Benefits to the community were discussed, and a proposal example was provided. The project area map that was distributed during the first open house sessions was displayed. Then, Hydro One provided details regarding the process of connecting the transmission line to the suggested substation. Finally, the participants were explained the environmental assessment process and the results of conducted studies.

Hydro Ottawa emphasized the importance of community engagement throughout the entire process and assured that all concerns would be taken into consideration. The participants were encouraged to provide feedback and ask questions regarding the proposed municipal transformer station and its potential impact on the community. During the questions and answer session Hydro Ottawa confirmed that the zoning by-law amendment application was approved by the city, which will refrain the severed property use from being it redeveloped as a rural residential parcel. Two participants raised few questions as following:

- What is the decision on the zoning by-law application?
- What would be the impact of potential fire hazards due to the proposed substation in the community?
- How the impacts on property values, species at risk will be mitigated?
- How is Hydro Ottawa going to proceed with calls for a SAR bat passing by the site from the evening bat surveys conducted and mentioned in the environmental impact statement report?
- What is the setback between the proposed substation to the edge of the property line on the Piperville Road?

On November 30, 2023, from 7 to 9 p.m., Hydro Ottawa hosted the second open house in person session at the Anderson Golf Links in Carlsbad Springs. Twelve (12) members of the project team as well as three (3) attendees of the local community were present in total.

A dedicated television display was set up to show the presentation slides which were presented during the virtual session at noon. Hydro Ottawa had displayed four panels per each official language (English and French) reiterating the need of a new substation in the study area, the class EA process, information on vegetation, whereas three four panels (in English and French) were from Hydro One, which not only depicted the construction area for Hydro One to establish a connection from the transmission line to the proposed substation at 5134 Piperville Road, but also shared information on possible structures in the vicinity of Hydro One's construction area and further steps to be taken from Hydro One.

The presentation slides that were given during the virtual session at noon were set up on a dedicated television display. Hydro Ottawa had displayed four panels in each of the official languages, English and French, defining the need identified in the IRRP (2020) for a new substation in the southeast are of the city, the class EA process, and information on vegetation. Hydro One displayed four panels in both English and French that not only showed the construction area (shown in blue shade) where they plan to connect the transmission line to the proposed substation at 5134 Piperville Road, but also provided information on potential structures in the vicinity of Hydro One's construction area.

The participants were encouraged to provide feedback and ask questions regarding the proposed municipal transformer station. The questions raised during the open house are as following:

- Why now and why here? Why was this the study area selected for the proposed substation?
- How will this project bring resiliency in the community?
- How the impacts from noise emitting transformer, aesthetics that will likely to be generated due to this proposed substation be mitigated?
- Will there be an effect on the ability to add solar generation or battery storage systems in the area?
- What are the risks associated with fire breakout from the transformer and how typically it is mitigated?
- Is this project having any links to the recent tree clearing activity for a residential project from Tewin group in the neighborhood community?
- How the impact on the woodland clearing the trees will be mitigated? In response, is there a possibility of sharing numbers of trees to be replanted?
- Will there be any power outages while establishing the connection to the transmission line?
- Given that the proposed substation has been constructed, will this area be less likely to experience power outages for longer periods?
- Participants mentioned if battery energy storage systems (BESS) were part of this project?

Five (5) attendees completed the survey forms. The survey results were positive as the respondents reported feeling satisfied with the way the session went, being heard, and getting thorough explanations from the subject matter experts on several specific questions except for one concerned attendee. The latter felt that they did not get satisfactory answers regarding decreases to property values, the real dangers of EMR (according to latest research), the current dangers of transformer stations (How Toronto Hydro is decommissioning those beside residences) while Hydro Ottawa is trying to build one, and concerns that the environmental assessment was inadequate and was not thoroughly carried out when the Monarchs were in the area, was simply for a roadside visit at the wrong time of year, etc. (not even enough space to list all).

A copy of the comment form is provided in Appendix B.

Following the POHS, the displays were posted on the project webpage.

Final ESR Public Review and Response

This Final Environmental Study Report was completed in accordance with the *Class Environmental Assessment for Minor Transmission Facilities 2022* and was made available for the general public and stakeholder's review and comments for a period of 31 days from November 9th, 2023 to December 10th, 2023. Hydro Ottawa had posted the report on its webpage and printed copies were provided at the following locations:

Hydro Ottawa – Hunt Club Office

2711 Hunt Club Road, Ottawa, ON
K1G 5Z9

Greely – Public Library

1448 Meadow Dr, Ottawa, ON
K4P 1B1

4.2 Statement of Completion

During the 31-day review period, the project team integrated all pertinent feedback received into the report. It is important to highlight that there were no requests for Part II Orders during this process.

The conclusive Environmental Study Report (ESR) has been made publicly accessible on the project website and has been transmitted to both the Environmental Assessment and Approvals Branch at the Ministry of the Environment, Conservation and Parks (MECP) and the relevant Regional EA Coordinator. The project team has formally submitted a Statement of Completion, accompanied by the finalized ESR, to the MECP. For reference, a copy of the Statement of Completion is appended in Appendix B10.

4.3 Summary of Key Questions and Responses

Table 3 below summarizes the key issues and concerns raised throughout the consultation process. This summarizes information received through the open houses, in person consultation, email correspondence, and phone communication from varied stakeholders.

Table 3: Summary of Key Questions and Responses

<table>
<tr><th>Category</th><th>Questions/Inquiries</th><th>Project Team Responses</th></tr>
<tr><td colspan="3">Class EA Process</td></tr>
<tr><td>Class EA</td><td>Can the purchase from Hydro Ottawa Ltd. occur prior to a Class EA approval process and the completion of an EIS or equivalent study? If so, what happens if it fails these studies? If it passes then what timeline looks like?</td><td>The purchase and sale agreement for the land located on Piperville Road has been structured so that it is conditional on the approval of the Class Environmental Assessment (Class EA). If the Class EA is not approved, then Hydro Ottawa will explore alternative land options for its proposed MTS. However, if the Class EA is approved, then the general construction timeline would include:
preliminary site work starting in the winter to the spring of 2024.
the main construction of the substation, power lines, security fencing and screening starting during the summer of 2024. This stage is expected to last approximately two years.</td></tr>
<tr><td>Consideration of other locations</td><td>Is HOL considering other local properties adjacent to Ontario Hydro towers? If yes, why not to consider Anderson Road near 417 exit, as less population lives there?</td><td>A study area for the new MTS site has been determined within the growth area. However, alternative sites for the new station have been identified based on a number of criteria which will be evaluated during the Class Environmental Assessment process, such as environmental, technical, socio-economic and public input in order to determine a preferred site.

When the need was first identified for the station, three locations were selected as possibilities due to their close proximity to the existing HONI Corridor and the available connection points to Hydro One’s 230kV line.

Hydro Ottawa examined many other locations for the station, but they were either not technically or environmentally suitable, or simply not commercially available. The lot near the intersection of Piperville Road and Farmers Way was the only property available for purchase.</td></tr>
</table>

Natural Environment		
Wildlife, SAR	What about wildlife and SAR impact in that area?	Based upon the studies conducted EIS in Appendix C, no adverse effect is anticipated on wildlife. Trees will be cleared and a small loss of habitat, but no significant impact is anticipated. No impact on SAR such as Monarch butterflies, migratory birds.
Species at Risk	In EIS, it was mentioned that one SAR bat was recorded during the evening bat survey, how Hydro Ottawa is going to proceed with that?	More than adequate field research was conducted for this project and followed standard practices for environmental impact studies. An Englobe biologist conducted background research for the Site and surrounding area prior to an October Site visit. Follow up SAR field surveys for the Piperville Site were conducted in August 2023, including three (3) bird point count surveys, three (3) Species at Risk (SAR) transect surveys, and three (3) evening surveys for bats, including acoustical monitoring and exit surveys. Additional bird nesting and bat habitat assessments were conducted prior to vegetation clearing for borehole installations to ensure no birds or bats were directly impacted from vegetation removal. Proposed avoidance and mitigation measures to minimize impacts to SAR and wildlife are included in the ESR.
Vegetation	City trees and environment team: can you build the station as close to the road as possible, to minimize clearing mature trees at rear of property? Neighbours: can you build the station as far back as possible to improve aesthetics on the street?	Hydro Ottawa will explore the siting and setback of the station to minimize the clearing of mature trees at the rear of the property and improve aesthetics on Piperville Road.
Impacts due to the preferred location for new MTS		
Traffic Impacts	Piperville Road is currently stressed with the number of trucks & the city buses. How will this be addressed to mitigate the additional traffic during & after the construction of this	During the construction phase of the project, local residents may see various types and frequencies of construction traffic depending on the stage of the construction. That being said, there will not be a sustained long-term traffic impact associated with the MTS project. Once operational, traffic generated by the MTS will generally be limited to a monthly site visit by a technician since the station will be remotely monitored. During major weather events, required maintenance or other related system needs, the station may be visited more frequently depending on

	station?	Hydro Ottawa's need as part of our commitment to deliver safe, and reliable electricity to our customers.
Noise Impacts	Will the project be loud or cause disruptive noise?	With regards to noise, residents will notice increased construction presence throughout the duration of the project, including excavation activities and construction vehicles. Traffic control, lane reductions and sidewalk closures will be implemented when required to ensure that roads, sidewalks and driveways remain as accessible and safe to residents and staff as possible. Understanding that any construction activities can be very disruptive, we want to assure you that all construction activities and any possible power interruptions will be scheduled and planned very carefully. Further, to ensure the safety of the public and our crews as a result of the work required for this project, the majority of the work will be completed weekdays between 7:00 a.m. and 5:00 p.m., and in accordance with City of Ottawa noise by-law. Appropriate noise attenuation measures will be taken for noise emitting from transformer to ensure the site complies with the noise by-law.
Noise Impacts	How the "buzzing" noise generated from the transformers will be mitigated?	A tabletop site layout map showing the proposed municipal transformer station along the Piperville road was shared and it was explained that a noise study will be conducted during the design stage to assess the noise levels at each receptor within the study area. Appropriate mitigation measures such as constructing a berm or constructing a noise barrier wall around the transformer itself will be considered in the design stage.
Health Impacts; Electric and Magnetic Fields (EMF) / Radiation	Regards to potential EMF/ELF/Radiation exposure. How will this be addressed for those residing in proximity to this site?	Electric and magnetic fields (EMFs) / radiation are invisible forces that surround all electrical appliances and equipment, power cords and wiring, and outdoor power lines and equipment operated by utility companies. These fields are at extremely low frequency. The field strength is strongest close to its source and fades rapidly as you move away from the source. Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at extremely low frequencies. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors.
Visual & Aesthetic Impact	What proactive measures will be taken to address impacts on appearance of the site and views from adjacent residential properties?	Hydro Ottawa ensures that mitigation measures will be implemented in accordance with the recommendations of the Class EA, which will include input from the local community. There could include, for example, tree planting, vegetation buffers, decorative / community friendly fencing and/or an earth berm along the frontage of the site to visually mask the MTS, and to dampen operational noise and vibration. Hydro Ottawa has heard from numerous community members and neighbours in

		support of vegetation screening as the preferred visual mitigation.
Property Values	What will be the impact on the property values?	Regarding property values, transformer stations are in neighbourhoods across our service territory. Like hydro poles, many residents rarely notice them anymore, as they become a part of the background of our neighborhoods. Hydro Ottawa takes care to respect the aesthetic of communities as much as possible, based on recommendations from our Class Environmental Assessment and community input. As mentioned at POHS information sessions, this could include tree planting, decorative fencing, situating the station further into the property, etc. A reliable and safe supply of electricity can be considered a positive attribute for the area, and for property values, in addition to the local development it supports.
Fire Hazards	What are the fire hazards from the transformers?	HOL understands that power transformers can fail. Several mitigation measures will be incorporated into the design such as containment of the transformer and setback to vegetation to reduce the risk of fire outside the station property or to adjacent homeowners' properties.
Woodland / Tree Clearing	How the impact on the woodland clearing will be mitigated? In response, is there a possibility of sharing numbers of trees to be replanted?	The design will include mitigation measures recommended by the EIS, such as removing trees during less sensitive seasons for local species. More information about the trees to be replanted will be shared as the design progresses.
Power Disruptions / Outages	Will there be any power outages while establishing the connection to the transmission line? Given that the proposed substation has been constructed, will this area be less likely to experience power outages for longer periods?	There could be minor power disruptions in 2026 while establishing a connection of the proposed MTS to the exiting local power grid.

Need of a Substation / BESS / Resident Solar Power Generation		
Need for a substation	Why now and why here the study area is selected for the proposed substation?	The need for a new substation in the southeast area of the city was identified in the 2020 IRRP. The report recommended Hydro Ottawa to initiate a planning process to solve an immediate need for a new substation for this area. The Hydro Ottawa planning team shared that the existing substations near the area are running beyond their planning capacity. Hydro Ottawa outlined a study area, and the Class EA process was initiated. By a thorough review of the studies conducted in accordance with Class EA process and based upon availability of willing sellers the project site at 5134 Piperville Road was the preferred option.
Battery Energy Storage Systems (BESS)	Participants mentioned if battery energy storage systems (BESS) were part of this project?	HOL indicated that BESS were not part of this project.
Resident Solar Power Generation	Will there be an effect on the generation capacity to the solar power producing households?	HOL pointed out that there will be no effect.
Resiliency		
Resiliency to the community	How will this project bring resiliency in the community?	Implementing this substation in the area shows Hydro Ottawa's commitment to build resiliency in its power grid to recover power rapidly and protect customers from prolonged outages caused by extreme-weather events such as severe storms and tornados.
Nearby Residential Project		
Nearby Residential Project	Is this project having any links to the recent tree clearing activity for a residential project from Tewin project in the neighborhood community?	HOL stated that the station is not being built for the nearby residential project. The project need was identified a long time ago in the 2020 IRRP, it is necessary today as the existing stations are above its planned rating capacity. However, Hol will supply power to that community.

5 Alternative Methods

This section describes the reasonable alternative methods for carrying out the proposed Project. Alternative methods refer to different means of carrying out the same task to achieve the purpose of the undertaking (e.g., different sites). Potential alternative methods are identified based on presence of environmental features, technical and cost factors, and input received during the consultation process, and follow the recommendations of the IRRP. Following the identification of alternative methods for the undertaking, evaluation criteria are established, and evaluation and selection of the preferred alternative occurs.

5.1 Alternative 1: Do nothing

Since this alternative ignores the region's need for greater transformation capacity, this alternative is not viable.

5.2 Alternative 2: New Dual Element Spot Network (DESN) at Hawthorne TS

In this alternative, a new DESN station would be built at Hawthorne TS. The outbound path of the station's feeder is considerably congested due to the presence of a substantial volume of lines and feeders. Additionally, the extended geographical positioning of the load is expected to result in longer feeder runs. While this alternative was taken into deliberation by the Working Group, it was ultimately dismissed based on the outlined rationale.

5.3 Alternative 3: Expanding Leitrim MS or supplying a new 44 kV/27.6 kV station from Hawthorne TS

An upgraded station, Hawthorne TS, which supplies Leitrim MS, if forecasted to be exceed the station LMC by 2027. A significant proportion of the anticipated demand growth is anticipated to be carried by Leitrim MS. As a result, shifting this demand away from Leitrim MS and Hawthorne TS eliminates the need to increase supply capacity there. Therefore, it is unlikely to be practical to increase the 27.6 kV supply's capacity in southeast Ottawa through the expansion of Leitrim MS or the construction of a new 44 kV/27.6 kV station originating from Hawthorne TS.

5.4 Alternative 4: Non-Wires Alternatives

To lower the anticipated demand in the region, the Working Group looked at the viability of implementing non-wires resources. The most economical bundle of non-wires options is compared in the table below. These included new generating facilities in the region, simple cycle gas turbines (SCGT), demand response (DR), and energy efficiency (EE) initiatives. However, the results of the NPV assessment for the Southeast Ottawa area show that most of the costs associated with non-wires alternatives would need to be covered by funding sources other than local value. Therefore, it is prudent for the Working Group to keep in mind a new transformer station as the most cost-effective long-term solution since the likelihood of full cost recovery for the non-wires options appears to be low. Table-4 below, summarizes the non-wire options consideration and NPV assessment.

Table 4 : NPV Assessment Summary for Non-Wires Alternatives (IRRP, 2020)

Option	Cost (2019 $CAD, millions)	Local Value (2019 $CAD, millions)	Remaining Costs to be Recovered (2019 $ CAD, millions)
35 MW of SCGT	151	39	112
Package of solutions: -25 MW of SCGT -4.5 MW of DR - 7 MW of system cost-effective EE	93	39	54

5.5 Alternative 5: New Station on Circuit L24A

The prospect of building the new municipal transformer station 27.6kV on the 230kV circuit L24A allows Hydro Ottawa to further interconnect their distribution network in the area and provide greater supply diversity to new loads. Following the addition of the new MTS on circuit L24A, the revised loading for the stations in the area is provided below. Among all options, seeking approval and beginning construction on a new MTS is the preferred option. This preferred option not only improves the local distribution network, but it also improves the reliability and efficiency of power supply to new loads. Furthermore, building a new MTS on circuit L24A aligns with Hydro Ottawa's long-term goals of modernizing and expanding infrastructure to meet the growing demand.

Table 5 : Transformation Capacity in South East Area - After upgrades and new L24A station (IRRP 2020)

Station	LTR (MW)	2020	2022	2025 (1)	2023	2037
Limebank MTS	89.1 (2)	61.2	70.3	65.3	89.1	94.1
Uplands MTS	54.0 (3)	32.2	39.9	45.9	49.1	52.2
Leitrim MS 9 from Hawthorne TS)	22.5	30.4	34.5	4.9	10.9	16.3
New L24A station	TBD	0	0	40.1	46.5	52.8

Reference: IRRP 2020, Appendix A

5.6 Preferred Alternative to construct a new municipal transformer station on circuit L24A

According to the IRRP 2020 and Regional Infrastrutre Plan for Greater Ottawa, it was recommended to construct a new municipal transformer station on the existing hydro transmission corridor L24A. This preferred option not only improves the local distribution network, but also enhances the reliability and efficiency of power supply to new loads. This station will provide a new supply point in a growing area of the city that is more than 10 kilometers away from the existing supply stations, reducing distribution distances for customers. The design of the MTS will be similar to other projects that the Hydro Ottawa team has completed in the past.

Table 6 below lists general factors considered during the initial assessment of substitute identification.

Table 6 : General factors considered during initial assessment and site substitution identification

Factor	Consideration
Natural	• Minimizing impacts on the natural environment including noise, air, wetland, surface watercourses, woodland, SAR, wildlife, area of natural significance and other environmentally sensitive areas • Minimizing impacts to groundwater resources and reduce potential for effects to significant aquatic habitat and vegetation
Socio-economic	• Ensuring maximum compliance with local land use policy. • Reduce incompatibility with existing sensitive land uses (for example, First Nation reserves, residential and built-up areas, environmental protection zones, agricultural lands, forest management areas, mineral areas, and landfills). • Reduce potential disruption to adjacent residences (and traditional lands, if applicable) that may be impacted by construction activities. • Reduce potential disruption to adjacent commercial and industrial properties that may be impacted by construction activities. • Increase the separation from resources related to cultural heritage (landscapes, buildings, and archaeology).
Technical and Cost Factors	• Locating the cost-effective options • Finding options with ease access to roads • Minimizing use of congested area for MTS construction • Proximity to the existing HONI Corridor • Easiness of site availability for purchase • Tree Clearing and access & Construction cost and maintenance

6 Site Locations Evaluation

Each site location was analyzed and ranked in accordance with three main areas of evaluation, including:

- Potential natural environmental impacts;
- Socio Economics Environment;
- Technical and cost constraints.

The main areas of evaluation are explained in detail below.

6.1 Summary of Site Location Advantages & Disadvantages

The following sections provide a more descriptive summary of the advantages and the disadvantages of the three site locations.

6.1.1 Site Location 1 – Parcel at 3925 Anderson Road

Advantages:

- The site is relatively flat.
- There was a potential, but no archeological resources of cultural heritage value or interest were discovered during the consecutive archeological assessments.
- The site is adjacent to the existing HONI Corridor.

Disadvantages:

- Mostly agricultural land was observed owned by Anderson Turf Farm Limited.
- The site was observed with PCA #40 from the environmental site assessment carried out in September 2022.
- This site is zoned as Environment Protection Zone and is a part of Greenbelt, which is owned by the NCC.
- No parcel of land was available to purchase.

6.1.2 Site Location 2 – Parcel at 5134 Piperville Road

Advantages:

- The proposed construction activity at the substation site has low potential to impact or alter the hydrogeological characteristics and function (groundwater and surface water interactions) of the environmental framework in the area. High volume dewatering pumping is not predicted which has the potential to impact environmental receptors (shallow water wells, sensitive natural environmental features) within immediate vicinity of the site. Since the proposed activities at the site will be limited to shallow depths (assuming less then 5m from the existing ground surface) there is adequate protective soil layer (thickness of more than 20m) above the regional confined bedrock aquifer that the groundwater resources will not be impacted.

- During the consecutive archeological assessments, no archeological resources of cultural heritage value or interest were discovered.
- No significant and/or sensitive natural features were present on the site.
- The site is adjacent to the existing HONI transmission corridor.
- Despite the south side of the site being dense woodlot area, the site is not classified as a significant woodland.
- It is unlikely the site where the substation is proposed would be utilized by animals as significant movement corridors to the large natural areas when more suitable routes are located to the south where fewer humans are present.
- The site was available to purchase.
- The site has been partially cleared and is relatively flat.
- Public acceptance for the construction of the transformer station on this site is moderate.

Disadvantages:

- The south side area of the site has dense woodlot area.
- Local residents expressed concern including health concerns from electro-magnetic fields (EMF), the potential devaluation of their properties, the potential noise associated with the transformer station.

6.1.3 Site Location 3 - Thunder Road

Advantages:

- The site is relatively flat.
- The site is adjacent to the existing HONI Corridor.

Disadvantages:

- No parcel of land was available to purchase.

6.2 Site Evaluation Criteria

The site selection process included completing a comparative quantitative and qualitative evaluation. The purpose of the evaluation was to identify a preferred site for the new municipal transformer station which satisfies the main criteria such as severity of impact on natural environment, socio-economic environment, technical and cost factors. Lastly, net effects will be addressed in the environmental evaluation by considering residual effects after mitigation is considered. The table-7 below depicts site evaluation criteria.

Table 7 : Site Location Evaluation Criteria

Criteria Category	Evaluation Criteria
Natural Environment	• Potential impacts on the natural environment including noise, air, wetland, surface watercourses, woodland, SAR, wildlife, and other environmentally sensitive areas
Socio-Economic Environment	• Compatibility with current land use and compatibility with future land use • Potential for disturbing the neighbors and clashing with the landscape's aesthetics • Potential conflicts with archeological discoveries
Technical and Cost Factors	• Proximity to the existing HONI Corridor • Ease of construction based upon existing geology • Ease of construction and maintenance/operation • Easy access to the roads • Environmental Risk Mitigation • Availability if suitable property and acquisition • Tree Clearing and access • Construction cost and maintenance

6.3 Site Evaluation Results and the Decision on Preferred Site

The preferred site is a parcel at Site Location 2 (5134 Piperville Road) considering all three main areas of interest (potential environmental impacts, technical considerations, and economic considerations). This site has the most advantages and the least disadvantages. Some of the key advantages of this site include non-agricultural land, privately owned, not part of the Greenbelt, no SAR presence and land available to purchase for the transformer station development. Table 8 below reflects the evaluation completed for the portion of the proposed Project.

Table 8 : Detailed Evaluation of Potential Sites

Evaluation Criteria	Site Location 1 Parcel at 3925 Anderson Road	Site Location 3 Thunder Road	Site Location 2 Parcel at 5134 Piperville Road
Natural Environment			
Watercourse Crossing per site (Numbers)	0	0	0[1]
Wetlands Concentration (Low, Moderate, Excessive)	Excessive	Moderate	Low
Area of Special Natural Environment (Yes/No)	No	No	No
Agricultural Land (Yes/No)	No	Yes	No
Vegetation Concentration (Low, Moderate, Excessive)	Excessive	Moderate	Moderate (the northeast and central portion)
Species at Risk (Potential / Not)	Potential	Potential	Potential but no SAR were observed upon field survey
Environmentally Protected Zone (Yes/No)	Yes	No	No
Socio-Economic Environment			
Potential Conflict with Archeological Findings (Yes/No)	No	No	No
Adjacent Residential Properties (#)	0	5	4
Adjacent Commercial, Industrial area	0	0	0

(#)			
Adjacent Recreational Resources (#)	0	1	0
Adjacent Institutional (Schools, hospitals, Monastery)	0	0	0
Aesthetic Concerns from residents (Yes/No)	No	Yes	Yes
Technical and Cost Factors			
Proximity to the HONI existing transmission corridor and demand growth (good/bad)	Good	Good	Good
Acquisition Availability if suitable property (Available/ Not available)	Not available	Not Available	Available
Tree Clearing and access	Excessive Clearing	Low Clearing	Moderate Clearing
Ease of road access (Yes/No)	Yes	Yes	Yes
Is it Feasible of construction based upon existing geology (Yes/No)	Yes	Yes	Yes
Ease of construction and maintenance/operation (Easy/complicated)	Easy	Easy	Easy
Federal land/Conflict in acquisition of land(Yes/No)	Yes	Yes	No

1 - There is a watercourse crossing the southeast portion of 5134 Piperville Road, however this is part of the retained parcel, not the parcel proposed to be severed for the station property.

Table 9 summarizes the overall ranking of the three potential site locations for the new municipal transformer station.

Table 9 : Summarizing the Ranking of the Three Potential Site Locations

Rank	Site Location	Description
1	2	Parcel at 5134 Piperville Road
2	3	Thunder Road
3	1	Parcel at 3925 Anderson Road

6.3.1 Preferred Site Location in the Study Area:

Based on the evaluation of the site locations shown in the above table, a parcel of land at Site location 2 (5134 Piperville Road) was determined to be the best location for building a new municipal transformer station with a capacity of 27.6 kV.

In summary, to accommodate the footprint of a new MTS, this parcel of land at Site location 2 will require some woodland and vegetation clearance. It is recommended that Site clearing take place outside of the breeding bird and bat season (April – end of October).

Moreover, during a meeting with SNCA in March 2023, from a desktop review SNCA confirmed that no watercourse appears to be affected by the footprint of the proposed facility at the preferred location. Moreover, no floodplain overlay has been observed in the vicinity of the proposed facility. This will be confirmed at the detailed design stage.

According to the recommendation made in the IRRP 2020, Site location 2 has been chosen as the preferred option to support the growth in demand in southeast of the City of Ottawa. The benefits that Site location 2 offers over the other two site locations are as follows:

- Site does not have a floodplain overlay, confirmed from SNCA.
- The property had been developed as a hydro transmission corridor, circa 1957. Therefore, it avoids interference with current and future land use.
- Given the project's non-intrusive nature and future substation operations, the proposed substation is not anticipated to cause any adverse effect on the nearby soils or landforms.
- Given the project's non-intrusive nature and future substation operations, the impact on nearby natural environmental areas such as wetlands, woodlands, and watercourses will be minimal.
- It is unlikely the site where the substation is proposed would be utilized by animals as significant movement corridors to the large natural areas when more suitable routes are located to the south where fewer humans are present.
- It is not a part of the Greenbelt and it is not zoned as agricultural land

- Site provides largely unsuitable habitat for the SAR of concern, moreover no presence of SAR birds, insects, animals, plants, or aquatic habitat was recorded during the field survey in August 2023.
- Offers adequate construction working space.

7 Project Description and Schedule

The section below summarizes the description of the proposed project including detailed design phase, pre-construction, construction, and operation & maintenance phase.

7.1 New 27.6 kV Municipal Transformer Station

The description of the proposed MTS has been described in sub-section 1.2.2.

7.2 Detailed Design, Construction Phase & Maintenance Phase

The proposed Project and related design work will go through detailed engineering and design after the Class EA process is finished. The findings of a geotechnical assessment will serve as the basis for the final design plans, which will be created after discussions with the stakeholders.

Hydro Ottawa will provide guidance for both construction and maintenance. The MTS will be maintained in accordance with Hydro Ottawa's maintenance guidelines. To reduce any risks or electrical system interruptions, Hydro Ottawa will also make sure that all applicable safety laws and industry standards are followed.

7.3 Project Schedule

Following the successful completion of the approval process, pre-construction planning will be initiated in early 2024, with construction of these new facilities expected to begin in mid-2024 and be completed by 2026.

8 Impact Management and Mitigation Measures

This section contains a summary of the potential impacts that may occur during the construction and operation of the transformer station on the preferred site, and recommended impact management and mitigation measures that may be employed to reduce these potential impacts and address public concerns.

The project team has experience working on other similar projects, and the possible environmental effects of building and operating the proposed project are well known. With a proven track record of environmental compliance and stewardship, the project team is dedicated to completing a thorough environmental and social analysis as well as mitigating any potential environmental effects.

Table 10 documents the interaction between project activities, their potential effects, the proposed mitigation measures, and the resulting residual effects.

Table 10 : Interaction between type of impact, their potential effects, the proposed mitigation measures, and the resulting residual effects

Category	Potential Effects	Proposed Mitigation	Net (Residual) Effect
		Short Term Effects	
Air Quality and Noise (construction)	There is the potential for noise, dust and air pollutant emissions related to construction activities	Noise levels will be monitored, and efforts will be made to conform to municipal noise bylaws. Construction equipment will be maintained and monitored to ensure that their operation conforms to normal parameters. Dust suppression measures will be implemented at the construction site.	No long-term residual effects are predicted.
Traffic Disruption	There is the potential for minor traffic disruptions during the construction of the station due to the movement of large trucks and construction equipment.	A traffic management plan will be developed to minimize traffic disruption.	No long-term residual effects are predicted.

Waste Creation	There is the potential for the generation of waste materials during the construction of the station.	Waste materials generated during the construction of the station will be disposed of in accordance to applicable regulations by licensed waste haulers.	No long-term residual effects are predicted.
Long-term Effects			
Surface and Ground Water	There is the potential for environmental impact to surface and ground water resources due to a transformer oil leak or spill.	Oil containment and storm water run-off controls will be implemented during the design phase of the station to ensure station discharges are within regulatory limits.	No long-term residual effects are predicted.
Natural Environment	There is the potential for impact to a possible wildlife corridor that may include the subject site.	Efforts will be made to protect wildlife and prevent entry to the switchyard.	No significant long-term effects are predicted.
Aesthetics	The proposed station will be visible from Piperville Road and adjacent neighborhood.	While transformer stations are for utility use, the station will include landscape screening, tree planting and be designed to match the surrounding landscape, and the architectural features in the area. The design is also subject to local by-laws.	No significant long-term effects are predicted.
Noise (operation)	There is the potential for noise generated by transformer hum, cooling fans and circuit breaker operation.	The transformers will be designed to ensure that the noise levels at the adjacent residential and institutional developments will meet MECP noise level criteria. Adequate measures will be taken around each transformer to achieve noise attenuation.	No significant long-term effects are predicted. The noise level will meet the MECP noise level criteria.

EMF Exposure	Health Canada and the World Health Organization provide guidance with respect to EMF exposure. To date, the advice is that a health risk from EMF exposure has not been established.	No mitigation necessary.	No negative effects are predicted.

Using the environmental screening criteria presented in Section 2.4, the project specific potential impacts and mitigation measures were evaluated in greater detail in the following sections.

8.1 Surface Water and Groundwater

This section refers to item 1.4 of the MECP screening criteria "Will the project cause potential negative effects on surface or ground water from accidental spills or releases to the environment?"

An impact assessment was carried out for the pre-construction and construction phase, which concludes the following: There will be no environmental impact because there are no sensitive environmental features near the preferred site where the substation will be built. Since the excavation for the substation foundation pad is expected to be shallow, high-volume groundwater pumping is not anticipated, and thus the potential for impacts on private water supply wells nearby is not anticipated. Furthermore, because the excavation will be limited to the shallow overburden material and the nearby recorded wells are all completed in the bedrock, there is no risk of site activities interfering with the performance and function of the water wells.

While there is the potential for environmental impact to surface and ground water resources due to a transformer oil leak or spill during operations phase, the transformers will be installed atop oil containment pits. These oil containment pits will consist of a reinforced concrete pit, lined with a waterproof liner and filled with river washed stone. A drain line will lead from the bottom of the pit to a sump. This will ensure that there is no loss of insulating oil to the surrounding environment. This water is then treated so that any contaminating oil is removed, and clean water can be discharged from the site.

The discharge from the site may be permitted as overland flow downslope if the discharge water quality meets the PWQO guideline standards. To manage discharge within PWQO guideline limits, a discharge management plan is to be required to be developed, if needed and implemented as needed during the construction dewatering period.

The station will not use or release processed waters. Storm water drainage will be subject to a Certificate of Approval from the MECP and will be designed in accordance with municipal and regulatory agency requirements. Site surface drainage will likely flow to the drainage ditch along the Piperville Road.

No long-term residual effects to surface water and groundwater are anticipated.

8.2 Land Impacts

This section refers to item 2.1 to 2.5 of the MECP screening criteria "Will the project;

- cause potential negative effects on residential, commercial, or institutional land uses within 500 m of the site?
- be inconsistent with the Provincial Policy Statement, provincial land use or resource management plans?
- be inconsistent with municipal land use policies, plans and zoning bylaws?
- use hazard lands or unstable lands subject to erosion?
- have potential negative effects related to the remediation of contaminated land?

The proposed project does not adversely affect land impacts in any way.

8.3 Air and Noise

This section refers to items 3.1 to 3.4 of the MECP screening criteria. Specifically, "Will the project:

- have negative effects on air quality due to emissions of nitrogen dioxide, suspended particulates, or other pollutants?
- cause negative effects from the emission of greenhouse gases (CO2 and methane)?
- cause negative effects from the emission of dust or odour?
- cause negative effects from the emission of noise?

8.3.1 Air

The proposed project's construction phase has the potential to have a short-term, geographically limited impact on air quality in its vicinity. Construction-related emissions primarily consist of airborne particulate matter and byproducts generated by the operation and mobility of construction machinery and vehicles. These emissions may cause inconvenience or disruption to nearby residents and land occupants during the construction stage.

Dust generation is also likely to occur during construction activities. This short-term impact will be mitigated using dust suppression controls (such as windbreaks and water spraying) and no residual effects are predicted.

The following are some mitigation techniques to lessen the possibility of air quality deterioration and dust annoyances:

- Maintaining construction equipment in accordance with manufacturer guidelines and performing routine maintenance, such as tune-ups and inspections, can help reduce exhaust emissions.
- Use efficient dust suppression methods as needed, such as road sweeping and on-site watering.

- Strong winds can easily carry dust particles over long distances, avoiding construction work in such instances.

8.3.2 Noise

There is potential for short-term noise impacts related to site construction activities. Noise levels will be monitored, and efforts will be made to conform to municipal noise bylaws. No long-term residual effects are predicted.

There is also the potential for long-term noise impacts related to transformer hum, cooling fans and circuit breaker operation. To lessen the possibility of noise-related annoyances, noise barriers or berms surrounding individual transformers are recommended to mitigate noise from the transformers.

An Environmental Acoustic Assessment will be completed during the detailed design.

8.4 Natural Environment

This section refers to items 4.1 to 4.4 and 4.7 of the MECP screening criteria. Specifically, "Will the project:

- cause negative effects on rare, threatened, or endangered species of flora or fauna or their habitat?
- cause negative effects on protected natural areas such as ANSIs, ESAs or other significant natural areas?
- cause negative effects on wetlands?
- have negative effects on wildlife habitat, populations, corridors, or movement?
- have negative effects on locally important or valued ecosystems or vegetation?

There are no Environmentally Significant Areas (ESAs), Areas of Natural and Scientific Interest (ANSIs) or provincially significant wetlands located on or adjacent to the preferred site.

During a site visit in October 2022, an Evening Grosbeak was heard. Evening Grosbeak's are listed as Special Concern in Ontario, meaning they do not receive species or habitat protection, but their abundance and distribution is being monitored.

Based upon the potential of having SAR in the vicinity of the parcel at 5134 Piperville Road, follow up SAR filed surveys were carried out in August 2023, including three (3) bird point count surveys, three (3) SAR transect surveys, and three (3) evening surveys for bats, including acoustical monitoring. In person field surveys assessed the quality of bat roosting habitat. No SAR birds were observed or heard during the August 2023 surveys. No SAR or signs of SAR were noted during the SAR Transect survey. Passive recording devices allowed the biologist to determine that no SAR are using the preferred site as roosting habitat. The parcel at 5134 Piperville Road does not contain high quality bat roosting habitat as it lacks tall, large diameter snag trees or tall trees with cavities or loose bark. There should be no long-term effect on habitat locations provided mitigation measures are implemented.

It is unlikely the preferred site where the substation is proposed would be utilized by animals as significant movement corridors to the large natural areas when more suitable routes are located to the south where fewer humans are present. Despite the south side of the site being dense woodlot area, the site is not classified as a significant woodland.

To minimize impacts to adjacent natural environment areas (e.g., forested lands to the South of the preferred site, the following avoidance and mitigation measures are recommended:

- Restricting grading and other site alternation activities in the vicinity of the critical root zone of adjacent forested areas;
- Setting up fencing (such as metal, snow, or other types of fencing) to demarcate the boundaries of the construction area in relation to the critical root zone so that no machinery is operating, or materials are piled there;
- By not allowing signs, notices, or posters to be attached to any adjacent trees;
- Ensuring equipment exhaust fumes are not directed to any adjacent trees or vegetation;
- Carrying out routine inspections to make sure that no harm is done to any nearby natural environment areas. If nearby areas sustain any vegetation damage, a certified arborist will be called in to evaluate the damage and decide what should be done next;
- Development and implementation of a sediment and erosion control plan prior to the proposed undertaking;
- Development and application of an emergency spill response plan prior to the proposed undertaking;
- Temporary exclusion fencing should be installed and then routinely inspected (daily, for example) in accordance with the MECP's best practices. To prevent turtle species from entering the work zone between April 1 and October 31 of any given year (or during any time that project-related works are scheduled to take place), a Technical Note for Reptile and Amphibian Exclusion Fencing is required. It is best to have functional and installed reptile and amphibian exclusion fencing before April 1st of any given year. In the event that it is installed after this date, a certified biologist should remove or relocate any potential turtles from the work zone to make room for the fencing;
- Installation of fencing and maintaining a vegetation buffer zone along private and/or public property lines will help to minimize the impact to adjacent property owners; and,
- Re-vegetation and remediation of the Site and areas impacted by construction activities should occur as soon as possible to help mitigate potential off-site impacts.

To minimize impacts to adjacent aquatic habitat areas, the following avoidance and mitigation measures are recommended:

- Creation and execution of a plan to control sedimentation and erosion before starting the proposed project to minimize any possible harm to the Smith Crowding Municipal Drain and adjacent aquatic habitat; and,
- Creating and carrying out an emergency spill response strategy to lessen potential environmental harm from spills.

8.5 Resources Impacts

There are no resource impacts, except for the tree clearing in the south side of the preferred site, as mentioned in the Environmental Study Assessment (ESA) prepared by EXP, dated December 21, 2022 included in Appendix C.

8.6 Socio-Economic Impacts

This section refers to item 6.7 of the MECP screening criteria "Will the project have any negative effects related to traffic?"

There is potential for minor traffic disturbance during the station's construction phase. A road cut permit will be obtained from the City of Ottawa and a traffic management plan will be prepared for any excavation work on Piperville Road related to the station construction. No significant long-term effects are anticipated.

8.7 Heritage and Culture

No negative effects are anticipated on the heritage buildings and sites, as they do not exist in the vicinity of the preferred site.

8.8 Indigenous

Due to no presence of the archeological findings, no negative effect is anticipated on indigenous communities.

8.9 Other Impacts

This section refers to item 9.1 of the MECP screening criteria "Will the project result in the creation of waste materials requiring disposal?"

There is the potential for the creation of waste materials during the construction phase. Waste materials will be disposed of off-site in accordance with local municipal by-laws. No significant long-term effects are anticipated.

9 Effects Monitoring Plan

The Contractor in charge of carrying out the proposed project is responsible for the implementation and ongoing monitoring of the mitigation measures outlined. If new information becomes available after the date of publication of this report, the Contractor will be responsible for developing new measures as needed. Routine work area inspections and mitigation measures will include, but are not limited to, the following:

- All erosion and sediment control measures must be examined on a regular basis to ensure proper operation. This includes the removal of accumulated sediment as well as the proper maintenance of sediment fencing to prevent surface water flow, sediment passage, or fencing breaches.
- Inspections of wildlife exclusion fencing on a regular basis to ensure its effectiveness.
- Compliance with the controlled areas for equipment, vehicles, and fuels.
- Adherence to all mitigation measures specified (including any additional measures determined after the report's publication).
- Immediate correction of any shortcomings in the above-mentioned mitigation measures.

Following the completion of the proposed substation construction, the preferred Site should be re-vegetated, remedied, and landscaped in accordance with relevant development or concept plans. When the project is finished, all temporary sediment and erosion control measures, as well as wildlife exclusion fencing, should be removed.

10 Conclusions and Recommendations

In their ongoing effort to ensure an adequate and reliable electrical supply to customers, Hydro Ottawa Limited is preparing a plan and seeking approval under the EA act for its facilities and modifications required to meet this objective. Hydro Ottawa has determined that it is necessary to increase the distribution capacity within the southeast end of Ottawa by adding a new 230/27.6 kV station, to be named Piperville MTS.

This Class EA Environmental Study Report was prepared on behalf of Hydro Ottawa Limited in support of their plan to construct this new municipal transformer station in the southeast end of the City of Ottawa. This report has been prepared in accordance with the requirements of the Ontario Ministry of Environment Guide to Environmental Assessment Requirements for Electricity Projects (2011) and Class Environmental Assessment for Minor Transmission Facilities (Hydro One, 2022). The Class EA process mandated by the Ontario Ministry of the Environment ensures a framework for involving municipal and provincial ministries/agencies, interested organizations and individuals. The proposed project was recognized as a near-term priority within the IESO's Ottawa Area Integrated Regional Resource Planning process, aimed at guaranteeing the region's access to a dependable and ample electricity supply.

A public and agency stakeholder consultation program was instituted to ensure that the stakeholders were aware of what is being proposed and had an opportunity to provide input before final decisions were made. Input obtained from the public and agency stakeholders was considered by the study team and incorporated into the project where appropriate.

This Class EA study has determined the preferred location for the proposed station, based on the site location with most advantages and fewest disadvantages. Among the factors considered were agricultural resources, appearance of the landscape, biological resources, forestry resources, heritage resources, human settlement, mineral resources, and recreational resources. Each potential site location was also assessed based on the natural environment, socio-economic factors, technical and cost constraints.

It is the conclusion of this assessment that Site location 2 at 5134 Piperville Road, is the best available location for a new transformer station within the study area. This site offers many advantages including:

- Does not contain significant woodland.
- Given the project's non-intrusive nature and future substation operations, the proposed substation is not anticipated to cause any adverse effect on the nearby soils or landforms.
- Given the project's non-intrusive nature and future substation operations, the impact on nearby natural environmental areas such as wetlands, woodlands, and watercourses will be minimal.
- Not part of a significant wildlife movement corridor.
- Outside the “Natural Link” designation under the NCC’s Greenbelt Master Plan (2023).
- Not zoned as agricultural land.
- Provides largely unsuitable habitat for the SAR of concern, however, calls of SAR bat were recorded during the field survey in August 2023, but it was concluded that the bat did not inhabit

the location. Moreover, no presence of SAR birds, insects, animals, plants, or aquatic habitat was recorded during the field survey in August 2023.

- Offers adequate construction staging and working spaces.

For the proposed project, potential long-term and short-term environmental effects were evaluated, and suitable mitigation strategies were developed to mitigate these effects. With the project's design and these mitigation measures in place, no significant negative net effects are expected. In addition, effective monitoring will be carried out to guarantee the efficacy of the mitigating actions and to handle any unanticipated consequences that might emerge. This all-encompassing strategy will not only reduce possible negative environmental impacts but also improve the project's overall sustainability.

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Appendix A - Integrated Regional Resources Plan (IRRP 2020)

Ottawa Sub-Region:

Integrated Regional Resource Plan

Part of the Greater Ottawa Regional Planning Region

March 4, 2020

Connecting Today.
Powering Tomorrow.

Integrated Regional Resource Plan

Ottawa Sub-Region

This Integrated Regional Resource Plan (IRRP) was prepared by the Independent Electricity System Operator (IESO) pursuant to the terms of its Ontario Energy Board license, EI-2013-0066.

The IESO prepared the IRRP on behalf of the Ottawa Sub-Region Working Group (Working Group), which included the following members:

- Independent Electricity System Operator
- Hydro Ottawa Limited
- Hydro One Networks Inc. (Distribution)
- Hydro One Networks Inc. (Transmission)

The Working Group developed a plan that considers the potential for long-term electricity demand growth and varying supply conditions in the Ottawa Sub-Region, and maintains the flexibility to accommodate changes to key conditions over time.

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List of Abbreviations

Abbreviations	Descriptions
2019 APS	Achievable Potential Study
A	Amp
ACSR	Aluminum Conductor Steel-Reinforced Conductors
BES	Bulk Electric System
BPS	Bulk Power System
CDM	Conservation and Demand Management
CFF	Conservation First Framework
CHP	Combined Heat and Power
City	City of Ottawa
DER	Distributed Energy Resource
DESN	Dual Element Spot Network
DG	Distributed Generation
DR	Demand Response
EE	Energy Efficiency
FIT	Feed-in Tariff
GS	Generating Stations
Hydro One or Hydro One Transmission	Hydro One Networks Inc.
Hydro Ottawa	Hydro Ottawa Limited
ICG	IESO Controlled Grid
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Plan
kV	Kilovolt
LDC	Local Distribution Company
LMC	Load Meeting Capability

Abbreviations	Descriptions
LTE	Long-Term Emergency ratings
LTR	Limited Time Rating
MS	Municipal Station
MVA	Mega Volt Amp
MW	Megawatt
NERC	North American Electric Reliability Corporation
NPCC	Northeast Power Coordinating Council
OEB or Board	Ontario Energy Board
ORTAC	Ontario Resource and Transmission Assessment Criteria
PPWG	Planning Process Working Group
RIP	Regional Infrastructure Plan
SCGT	Simple Cycle Gas Turbine
SIA	System Impact Assessment
STE	Short-Term Emergency ratings
sub-region	Ottawa Sub-Region
TS	Transformer Station
TWh	Terawatt-Hours
Working Group	Technical Working Group for Ottawa Sub-Region IRRP

1 Introduction

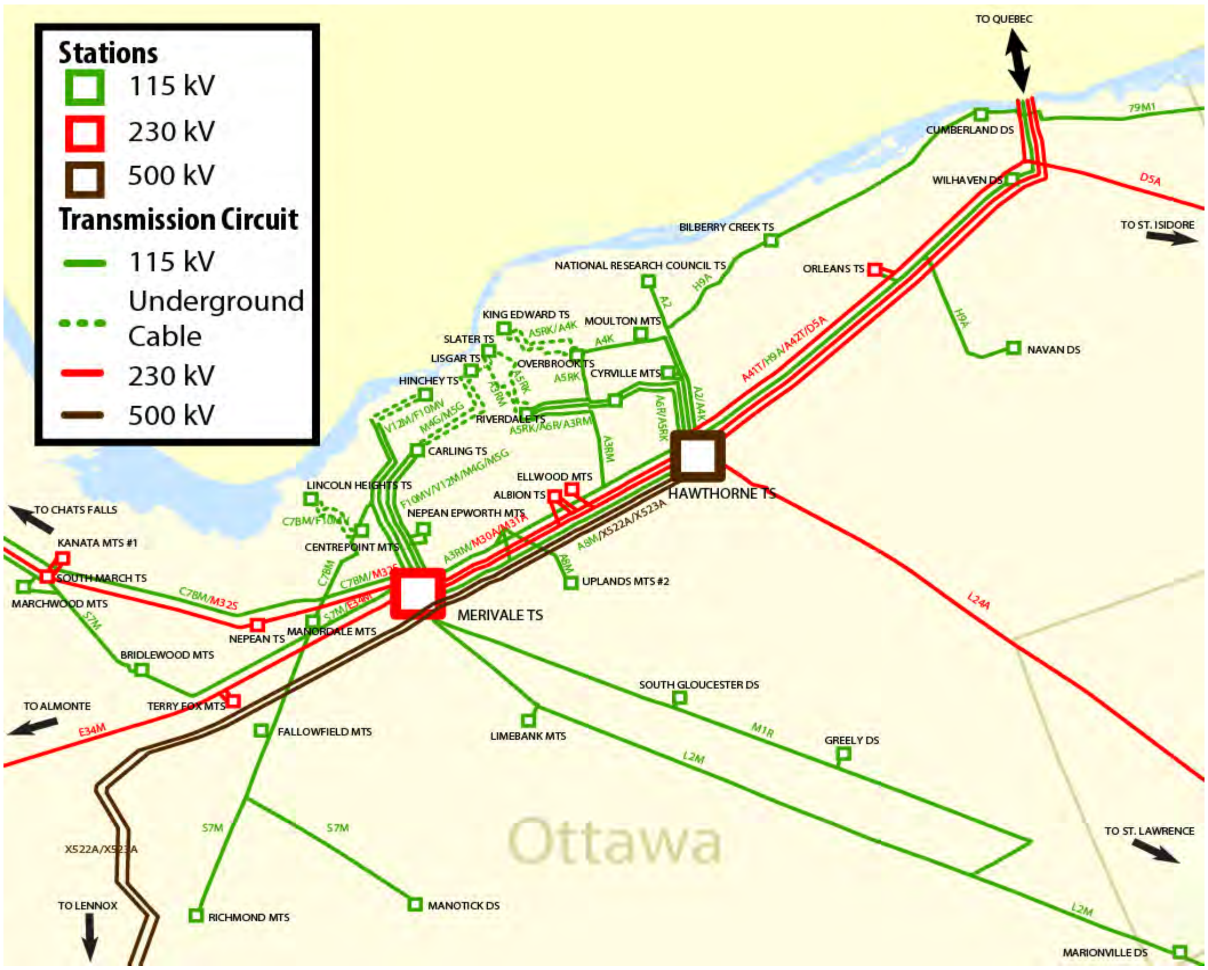
This Integrated Regional Resource Plan (IRRP) documents the studies, conclusions, recommendations and actions required to address the electricity needs of the Ottawa Sub-Region (sub-region) over the next 20 years. It was prepared by the Independent Electricity System Operator (IESO) on behalf of a technical working group (Working Group) composed of the IESO, Hydro Ottawa Limited (Hydro Ottawa), Hydro One Distribution, and Hydro One Transmission. Hydro Ottawa, a municipally-owned utility which operates in the City of Ottawa (City) and in the Village of Casselman, and Hydro One Distribution are local distribution companies (LDCs) that serve customers in the sub-region. Hydro One is the transmission asset owner in the sub-region.

In Ontario, planning to meet the electrical supply and reliability needs of a large area or region is carried out through regional electricity planning, a process that was formalized by the Ontario Energy Board (OEB) in 2013. In accordance with this process, transmitters, distributers, and the IESO are required to carry out regional planning activities for 21 electricity planning regions across Ontario, at least once every five years. The Ottawa Sub-Region covered by this IRRP is a sub-region of the "Greater Ottawa" Region, as shown in Figure 1-1 and

Figure **1-2**. The sub-region encompasses the City, including the Kanata, Nepean, and Orléans communities.

Figure 1-1: Sub-Regions of the Greater Ottawa Regional Planning Region

Figure 1-2: Ottawa Sub-Region Transmission System



The City of Ottawa has grown steadily over recent years, reaching a population of one million in 2019. This trend for growth is expected to continue; the City's Official Plan anticipates a 16% population increase between 2016 and 2031.[1] This expansion is resulting in residential and commercial development plans across the City, particularly in the suburban areas outside the Greenbelt. As a result, the electricity demand forecast for the City shows growth over the nearly 20-year forecast horizon.

This IRRP identifies upcoming power system capacity, reliability, and end-of-life asset replacement needs and recommends specific investments to address the most imminent needs.

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[1] [1] https://ottawa.ca/en/city-hall/get-know-your-city/statistics-and-economic-profile/statistics/ottawas-population

This IRRP also recommends near-term activities to manage longer-term requirements. The next planning cycle is scheduled to be initiated in 2023, but may be triggered sooner depending on demand growth or other factors. Annual monitoring of potential needs will provide additional input on when the next regional planning cycle should be initiated.

This report is organized as follows:

- A summary of the recommended plan for the Ottawa Sub-Region is provided in Section 2;
- The process and methodology used to develop the plan are discussed in Section 3;
- The context for electricity planning in the sub-region and the study scope are discussed in Section 4;
- The demand outlook scenarios, as well as energy efficiency and distributed energy resource (DER) assumptions, are described in Section 5;
- Electricity needs in the Ottawa Sub-Region are presented in Section 6;
- Options and recommendations for addressing the needs are described in Section 7;
- A summary of engagement activities to date, and moving forward, is provided in Section 8; and
- A conclusion is provided in Section 9.

2 The Integrated Regional Resource Plan

This is the second IRRP for the Ottawa Sub-Region. The first IRRP was produced in 2015. Regional plans are based on 20-year station level demand forecasts generated by the local distribution companies that supply customers in the sub-region. The planning forecast for the Ottawa Sub-Region has changed since the 2015 IRRP. The planning forecast for this IRRP is about five percent higher in the long term; attributable mostly to changes in energy efficiency programs in the sub-region. Much of the load growth is forecast to occur in the communities of Kanata, Stittsville, Nepean and Barrhaven and Orleans, with smaller changes expected in the central part of Ottawa.

The Ottawa Sub-Region IRRP documents the sub-region's forecast electricity needs, based on the application of the IESO's Ontario Resource and Transmission Assessment Criteria (ORTAC).[2] The IRRP was developed based on a set of planning considerations, including reliability, cost, feasibility and flexibility; and, in the near term, it seeks to maximize the use of existing electricity system assets.

This IRRP identifies three planning horizons: from the base year when the forecast was originated (2017) through the near term (up to and including 2022), medium term (six to 10 years, from 2023 to 2027 inclusive), and longer term (11 to 20 years, or from 2028 to 2037 inclusive). This IRRP identifies and recommends investments to address the most imminent needs. The IRRP also spells out specific actions that will address remaining near term and medium-term needs. The Working Group will monitor long-term needs on an annual basis until the next regional planning cycle.

Ottawa's growth is increasing the burden on the transmission network that supplies the sub-region. Many stations across the sub-region are supplied by the older regional 115 kV transmission network. The demand at these stations is forecast to exceed the capability of that 115 kV system in coming years. The 115 kV transmission system is in turn supplied mainly by 230 kV bulk transmission lines that connect the sub-region to the rest of the province. Planning for the bulk transmission system is carried out separately from regional planning, since bulk facilities serve both local and provincial needs, however the two planning processes must be coordinated. The IESO is currently working on a plan for bulk transmission supply to the

[2] Refer to the ORTAC for details:
www.ieso.ca/~/.../IMO-REQ-0041 -TransmissionAssessmentCriteria.pdf

Ottawa area, which is expected to be completed later in 2020. Accordingly, this regional planning process has considered opportunities to coordinate regional planning decisions with the ongoing bulk planning process.

Ontario's formalized regional planning process is based on a minimum five-year review cycle. However, the process allows a regional planning cycle to be triggered before the five-year mark due to, for example, material resource or demand changes. The active part of this cycle is made up of needs assessment, scoping assessment, IRRP, and Regional Infrastructure Plan (RIP) stages, which take up approximately half of the typical five-year timeframe. In many regions, this period of active planning is followed by a period when plan implementation begins, and the technical working group monitors demand trends until the next cycle begins. In some large or fast growing regions like Ottawa, however, the complexity of issues requires the technical working group to continue to be engaged in integrated planning throughout the regional planning cycle, after the completion of the IRRP.

2.1 RECOMMENDED ACTIONS

The recommended actions are summarized in Table 2-1, below.

In the case of two near-term regional planning needs identified in this IRRP, it is beneficial to defer confirming a long-term plan until after the bulk transmission plan has been completed, to allow for integration between bulk planning and regional planning.

In the first case, there is a need for increased supply to the Kanata-Stittsville area, however the bulk transmission plan may provide additional options that should be considered before confirming a plan for long-term supply to the area. The IESO's Save on Energy Local Program Fund has recently approved two Hydro Ottawa programs to target system cost-effective energy efficiency measures to reduce station demand at three Hydro Ottawa stations in the Kanata-Stittsville area as a near-term measure to support reliable supply until a long-term solution for the area is implemented. In addition, Hydro Ottawa is planning distribution system transfers to reduce demand at heavily loaded stations.

In the second case, there is a need for increased supply to the regional 115 kV system, and the options for a long-term plan are closely related to the bulk transmission plan, which will focus on the 230 kV and 500 kV system. The technical Working Group will continue integrated planning for the 115 kV system after this IRRP is released, working in parallel with the IESO's ongoing bulk transmission planning study. A long-term plan for the 115 kV system is expected to be released later in 2020. The IESO will lead engagement with communities and stakeholders on the long-term plan for the 115 kV system, which will include assessment of non-wires alternatives. In the near term, Hydro One will replace transformer T22 at Merivale TS with one that is approximately equal to T21 as a first step to address the need for increased supply to the 115 kV system.

Four outcomes included in this plan address the future of assets that are approaching end of life at Bilberry Creek TS, Slater TS, Albion TS, and Lincoln Heights TS.

Finally, to address the need for additional supply station capacity in southeastern Ottawa, Hydro Ottawa will initiate development work and seek approval for a new 230 kV connected supply station.

Table 2-1: Recommended Actions Resulting from the Ottawa Sub-Region IRRP

Area	Action	Timeline
Kanata-Stittsville	Hydro Ottawa is to implement the North Kanata Retrofit Top-Up Program and the North Kanata Smart Thermostat Program, targeted commercial and residential energy efficiency programs. Hydro Ottawa is also planning distribution system transfers to reduce demand at heavily loaded stations.	Beginning in 2020
Regional 115 kV System	Hydro One is to replace Merivale TS Transformer T22 with one that is approximately equivalent to T21.	Planned Completion: mid-2020s
Orleans	Hydro One is to proceed with the like-for-like refurbishment of Bilberry Creek TS, which is approaching its end of life, and expand the station to accommodate two additional breaker positions to supply Hydro Ottawa customers.	Planned Completion: 2025
Central Ottawa	Hydro One is to replace Slater TS T2 and T3, which are approaching their end of life, with larger transformers, approximately 100 MVA, as was done for the recent replacement of T1.	Planned Completion: late 2023
Central Ottawa	Hydro One is to replace the two 75 MVA transformers at Albion TS, which are approaching their end of life, with similar size transformers.	Planned Completion: mid 2026
Central Ottawa	Hydro One is to replace the two 75 MVA transformers at Lincoln Heights, which are approaching their end of life, with similar size transformers.	Planned Completion: 2025
Southeast Ottawa	Hydro Ottawa is to plan and seek approval for a new 230 kV connected supply station in southeast Ottawa.	Estimated in-service date for the new station: 2025

3 Development of the Plan

3.1 THE REGIONAL PLANNING PROCESS

In Ontario, preparing to meet the electricity needs of customers at a regional level is achieved through regional planning. Regional planning assesses the interrelated needs of a region—defined by common electricity supply infrastructure—over the near, medium, and long term and results in a plan to ensure cost-effective, reliable electricity supply. A regional plan considers the existing electricity infrastructure in an area, forecast growth and customer reliability, evaluates options for addressing needs, and recommends actions.

The current regional planning process was formalized by the OEB in 2013 and is performed on a five-year planning cycle for each of the 21 planning regions in the province. The process is carried out by the IESO, in collaboration with the transmitter(s) and LDC(s) in each planning region.

The process consists of four main components:

1. A Needs Assessment, led by the transmitter, which completes an initial screening of a region's electricity needs;
2. A Scoping Assessment, led by the IESO, which identifies the appropriate planning approach for the identified needs and the scope of any recommended planning activities;
3. An IRRP, led by the IESO, which proposes recommendations to meet the identified needs requiring coordinated planning; and/or
4. A RIP which provides further details on recommended wires solutions.

Further details on the regional planning process and the IESO's approach to regional planning can be found in Appendix A.

The IESO is also currently conducting a Regional Planning Review Process to consider lessons learned and findings from the previous cycle of regional planning and other regional planning development initiatives, such as pilots and studies.[3]

[3] http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Regional-Planning-Review-Process

3.2 OTTAWA SUB-REGION WORKING GROUP AND IRRP DEVELOPMENT

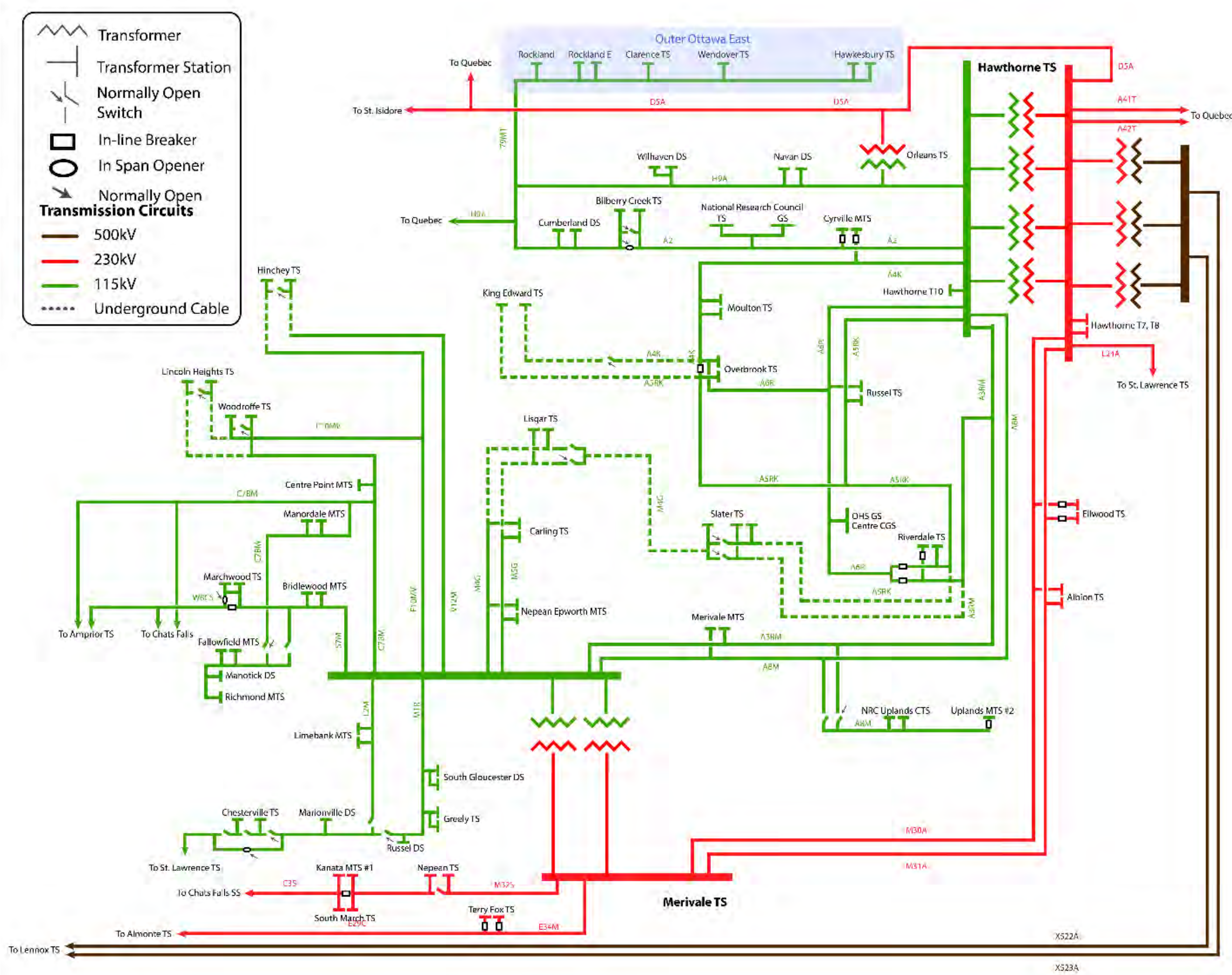
Development of the Ottawa Sub-Region IRRP was initiated in 2018 with the release of the Needs Assessment report for the Greater Ottawa Region. This product was prepared by Hydro One Transmission with participation from the IESO, Hydro Ottawa, and Hydro One Distribution. Screening for needs was carried out to identify needs that may require coordinated regional planning. The subsequent Scoping Assessment Outcome Report prepared by the IESO recommended that an IRRP should be developed to address previously identified and new needs in the Ottawa Sub-Region due to the potential for coordinated solutions.

In 2018 the Working Group was formed to develop Terms of Reference for this IRRP, gather data, identify near- to long-term needs in the sub-region, and recommend actions to address them.

4 Regional Overview

The Ottawa Sub-Region, as shown in 4-1, is supplied by both transmission connections to the Ontario grid and nearby electricity generation facilities, including hydroelectric generating stations on the Madawaska and Ottawa Rivers and renewable generation procured through the Feed-in Tariff (FIT) and microFIT programs.

Figure 4-1: Ottawa Sub-Region Electrical Single Line Diagram



Transmission supply to the sub-region is provided through a 500 kV double-circuit bulk system transmission line connecting to Hawthorne TS, a major TS on the eastern side of the city, and an expansive network of 230 kV and 115 kV transmission lines. Hawthorne TS and a second major TS on the west side of the city, Merivale TS, are the two main supply points for the sub-region. These stations have a total of six 230/115 kV transformers providing supply to the 115 kV system: four at Hawthorne and two at Merivale. Hawthorne and Merivale are connected by two 230 kV circuits in parallel with two 115 kV circuits. Together, these circuits make up the Hawthorne-Merivale transmission interface, the major transmission supply path across the City. Merivale TS is the primary supply point for the western half of the sub-region and receives the majority of its supply through the Hawthorne-Merivale interface.

The Greater Ottawa Region is home to 536 MW of contracted hydroelectric capacity. There are three transmission-connected hydroelectric generating stations on the Madawaska River (Stewartville, Barrett Chute and Arnprior) and one on the Ottawa River (Chats Falls) which, due to their connectivity in the western part of the Ottawa area system, have the potential to reduce the need for supply from the transmission system. However, it is important to note that these hydroelectric plants are run-of-river type generators, which do not have the ability to store water for controlled use at specific times. This type of generating facility typically produces peak output during the spring due to melting snow and ice and produce relatively low output at the time of peak system demand (which typically occurs during the summer). According to the ORTAC, a planning study shall assume a level of output for run-of-river hydroelectric generation that is available 98% of the time. This results in an output level for the of approximately 70 MW for these generators.

4.1 RECENT PLANNING ACTIVITIES IN THE REGION

This is the second cycle of regional planning for the Ottawa Sub-Region. When the OEB formalized the regional planning process in 2013, planning work was already underway in Ottawa. As such, the Needs Assessment and Scoping Assessment for the first cycle of the regional planning process were deemed to be complete and Ottawa was identified as a "transitional" region within the Group 1 planning regions, the first group to utilize the formalized regional planning process.

In April 2015 the Ottawa Area IRRP documented a number of recommendations to address near-term needs. In summary, these recommendations can be organized into four primary areas.

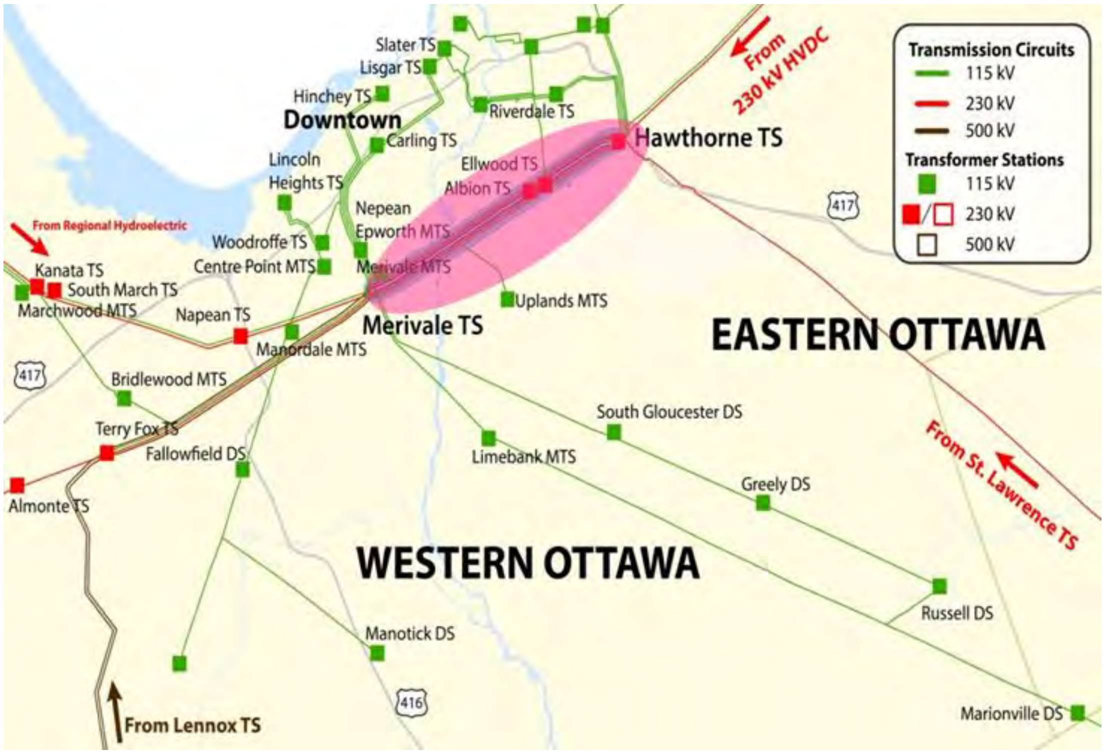
1. To reinforce electricity supply to southwest Ottawa: a 230 kV in-line breaker at Almonte TS was installed (2015), a section of the S7M circuit was upgraded (2017), and development work for a new South Nepean MTS and connection line ensued (expected in-service date of 2022).

2. To reinforce electricity supply to central Ottawa: Overbrook TS transformers were replaced and reconfigured (2018), a section of the A5RK circuit was rebuilt (2019), station capacity at King Edward TS will be increased (2023), and more generally, distribution system transfer capability between central Ottawa stations was increased.
3. To reinforce electricity supply to east Ottawa: transformers T7/T8 at Hawthorne TS were replaced with higher rated (125 MVA) transformers (2019).
4. More broadly, to reinforce the overall regional supply: end-of-life Hawthorne transformers T5/T6 are in the process of being replaced with higher rated transformers (T6 has been completed, T5 will be completed in 2021).

Two medium-term needs, the need for additional 230/115 kV transformer capacity at Merivale TS, and the need for an end-of-life plan for Bilberry Creek TS were also identified in that report, though no specific action was recommended. These two issues are now more imminent and are revisited in this report.

In addition to the enhancements identified in the 2015 IRRP, the IESO provided a hand-off letter to Hydro One in February 2019, requesting the transmitter to proceed with the upgrading of the 230 kV circuits M30A and M31A in the Hawthorne to Merivale transmission corridor (as shown in Figure 4-2). These circuits are critical for supplying customers in the western half of the City of Ottawa and providing a transmission path for a portion of the power transfers between Eastern Ontario and the Greater Toronto Area. The M30/31A reinforcements have a target in-service date of December 2022.

Figure 4-2: Hawthorne to Merivale Transmission Corridor



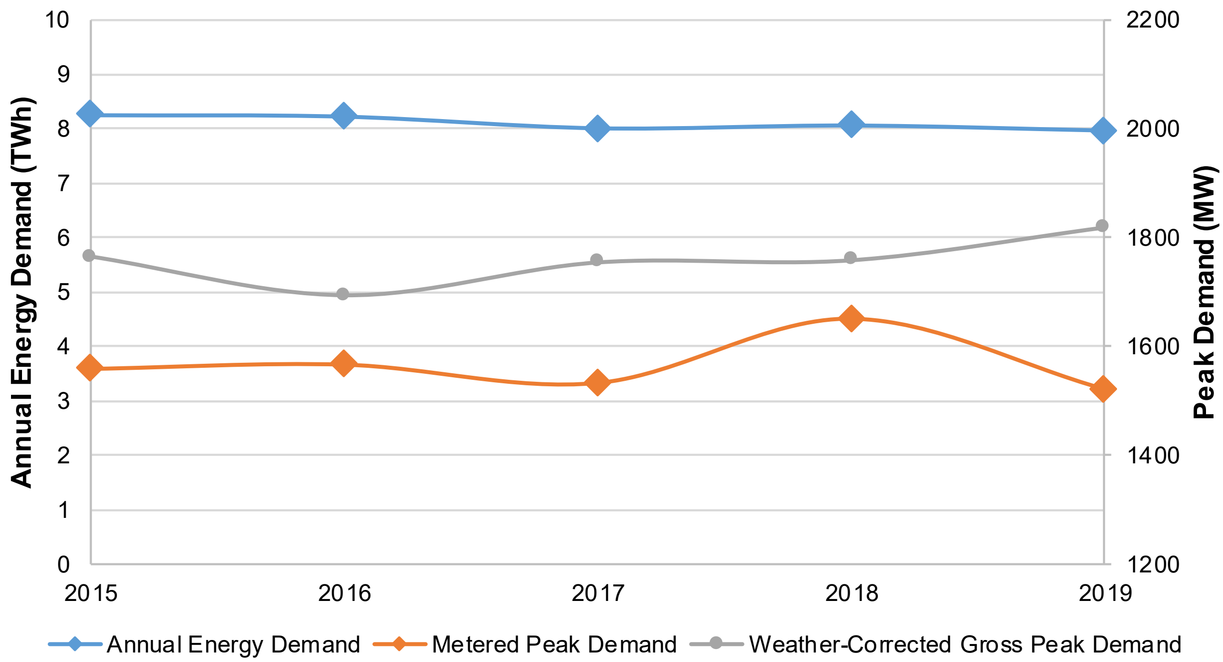
5 Demand Outlook

This section describes the development of the demand forecast for the Ottawa Sub-Region. Section 5.1 begins by describing the historic electricity demand in the sub-region from 2015-2019 inclusive. Section 5.2 describes the demand forecast used in this IRRP and the methodology used to develop it. Furthermore, Section 5.3 provides an overview of changes to the forecast since the 2015 Ottawa Area IRRP. Additional details on the demand forecast assumptions can be found in Appendix B.

5.1 HISTORICAL DEMAND

Over recent years, the electric system in the Ottawa Sub-Region has been summer-peaking, with the primary load centre being its central area within the Greenbelt. As seen in Figure 5-1, over the past five years, the annual energy requirements and coincident net peak demand in the sub-region have been around 8 TWh and 1600 MW, respectively. After correcting historical metered data for weather and the impact of both distributed generation and energy efficiency, the coincident peak demand in the Ottawa Sub-Region was determined to be closer to 1800 MW. This weather-normalized, gross peak-demand data more accurately represents customer electricity demand and its changes in the past five years; the process for calculating this is described in the next section of the IRRP.

Figure 5-1: Historical Net Summer Demand and Energy Consumption for the Ottawa Sub-Region



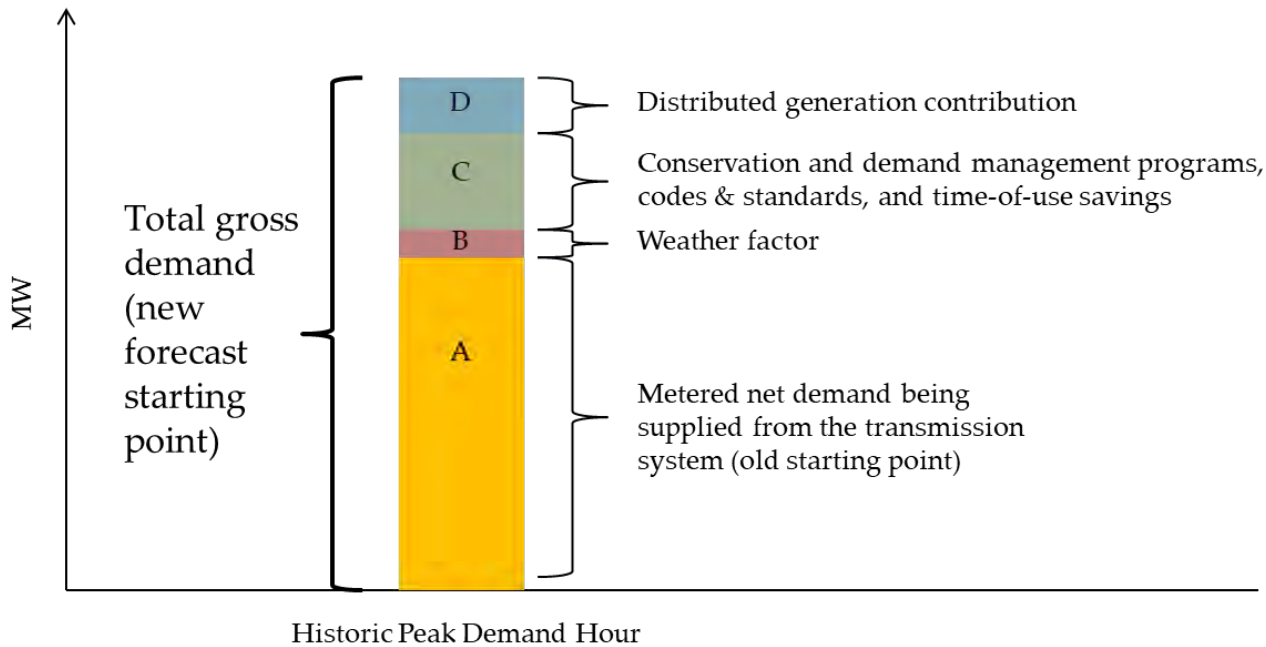
5.2 DEMAND FORECAST METHODOLOGY

5.2.1 Forecast Starting Point

Since electricity supply infrastructure is sized to meet peak-demand requirements, the Working Group developed a 20-year planning forecast to assess electricity supply and reliability needs in the sub-region. Due to their direct relationship with customers, LDCs have the best information on customer and regional growth expectations in the near- and medium term. These considerations include known connection applications and typical electrical demand for similar customer types. Gross demand was therefore forecast at the supply station level by the LDCs. The LDCs also used the IESO's forecast starting points developed through a load "unbundling" process and based on available data.

Historically (as was the case for the 2015 Ottawa Area IRRP), the starting point of the forecast was based on net demand (i.e., metered data). Recognizing that this was no longer an adequate representation of actual customer demand due to the impact of distributed generation, energy efficiency, and weather, the IESO established a new starting point to reflect actual gross demand under median weather conditions. Doing so allowed LDCs to forecast growth from a value that represents "true" customer demand, rather than simultaneously growing the existing savings from distribution generation and energy efficiency too. For illustrative purposes, this approach is summarized in Figure 5-2. Note that for the Ottawa Sub-Region, unbundling gross load was achieved to the extent for which the necessary data was available. More details regarding this methodology can be found in Appendix B.

Figure 5-2: Load Unbundling to Establish a Gross Demand Starting Point for Forecasting



The gross-demand forecasts provided by the LDCs after using these starting points are described in the following section. A net forecast is established for extreme weather conditions and used as the final planning forecast (later described in Section 5.2.5).

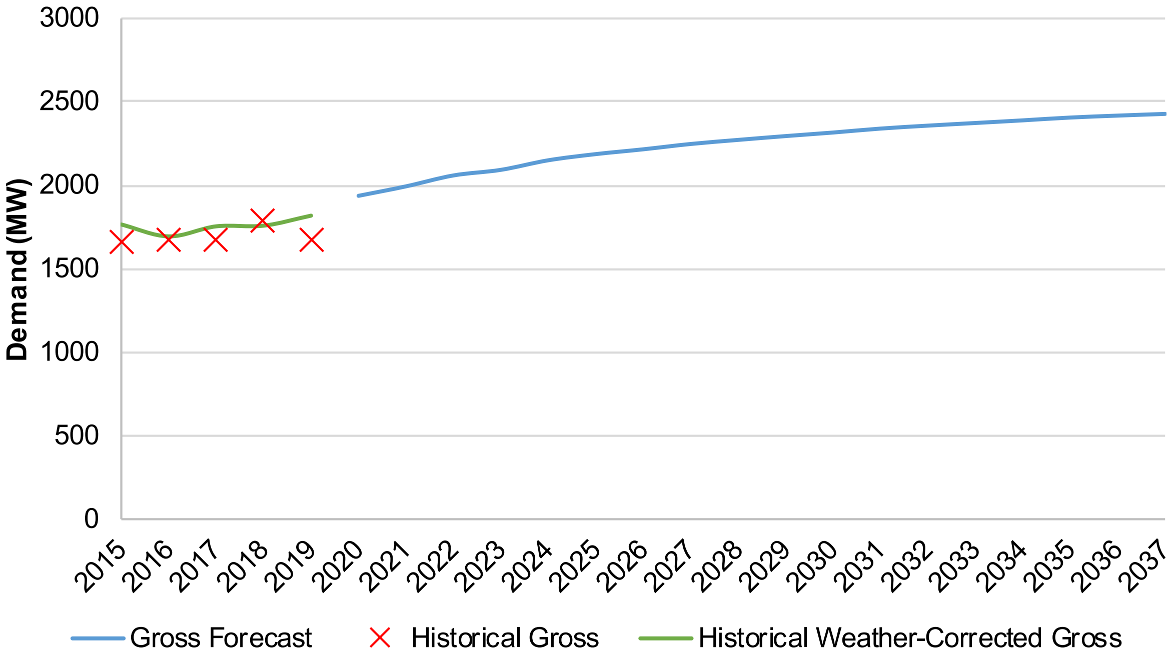
5.2.2 Gross-Demand Forecast

Gross supply station demand forecasts provided by the LDCs account for increases in demand from new or intensified development, but not for the full impact of future energy efficiency measures such as future codes and standards and energy efficiency programs. This is instead later accounted for when developing the net planning forecast.

The graph in

Figure **5-3** shows the forecast gross-demand outlook for the Ottawa Sub-Region under median weather conditions, combined with historical data points for comparison. Details regarding the station-level gross-demand forecast are provided by Hydro Ottawa and Hydro One Distribution in Appendix B.

Figure 5-3: Ottawa Sub-Region Demand Outlook (Median Weather Summer Gross Forecast)



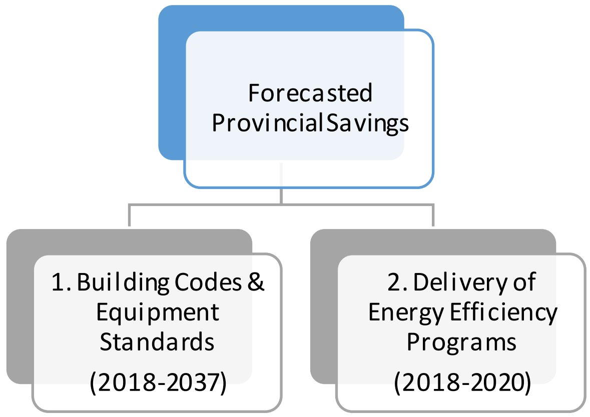
5.2.3 Energy Efficiency Assumed in the Forecast

Energy savings can be achieved through a mix of program-related energy efficiency activities, as well as mandated efficiencies from building codes and equipment standards. It plays a key role in maximizing the use of existing assets and maintaining reliable supply by offsetting a portion of a region's growth, and helping to ensure demand does not exceed equipment capability. The expected energy efficiency savings expected building codes and equipment standards and committed programs that are forecast for the Ottawa Sub-Region have been applied to the gross peak-demand forecast for median weather, along with the peak contribution of distributed generation resources (described in Section 5.2.4), to determine the net peak demand for the sub-region.

Future energy efficiency savings for the Ottawa Sub-Region have been applied to the gross peak-demand forecast to take into account both policy-driven and funded energy efficiency through the Interim Framework (estimated peak-demand impacts due to program delivery to the end of 2020), as well as expected peak-demand impacts due to building codes and equipment standards for the duration of the forecast. As policy related to future provincial energy efficiency activities changes, the forecast assumptions will be updated accordingly.

To estimate the peak-demand impact of energy-efficiency savings in the sub-region, the forecast provincial savings were divided into two main categories:

Figure 5-4: Categories of Energy Efficiency Savings



1. *Savings due to building codes & equipment standards*
2. *Savings due to the delivery of energy efficiency programs*

For the Ottawa Sub-Region, the IESO worked with the LDCs to establish a methodology to assess the estimated savings for each category, which were further subdivided by customer sector: residential, commercial and industrial. This provides a better resolution for the forecast energy efficiency, as energy efficiency potential estimates vary by sector due to differing energy consumption characteristics and applicable measures.

For the Ottawa Sub-Region, LDCs provided both their gross-demand forecast and a breakdown of electrical demand by sector for each TS. Once sectoral gross demand at each TS was estimated, peak-demand savings were assessed for each energy efficiency category – codes and standards, and energy efficiency programs. Due to the unique characteristics and available data associated with each group, estimated savings were determined separately. The final estimated energy efficiency peak-demand reduction, 173 MW by 2037, was applied to the gross demand to create the planning forecast. Table 5-1 provides the peak-demand savings for a selection of the forecast years.

Table 5-1: Peak-Demand Savings from Energy Efficiency (Select Years), in MW

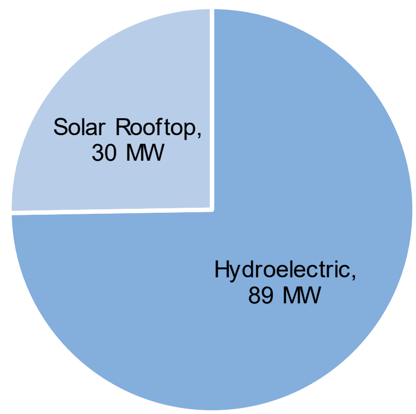
Year	2020	2025	2030	2037
Savings (MW)	108	122	150	173

Additional energy efficiency forecast details are provided in Appendix B.

5.2.4 Distributed Generation Assumed in the Forecast

There are several contracted distributed generation resources in the Ottawa Sub-Region. A full breakdown of distributed generation resources is shown in Figure 5-5.

Figure 5-5: Installed Distributed Generation in the Ottawa Sub-Region in 2020 by Resource Type (Type, Contract Capacity in MW)



The contracted distribution-connected generators in the forecast comprise a mix of rooftop solar and hydroelectric projects. Most of these generators in the sub-region are hydroelectric (75% of total contracted DG capacity in 2020), with solar accounting for 25% of the contracted capacity. Capacity contribution factors of 62% and 30% (hydroelectric and solar respectively) to the regional peak have been assumed to account for the expected output of the mix of local generation resources during summer peak conditions. Based on the IESO contract list as of February 2019, distributed generation projects are expected to offset 64 MW of peak demand within the Ottawa Sub-Region by 2020.

In the process of adjusting the gross forecast (described in Section 5.2.2) to produce a net forecast, projected load is decremented by the expected effect of the distributed generation at each station. This considers the typical peak effective contribution of the relevant generation technology. Once a generation contract expires, the effect of that generation is removed from the forecast.

For the Ottawa Sub-Region, this approach meant that the gross forecast was decremented by 30% of the total installed solar at each station. However, because hourly output data from existing distribution-connected hydroelectric facilities was not available for the creation of the gross forecast, their contribution to peak-demand savings was assumed to be embedded in the gross forecasts provided by the LDCs. For instance, this was the case for the 29 MW Chaudière Hydro facility at Carling TS, which came into service in 2017. Consequently, the gross forecast was not decremented by 62% of all installed hydroelectric at each station – rather, only the new hydroelectric capacity. This corresponds to approximately 40 MW of new installed hydroelectric generation between Hinchey TS and Lisgar TS starting in 2020, corresponding to the Gatineau No. 1 and Hull No. 2 units.

Additional information on the regional demand impacts from distributed generation are provided in Appendix B.

5.2.5 Planning Forecasts

After taking into consideration the combined impacts of energy efficiency and distributed generation, as well as extreme weather, a 20-year planning (net extreme) forecast was produced for the Ottawa Sub-Region. Generally, the forecast indicates an average growth rate of 1.7% each year and a total increase in load of 340 MW over the next 10 years. This is nearly a 20% increase from the weather-corrected peak gross demand observed for the Ottawa Sub-Region in 2019.

Figure 5-6: Ottawa Sub-Region Demand Outlook (Summer Planning Forecast)

The following three figures show this planning forecast divided into three smaller forecast areas based on electricity system connectivity, in order to indicate the distribution of demand and forecast growth across the City. The West Ottawa planning forecast generally consists of stations outside the Greenbelt supplied by Merivale TS. Here, an average growth rate of 2.2% is observed for each year and a total of 169 MW of load is projected by 2030. The Central Ottawa planning forecast generally consists of stations within the Greenbelt. In this area, the average growth rate is 0.9 % per year, with 76 MW of additional load estimated within the next decade. The East Ottawa planning forecast consists of stations outside the Greenbelt supplied by Hawthorne TS. The average growth rate is 2.4% year-over-year, and a total increase of 96 MW is projected by 2030.

The detailed breakdown of stations within each sub-forecast area can be found in Appendix B.

Figure 5-7: West Ottawa Summer Planning Forecast

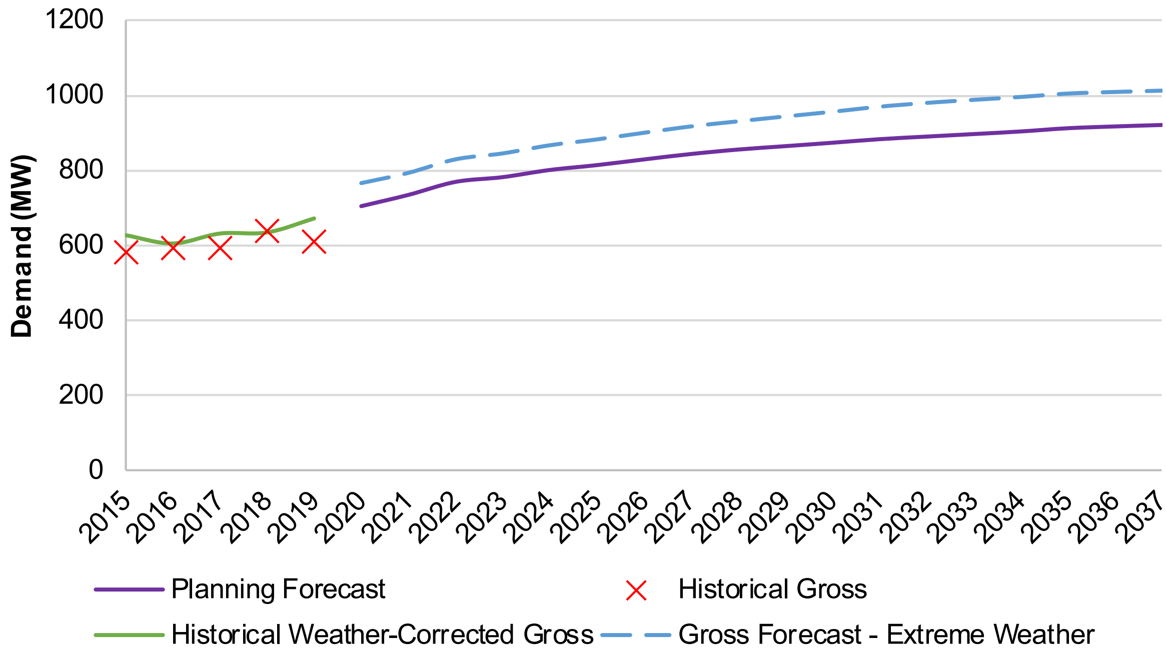


Figure 5-8: Central Ottawa Summer Planning Forecast

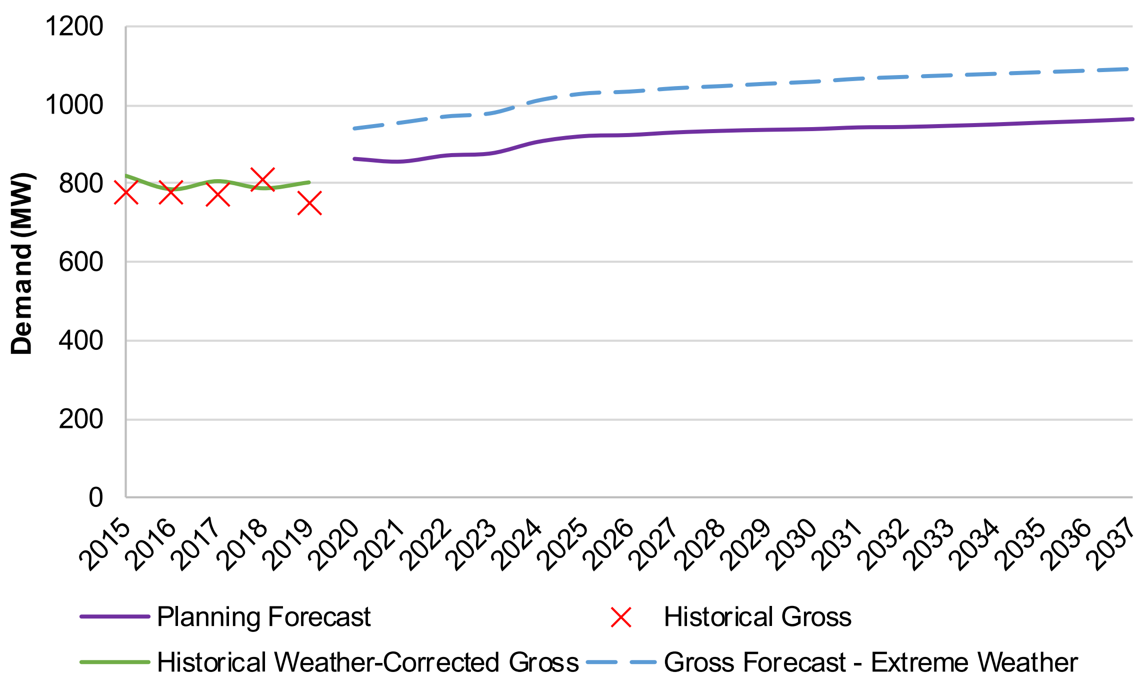
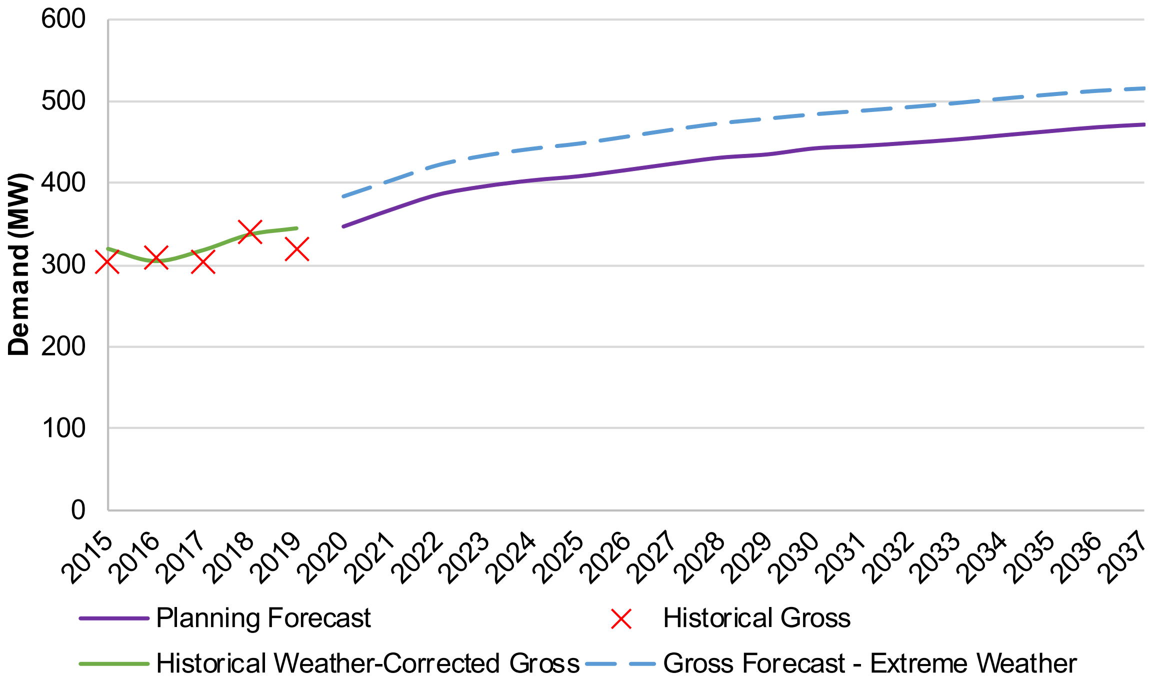


Figure 5-9: East Ottawa Summer Planning Forecast



5.2.6 Hourly Forecasts

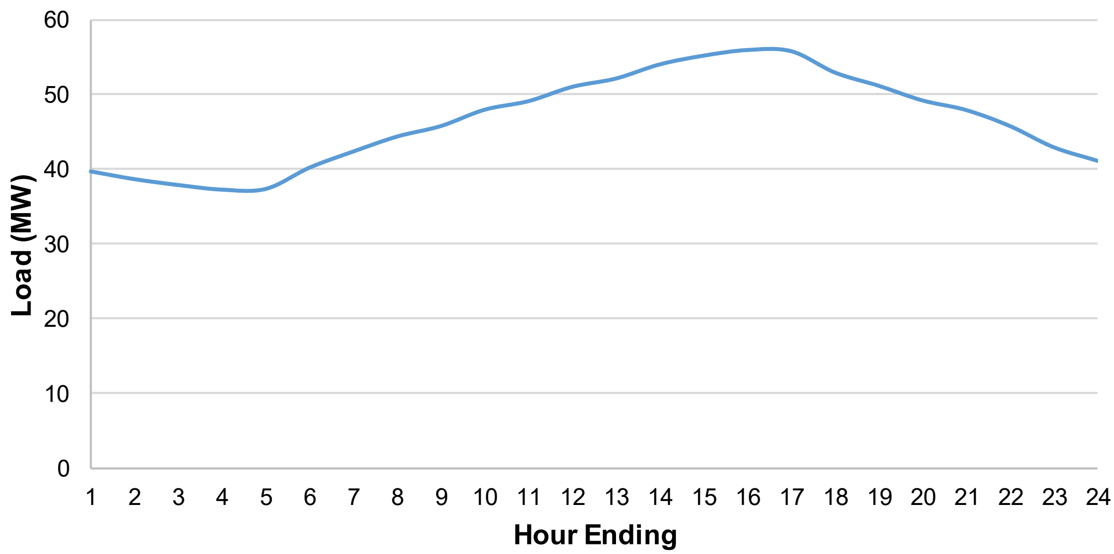
While needs later described in Section 5.3 are primarily based upon annual peak-demand forecasts, additional work was done to develop hourly forecasts. These projected hourly load profiles were integral to better understanding the needs in the Ottawa Sub-Region on a more granular level and ultimately, for evaluating the feasibility of non-wires options (explained further in Section 7.1.1).

Hourly load forecasts were created for the following stations:

- Kanata-Stittsville: Terry Fox MTS, Marchwood MTS, Kanata MTS
- Southeast Ottawa: Leitrim MS

Figure 5-10 shows a sample hourly forecast profile in 2037.

Figure 5-10: Sample Hourly Profile for a Summer Peak Day in 2037 at Leitrim MS

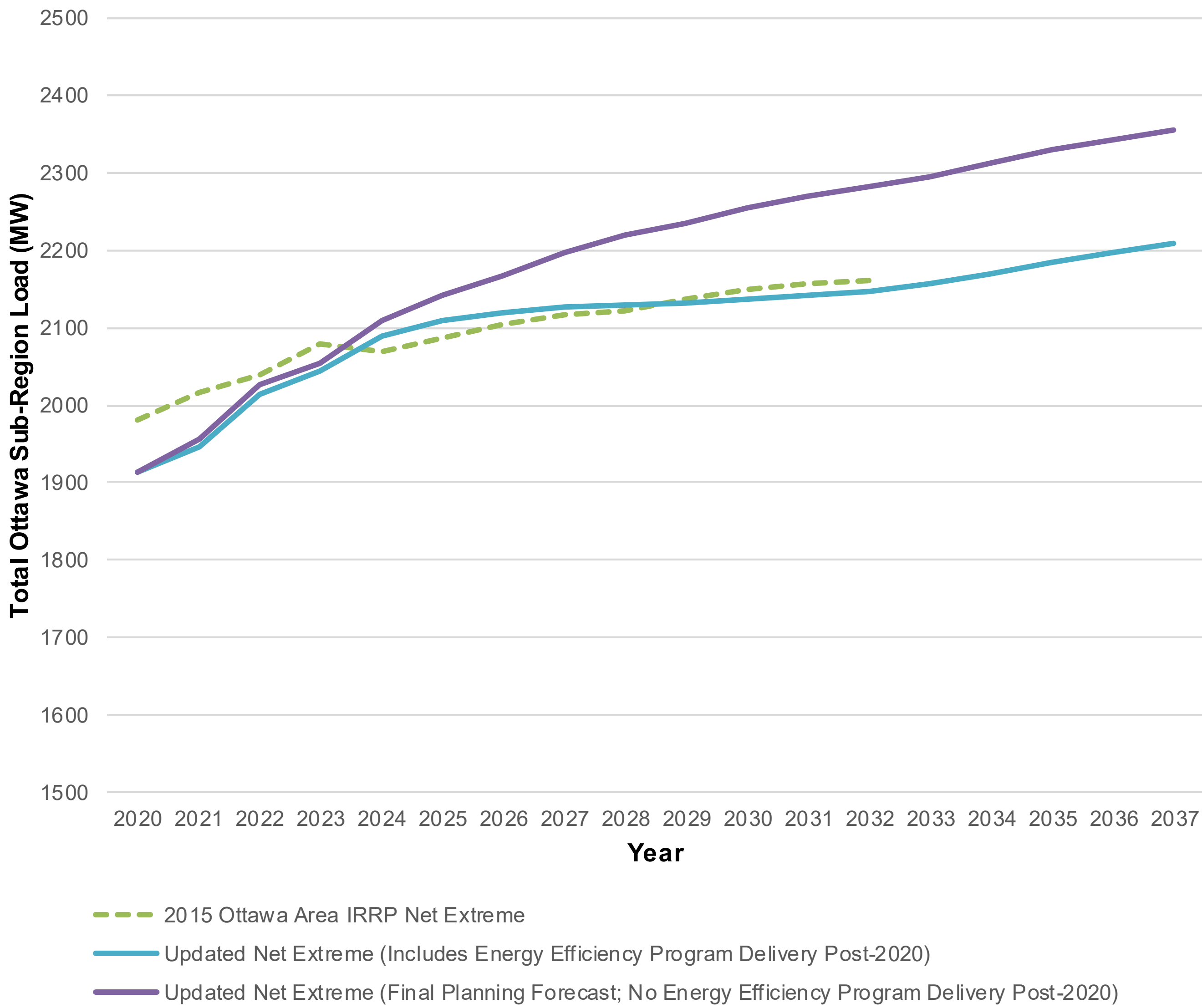


Additional details regarding the hourly forecasting methodology can be found in Appendix D.

5.3 COMPARISON OF PEAK FORECASTS

To better understand the nature of the load growth in the Ottawa Sub-Region – and therefore, the electricity needs later identified in Section 6 – this IRRP compares the most up-to-date planning forecast against what was previously estimated in the 2015 Ottawa Area IRRP. This comparison is summarized in Figure 5-11.

Figure 5-11: Comparison of Total Sub-Region Planning Forecasts (Current and 2015 Ottawa Area IRRP)



Ten years from now, in 2030, the overall planning forecast (net extreme) for the Ottawa Sub-Region is moderately different from its counterpart in the 2015 Ottawa Area IRRP. However, the forecasts differ even more depending on station and area within the sub-region. For instance, when comparing planning forecasts at year 2030, many stations in the current IRRP have projected loads that are at least 15 MW greater than previously predicted:

- Marchwood MTS
- Uplands MTS
- Greely DS
- Kanata MTS
- Terry Fox MTS

- King Edward TS
- Orleans TS
- Hawthorne TS

These changes can lead to imminent needs later identified in Section 6. Table 5-2 further summarizes the planning forecast differences at year 2030 according to the area within the Ottawa Sub-Region.[4]

Table 5-2: Current Net Extreme Forecast vs. 2015 Ottawa Area IRRP Net Extreme Forecast, by Area, in 2030

Forecast Scenario		Current Forecast – Old Forecast (in Year 2030)
Net Extreme	West Ottawa	+134 MW
	East Ottawa	-52 MW
	Central Ottawa	+23 MW
	Entire Region	+105 MW

The old and new forecasts diverge in the long term. Two key factors account for this divergence:

1) Long-term energy efficiency savings targets no longer being assumed in the planning forecast, and
2) The predicted extreme weather impact on load.

Weather correction is integral to the development of a forecast because peak demand is sensitive to different weather conditions. Since the 2015 Ottawa Area IRRP, for which a standard 6% extreme weather factor was applied to the entire region, the Technical Working Group more closely explored the local weather-load behaviour. Continuous improvement efforts led to a new approach that uses an extreme weather correction factor based on historical weather-load behaviour for each area. For the Ottawa Sub-Region, this required a more a more granular analysis. Rather than correcting the region as a whole, loads were weather-normalized separately for three areas (West Ottawa, Central Ottawa, and East Ottawa), assuming that stations located closely together experience similar weather conditions. Linear regression was performed for each area using 31 years of historical temperature and load data. Median weather and extreme weather conditions were also defined using this data set. As a result, a factor

[4] These areas are defined in Appendix B and were used for weather normalization.

between 7-9% was applied to the median forecast depending on the area within the Ottawa Sub-Region. Additional details on the weather normalization methodology can be found in Appendix B.

In addition to the predicted extreme weather impact, changes to the planning forecast's energy efficiency assumptions result in more load (approximately 120 MW) than previously indicated in the 2015 IRRP. Ultimately, these factors advance some needs in the Ottawa Sub-Region, as identified through this current IRRP.

6 Needs

The Working Group identified needs for this IRRP at several different stages of the regional planning process. The preliminary regional planning Needs Assessment was completed by Hydro One in June 2018. The Scoping Assessment was completed by the IESO in September 2018. Finally, in 2019 the IESO completed the needs assessment for the IRRP based on the final IRRP planning forecast provided by Hydro One Distribution and Hydro Ottawa. This needs assessment is described in Appendix C. This section summarizes the needs that were identified for this IRRP.

6.1 NEEDS ASSESSMENT METHODOLOGY

The ORTAC are used for assessing the reliability of the transmission system. These criteria were applied to the existing system to assess supply capacity and reliability needs. The Working Group also considered end-of-life asset replacement needs identified by the asset owners.

6.1.1 Station and Transmission Capacity

Station and transmission capacity describes the electricity system's ability to deliver power to the distribution network through regional step-down transformer stations. In most cases, the MW load meeting capability (LMC) of a transformer station is determined based on the number of transformers at the station and their specifications. For stations with more than one transformer, the LMC is equivalent to the 10-day limited time rating (LTR) of a station's smallest transformer(s), assuming that the largest transformer is out of service. The LMC of one or more transformer stations can also be limited when another system element, such as the transmission line that supplies the station(s) or a circuit breaker, limits the total supply capacity of the line.

The distribution systems in urban areas are often networked, in which case the LDC has options for transferring feeders (which supply distribution customers) from being supplied by their primary supply station to being supplied by an alternate station. This is different than the situation in areas with sparse electricity supply infrastructure, where there may only be one supply station in the vicinity. In both cases, the station's LMC is used to indicate the need to plan for adequate supply capacity based on the station's annual peak-demand forecast.

6.1.2 Voltage Regulation

The ORTAC includes voltage related criteria such as the limits of the acceptable voltage range, and the magnitude of acceptable voltage change for all buses that make up the IESO controlled grid (ICG). The voltage criteria prescribed by the ORTAC are described in Appendix C.

6.1.3 Load Security and Restoration

Load security and restoration refers to the electricity system's ability to minimize the impact of potential supply interruptions to customers in the event of a major transmission outage, such as the loss of a double-circuit tower line resulting in the loss of both circuits. Load security describes the total amount of electricity supply that would be interrupted in the event of a major transmission outage. Restoration describes the electricity system's ability to restore power to those affected by a major transmission outage within reasonable timeframes. The specific load security and restoration requirements prescribed by the ORTAC are described in Appendix C. A summary of these requirements are found in

Table 6-1 and

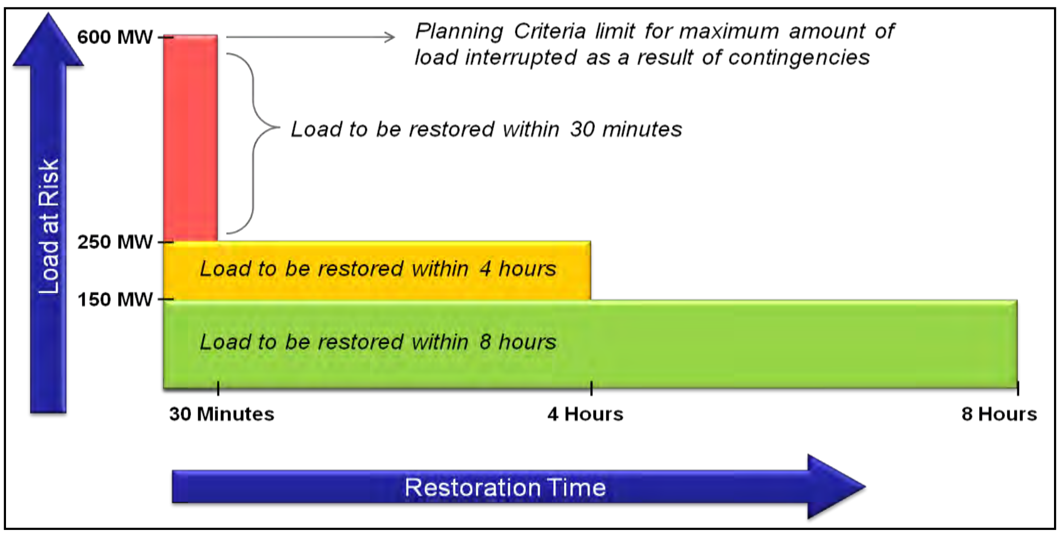
Figure 6-1 below.

Table 6-1: Load Security Criteria

Number of transmission elements out of service	Local generation outage?	Amount of load allowed to be interrupted by configuration	Amount of load allowed to be interrupted by load rejection or curtailment	Total amount of load allowed to be interrupted by load curtailment, rejection, and curtailment
One	No	≤ 150 MW	None	≤ 150 MW
	Yes	≤ 150 MW	≤ 150 MW	≤ 150 MW
Two	No	≤ 600 MW	≤ 150 MW	≤ 600 MW

	Yes	≤ 600 MW	≤ 600 MW	≤ 600 MW

Figure 6-1: Load Restoration Criteria



6.1.4 End-of-Life Equipment

As described in the 2018 Greater Ottawa Needs Assessment, equipment end of life presents an opportunity to:

1) Maintain the status quo,
2) Replace the equipment with similar equipment with lower ratings and built to current standards,
3) Replace equipment with equipment with lower ratings and built to current standards by transferring some load to other existing facilities,
4) Eliminate the equipment by transferring all of the load to other existing facilities,

5) Replace equipment with similar equipment and built to current standards (i.e., "like-for-like" replacement), or
6) Replace equipment with equipment with higher ratings and built to current standards.[5]

End-of-life planning should begin when an aging asset is approaching the end of its expected service life, which is an estimate of the lifespan. However, the condition of the asset, which can only be confirmed by physical testing, along with the risk associated with the failure of the asset may shorten or extend the timeline for implementation of the plan, and could affect which options are available. Replacement needs identified in the near-term typically reflect the condition of the assets, while replacement needs identified in the longer-term are often based on the expected service life of the equipment. As such, any recommendations for longer-term needs should reflect the potential for the need date to change as condition information is routinely updated.

6.2 POWER SYSTEM NEEDS

Electricity demand growth is forecast across the Ottawa area. Ottawa's population is growing faster than that of Ontario or Canada.[6] In June 2019 the City celebrated reaching a population of one million. In particular portions of the City outside the Greenbelt are the focus of increasing intensification and development. The existing transmission and distribution systems in these areas were designed to supply agricultural or low density suburban communities. Changing development patterns are adding new residential, commercial and institutional customers in these areas. As a result, many existing stations are operating at or near their LMC.

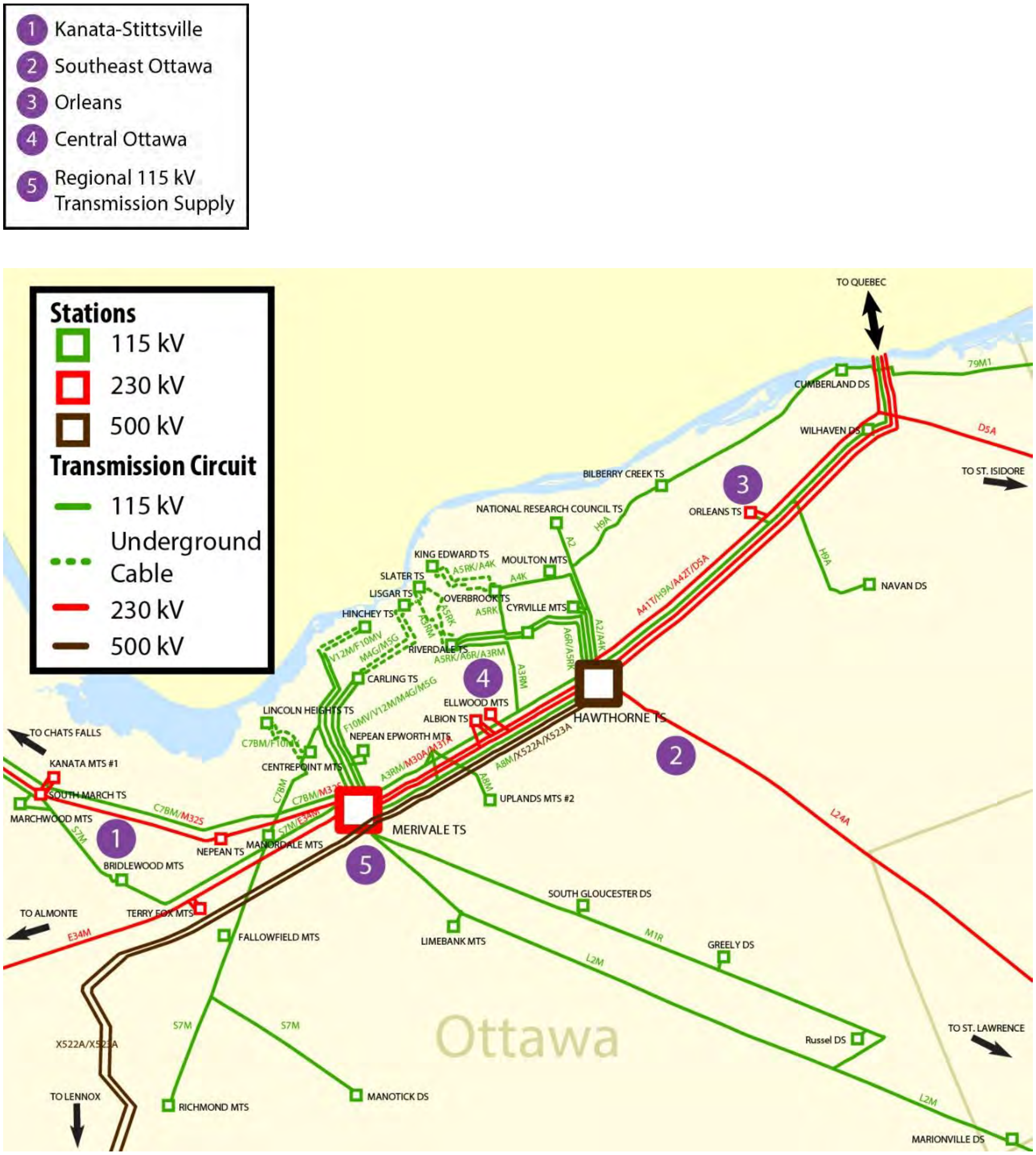
This needs section is divided into the following local areas, which describe the status and specific needs for each portion of the electricity system in the sub-region:

- the Kanata-Stittsville area,
- the Southeast Ottawa area,
- Orleans,
- Central Ottawa, and
- the regional 115 kV system.

These locations are identified on a transmission map in Figure 6-2. Each section concludes with a table summarizing the needs in each portion of the system.

[5] Greater Ottawa Needs Assessment 2018, p. 15.
[6] https://ottawa.ca/en/city-hall/get-know-your-city/statistics-and-economic-profile/statistics/ottawas-population

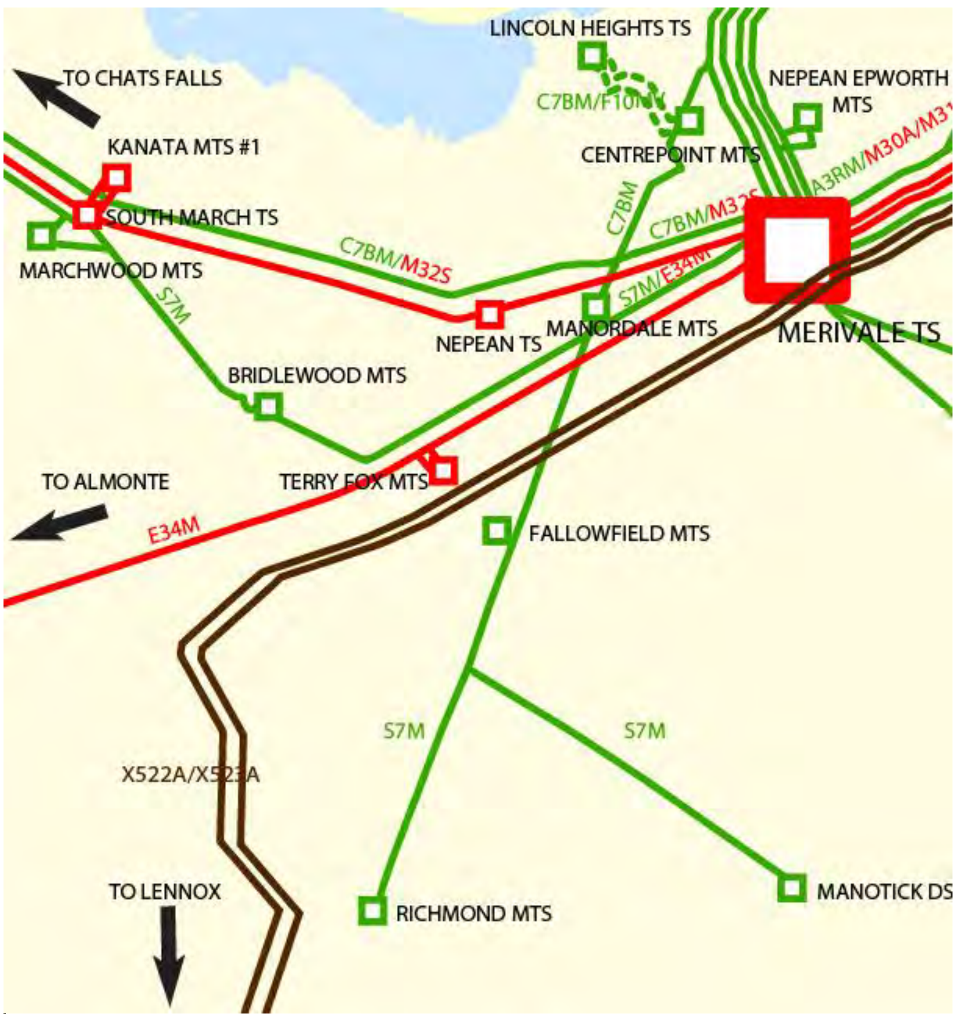
Figure 6-2: Needs Assessment Locations for the Ottawa Sub-Region



6.2.1 The Kanata-Stittsville Area

Kanata-Stittsville is a suburban portion of the City of Ottawa located west of the Greenbelt, about 25 km from downtown Ottawa. This area has been a centre for high tech employers for several decades. This area is supplied by several transformer stations, including South March TS, Kanata MTS, Marchwood MTS, Bridlewood MTS and Terry Fox MTS. The demand forecast for these stations reflects growing interest in intensification and development in the area. This forecast has increased since the 2015 IRRP; however, there is uncertainty associated with the timing of new developments included in the forecast, such as the Kanata North Community Development Plan and the Fernbank Community. The Kanata-Stittsville area is shown in Figure 6-3, below.

Figure 6-3: Transmission System in the Kanata-Stittsville Area



27.6 kV Supply Station Capacity

Three stations in the area, Marchwood MTS (115 kV supplied), Kanata MTS (230 kV supplied), and Terry Fox MTS (230 kV supplied) supply load at the 27.6 kV voltage level, which makes it feasible to transfer demand between the stations, depending on the individual feeder capabilities. All three of these stations are owned by Hydro Ottawa. Marchwood MTS and Kanata MTS are already loaded near their LMC. Terry Fox MTS came into service in 2013 and is the newest of the three stations. Loading at Terry Fox is forecast to reach its LMC by 2030. The combined demand of the three Kanata-Stittsville 27.6 kV stations is forecast to exceed the combined LMC for the three stations by 41 MW in 2020, and 65 MW in 2028. While this appears to represent an imminent capacity shortfall, because distribution transfer options are available it is acceptable to load these stations above the LMC for an interim period until a plan for long-term reliable supply can be implemented. In such a case, customers may experience a supply interruption if a transformer experiences an unplanned outage (contingency) when a station is loaded above the LMC. Relying on distribution transfer capability for post-contingency restoration makes the distribution system more complex for an LDC to operate. As an interim measure, this approach represents a limited risk to customers because annual peak loading only lasts for a short period of time and there are many periods of the year when a station that is heavily loaded at peak will be supplying much lower demand. Nevertheless, the forecast exceeding the LMC for these stations indicates the need to plan for an enduring solution for reliable supply to the Kanata-Stittsville area.

Summary of Needs in Kanata-Stittsville

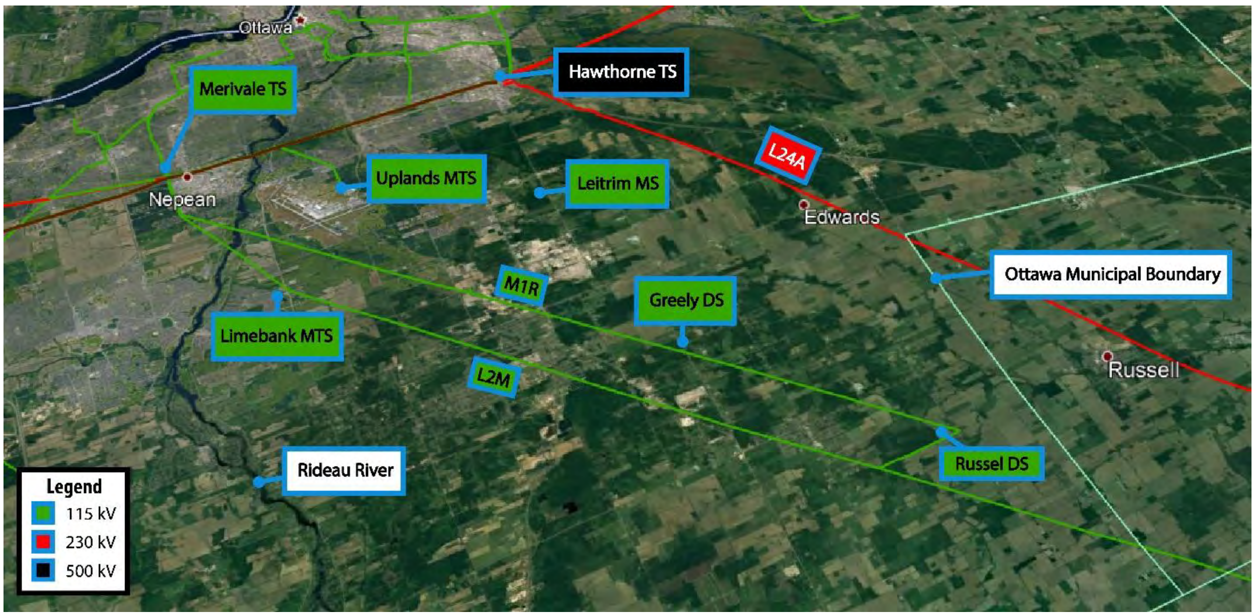
Description	Need	Forecast Timing
27.6 kV Supply Station Capacity (Terry Fox MTS, Marchwood MTS and Kanata MTS)	Station Capacity	In the near term Hydro Ottawa is able to manage high demand at these stations operationally. A plan for an enduring solution to be implemented in the medium term is required.

6.2.2 The Southeast Ottawa Area

For the purpose of this plan, the southeast area of the City of Ottawa describes the portion of the City bounded by the Rideau River (west), the Greenbelt (northwest), Highway 417 (northeast) and the municipal boundary between Ottawa and the Municipality of Prescott-

Russell (east and south). Highway 417 is the Trans-Canada Highway that connects Ottawa and Montreal. The Macdonald-Cartier International Airport, located south of the Greenbelt, on the east side of the Rideau River is also located in this area. This area is primarily agricultural, however there are several recent and planned residential, mixed and industrial developments that are increasing electricity demand in this area. The Hydro Ottawa service territory boundary passes through this area, with Hydro One Distribution serving customers in the outer portions of the City. The Southeast Ottawa area is shown in Figure 6-4, below.

Figure 6-4: Transmission System in the Southeast Ottawa Area



The southeast Ottawa area is presently supplied by four 27.6 kV supply stations: Uplands MTS #2 (115 kV/27.6 kV), Limebank MTS (115 kV/27.6 kV), Greely DS (115 kV/27.6 kV), and Leitrim MS (44kV/27.6kV), which is supplied by Hawthorne TS. Uplands MTS, Limebank MTS and Leitrim MS are owned by Hydro Ottawa. Greely DS and Hawthorne TS are owned by Hydro One. Uplands MTS is located slightly north of Macdonald-Cartier International Airport. Limebank MTS is located about 3 km south of the Airport. Leitrim MS is located about 6 km east of the Airport, and 8 km west of the Highway 417/Boundary Rd. intersection. Greely DS is located about 20 km southeast of the airport, and about 13 km south of the Highway 417/Boundary Rd. intersection. Leitrim MS is supplied by a 44 kV feeder from Hawthorne TS, which is about 7 km to the north. One 230 kV circuit (L24A) extends southeast from Hawthorne TS, a few km south of Highway 417.

Station Capacity at Uplands MTS and Limebank MTS

As a result of anticipated demand increases, Hydro Ottawa is currently implementing plans to expand the LMC at Uplands MTS and Limebank MTS, both of which are loaded to near their LMC. At Uplands MTS, this work will consist of replacing the existing 33 MVA 115/27.6 kV transformer with two 50 MVA transformers. This will increase the station's LMC from 33 MVA to 50 MVA (45 MW). This expansion is expected to be completed in 2021. The planning forecast anticipates demand at Uplands MTS will exceed the station's expanded LMC by 2024.

Hydro Ottawa plans to install the 33 MVA transformer that is removed from Uplands MTS at Limebank MTS, adding to the three existing 33 MVA transformers at that station. This will increase the station capacity from 66 MVA to 99 MVA (89.1 MW) however it is expected that the capability of the existing transmission circuit L2M will limit the LMC of the station to about 75 MW. It is possible that upgrading the transmission circuit could increase the LMC to 89 MW, however Hydro Ottawa has not yet committed to upgrading L2M. Hydro Ottawa expects to complete this station upgrade project by 2021. The IRRP planning forecast anticipates demand at Limebank MTS will reach 75 MW by 2021.

The existing transformers at Limebank MTS are approaching their end of life around the early 2030s.[7] The opportunity to consider future plans for Limebank MTS will be reviewed in the next IRRP cycle.

Station Capacity at Leitrim MS and Hawthorne TS

As described above, Leitrim MS is a 44/27.6 kV supply station connected to a 44 kV feeder that is supplied by Hawthorne TS. The 44 kV feeder limits the LMC of Leitrim MS to 25 MVA (22.5 MW). Leitrim MS supplies Hydro Ottawa customers as far away as Hydro Ottawa's service territory boundary, approximately 15 km to the east, as Hydro Ottawa does not have any other supply stations in the vicinity. The planning forecast for Leitrim MS is shown in Table 6-2, below. This is a forecast of the remaining demand at Leitrim MS after Hydro Ottawa has maximized the potential to transfer loads in the southeast area to Uplands MTS and to Limebank MTS, both of which are west of Leitrim. The planning forecast anticipates demand at Leitrim MS will exceed the station's LMC by 2022. Leitrim MS is forecast to be overloaded by 33.5 MW by 2037.

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[7] This is updated end-of-life information. The 2018 Needs Assessment indicated that the Limebank MTS transformers would reach their end of life in the early 2020s.

Table 6-2: Electricity Planning Forecast for Leitrim MS

		Summer Planning Peak-Demand Forecast (MW)								
Station	LTR	2020	2021	2022	2023	2024	2025	2026	2027	2028
Leitrim MS	22.5	18.9	20.8	26.7	29.8	30.3	32	33.7	36.2	38.8
		2029	2030	2031	2032	2033	2034	2035	2036	2037
		41.8	43.3	44.8	46.2	48.3	50.4	52.6	54.7	56

Hawthorne TS is a 230/44 kV transformer station on the east side of central Ottawa. Both Hydro Ottawa and Hydro One supply customers from this station. As noted in Section 4.1 a station expansion project that was recommended as part of the 2015 IRRP was completed in 2019. This project has increased the LMC of Hawthorne TS to 158 MVA (142 MW). The IRRP forecast anticipates demand at Hawthorne TS will reach the expanded LMC by 2028, however the overloading at Leitrim MS is a large factor in this. If the overloading at Leitrim MS were removed from Hawthorne TS the station forecast would be within the LMC for the entire forecast period.

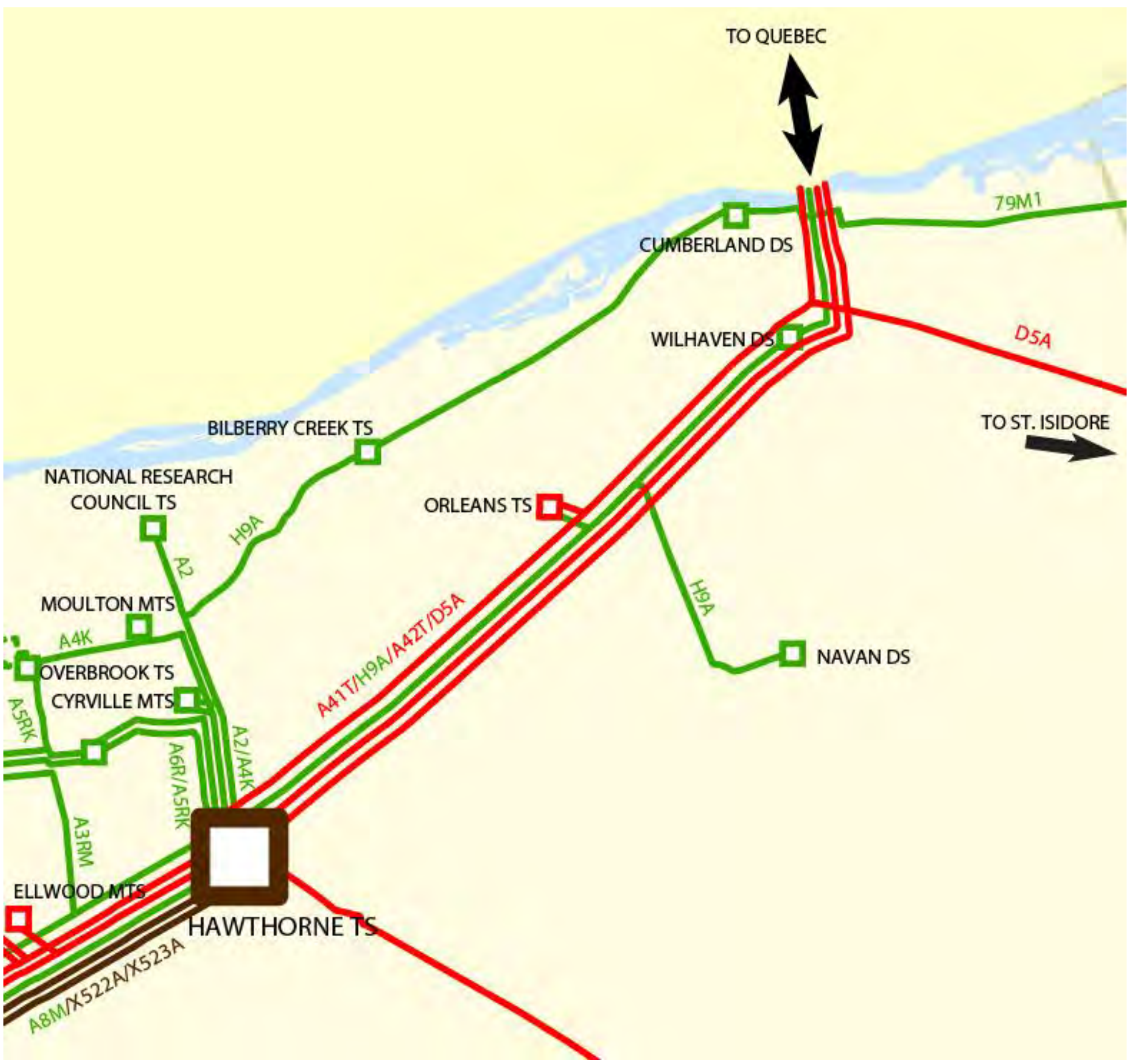
Summary of Needs in Southeast Ottawa

Description	Need	Forecast Timing
Uplands MTS	Station Capacity	Medium Term (after planned Hydro Ottawa station expansions)
Limebank MTS	Station Capacity	Near Term (after planned Hydro Ottawa station expansions)
Limebank MTS	End-of-Life Transformers	Medium Term
Leitrim MS (44/27.6 kV station supplied by Hawthorne TS)	Station Capacity	Near Term
Hawthorne TS	Station Capacity	Medium Term

6.2.3 Orleans

Orleans is a suburb in the eastern part of the City of Ottawa located along the Ottawa River. Like other areas outside the Greenbelt, development is underway in this area, including development of the East Urban Community and the Orleans Industrial Park. East Ottawa is supplied by one 230 kV circuit (D5A) and a network of 115 kV circuits (including H9A, A2, and A4K) that emanate from Hawthorne TS toward the northeast. The Orleans community is supplied by five stations. Four of these stations, Bilberry Creek TS, Cumberland DS, Navan DS and Wilhaven DS are supplied by the 115 kV system. Orleans TS is the newest station, completed in 2015. It is supplied at both the 230 kV and 115 kV voltage levels. Figure 6-5 below shows the location of the Orleans planning area in relation to Hawthorne TS.

Figure 6-5: Transmission System in Orleans



Station Capacity at Orleans TS

Orleans TS is a dual element spot network (DESN) type station, a design that consists of two transformers typically supplied by two circuits, one transformer connected to each. The existing configuration of Orleans, however, is such that one transformer is connected to 115 kV circuit H9A and the other transformer is connected to 230 kV circuit D5A. Because the transformers are supplied at two different voltages the station must be operated with the low voltage bus-tie breaker open. If there is an outage on one of the supply circuits supply will be restored to affected customers by closing the bus-tie breaker, after a momentary outage. The 2015 IRRP noted that although this supply configuration is acceptable, regional planning should consider potential opportunities to convert this station to a typical DESN configuration in conjunction with addressing other reliability needs in the vicinity. At the time Orleans TS was constructed, 115 kV circuit H9A was built ready for conversion to 230 kV operation; however, presently it operates at 115 kV.

The IRRP planning forecast for Orleans TS anticipates it will be loaded to the planning capacity level of 117 MW by 2025.

Upcoming End-of-Life of Bilberry Creek TS

Bilberry Creek TS is a 115 kV connected supply station built in 1964 to supply the Orleans area. Bilberry Creek TS is owned by Hydro One and supplies both Hydro One and Hydro Ottawa.

Hydro One has indicated that Bilberry Creek TS will reach its end of life around 2023 and will require substantial refurbishment to continue operation. This issue was identified prior to the 2015 IRRP. At that time, the Working Group determined that there was sufficient time available to defer the decision about the future of Bilberry Creek TS until this IRRP. A plan for the long-term reliability supply to customers supplied by Bilberry Creek TS must be confirmed in this IRRP. This plan should be coordinated with the plan for Orleans TS which is located 5 km south of Bilberry Creek.

Summary of Needs in Orleans

Description	Need	Forecast Timing
Orleans TS	Station Capacity	Near Term
Bilberry Creek TS	End of Life	Near Term

6.2.4 Central Ottawa

Central Ottawa is the portion of the City inside the Greenbelt. Section 6.2.5, below, describes the supply to central Ottawa in more detail, in the context of the 115 kV transmission system that supplies most of the area. This section focuses on the end-of-life replacement of transformers and other equipment at three central Ottawa stations: Slater TS and Lincoln Heights TS, which are supplied by the 115 kV system, and Albion TS, which is supplied by the 230 kV system.

Upcoming End-of-Life of Slater TS Components

Slater TS is a supply station in downtown Ottawa which was originally consisted of three 65 MVA transformers. Transformer T1 failed in 2018 and was replaced with a 100 MVA unit in 2018. Transformers T2 and T3 are reaching their end of life around 2022. A decision on the size of the replacement transformers is required.

Upcoming End-of-Life of Albion TS Components

Albion TS is a supply station in south central Ottawa. The two 75 MVA transformers at Albion TS and station switchgear are reaching their end of life around 2028. A decision on the size of the replacement transformers is required.

Upcoming End-of-Life of Lincoln Heights TS Components

Lincoln Heights TS is a supply station in central Ottawa that consists of two 75 MVA transformers that are reaching their end of life around 2027. A decision on the size of the replacement transformers is required.

Summary of Central Ottawa Needs

Description	Need	Forecast Timing
Slater TS	End of Life	Near Term
Albion TS	End of Life	Medium Term
Lincoln Heights TS	End of Life	Medium Term

6.2.5 The Regional 115 kV System

As described in Section 4, the 115 kV system is supplied by a total of six 230/115 kV transformers: four at Hawthorne TS, on the east side of the City, and two at Merivale TS, on the west side. A large number of stations in the sub-region, including nearly all of the stations located within the Greenbelt, are supplied by the 115 kV transmission system, which includes overhead transmission lines as well as underground cables that supply several stations in downtown Ottawa.

Figure 6-6 below shows the 115 kV system in central Ottawa, however this figure does not show the full extent of the 115 kV transmission circuits that connect Ottawa with three 115 kV connected hydroelectric generating stations west of the City. As described in Section 4, while these facilities supply variable amounts of energy throughout the year, the 115 kV transmission system in the Ottawa area is mainly supplied from the 230 kV system during peak periods.

Figure 6-6: The 115 kV Transmission System in Ottawa

Demand growth on the 115 kV system is increasing the power flow through the 230/115 kV transformers to the point where they are generally reaching their LMC. This issue was identified prior to the 2015 IRRP. At that time, the Working Group determined that sufficient time and mitigating options were available to defer the decision on a plan for the 115 kV system. A plan for long-term reliable supply to the 115 kV system must be confirmed in the near future.

The combined capacity of the existing 115 kV supply stations is generally matched to the LMC of the 230/115 kV transformers. Accordingly, the planning forecast indicates that a number of these stations are currently being operated at or near their planning capacity. Notwithstanding other station limitations, the potential to expand these stations will be limited by the LMC of the 115 kV system as a whole. An integrated plan for the 115 kV system will consider the options for increasing the LMC of the 115 kV system in conjunction with the limitations of the 115 kV transmission lines and the LDCs plans for the 115 kV supply stations. This plan will determine a strategy for the future of the 115 kV system.

230/115 kV Transformation Capacity – Merivale TS T22 Limitation

As described above, the LMC of the 115 kV system is limited by the thermal capability of the 230/115 kV transformers. The most limiting transformer is T22 at Merivale TS. Transformers T21 and T22 at Merivale TS have different overload capabilities, with T22 having a lower thermal rating. Merivale TS transformer T22 would today be exceeding its limited time thermal rating after the loss of the companion transformer, T21, at time of peak demand. The existing transformer T22 came into service in 1978. Addressing this limitation in this IRRP will increase the LMC of the 115 kV system in the near term. It is important to note, however, that the increase will only be adequate for a few years because once this limitation is removed the LMC will be limited by other factors, including the continuous rating of 230/115 kV transformer T21 at Merivale TS, and the continuous rating of 230/115 kV transformers at Hawthorne TS.

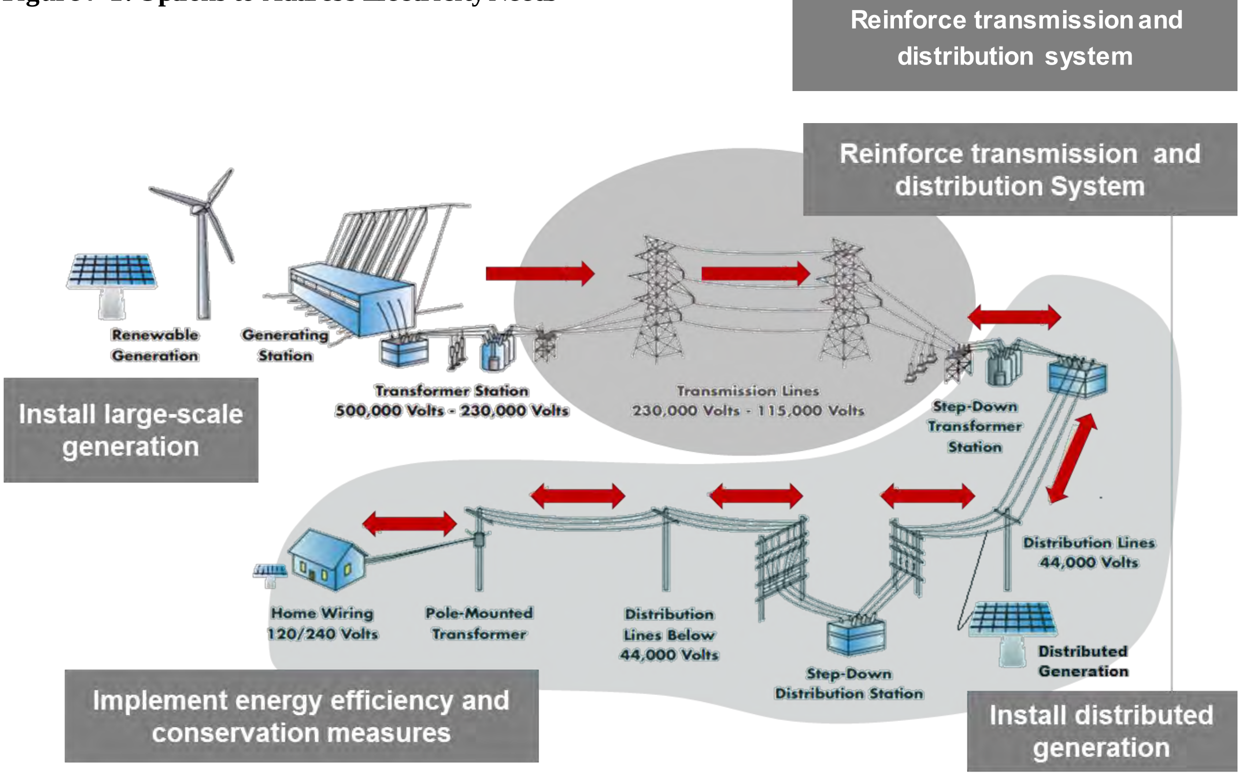
Summary of Regional 115 kV System Needs

Description	Need	Forecast Timing
Merivale TS T22 – LTR exceeded post-contingency (loss of T21)	230/115 kV Transformer Capacity	Near Term

7 Options and Recommendations

As shown in Figure 7-1, Ontario communities have traditionally been supplied with electricity generated from large, centralized generation sources delivered through transmission and distribution infrastructure. To address regional and local electricity needs, one approach is therefore to reinforce the transmission and distribution infrastructure supplying the local area. In recent years, communities and customers have also been exploring opportunities to reduce their reliance on the provincial electricity system by meeting their electricity needs with local, distributed energy resources and community-based solutions. This approach includes a combination of emerging technologies and programs, such as targeted demand response and energy efficiency programs, distributed generation and advanced storage technologies, micro-grid and smart-grid technologies, and more efficient and integrated process systems combining heat and power.

Figure 7-1: Options to Address Electricity Needs



7.1 GENERAL OVERVIEW OF OPTIONS EVALUATION

When evaluating alternatives, the Working Group considered a number of factors, including technical feasibility to meet capacity needs, timing, cost, solution flexibility, alignment with broader planning policies and priorities, and consistency with long-term needs and options. Solutions that maximized the use of existing infrastructure were given priority.

Investing in new electricity infrastructure such as a new transmission line or a generation facility requires substantial capital investment and may have environmental or land-use impacts. This, in conjunction with the long-service life of such facilities, requires the Working Group to give careful consideration to the longer-term cost implications, value, and potential risks (e.g., stranded or underutilized assets) before recommending an investment. Furthermore, considering the lengthy process of obtaining necessary approvals, construction, and other activities during the development phase, decisions on new facilities must take into account the required lead time to ensure they are available when needed.

When assessing the need for infrastructure investments, it is also important to strike a balance between overbuilding infrastructure (e.g., committing to infrastructure when there is insufficient demand to justify the investment) and under-investing (e.g., avoiding or deferring investment despite insufficient infrastructure to support growth in the region). Investment cost, as well as cost responsibility, for recommendations made through regional planning depend on the type and classification of assets. Costs may potentially be shared by all provincial ratepayers or recovered only by the specific customers they serve (e.g., LDCs, industrial customers). In some cases, a combination of cost-sharing may occur when there are both provincial and local benefits.

In developing the IRRP, the Working Group examined a wide range of integrated solutions to address local and regional needs, as well as identified additional studies that will help inform mid- and long-term plans and actions. These options are discussed in detail in Sections 7.2-7.7, organized by areas of need in the Ottawa Sub-Region. Preceding this, in Section 7.1.1, is commentary specifically on how non-wires options were considered for this IRRP.

7.1.1 Consideration of Non-Wires Options

Complementary to the IRRP's objective to consider the most effective integrated solutions to address regional electricity system needs, technologies continue to advance and mature, increasing customer and community choice. While there is an abundance of options that may be evaluated, many resource options may not suitable for all different types of needs (whether they be capacity, load security and restoration, end of life, etc.). Moreover, resource options may address some types of needs, but perhaps only for a few years. Key considerations when evaluating non-wires option feasibility are further explained in this section.

Technical Ability to Address the Local Capacity Need

As previously described, regional planning identifies needs based upon provincial planning criteria, peak-demand forecasts, and the existing system load supply capability. While the cause of needs can vary, IRRPs focus on the shortfall between the LMC of the local area's existing transmission infrastructure and its projected load requirements during periods of peak demand.

Before other matters, the recommendations in this IRRP prioritize options that can, either alone or as a package of solutions, provide the peak capacity (MW) needed and allow the local transmission system to fulfill planning criteria. Options are therefore developed and sized according to capacity requirements rather than multi-hour energy needs. However, in recognition that non-wires options offer diverse services, hourly load forecasts (as first mentioned in Section 5.2.6) were developed for the Ottawa Sub-Region to better understand needs beyond the single peak hour. From these hourly load forecasts, needs were further characterized by three primary traits:

1. The magnitude (MW) over the supply limit,
2. The duration (consecutive hours) that demand exceeds the supply limit, and
3. The frequency at which the need occurs per year or season.

To help visualize these characteristics and show the probabilistic nature of needs – which vary daily and seasonally – the hourly load forecasts were used to produce "heat maps". An example is shown in Figure 7-2 where the estimated needs in the Kanata-Stittsville area during 2037 are depicted.

Figure 7-2: Heat Map for Kanata-Stittsville Area (Terry Fox MTS, Marchwood MTS, Kanata MTS) Needs in 2037)

Each cell in the heat map shows the probability that, of the total numbers of hours where demand exceeds supply capability, a need will occur in the hour shown on the x-axis and with a

MW \ Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
24	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%
18	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%
12	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%
6	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
0	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%

magnitude shown on the y-axis or greater. For instance, of all the hours of need in the Kanata-Stittsville area in 2037, ~4% is expected to occur at 5 PM. Moreover, ~1% of need events is estimated to occur at 5 PM *and* exceed 18 MW in magnitude. Figure 7-2 also suggests that for the Kanata-Stittsville area in 2037, a need event likely occurs throughout all hours of the day – albeit its magnitude will likely vary hour to hour.

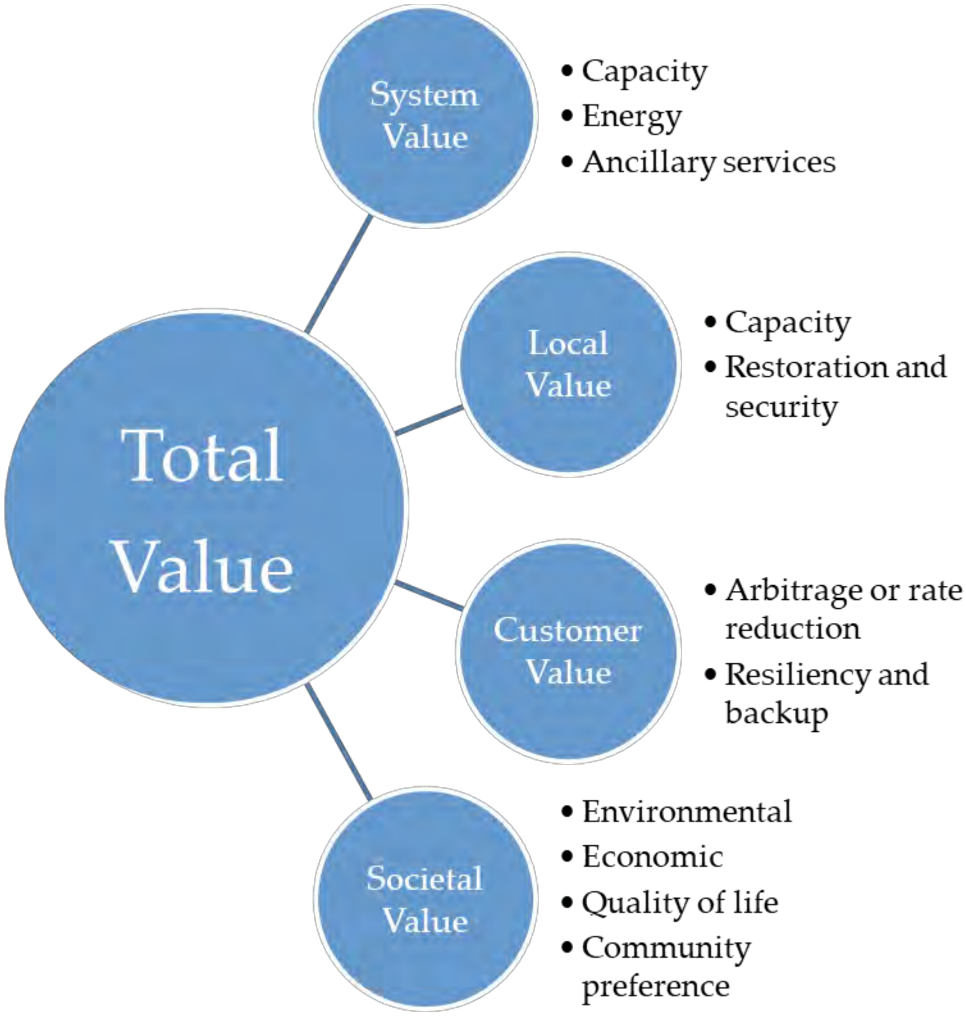
It is worthwhile to note that forecasts have less certainty as they project farther into the long-term time horizon – and this is even more significant when forecasting on a level as granular as each hour. As such, the heat maps and hourly forecasts developed for this IRRP are intended only to help better understand the nature of the needs and guide the development of non-wires options. Ultimately, when evaluating a non-wires option's technical ability to solve a need, the Working Group assessed its capacity contribution or expected performance during predicted need hours. This technical potential (a resource's capability without considering cost-effectiveness or market adoption) was then united with economic considerations to screen in or out a non-wires option.

Further details on the hourly forecasting methodology and more heat maps can be found in Appendix D.1 and D.2, respectively.

Costs and Benefits

While many non-wires options may have some technical potential to address local capacity needs identified in an IRRP, costliness can detract from their candidacy. To gauge the full costs and benefits of non-wires options, various value or funding streams must be considered. A non-wires option may have to provide multiple services concurrently to be economically viable, recovering costs through mechanisms such as regulated rates, market revenues, or program funding through uplift. Some potential value streams are highlighted in the figure below.

Figure 7-3: Potential Value Streams Provided by a Non-Wires Option



Since IRRPs focus on regional needs and their possible solutions, an option's *local value* is naturally best identified through regional planning and is traditionally recovered through regulated rates. Conversely, *system value* refers to the resource's ability to provide services to the bulk system, and is typically identified and accessed through wholesale markets.[8] *Customer value*, which may be defined as the option's ability to provide services and financial benefits directly to the customer, can be established between the option proponent and electricity customers. *Societal value* is determined by the community and includes benefits that are beyond

[8] The IESO's 2020 Annual Planning Outlook includes an avoided cost analysis that considers both avoided energy and capacity costs due to reduced demand. This avoided cost data can be found in the data tables at http://www.ieso.ca/Sector-Participants/Planning-and-Forecasting/Annual-Planning-Outlook.

what is typically recovered by the ratepayer (such as greenhouse gas emission reduction, economic stimuli, improved air quality, etc.).

In IRRPs, the local value of each option is prioritized. As the electricity industry evolves (including any market reform), standardized tools and methodologies may be developed to confidently compute and sum different value streams for more resource types. Overall relative costs and rates of return between all options – wires or otherwise – may be calculated, allowing for a more comprehensive comparison. Table 7-1 below characterizes the non-wires options that were considered during the development of this IRRP. Specific details regarding the local capacity deferral value available are described later, as they are dependent on the unique Ottawa area need. Additional details on the methodology for quantifying resource potential and economic comparison can be found in Appendix D.3 and D.4.

Table 7-1: All Non-Wires Options Considered for the Ottawa Sub-Region

Resource Type	Description
Energy Efficiency	Technologies and operational measures that increase the efficiency of electricity usage at the end-use level. Examples include programs for high-efficiency HVAC equipment or LED lighting.
Lithium Battery Energy Storage	Energy is stored and then dispatched during times of need.
Demand Response	Curtailment of electricity consumption targeting specific hours when a need occurs; considered to be a dispatchable resource that responds to price signals or is implemented through contractual obligations.
Natural Gas Generation	Simple Cycle Gas Turbine (SCGT): natural gas power plant whose waste heat is not used; best for peak power needs on the electric grid. Combined Heat and Power (CHP): gas generation providing both electricity and heat (for end-use).
Solar Generation	Solar panels (typically rooftop or ground-mounted) installed to provide electricity.

Other Barriers to Implementation

Even beyond a non-wires option's technical and economic feasibility, a multitude of barriers to implementation may still persist and had to be considered during the development of the Ottawa Sub-Region IRRP.[9] Some of these barriers were easily quantifiable – such as the option's

[9] Launched in 2018, the Regional Planning Process Review is exploring a number of enhancements to regional

lead time in comparison to the timing of the need, or even the duration of the need versus the longevity or persistence of the resource. Generally, demand management and energy efficiency programs can be implemented within six months (or up to two years for larger projects), whereas transmission and distribution facilities can take five to seven years to come into service. The lead time for generation development is typically two to three years, but could be longer depending on the size, technology type, or environmental impact assessment. All of these factors were considered in unison with the firmness of the needs that were identified.

Successful implementation of a non-wires option also requires community input and local intelligence. Community preferences, such as those for non-emitting resources, were inherently considered in this IRRP through its engagement process. These preferences not only influenced which options were initially evaluated by the Working Group, but also indicated the likelihood of feasibility. Zoning or siting of resources (such as large gas generation) and firmness of acquisition potential are examples of factors that impact feasibility of an option and are unique to the Ottawa Sub-Region's customers (or whoever else is ultimately responsible for hosting or implementing the solution). It is not only the maturity of a technology that was considered; local unfamiliarity and lack of experience with measures such as demand response or specific energy efficiency programs can lead to both cost and implementation uncertainty. Moreover, operational requirements (to fulfill both local and bulk system needs) and regulatory structures for cost recuperation may not yet be well defined enough to actualize all value streams. All of this, in conjunction with unknown future market behaviour and other competitive procurement processes, can contribute to even greater cost and implementation variability. These are all considerations taken into account during the development of this IRRP's recommendations.

7.1.2 Energy Efficiency Opportunities

Since March 2019, the IESO has been given a mandate to centrally deliver energy efficiency programs on a province-wide basis with a focus on business and industrial programs. Through the 2019-2020 Interim Framework, the IESO offers energy efficiency incentives and rebates to electricity customers through a suite of Save on Energy programs, which provide a valuable and cost-effective system resource that helps customers better manage their energy costs.

The IESO is currently working with government and stakeholders to consider opportunities for energy efficiency in Ontario beyond 2020 and recently completed an integrated electricity and

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Planning and includes the Barriers to Non-Wires sub-initiative. More information can be found here: http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Regional-Planning-Review-Process natural gas conservation achievable potential study (2019 APS) in partnership with the OEB. This 2019 APS identified significant and sustained potential for energy and efficiency across all customer sectors throughout the study period.

Energy efficiency investment decisions are typically determined by assessing the cost effectiveness of the initiative (i.e., whether the incremental cost of the energy efficiency measure is outweighed by the benefits to the electricity system, with some value also being attributed to non-energy benefits such as customer comfort or improved business productivity). The 2019 APS identified energy efficiency opportunities that are cost-effective from the system perspective in all areas of the province. The cost-effective energy efficiency opportunities throughout Ottawa are shown in Appendix D, alongside more information about the methodology used to calculate energy efficiency potential. Across the Ottawa Sub-Region, by 2037, system cost-effective energy efficiency could reduce the summer peak demand by approximately 28 MW.

While the rapid growth in a region may limit the ability for energy efficiency to fully meet forecast near-term needs, any medium- to longer-term needs can present an opportunity for system cost-effective energy efficiency. Energy efficiency could also be used as an interim measure to support reliability until long-term solutions in an area are implemented. Consequently, the impact on load growth of any near-term energy efficiency initiatives in the area should be evaluated and monitored between regional planning cycles.

7.2 OPTIONS FOR ADDRESSING KANATA-STITTSVILLE AREA NEEDS

27.6 kV Supply Station Capacity

As described in Section 6.2.2, there is a need for additional station capacity to supply the 27.6 kV distribution system in the Kanata-Stittsville area because the combined demand at the three existing 27.6 kV stations is forecast to exceed the combined LMC of the three stations by 41 MW in 2020, increasing to 65 MW by 2028.[10] Demand is expected to continue increasing, at a consistent, slower rate, over the second half of the forecast period. While using this measure suggests the need for additional supply capacity is imminent, the networked 27.6 kV distribution system supplied by these three stations provides the capacity for Hydro Ottawa to

[10] These numbers are the difference between the combined demand forecast for the three Kanata-Stittsville 27.6 kV stations and the combined planning rating (LTR) of 160 MW for the three stations.

supply peak loading above the LMC for the near term. Nevertheless, a plan to address the need for supply capacity in the area should be readied for implementation in the medium term.

Several options were evaluated while considering the magnitude and timing of the cumulative capacity need: the expansion of existing stations, the construction of a new station, and the use of non-wires alternatives.

Option 1: Expansion of Existing 27.6 kV Stations

Options for reinforcing one or more existing stations in the Kanata-Stittsville area were considered – specifically, expanding Kanata MTS and Marchwood MTS. The Working Group determined that these were inadequate options due to the number of egress feeders from these stations, which are in close proximity. With no space for additional feeders on existing overhead lines, any expansion would require underground extensions. This would increase the complexity and cost of these options.

Option 2: A New Supply Station in Kanata-Stittsville

The demand forecast indicates that there is a need for 65 MW of additional station capacity in the Kanata-Stittsville area by 2028. This growth is expected to come from new residential, commercial and institutional customer connections in the area. These customers will each require an incremental amount of electricity supply, despite technological improvements in end-use efficiency. This is enough demand to utilize about 80% of the capacity of a station similar to Terry Fox MTS, which has a LMC of about 80 MW. A new supply station is therefore an important option to consider for this area of Ottawa. According to Hydro Ottawa, a new station, if built, should be located in the northern part of Kanata, to the north of Kanata MTS, and Marchwood MTS.

Developing a long-term plan for a new supply station requires evaluation of the potential transmission connection points for the new station. The IESO is currently leading the development of a long-term bulk transmission supply plan for the Ottawa area. This bulk transmission plan may recommend changes to the transmission configuration in the Kanata-Stittsville area, which may change the consideration of transmission connection options for a new station. The following paragraphs provide a high-level assessment of existing transmission connection options.

There are three existing transmission circuits that pass through the northern part of Kanata: 230 kV circuit C3S is part of a 230 kV transmission path between Ottawa and the Greater Toronto Area, and 115 kV circuits C7BM and W6CS are part of the 115 kV network between Merivale TS and the Ottawa River and Madawaska River hydroelectric generation sites. Due to the limited LMC of the 115 kV system, as described in Section 6.2.4, the Working Group determined that a 230 kV connection would be preferable.

As mentioned above, the IESO has a bulk transmission planning study underway to consider the potential end-of-life options for several circuits that were placed into service as early as the 1930s. The IESO expects to complete this study in 2020. The outcome of this study will include a plan for long-term reliable supply to Ottawa. This plan may result in changes to transmission flow on existing circuits in the area, including C3S. The study may also recommend transmission reinforcement in the western Ottawa area which could provide an additional option(s) for connecting a new supply station for northern Kanata.

Option 3: Non-Wires Alternatives

The Working Group examined the feasibility of implementing non-wires resources to offset load growth in the Kanata-Stittsville area. These potential resources, considered both on an individual basis and as a package of solutions, were outlined previously in Table 7-1.

Non-wires options may be preferred over a wires investment due to their ability to address needs more incrementally. However, due to the size of the capacity and energy needs in the Kanata-Stittsville area, most non-wires options were found to be insufficient for the deferral of a new station if used alone. For instance, peak reduction of battery energy storage was not a cost-effective option due to the long duration (spanning multiple hours) and large MW size of the need. This was illustrated in heat maps (Figure 7-2). With solar resources, because the expected capacity contribution for peak-demand reduction ranges between 13% - 30%, the costs increase significantly to install the capacity actually required. Consequently, for full station deferral in the Kanata-Stittsville area, the lowest cost resource alternative was identified to be a new natural gas-fired SCGT.

The table below shows the costs for the most cost-effective package of non-wires alternatives and compares them to the local value (i.e., what would be spent on the wires alternative). A planning estimate of approximately $33 million was used for the cost of a new 90 MVA 230 kV connection station. Note that any additional 230 kV connection costs would increase this preliminary estimate.

Table 7-2: Non-Wires Options Considered for the Kanata-Stittsville Area

<table>
<tr><th>Most Cost-Effective Non-Wires Alternative</th><th>Cost (2019 $CAD, millions)</th><th>Local Value (2019 $CAD, millions)</th><th>Remaining Costs to be Recovered (2019 $CAD, millions)</th></tr>
<tr><td>70 MW of SCGT</td><td>244</td><td rowspan="2">39</td><td>205</td></tr>
<tr><td>Package of solutions:
- 55 MW of SCGT
- 4.5 MW of DR
- 10 MW of system cost-effective EE[11]</td><td>230</td><td>191</td></tr>
</table>

This NPV assessment indicates that the majority of their costs would need to be recovered through funding streams beyond local value. This includes the possibility of the resource contributing to system needs (capacity, energy, or otherwise) and having the potential for high customer or societal value. However, considering the magnitude of remaining costs to be funded, in addition to the other barriers to implementation described in Section 7.1.1, the probability of full cost recovery for the non-wires options appears to be low. While it is prudent at this time for the Working Group to continue considering a new transformer station as the cost cost-effective long-term solution, non-wires options proponents may wish to investigate other funding streams and services provided by the non-wires options.

Details on the NPV calculation and assumptions can be found in Appendix D.4.

Recommended Actions

Addressing the need for additional 27.6 kV supply capacity in the Kanata-Stittsville area involves several components. Analysis in this IRRP suggests that the long-term plan will likely consist of a new station; however, development of this option should be coordinated with ongoing bulk transmission planning. Operational measures, as well as targeted energy efficiency, will support reliability in this area until the long-term plan is implemented.

The long-term plan for Kanata-Stittsville will be confirmed after the bulk transmission plan for the area is complete, later in 2020. In addition to considering new station connection options that arise from the bulk transmission supply plan, the long-term plan for Kanata-Stittsville will

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[11] For the purpose of this non-wires options assessment, costs of system cost-effective EE were assumed to be zero. This assumes that their costs would be incurred through provincial program delivery.

consider the most up-to-date information on the potential and cost for non-wires alternatives that is available at that time.

Interim Measures

The networked distribution system in the Kanata-Stittsville area allows Hydro Ottawa to restore peak demand post-contingency at the heavily loaded Marchwood MTS and Kanata MTS. Hydro Ottawa's distribution system plan includes investments to increase load transfer capability and post-contingency capacity. While this operational capability is not equivalent to new supply capacity, this approach will support reliability at these stations for the near term.

In 2019, in consultation with IESO staff, Hydro Ottawa submitted two proposals to Save on Energy's LDC Local Program Fund (the "Fund), a program application stream which allows LDCs to continue to design and deliver energy efficiency programs that serve the needs of their specific customers. Programs approved through the Fund must demonstrate cost-effectiveness based on the resulting net benefit when comparing the program investment (cost) against the provincial average avoided costs of providing electricity (benefit). So while these investments will benefit ratepayers province-wide, these offerings are also expected to help reduce the reliability risk due to heavily loaded stations in Kanata-Stittsville.

The IESO recently approved both of Hydro Ottawa's proposed programs for delivery in 2020, which include the Kanata North Retrofit+ Program and the Kanata North Smart Thermostat Program. As highlighted below, both of these programs leverage the existing delivery infrastructure of current electricity and natural gas province-wide programs, which reduces administrative costs, streamlines customer experiences, and avoids market duplication and confusion. These local programs are an example of using system cost-effective energy efficiency to help address local system needs, and can inform similar approaches in the future. It is forecasted that these two initiatives could combine to offset more than 3 MW of peak demand in the Kanata North area in 2022. In doing so, these programs could help address the capacity need in the Kanata-Stittsville area and support reliable supply until a long-term solution for the area is implemented.

<u>Kanata North Retrofit+ Program</u>

The Kanata North Retrofit+ Program mimics the existing province-wide Save on Energy Retrofit program in that it provides participant incentives to the business sector to upgrade their facilities with measures that reduce electricity consumption. However, in the case of the local program, businesses in Kanata North are offered up to triple the provincial Retrofit incentives for measures that reduce peak demand. This is intended to make the business cases for energy efficiency projects much more attractive in order to drive higher uptake in the constrained area. In addition to the increased incentives, this program will be supported by a targeted outreach strategy that embeds three full-time resources – one energy consultant and one program consultant, along with a sales support agent – to work with customers to identify opportunities, develop business plans, submit incentive applications and support the implementation of energy efficiency measures. The energy consultant will target and engage primarily with the subsectors which represent the largest technical potential for peak-demand reduction (primarily large commercial buildings, manufacturing facilities, and data centers). The program consultant will target and engage primarily with schools, hotels, food stores, box stores, and other small businesses in the area.

Kanata North Smart Thermostat Program

The Kanata North Smart Thermostat Program intends to leverage the existing Smart Thermostat Program offered by Enbridge Gas Inc., where customers who reside in single-family households are eligible to receive an instant $75 rebate towards a qualifying smart thermostat purchased online or at Home Depot stores province-wide. However, in addition to the $75 rebate that the participant receives from Enbridge, the local program will, in many cases, subsidize the remaining cost of the smart thermostat for those qualifying households located in the area of Kanata North. Once more, this offering is meant to increase uptake in the grid-constrained area by creating a very attractive value proposition for customers to invest in energy efficiency.

By offering energy efficiency programs to a specific local area, Hydro Ottawa and Save on Energy are helping customers better manage energy use in communities where local infrastructure is in need of reinforcement. The electricity system relies on various resources and approaches to help balance electricity needs, and with offerings such as the Kanata North Retrofit+ and Smart Thermostat programs, energy efficiency is being positioned as one of the tools. Encouraging customers now to invest in energy efficiency provides short and long-term savings could reduce the need to build new infrastructure while supporting businesses as they continue to grow. The benefits of these energy efficiency programs persist over the lifetime of the equipment installed, which in most cases means they'll continue to provide relief until the long-term local supply plan can be implemented.

7.3 OPTIONS FOR ADDRESSING THE SOUTHEAST OTTAWA AREA NEEDS

27.6 kV Supply Station Capacity

As described in Section 6.2.3, there is a foreseeable need for additional station capacity to supply the 27.6 kV distribution system in the southeast Ottawa area. The planning forecast for Leitrim MS, the most southeasterly of the stations, exceeds the station's LMC by 4 MW in 2022, 20 MW in 2030 and 33 MW in 2037. This forecast is the demand remaining at Leitrim MS after the capability to transfer growth away from Leitrim MS to Uplands MTS and Limebank MTS has been maximized. Demand growth is located east of Leitrim MS at the outer edge of the station's distribution feeder range. As a result, new station capacity is required in the southeast as early as 2022, based on the limited LMC of Leitrim MS. Hydro Ottawa estimates the cost of a new 90 MVA 230 kV connection station to be approximately $28 million, plus about $5 million in 230 kV connection costs.[12]

The Working Group evaluated several options while considering the magnitude and timing of the capacity need, including non-wires resources, expansion of existing stations, and construction of a new station.

Options for New or Expanded 27.6 Supply in Southeast Ottawa

As described in Section 6.2.2, Hydro Ottawa is already pursuing expansions to Uplands MTS and Limebank MTS, to supply demand growth in the southeast Ottawa area.

Section 6.2.2 also describes how the demand at the recently expanded Hawthorne TS, which supplies Leitrim MS, is forecast to be exceed the station LMC by 2027. As noted in Section 6.2.2, a large portion of the demand growth is forecast at Leitrim MS, and moving this growth away from both Leitrim MS and Hawthorne TS removes the need for additional supply capacity at Hawthorne TS. Accordingly, expanding Leitrim MS or supplying a new 44kV/27.6 kV station from Hawthorne TS is not a feasible means of increasing 27.6 kV supply capacity in southeast Ottawa.

Transmission circuit L24A is a 230 kV circuit that connects Hawthorne TS to St. Lawrence TS (in the Cornwall area) and is part of the bulk transmission system that supplies the Ottawa area from the south. This circuit passes through southeast Ottawa, slightly west of Highway 417.

[12] Connection cost estimate is based on preliminary assumptions about the connection configuration and the proximity of the station to the transmission line.

Due to the sparse transmission network on the east side of Ottawa, L24A is the only option for connecting a new station to supply the southeast area.

Non-Wires Alternatives

The Working Group examined the feasibility of implementing non-wires resources to reduce the forecast demand in the area and defer the need for a new station or existing station expansion. These potential resources, considered both on an individual basis and as a package of solutions, were defined previously in Table 7-1. Similar to the economic assessment performed for Kanata-Stittsville area needs, costs for the most cost-effective package of non-wires alternatives in Southeast Ottawa were compared to the theoretical local value (i.e., what would be spent on the new 90 MVA 230 kV connection station).

Table 7-3: Non-Wires Options Considered for the Southeast Ottawa Area

<table>
<tr><th>Option</th><th>Cost (2019 $CAD, millions)</th><th>Local Value (2019 $CAD, millions)</th><th>Remaining Costs to be Recovered (2019 $CAD, millions)</th></tr>
<tr><td>35 MW of SCGT</td><td>151</td><td rowspan="2">39</td><td>112</td></tr>
<tr><td>Package of solutions:
- 25 MW of SCGT
- 4.5 MW of DR
- 7 MW of system cost-effective EE[13]</td><td>93</td><td>54</td></tr>
</table>

Similar to what was described for the Kanata-Stittsville area options, the NPV assessment for the Southeast Ottawa area indicates that the majority of the non-wires alternatives costs would need to be recovered through other funding streams beyond local value. Therefore, the probability of full cost recovery for the non-wires options appears to be low, and it is prudent for the Working Group to continue considering a new transformer station as the most cost-effective long-term solution.

Details on the NPV calculation and assumptions can be found in Appendix D.4.

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[13] For the purpose of this non-wires options assessment, costs of system cost-effective EE were assumed to be zero. This assumes that their costs would be incurred through provincial program delivery.

Recommended Actions

A new 27.6 kV station supplied by 230 kV circuit L24A is the preferred wires option to supply the southeast Ottawa area. This station will provide a new supply point in a growing part of the City that is more than 10 km from the existing supply stations, therefore reducing distribution distances for customers.

Hydro Ottawa, the station proponent, has not yet identified a site for a new station in proximity to circuit L24A. Once a site is identified, Hydro Ottawa will initiate the environmental approval process, which will include engaging with stakeholders and communities. The size and design of the new station will be similar to that of two other Hydro Ottawa stations: Terry Fox MTS, completed in 2014, and South Nepean MTS which is currently under construction and scheduled to be in service before the end of 2022. Based on the costs of these two stations, the estimated cost of the new supply station is $28 million, plus approximately $5 million in 230 kV connection costs, assuming the new station is in close proximity to 230 kV circuit L24A. Hydro Ottawa indicates this station could be in service as early as 2025. The Working Group recommends that Hydro Ottawa initiate development work and seek approval for this new station.

Interim Measures

Hydro Ottawa has indicated that they will continue to redistribute loads in the southeast area between their existing supply stations over the coming years, for example as expanded capacity becomes available at Uplands MTS and Limebank MTS. Hydro Ottawa may also utilize some of the small amount of supply capacity available at Hydro One's Greely TS (less than 10 MW) to meet near-term demands near the service boundary as an interim measure until the new station is available.

7.4 OPTIONS FOR ADDRESSING ORLEANS AREA NEEDS

Bilberry Creek TS End-of-Life

As described in Section 2.3, the Working Group has been aware since the previous regional planning cycle that Bilberry Creek TS is approaching its end of life. The Working Group considered the two main options of retiring Bilberry Creek TS or refurbishing Bilberry Creek TS with like-for-like transformers. These options are described in the following subsections.

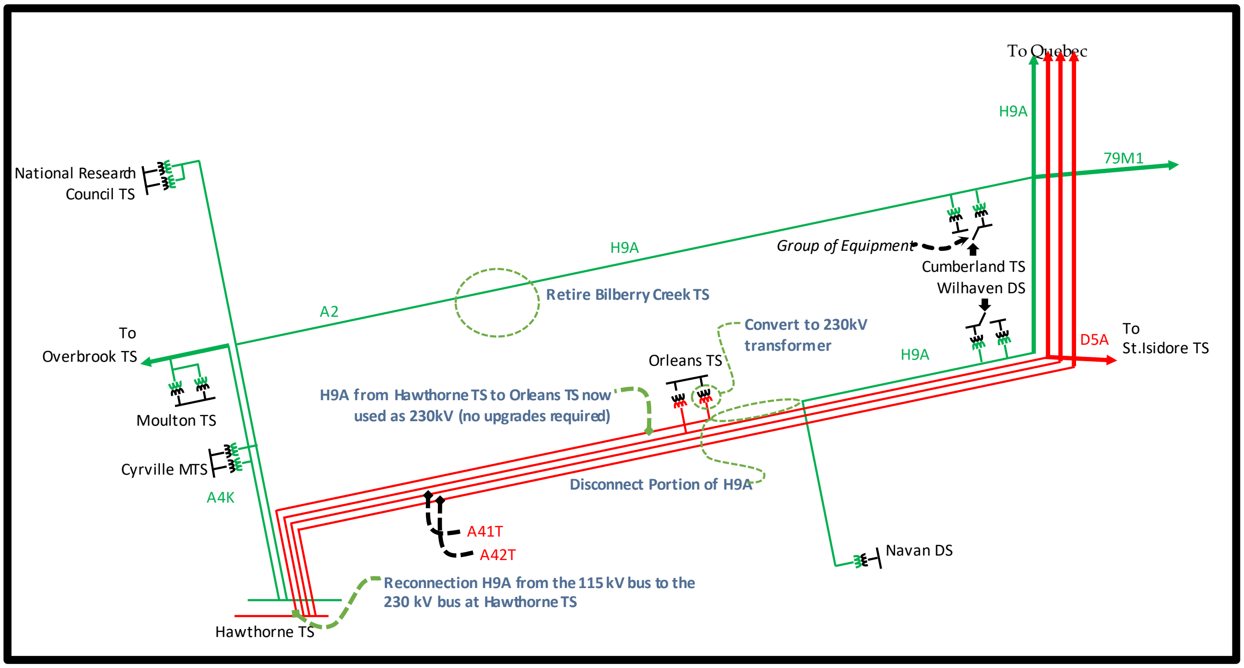
Option 1: Retire Bilberry Creek TS

In local areas where electricity demand is declining or shifting geographically retiring an existing transmission station at the end of its life and consolidating demand at a newer station may be part of a cost-effective plan. Like many parts of Ottawa, Orleans is a growing community with an increasing electricity demand forecast. While Bilberry Creek TS itself is not fully loaded, the nearby Orleans TS is forecast to be loaded to its planning capacity by 2025. The combined demand forecast for the two stations is 167 MW in 2023, rising slowly to 179 MW in 2028. The planning capacity of Orleans TS is 117 MW, so in terms of these two stations combined, if Bilberry Creek TS were retired in 2023 there would be an immediate shortfall of station capacity in the area. Additional station capacity (i.e., a new station or an expansion of Orleans TS), preferably supplied by the local 230 kV network due to the supply limitations on the regional 115 kV transmission system, would be needed to replace the loss of Bilberry Creek TS as soon as it were retired.

The retirement of Bilberry Creek TS option was therefore considered in conjunction with transferring Bilberry Creek TS customers to an expanded Orleans TS. This option would take advantage of the opportunity to convert 115 kV circuit H9A to 230 kV operation and convert the existing Orleans TS DESN to dual 230 kV supply, eliminating the brief outages that occur before switching to 230 kV operation when 115 kV circuit H9A is not available, as described in Section 6.2.3. A single line diagram of this configuration is shown in Figure 7-4. Hydro One indicated that in conjunction with the conversion to dual 230 kV supply the existing Orleans TS DESN could be expanded to 170 MVA (153 MW). This option would cost approximately $21 million, but would not result in sufficient capacity to supply the combined Bilberry Creek TS and Orleans TS demand forecast for 2023.

The option of retiring Bilberry Creek TS, would therefore need to be implemented in conjunction with a larger incremental capacity option than the expansion of the existing Orleans TS DESN could provide. This would likely take the form of a new second DESN station at the Orleans TS location, an option that would cost about $30 million.

Figure 7-4: Single Line Diagram of the East Ottawa Transmission System if Bilberry Creek TS Were Retired

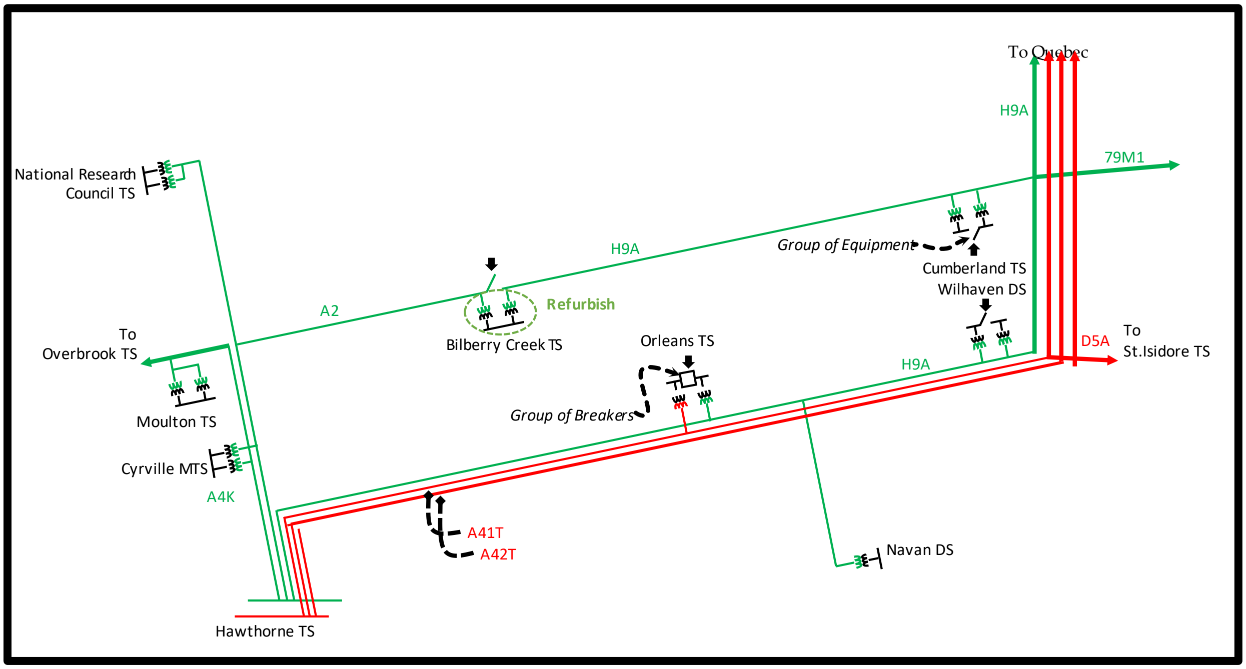


Option 2: Refurbish Bilberry Creek TS

The second main option is to refurbish Bilberry Creek TS. This includes the like-for-like replacement of two step-down transformers, the replacement of the majority of the low voltage breakers, and the installation of a new protection and control building. A single line diagram of this configuration is shown in

Figure 7-5. This option maintains the existing total of 225 MVA (202.5 MW) of supply capacity at the two stations; however, two new feeder positions would need to be added to Bilberry Creek TS to enable Hydro Ottawa to transfer some of the demand growth forecast for Orleans TS. This option would cost approximately $22 million and would provide adequate supply station capacity for the forecast period.

Figure 7-5: Single Line Diagram of the Existing Transmission Configuration in Orleans (Consistent with Option 2)



Recommended Actions

A comparison of the retire Bilberry Creek and refurbish Bilberry Creek options is shown in Table 7-4, on the following page. The demand forecast for Bilberry Creek TS and Orleans TS is also provided in Table 7-5 for reference.

Table 7-4: Comparison of Two End-of-Life Options for Bilberry Creek TS

Option	Estimated Cost	Resulting Supply Capacity in 2023	Adequacy of Supply Capacity for Combined Bilberry Creek TS and Orleans TS Forecast	Additional Benefits
Retire Bilberry Creek TS, Expand Orleans TS and Convert Orleans TS to dual 230 kV supply	$21 million	153 MW	Insufficient supply capacity for the forecast period. Additional supply capacity (i.e., a second DESN station at Orleans TS) would be required in 2023.	• Orleans TS is converted to a dual 230 kV supply • Decreases demand on the 115 kV system in the area
Refurbish Bilberry Creek TS and Provide Two Additional Feeder Positions for Hydro Ottawa	$22 million	202.5 MW	Adequate supply capacity for the forecast period	• Retains a second supply point in the northern part of the community

Table 7-5: IRRP Forecast for Bilberry Creek TS and Orleans TS

Station Forecast (MW)								
Station	**2023**	**2025**	**2027**	**2029**	**2031**	**2033**	**2035**	**2037**
Bilberry Creek TS	51.8	51.5	51.2	51	50.7	50.9	50.9	51
Orleans TS	115	119.4	126.1	129.1	130.8	132.1	134	134.9
Total	**166.8**	**170.9**	**177.3**	**180.1**	**181.5**	**183**	**184.9**	**185.9**

The Working Group recommends that Hydro One proceed with the like-for-like refurbishment of Bilberry Creek TS, with expansion to accommodate two additional breaker positions to supply Hydro Ottawa customers. The two options that were considered have similar estimated costs, however only the refurbishment option results in sufficient capacity to supply the combined demand forecast at Bilberry Creek TS and Orleans TS.

The decision to refurbish Bilberry Creek TS and expand the station in order to transfer some of the demand growth from Orleans TS will increase the loading on 115 kV circuit H9A by the mid-2020s. The 2018 Needs Assessment identified a potential voltage regulation need on 79M1, a 65 km 115 kV transmission circuit that branches off of 115 kV circuit H9A and supplies five stations on the outskirts of Ottawa. The Needs Assessment noted that the voltage on circuit 79M1 is dependent on the loading on H9A. As stated in the 2018 Greater Ottawa Needs Assessment, Hydro One will review the impact of forecast changes on the 79M1 voltage as part of the Regional Infrastructure Plan.

7.5 OPTIONS FOR ADDRESSING CENTRAL OTTAWA NEEDS

Recommended Action for Slater TS

Hydro Ottawa and Hydro One are investigating the feasibility and cost-effectiveness of replacing T2 and T3 at Slater TS with larger 100 MVA transformers, as was the case for the recent replacement of T1. This will increase the station's LMC by approximately 50%. This additional LMC would provide Hydro Ottawa with flexibility to transfer load from other stations in the downtown Ottawa area, where there are limited options for siting new supply stations. Hydro One anticipates completing the transformer replacement at Slater TS by the end of 2023.

Recommended Action for Albion TS

The working group has confirmed the need to retain the station at its existing transformation capacity. Hydro One will therefore proceed with its sustainment plan, with expected in service of 2026.

Recommended Action for Lincoln Heights TS

Hydro One intends to replace transformers T1 and T2 at Lincoln Heights with equivalent transformers when they reach end of life. Hydro One, the asset owner, anticipates completing the transformer replacement at Lincoln Heights TS later than 2025.

7.6 OPTIONS FOR ADDRESSING THE REGIONAL 115 KV SYSTEM NEEDS

As described in Section 6.2.4, T22 at Merivale TS is presently limiting the LMC of the 115 kV system. The Working Group recommends that Hydro One replace T22 with a larger capacity transformer so that it more closely matches the T21, the companion transformer Merivale TS. Hydro One estimates that this project will cost $10 million. Transformer T22 was put in service in 1978. Replacing it in the near-term advances the end-of-life replacement.

After transformer T22 is replaced, the LMC of the 115 kV system will be limited pre and post contingency by several of the 230/115 kV transformers. The complexity of the multiple subsequent constraints means that further increasing 115 kV supply will require consideration of expanding Merivale TS to include a third 230/115 kV transformer, an option that costs in the range of $100 million. This potential costly option to increase the LMC of the 115 kV system must be considered in conjunction with planning for the loading of 115 kV transmission circuits, and the 115 kV system stations, in order to ensure that all costs related to 115 kV system expansion option are included. A plan for the 115 kV system will consider the potential for non-wires alternatives to manage demand growth at heavily loaded individual stations supplied by the 115 kV system, while maintaining demand on the overall 115 kV system within the LMC of the existing 230/115 kV transformers. Another approach that will be considered is the potential for converting some 115 kV transmission lines and supply stations to 230 kV supply.

This IRRP has identified the scope and complexity of integrated planning needs for the 115 kV system in the Ottawa area, however additional work is required beyond the timeframe of this IRRP. Following the completion of this IRRP, the Working Group will focus on developing a long-term integrated plan for the 115 kV transmission system. This work will be coordinated with the IESO's ongoing bulk transmission planning study for the Ottawa area, which may consider bulk transmission options that provide additional considerations for future supply to existing 115 kV stations.

7.7 SUMMARY OF RECOMMENDED ACTIONS AND NEXT STEPS

Table 7-6, below, summarizes the specific recommendations that should be implemented immediately to address the most imminent electricity supply needs in the Ottawa area.

Table 7-6: Summary of 2020 Ottawa Sub-Region IRRP Recommendations

Area	Need	Recommended Solutions	Lead Responsibility	Estimated Cost	Timeline
Kanata-Stittsville	27.6 kV Supply Capacity	Implement the North Kanata Retrofit Top-Up Program and the North Kanata Smart Thermostat Program, targeted commercial and residential energy efficiency programs.	Hydro Ottawa	Cost for these system cost-effective resources will be recovered through a provincial program.	Beginning in 2020
Southeast Ottawa	27.6 kV Supply Capacity	Plan and seek approval for a new 230 kV connected supply station in southeast Ottawa.	Hydro Ottawa	MTS: $28 million; 230 kV connection: $5 million	Estimated in-service date for the new station: 2025
Orleans	Bilberry Creek TS End-of-Life	Proceed with the like-for-like refurbishment of Bilberry Creek TS, with expansion to accommodate two additional breaker positions to supply Hydro Ottawa customers.	Hydro One	$22 million	Planned completion: 2025
Central Ottawa	Slater TS End-of-Life Transformers	Replace end-of-life Slater TS transformers T2 and T3 with larger 100 MVA transformers, as was done for the recent end-of-life replacement of T1.	Hydro One	To be confirmed	Planned completion: late 2023
Central Ottawa	Albion-TS End-of-Life Transformers and Switchgear	Proceed with the like-for-like replacement of the transformers which are approaching their end of life.	Hydro One	To be confirmed	Planned completion: mid 2026

Central Ottawa	Lincoln Heights TS End-of-Life Transformers	Proceed with the sustainment plan for replacement of the transformers which are approaching their end of life.	Hydro One	To be confirmed	Planned completion: 2025
Regional 115 kV System	115 kV Supply Capacity	Replace Merivale TS Transformer T22 with one that is approximately equivalent to T21.	Hydro One	$10 million	Planned completion: mid-2020s

The Working Group has also identified the following additional planning activities to address ongoing regional planning needs.

Targeted Need or Area	Action	Timeframe
Across the Sub-Region	Monitor the City of Ottawa's Energy Evolution mandate and explore the potential for alignment between integrated regional planning and the Energy Evolution mandate.	Throughout the next regional planning cycle
Regional 115 kV System	Develop a long-term plan for the 115 kV transmission system. This study will include an assessment of the potential for non-wires alternatives to manage demand growth at heavily loaded stations supplied by the 115 kV system while maintaining demand on the overall 115 kV transmission system within the capability of the existing 230/115 kV transformers.	2020
Across the Sub-Region	Monitor demand growth and the status of major development proposals on an annual basis. The next regional planning cycle is scheduled to begin in 2023, however it could be triggered sooner if the Working Group identifies a material need.	Annually

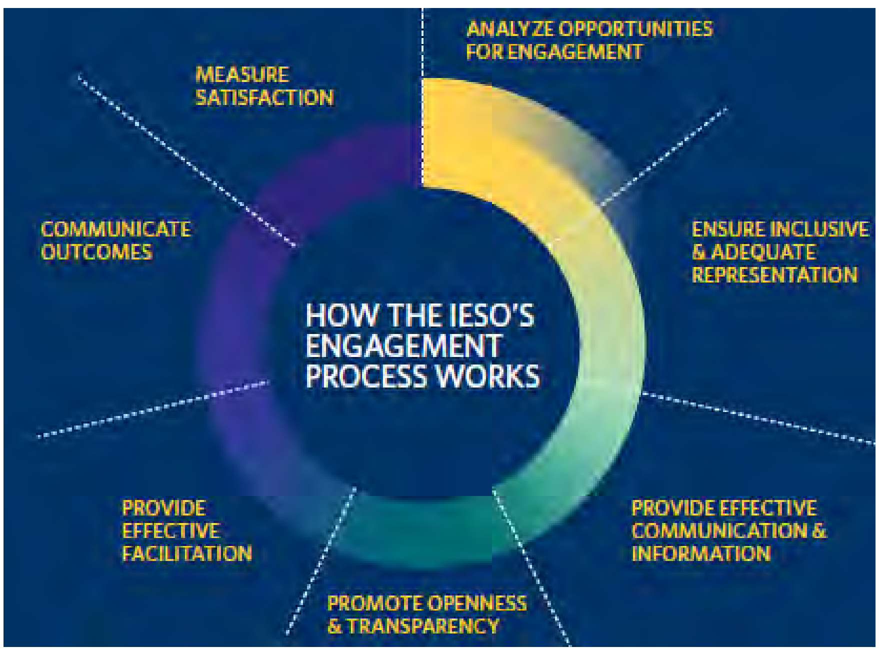
8 Community and Stakeholder Engagement

Engaging with communities and interested parties is an integral component of the regional planning process. Providing opportunities for input in regional planning enables the views and preferences of the community to be considered in the development of an IRRP and helps lay the foundation for successful implementation. This section outlines the engagement principles and activities undertaken for the Ottawa Sub-Region IRRP.

8.1 ENGAGEMENT PRINCIPLES

The IESO's Engagement Principles[14] guided the process to help ensure that all interested parties were aware of and could contribute to the development of this IRRP. The IESO uses these principles to ensure inclusiveness, sincerity, respect and fairness in its engagements, and to support its efforts to build trusted relationships.

Figure 8-1: IESO Engagement Principles



14 http://www.ieso.ca/Sector-Participants/Engagement-Initiatives/Overview/Engagement-Principles

8.2 CREATING AN ENGAGEMENT APPROACH

The outreach and engagement approach was designed to ensure the IRRP reflected input from key community and stakeholder representatives. A dedicated engagement web page[15] was also created to provide openness and transparency throughout the engagement process. This web page hosted all engagement activities, including background information, presentations and public meetings/webinars on the development of this IRRP, as well as previous plans for the area.

The IESO's email subscription service for the Greater Ottawa planning region was used to send information to interested communities and stakeholders who subscribed to receive updates. Targeted outreach to municipalities, Indigenous communities and other business sectors in the region was also conducted at the outset of this engagement and continued throughout the planning process.

In addition, regular communications were sent via the IESO's weekly Bulletin, which includes subscribers from across Ontario's electricity sector.

8.3 ENGAGE EARLY AND OFTEN

Leveraging relationships built during the previous planning cycle, the IESO held preliminary discussions to help inform the engagement approach during this second planning cycle – starting with the Scoping Assessment Outcome Report.

Early communication and engagement activities began with invitations to all subscribers and targeted communities to learn about and provide comments on the draft Greater Ottawa Scoping Assessment Outcome Report before it was finalized. This scoping assessment identified the need for an IRRP specifically for the Ottawa Sub-Region, and included Terms of Reference to guide development of the plan. Following a window for comments to be submitted by interested parties, the final Scoping Assessment Outcome Report was published in September 2018. No comments were received during this feedback period.

Outreach then began with targeted communities to inform early discussions for the development of the IRRP including the IESO's approach to engagement. In response to the input received through these initial discussions, the IESO undertook direct outreach and

[15] http://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Integrated-Regional-Resource-Plan-Ottawa-Area-Sub-Region

engagement with municipal councilors in targeted areas of need in the City of Ottawa. The launch of a broader engagement initiative followed with an invitation to subscribers to ensure that all interested parties were made aware of this opportunity for input.

Two public webinars were held at major junctures during IRRP development to give interested parties an opportunity to hear about its progress and provide comments on key components. Both webinars received strong participation with cross-representation of stakeholders and community representatives attending the webinar, and submitting written feedback during a 14-day comment period.

The first webinar sought input on the electricity demand forecast and needs in the Ottawa area and potential solutions to be examined. Several comments were received during the feedback window that touched on the following major themes:

- Non-wires solutions
- Land use
- GHG reduction
- Cost effectiveness
- Feasibility of generation

As a final step in the engagement initiative, a second public webinar was held to seek input on the analysis of options and draft IRRP recommendations. Feedback received during the written comment period were related to the major themes below:

- Options analysis: delivery models
- Options analysis: non-wires alternatives
- Alignment with local initiatives
- Engagement

Based on the discussion in the webinar and written feedback received, it is clear that there is a strong interest and need for ongoing monitoring of capacity and local demand growth and continued discussion and engagement with communities and stakeholders. While there is strong community interest in non-wires alternatives, the near-term nature of the needs will require other solutions to be in place in order to ensure a continued reliable electricity supply to support rapid local growth. Furthermore, other factors and initiatives that may have an impact on local electricity needs will continue to evolve post IRRP, such as projects arising from the City of Ottawa’s Energy Evolution. To that end, ongoing discussions will continue through the

IESO's Eastern Ontario Regional Electricity Network to keep interested parties engaged on local developments, priorities and planning initiatives.

All background information, including engagement presentations, recorded webinars, detailed feedback submissions, and responses to comments received, are available on the IESO's Integrated Regional Resource Plan engagement web page.

8.4 OUTREACH WITH MUNICIPALITIES

As the City of Ottawa was a key stakeholder in the development of this IRRP, the IESO held a number of meetings with City representatives, to exchange information on municipal planning and electricity planning processes, as well as the City's community energy transition strategy, called Energy Evolution. Meetings began in August 2018 at the outset of this planning project and continued in April, August and October 2019. These meetings were held with municipal representatives in the climate change resiliency and planning areas, as well as with some City Councilors to build awareness and provide opportunities to raise concerns that might arise from their constituents. No concerns were raised. The potential for future alignment between Energy Evolution and regional planning was also a topic of discussion with municipal representatives. In addition to helping to inform the City's electricity needs, these meetings also provided opportunities to strengthen relationships to enable ongoing dialogue beyond this IRRP process.

9 Conclusion

This report documents an IRRP that has been carried out for the Ottawa Sub-Region of the OEB's Greater Ottawa planning region. The IRRP identifies electricity needs in the sub-region over the 20-year period from 2018-2037 and recommends preferred solutions to address near-term needs. The Working Group recommends Hydro One initiate a RIP. The Working Group will continue to provide support throughout the RIP process, and assist with any regulatory matters that may arise during plan implementation.

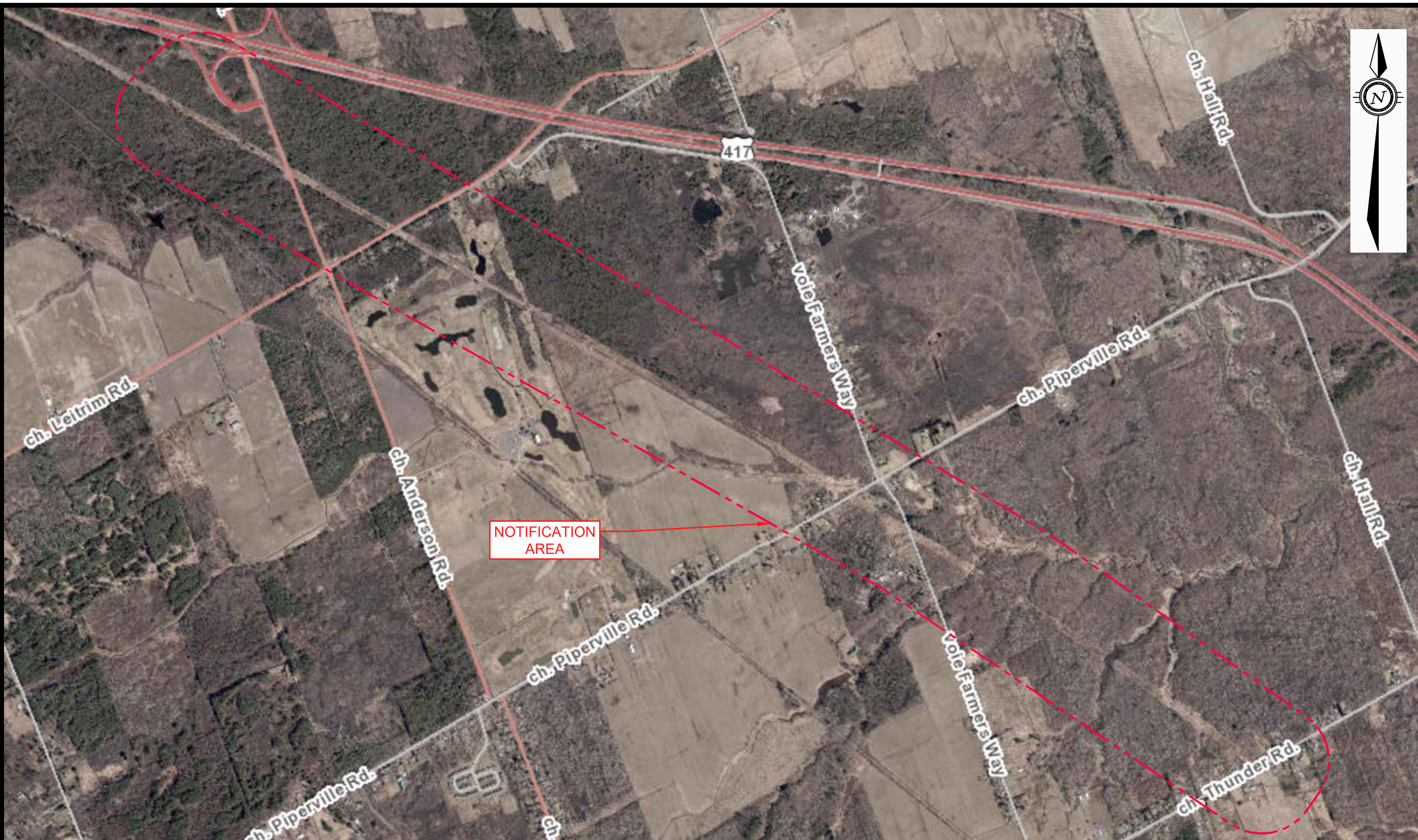
The IRRP also identifies actions to monitor, defer, and address remaining needs and to inform the next regional planning cycle. The Ottawa Sub-Region Working Group will continue to meet at regular intervals to monitor developments in the sub-region and track progress toward the plan deliverables. In the event that underlying assumptions change a new regional planning cycle may be initiated sooner than the OEB mandated five-year schedule.

Appendix B - Stakeholders Consultation

B1 – Stakeholders List

Stakeholder Group / Sub-group	Contact Name	Email	Phone Number
Federal			
Ministry of the Environment, Conservation & Parks	Jon K. Orpana	Jon.Orpana@ontario.ca (eanotification.eregion@ontario.ca)	(613) 548-6918
Indeginous Communities			
Algonquins of Ontario	To whom it may concern	algonquins@tanakiwin.com	(613) 735-3759
Kitigan Zibi Anishinabeg	Chief Dylan Whiteduck	dylan.whiteduck@kza.qc.ca info@anishinabenation.ca	(819) 449-5170
Ministry of Indigenous Affairs		moeccpermissions@ontario.ca	
Ottawa Metis Council	To whom it may concern	president.ormc@gmail.com	(613) 748-1880 Ext. 306
Local Conservation Authority			
South Nation Conservation Authority	Michelle Cavanagh James Holland	mcavanagh@nation.on.ca jholland@nation.on.ca	(613) 984-2948
City of Ottawa			
City of Ottawa Planning Department	To whom it may concern	DIOinquiry@ottawa.ca	(613) 580-2400
Councillor	Councillor George Darouze	George.Darouze@ottawa.ca	(613) 580-2490
Community Associations			
Carlsbad Springs Community Association	Adrian Becea Denis Labreche	info@carlsbadsprings.ca adrian.becea@gmail.com dlabreche@rogers.com	
Industry			
Hydro One Networks Inc.	Jayde Suleman Temesghen Bzuayehu	Jayde.Suleman@HydroOne.com temesghen.bzuayehu@hydroone.com	(613)-318-4667

B2 - Notification Area



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Last Saved: Nov 6, 2023 5:15 PM Last Plotted: Nov 7, 2023 1:51 PM Plotted by: PatelShi

LEGEND

NOTIFICATION AREA BOUNDARY

0 250m 500m 1km

HORIZONTAL 1:25,000

EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE NOVEMBER 2023	PROJECT: HYDRO OTTAWA NEW EAST SUBSTASTION DRAFT ENVIRONMENTAL STUDY REPORT	project no. OTT-22017543-A0
DESIGN LW / CHECKED GB	TITLE: NOTIFICATION AREA	scale 1:25,000
DRAWN BY SVP		B2

B3 – Notice of Commencement

Piperville Municipal Transformer Station

Notice of commencement of Class Environmental Assessment and invitation to community information session.

HydroOttawa

We're planning now to meet your future electricity needs

To ensure Ottawa's eastern region has the power to grow, Hydro Ottawa Limited (Hydro Ottawa) has initiated a Class Environmental Assessment (Class EA) for a new 27.6kV municipal transformer station (MTS) in the southeast end of the city of Ottawa.

This project will support projected growth in electricity demand for the area and provide redundancy to our system in the event of future extreme weather events. The Piperville Municipal Transformer Station is one of many future-planning projects we are spearheading to make our electricity system as resilient, and as sustainable, as possible.

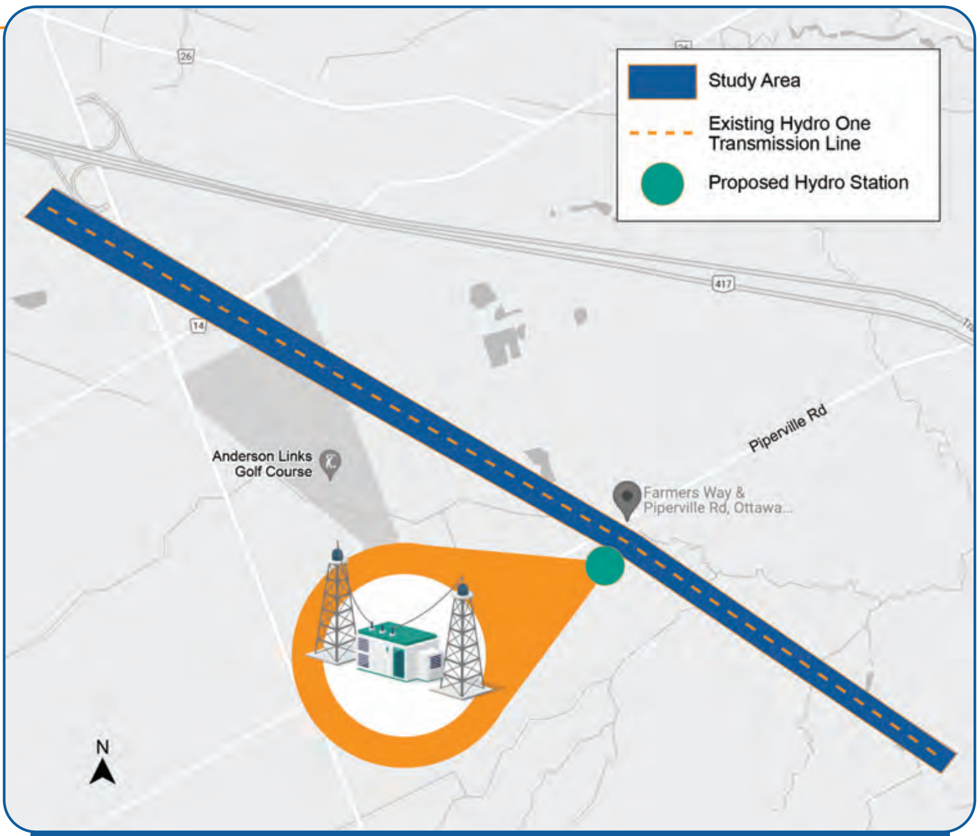
The need for new facilities was identified through the Integrated Regional Resource Plan (IRRP) for the Ottawa area. Released in March 2020, the IRRP is a twenty-year plan that has been developed by a regional planning working group consisting of the Independent Electricity System Operator (IESO), Hydro Ottawa and Hydro One.

The Piperville Municipal Transformer Station project proposes:

- **to construct a new 27.6kV municipal transformer station (MTS) at the intersection of Piperville Road and Farmers Way (located on the west side of Highway 417); and**
- **to connect the new power station to Hydro One's existing 230kV transmission line, also located on the west side of Highway 417.**

Planning and approvals

The Piperville Municipal Transformer Station is being planned in accordance with the Environmental Assessment Act of Ontario, and developed in compliance with the Class EA for Minor Transmission Facilities. The Class EA is a streamlined process to ensure that smaller transmission facility projects with a known range of effects are planned and executed in an efficient and environmentally responsible way. It is anticipated that construction on the new station could begin in April 2024 and be in-service by the fall of 2026 (pending the resolution of the Class EA procedure and other permits).



For your reference, the map of the study area shows the existing Hydro One transmission line, as well as the proposed location of the new station (pending approvals).

We look forward to speaking with you

Consultation is an important part of the Class EA process and our commitment to keeping our customers informed. As such, you are invited to attend one of our upcoming community information sessions to learn about the project, speak directly with members of our project team, and provide your feedback. **Please join us at one of our sessions:**

Community Information Session 1 (virtual)	Community Information Session 1 (in-person)
April 20, 2023 **12:00 pm - 1:00 pm** **Visit hydroottawa.com/piperville to register for our virtual event.**	**April 20, 2023** **7:00 pm - 9:00 pm** **Anderson Links Golf Club** **4175 Anderson Road**

For more information

If you have questions, or would like to join our contact list for email updates, please visit our website or reach out to our Piperville Municipal Transformer Station team at:

Email: piperville@hydroottawa.com
Project website: hydroottawa.com/piperville

At the request of the Ministry of the Environment, Conservation and Parks, information regarding the Freedom of Information and Protection of Privacy Act is included and can be viewed below.

Freedom of Information and Protection of Privacy Act
All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s. 37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the Ministry of the Environment, Conservation and Parks' Freedom of Information and Privacy Coordinator at 416-327-1434.

Poste de transformation municipal Piperville

Avis de démarrage d'une évaluation environnementale de portée générale et invitation à une séance d'information.

Nous planifions aujourd'hui pour répondre à vos besoins d'électricité de demain

Afin de s'assurer que le secteur est d'Ottawa ait suffisamment d'électricité pour soutenir sa croissance, Hydro Ottawa limitée (Hydro Ottawa) a amorcé une évaluation environnementale de portée générale (EE) relativement à un nouveau poste de transformation municipal (PTM) de 27,6 kV dans le secteur sud-est de la ville d'Ottawa.

Ce projet contribuera à répondre à la croissance prévue de la demande d'électricité dans le secteur et assurera une redondance pour notre réseau en cas d'événements météo extrêmes. Le poste de transformation municipal Piperville est l'un des nombreux projets porteurs d'avenir que nous planifions pour rendre notre réseau d'électricité aussi résilient et durable que possible.

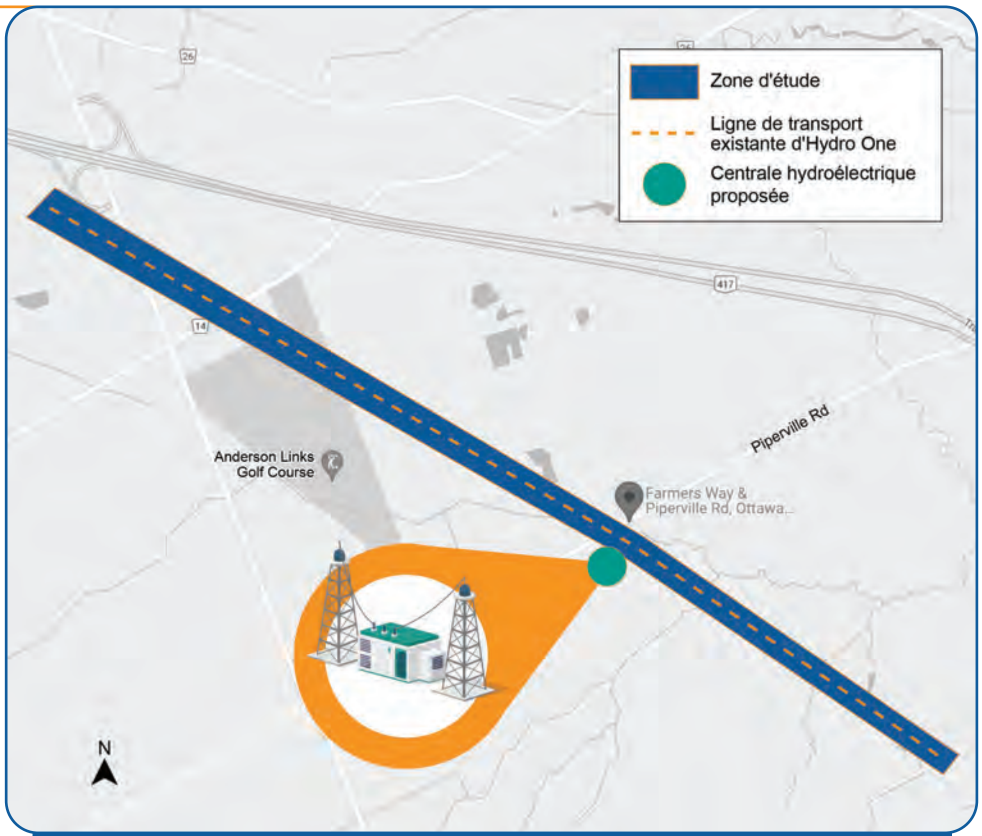
La nécessité de nouvelles installations a été mise en lumière par le Plan intégré des ressources régionales (PIRR) pour la région d'Ottawa. Publié en mars 2020, le PIRR est un plan de vingt ans qui a été élaboré par un groupe de travail consacré à la planification régionale, constitué de la Société indépendante d'exploitation du réseau d'électricité (SIERE), d'Hydro Ottawa et d'Hydro One.

Le projet de poste de transformation municipal Piperville propose :

- **pour construire un nouveau poste de transformation municipal (PTM) de 27, 6 kV à l'intersection du chemin Piperville et de la voie Farmers (situés du côté ouest de l'autoroute 417); et**
- **le raccordement du nouveau poste à la ligne de transport existante de 230 kV d'Hydro One, également située du côté ouest de l'autoroute 417.**

Planification et approbations

Le poste de transformation municipal Piperville fait l'objet d'une planification en conformité avec la Loi sur les évaluations environnementales de l'Ontario, et son développement est conforme à l'évaluation environnementale de portée générale (EE) relative aux installations de transmission secondaires. Cette EE est un processus simplifié conçu pour veiller à ce que les projets d'installations de transport plus petites, dont la portée des effets est connue, soient planifiés et réalisés d'une manière efficace et écoresponsable. La construction du nouveau poste pourrait commencer en avril 2024, pour une mise en service d'ici l'automne 2026 (sous réserve de l'issue du processus d'EE et de l'obtention d'autres permis).



Pour votre information, la carte de la zone d'étude avis fait état de la ligne de transport existante d'Hydro One ainsi que de l'emplacement où pourrait se trouver le nouveau poste de transformation (sous réserve des approbations).

Nous tenons à en discuter avec vous

La consultation est un élément important du processus d'EE et de notre engagement à tenir nos clients bien informés. Par conséquent, nous vous invitons à assister à l'une de nos séances d'information pour en savoir davantage sur le projet, parler directement aux membres de notre équipe de projet et émettre vos commentaires.
Veuillez vous joindre à nous lors d'une de ces séances :

1re séance d'information (virtuelle)	1re séance d'information (en personne)
20 avril 2023 **12 h – 13 h** **Visitez le site hydroottawa.com/fr/piperville pour inscrivez-vous à notre événement virtuel**	**20 avril 2023** **19 h – 21 h** **Club de golf Anderson Links** **4175, chemin Anderson**

Pour obtenir plus d'information

Si vous avez des questions ou souhaitez vous inscrire à notre liste de mises à jour à courriel, visitez notre site Web ou contactez notre équipe responsable du poste de transformation municipal Piperville à :

Courriel : piperville@hydroottawa.com
Page Web du projet : hydroottawa.com/fr/piperville

À la demande du ministère de l'Environnement, de la Protection de la nature et des Parcs, nous incluons ci-dessous de l'information relative à la Loi sur l'accès à l'information et la protection de la vie privée.

Loi sur l'accès à l'information et la protection de la vie privée
Tous les renseignements personnels indiqués dans une demande – comme un nom, une adresse, un numéro de téléphone et l'emplacement d'une propriété – sont recueillis, conservés et divulgués par le ministère de l'Environnement, de la Protection de la nature et des Parcs à des fins de transparence et de consultation. Les renseignements sont recueillis avec l'autorisation de la Loi sur les évaluations environnementales ou sont recueillis et conservés aux fins de la création d'un dossier qui est accessible par le grand public, tel que décrit à l'article 37 de la Loi sur l'accès à l'information et la protection de la vie privée. Les renseignements personnels que vous fournissez feront partie d'un dossier public accessible par le grand public, sauf si vous demandez que vos renseignements personnels demeurent confidentiels. Pour obtenir davantage d'information, veuillez contacter le coordonnateur de l'accès à l'information et de la protection de la vie privée du ministère de l'Environnement, de la Protection de la nature et des Parcs au 416 327-1434.

B4 – Notice of Completion – draft ESR

Piperville Municipal Transformer Station

Notice of Completion - Draft Environmental Study Report and Invitation to Community Information Session.

HydroOttawa

November 9, 2023

Hydro Ottawa Limited (Hydro Ottawa) has completed a draft Environmental Study Report (ESR) for the proposed Piperville Municipal Transformer Station project. The purpose of the undertaking is to ensure an adequate and reliable supply of power to meet the growing electricity needs in the southeast end of the City of Ottawa. The proposed project consists of a new 27.6kV municipal transformer station (MTS) at the intersection of Piperville Road and Farmers Way (located on the west side of Highway 417) and its connection to Hydro One's existing 230kV transmission line, also located on the west side of Highway 417.

The need for new facilities was identified through the Integrated Regional Resource Plan (IRRP) for the Ottawa area. Released in March 2020, the IRRP is a twenty-year plan that has been developed by a regional planning working group consisting of the Independent Electricity System Operator (IESO), Hydro Ottawa and Hydro One. This project is subject to the provincial Environmental Assessment Act and is being planned in accordance with the approved Class Environmental Assessment for Minor Transmission Facilities (Class EA) process. Subject to the outcome of the Class EA, construction may begin as early as April 2024.

HOW TO PROVIDE YOUR INPUT

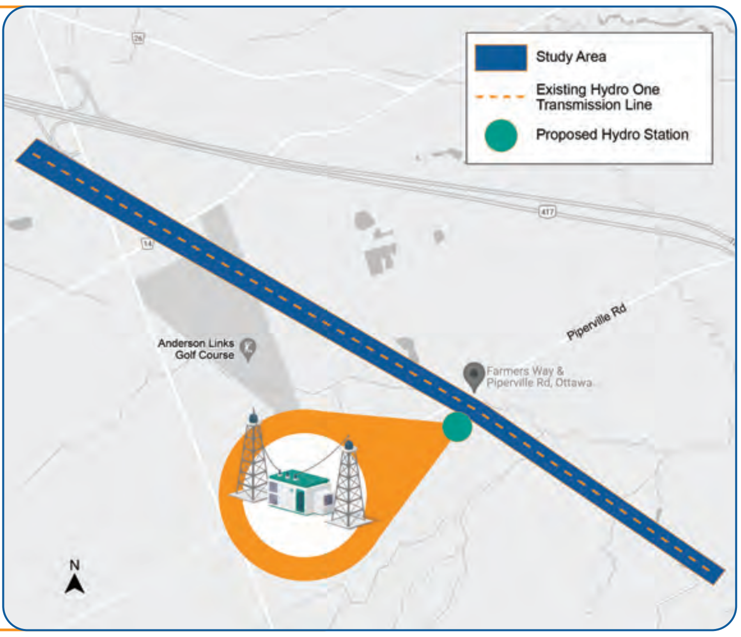
In accordance with the Class EA process, Hydro Ottawa is providing notice of their intent to proceed with the project. The draft ESR will be available for a 30 day public review and comment period from November 9, 2023 to December 10, 2023. The draft ESR can be viewed on the project website at **www.hydroottawa.com/piperville** or in hard copy form at the following locations:

Hydro Ottawa
Hunt Club Office
2711 Hunt Club Road
Ottawa, ON, K1G 3S4

Ottawa Public Library
Greely location
1448 promenade Meadow Drive
Greely, ON, K4P 1B1

Written comments and questions on the draft ESR must be received by Hydro Ottawa no later than 4:30 p.m. on December 10, 2023. Please address your correspondence to:

Michael Campbell, P.Eng
Project Manager
Hydro Ottawa Limited
2711 Hunt Club Road
Ottawa, ON, K1G 3S4
piperville@hydroottawa.com
613-738-5499 ext: 7478



Hydro Ottawa will respond to, and make best efforts to, resolve any issues raised during the review period. If no issues are raised during the review period, Hydro Ottawa will finalize the ESR and file it with the Ministry of the Environment, Conservation and Parks (MECP). The project will be considered acceptable and may proceed as outlined in the ESR.

Section 16 Requests

The Environmental Assessment Act, as amended through the COVID-19 Economic Recovery Act, 2020, allows a person with concerns pertaining to potential adverse impacts to Aboriginal or treaty rights, that have not been addressed through the Class Environmental Assessment process to request under Section 16 of the Environmental Assessment Act (EAA) that the Minister make an order requiring an individual environmental assessment or that conditions be imposed on the project. Such requests must be addressed in writing to the Minister of Environment, Conservation and Parks, as well as to the Director of the Environmental Assessment Branch, and received no later than 4:30 p.m. on December 10, 2023, at the following addresses:

Minister
Ministry of the Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto, ON, M7A 2J3
Email: Minister.mecp@ontario.ca

Director
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
135 St. Clair West, 1st Floor
Toronto, ON, M4V 1P5
Email: EABDirector@ontario.ca

To submit your Section 16(6) Order request, you should provide the following: your name, address and email address; project name; proponent name; what kind of Order is being requested (a request for additional conditions or a request for an individual environmental assessment); details about your concerns about potential adverse impacts on constitutionally protected Aboriginal or treaty rights and how the proposed Order may prevent, mitigate or remedy the identified adverse impacts; whether you belong to, represent or have spoken with an Indigenous community whose constitutionally protected Aboriginal or treaty rights may be adversely impacted by the proposed project; whether you have raised your concerns with the proponent, the proponent's response (if any) and why the concerns could not be resolved with the proponent; any other information to support your request.The project can legally proceed under the EAA if no Section 16 Order requests are submitted during the comment period.

Please note that a duplicate copy of a Section 16 request must also be sent to Hydro Ottawa at the previously noted address.

We look forward to speaking with you

As part of the consultation process, a second community information session is being held during the Environmental Study Report public review and comment period. Members of the public are invited to attend our upcoming community information sessions to learn about the Environmental Study Report findings, speak directly to members of our project team, and provide feedback. **Please join us at one of our sessions:**

Community Information Session 2

Virtual Session	In-person Session
November 30, 2023	**November 30, 2023**
12:00 p.m. - 1:00 p.m.	**7:00 p.m. - 9:00 p.m**
Visit **hydroottawa.com/piperville**	Anderson Links Golf Club
to register for our virtual event	4175 Anderson Road

For more information

Email: **piperville@hydroottawa.com**
Project website: **hydroottawa.com/piperville**
Class EA Process: **www.ontario.ca/page/class-ea-minor-transmission-facilities**

All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s. 37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the Ministry of the Environment, Conservation and Parks' Freedom of Information and Privacy Coordinator at 416-327-1434.

Poste de transformation municipal Piperville

Notice Avis d'achèvement du rapport provisoire d'étude environnementale et invitation à une séance d'information publique.

HydroOttawa

Le 9 novembre 2023

Hydro Ottawa limitée (Hydro Ottawa) a terminé un rapport provisoire d'étude environnementale (REE provisoire) pour le projet proposé de poste de transformation municipal Piperville. Ce projet a pour but d'assurer un approvisionnement en électricité adéquat et fiable pour répondre à la demande croissante du secteur sud-est de la Ville d'Ottawa. Le projet proposé consiste en ceci : la construction d'un nouveau poste de transformation municipal (PTM) de 27,6 kV à l'intersection du chemin Piperville et de la voie Farmers (situés du côté ouest de l'autoroute 417); et son raccordement à la ligne de transport existante de 230 kV d'Hydro One, également située du côté ouest de l'autoroute 417.

La nécessité de nouvelles installations a été mise en lumière par le Plan intégré des ressources régionales (PIRR) pour la région d'Ottawa. Publié en mars 2020, le PIRR est un plan de vingt ans qui a été élaboré par un groupe de travail consacré à la planification régionale, constitué de la Société indépendante d'exploitation du réseau d'électricité (SIERE), d'Hydro Ottawa et d'Hydro One. Ce projet est assujetti à la Loi sur les évaluations environnementales de l'Ontario; sa planification est conforme au processus approuvé d'évaluation environnementale (EE) de portée générale relative aux installations de transmission secondaires. Sous réserve du résultat de l'EE de portée générale, la construction pourrait commencer dès le mois d'avril 2024.

COMMENTER PRÉSENTER VOS COMMENTAIRES

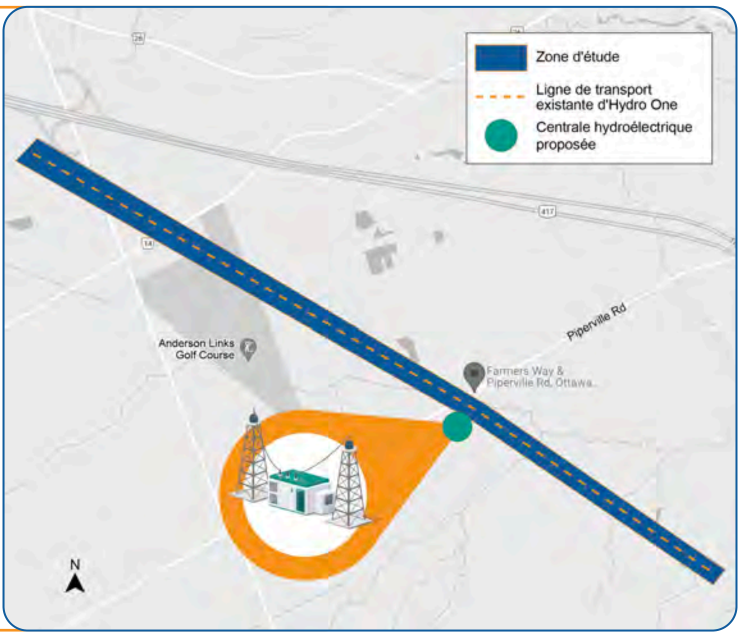
Conformément au processus d'EE de portée générale, Hydro Ottawa déclare son intention d'aller de l'avant avec le projet. Le REE provisoire est mis à la disposition du public pendant 30 jours, soit du 9 novembre 2023 au 10 décembre 2023, aux fins d'examen et de rétroaction. Le REE provisoire peut être consulté sur le site Web du projet à **www.hydroottawa.com/piperville** ou sur papier aux endroits suivants :

Hydro Ottawa
Bureau Hunt Club
2711, chemin Hunt Club
Ottawa, ON, K1G 3S4

Bibliothèque publique d'Ottawa
Emplacement Greely
1448 promenade Meadow Drive
Greely, ON, K4P 1B1

Les commentaires et les questions au sujet du REE provisoire doivent être reçus par Hydro Ottawa au plus tard à 16 h 30 le 10 décembre 2023. Veuillez adresser votre correspondance à :

Michael Campbell, P.Eng
Gestionnaire de projet
Hydro Ottawa limitée
2711, chemin Hunt Club
Ottawa, ON, K1G 3S4
piperville@hydroottawa.com
613-738-5499 ext: 7478



Hydro Ottawa répondra aux préoccupations soulevées durant la période d'examen et fera de son mieux pour les régler. Si aucune préoccupation n'est soulevée durant la période d'examen, Hydro Ottawa finalisera le REE provisoire et le déposera au ministère de l'Environnement, de la Protection de la nature et des Parcs. Le projet sera considéré comme étant acceptable et pourra aller de l'avant comme le décrit le REE provisoire.

Demandes en vertu de l'article 16

La Loi sur les évaluations environnementales, telle que modifiée par la Loi de 2020 visant à favoriser la reprise économique face à la COVID-19, permet à une personne qui a des préoccupations relativement aux incidences potentiellement préjudiciables sur les droits ancestraux ou issus de traités des peuples autochtones du Canada, qui n'ont pas été abordées par l'évaluation environnementale de portée générale, de demander – en vertu de l'article 16 de la Loi sur les évaluations environnementales – que le ministre prenne un arrêté exigeant une évaluation environnementale individuelle ou que des conditions soient imposées au projet. De telles demandes doivent être adressées par écrit au ministre de l'Environnement, de la Protection de la nature et des Parcs ainsi qu'au directeur de la Direction des évaluations environnementales, et reçues au plus tard à 16 h 30 le 10 décembre 2023 aux adresses suivantes :

Ministre
Ministère de l'Environnement, de la Protection de la nature et des Parcs
777, rue Bay, 5e étage
Toronto, ON, M7A 2J3
Courriel : Minister.mecp@ontario.ca

Directeur
Direction des évaluations environnementales
Ministère de l'Environnement, de la Protection de la nature et des Parcs
135, St. Clair Ouest, 1er étage
Toronto, ON, M4V 1P5
Courriel : EABDirector@ontario.ca

Pour transmettre votre demande d'arrêté en vertu de l'article 16(6), vous devez fournir les renseignements suivants : votre nom, votre adresse et votrecourriel; le nom du projet; le nom du promoteur; le type d'arrêté demandé (demande de conditions supplémentaires ou demande d'évaluation environnementale individuelle); des détails sur vos préoccupations relativement aux incidences potentiellement préjudiciables sur les droits ancestraux ou issus de traités des peuples autochtones qui sont protégés par la Constitution et sur la manière dont l'arrêté proposé pourrait prévenir, atténuer ou pallier les incidences préjudiciables identifiées; si vous faites partie, si vous représentez ou si vous avez parlé à une communauté autochtone dont les droits ancestraux ou issus de traités des peuples autochtones, qui sont protégés par la Constitution, sont susceptibles de subir des incidences préjudiciables en raison du projet proposé; si vous avez signalé vos préoccupations au promoteur, la réponse du promoteur (le cas échéant) et la raison pour laquelle les préoccupations n'ont pas pu être réglées en collaboration avec le promoteur; et tout autre renseignement qui pourrait appuyer votre demande. Le projet peut légalement aller de l'avant en vertu de la Loi sur les évaluations environnementales si aucune demande d'arrêté en vertu de l'article 16 n'est transmise durant la période d'examen et de rétroaction.

Veuillez noter qu'une copie de la demande en vertu de l'article 16 doit également être envoyée à Hydro Ottawa à l'adresse susmentionnée.

Nous tenons à en discuter avec vous

Dans le cadre du processus de consultation, nous tenons une deuxième séance d'information publique au cours de la période d'examen et de rétroaction du rapport provisoire d'étude environnementale. Les membres du public sont invités à assister à l'une de nos séances d'information pour en savoir avantage sur les résultats du rapport d'étude environnementale, parler directement aux membres de notre équipe de projet et émettre leurs commentaires. **Veuillez vous joindre à nous lors d'une de ces séances :**

2es séances d'information

Séance virtuelle
30 novembre 2023
12 h – 13 h
Visitez **hydroottawa.com/piperville** pour vous inscrire à la séance virtuelle

Séance en personne
30 novembre 2023
19 h – 21 h
Club de golf Anderson Links
4175, chemin Anderson

Pour obtenir plus d'information :

Courriel : **piperville@hydroottawa.com**
Site Web du projet : **hydroottawa.com/piperville**
Processus d'EE de portée générale :
https://www.ontario.ca/fr/page/evaluation-environnementale-de-portee-generale-relative-aux-installations-de-transmission

Tous les renseignements personnels indiqués dans une demande – comme un nom, une adresse, un numéro de téléphone et l'emplacement d'une propriété – sont recueillis, conservés et divulgués par le ministère de l'Environnement, de la Protection de la nature et des Parcs à des fins de transparence et de consultation. Les renseignements sont recueillis avec l'autorisation de la Loi sur les évaluations environnementales ou sont recueillis et conservés aux fins de la création d'un dossier qui est accessible par le grand public, tel que décrit à l'article 37 de la Loi sur l'accès à l'information et la protection de la vie privée. Les renseignements personnels que vous fournissez feront partie d'un dossier public accessible par le grand public, sauf si vous demandez que vos renseignements personnels demeurent confidentiels. Pour obtenir davantage d'information, veuillez contacter le coordonnateur de l'accès à l'information et de la protection de la vie privée du ministère de l'Environnement, de la Protection de la nature et des Parcs au 416 327 1434.

B5 – Public Open House Session Panels

First Public Open House Session Panels

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Welcome

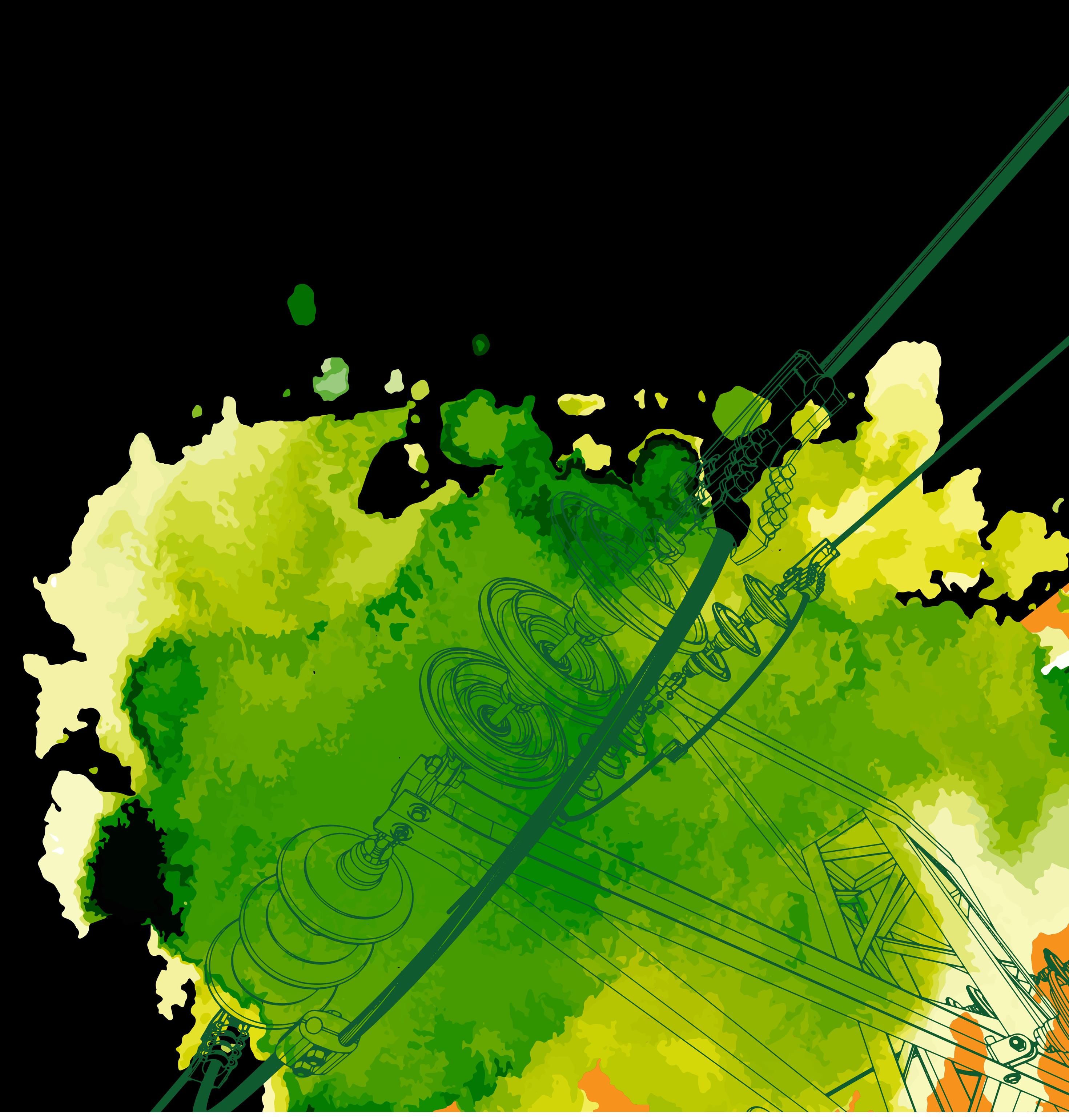
The Piperville Municipal Transformer Station Community Information Session

Hydro Ottawa

Welcome

The Piperville
Municipal Transformer Station
Community Information Session

Hydro Ottawa



Energy partners

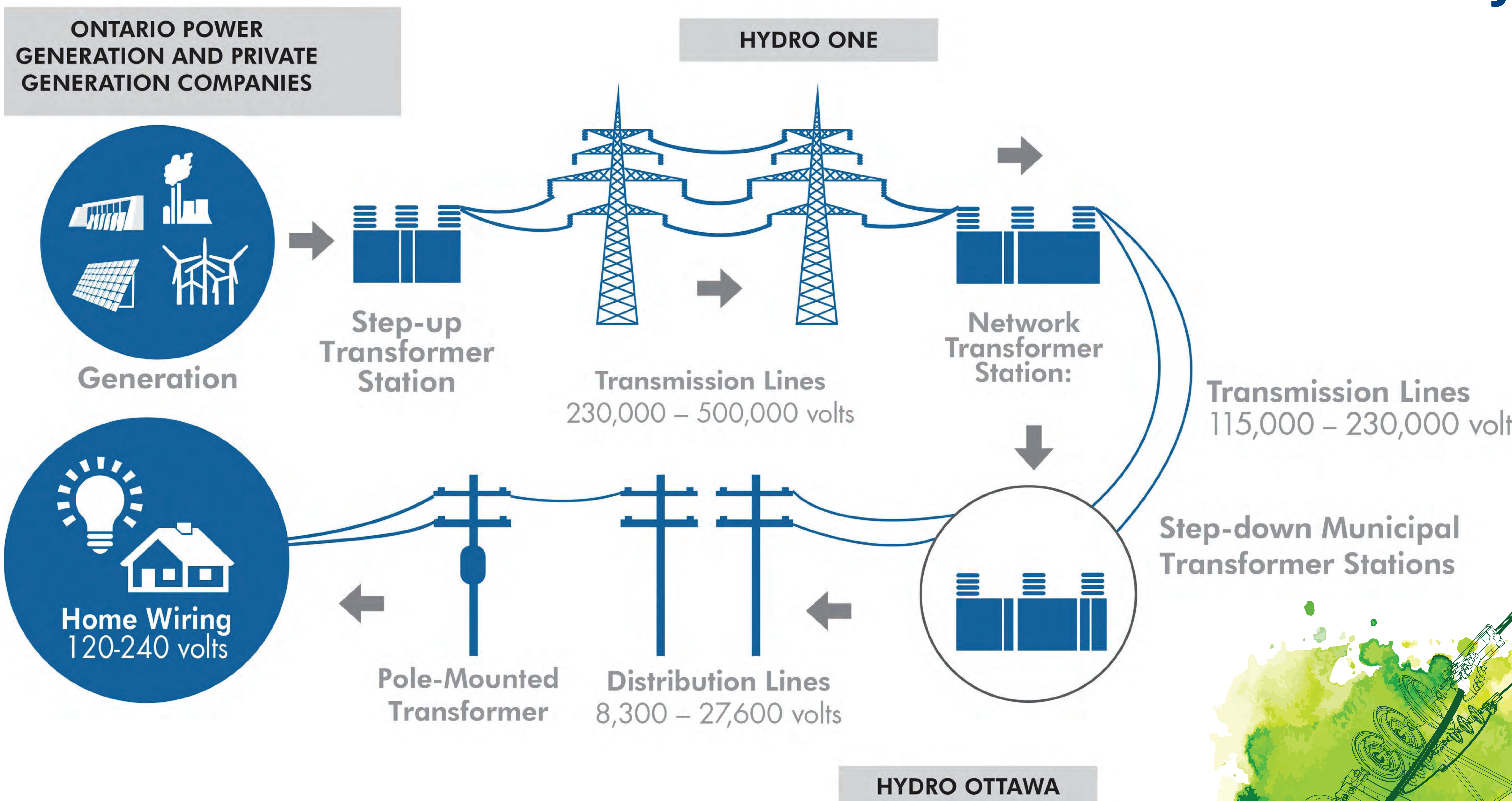
Hydro Ottawa
Builds, owns, operates and maintains the distribution of electricity facilities to more than 354,000 homes and businesses in Ottawa and Casselman.

Hydro One Networks Inc.
Builds, owns, operates and maintains the electricity transmission and distribution facilities across Ontario.

Independent Electricity System Operator
Operates the provincial electricity system, and is responsible for planning to ensure electricity needs are met both now and in the future.

Ministry of the Environment, Conservation and Parks
The legislative authority responsible for environmental assessments in the province of Ontario.

How electricity is delivered to your community



Why is a new station necessary?

In March 2020, the need for a new station was identified in a twenty-year Integrated Regional Resource Plan (IRRP).

Regional system planning ensures a reliable supply of electricity to regions across the province and considers a range of solutions including conservation, generation, transmission and distribution, as well as other resource options to ensure that electricity is available when needed.

A reliable source of electricity is essential to supporting community growth - powering homes, schools, businesses, hospitals and transportation.

The Piperville Municipal Transformer Station (MTS) Project is being proposed to support projected growth in electricity demand in the southeast parts of the city of Ottawa in the coming years.

Existing Hydro Ottawa infrastructure in the area does not have the capacity to supply anticipated future demand in the near or long-term.

Community benefits

The new station and proposed plan will:

Improve electricity service reliability to the area and relieve strain on Hydro Ottawa's existing infrastructure that is already operating near capacity.

Protect the electricity grid, our systems and our customers from prolonged outages caused by extreme weather-related events.

- After events like the tornadoes and derecho, Hydro Ottawa is building back stronger and investing in the grid and new technology to mitigate risks.

Maximize the use of existing provincial infrastructure such as Hydro One's 230kV transmission line, which is consistent with good planning practices.

- The station's close proximity to the transmission system will minimize costs and the need for new land rights from public and private landowners.

Help to make the electricity system in the area as clean, reliable and resilient as possible.

Anticipated project schedule

Communication and consultation

March 2020	The need for a new station is identified in the twenty-year Integrated Regional Resource Plan by Hydro Ottawa, Hydro One and the Independent Electricity System Operator.
2020 - 2023	Development work begins, including planning, pre-construction studies and identifying possible site locations for the new station.
February - August 2023	Environmental analysis
March 2023	Notice of commencement of Class Environmental Assessment (Class EA).
April 2023	First series of community information sessions.
August 2023	Notice of completion of draft Environmental Study Report (ESR).
August 2023	Second series of community information sessions.
August - September 2023	Public review and comment period for draft Environmental Study Report.
October - November 2023	Submit final Environmental Study Report to the Ministry of the Environment, Conservation and Parks.
November 2023 - April 2024	Pre-construction planning
February 2024	Third series of community information sessions (pre-construction).
April 2024	Anticipated start of construction.
September 2026	Target in-service date for new facility.

What's being proposed

To meet future electricity needs responsibly, this project proposes:

- To construct a new 27.6kV municipal transformer station (MTS) at the intersection of Piperville Road and Farmers Way (located on the west side of Highway 417).
- To connect the new power station to Hydro One's existing 230kV transmission line, also located on the west side of Highway 417.

The new MTS is similar in design and footprint to Hydro Ottawa's recently-built Cambrian MTS in south Nepean (shown).

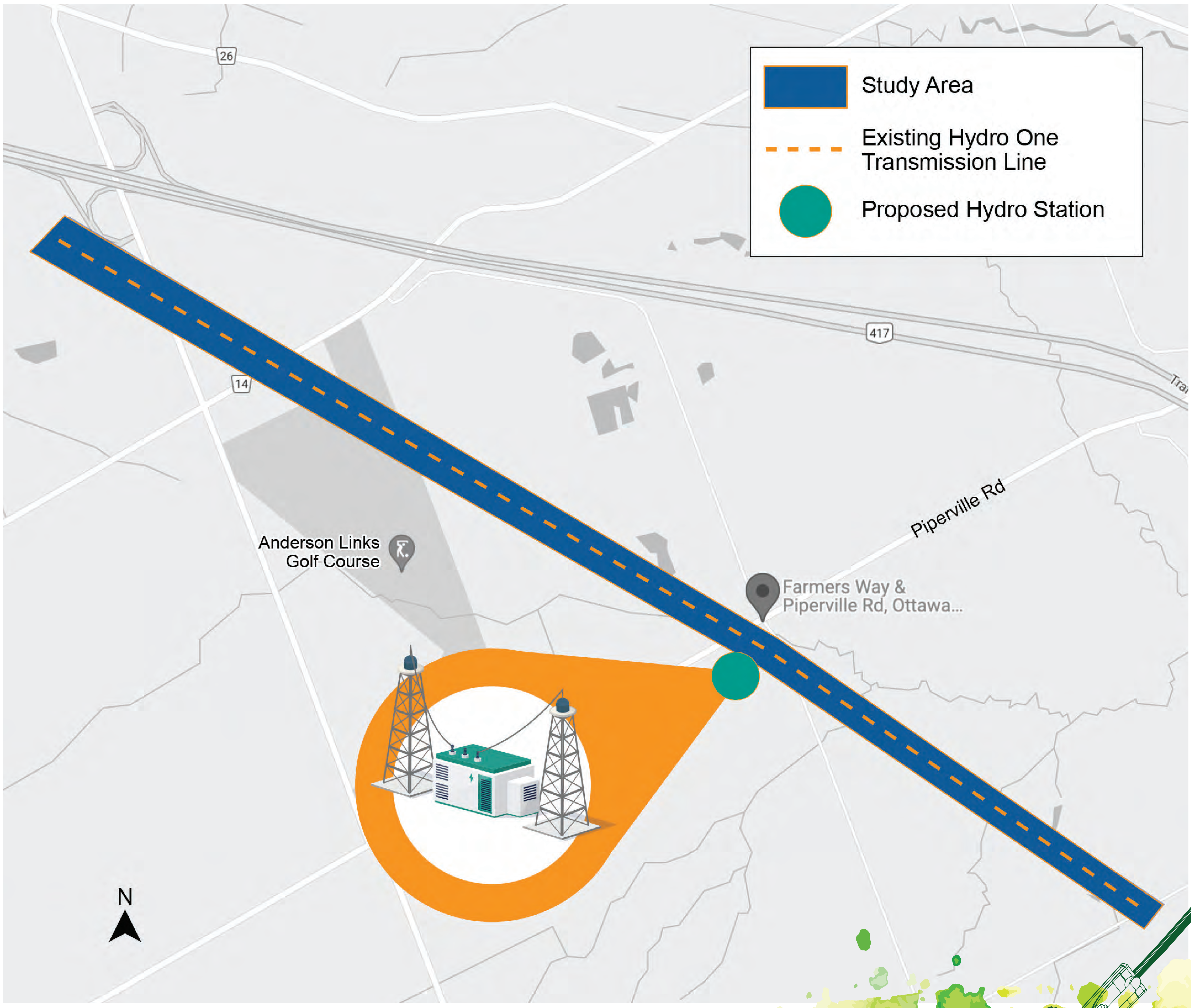
The MTS site needs to be accessible by road and close to the existing transmission line corridor.

As part of our sustainability commitments, Hydro Ottawa intends to develop Piperville as a low-carbon substation.

We are currently undertaking a full project review of the station's construction, including an innovative design, procurement and construction techniques that include using lower Global Warming Potential (GWP) materials, and equipment that will address embodied carbon associated with the construction and operation of the substation.

HydroOttawa

Where



HydroOttawa

Environmental assessment

A Class Environmental Assessment (Class EA) takes a broad and all-encompassing view of the environment. Potential effects of the project will be examined through a number of detailed studies, taking into consideration factors relating to:

- The natural and socio-economic environments; cultural/heritage resources; recreational resources; existing and planned land uses; visual landscapes; technical/cost considerations; and the concerns and interests of local business and residential property owners, Indigenous communities, government agencies and other interested parties.

A number of natural environment field studies will be undertaken in the project area as part of the Class EA process. This will include:

- Species at Risk (SAR) surveys, as required by government agencies; Ecological Land Classification; botanical and tree surveys; aquatic habitat assessments; incidental wildlife observations; and, potential significant wildlife habitat mapping. Where effects on the natural environment cannot be avoided, appropriate mitigation measures will be proposed.

Vegetation management

All vegetation removal will be thoughtfully considered, along with mitigation measures, in accordance with the recommendations of the Class Environmental Assessment and input from the local community.

We have selected a property as small as possible for the needs of the project (4 acres). While trees will need to be removed, we will only cut those which are strictly necessary.

Preliminary assessments indicate that the birch trees and undergrowth visible from the road will need to be removed. Depending on the final setback of the station, this could also include approximately 50 meters of vegetation into the woodlot.

Mitigation measures could include tree planting, vegetation buffers, decorative and community-friendly fencing, and/or an earth berm along the frontage of the site to visually mask the municipal transformer station and dampen operational noise and vibration.

What happens next

Following this community information session, the project team will:

- Consider all feedback received from stakeholders and respond to inquiries in a timely manner.
- Complete the Environmental Study Report (ESR)
  - The ESR is part of the Class EA process
  - A draft version of the ESR will be made available for review
  - Notifications will be sent out when the draft ESR is available
- Host a second community information session about the ESR, its findings, and gather input from stakeholders.
- Hydro Ottawa will make every effort to resolve any concerns raised during the public review and comment period before filing the final ESR with the Ministry of the Environment, Conservation and Parks.
- Prepare for permitting and approvals.

Contingent on if the project is approved, we will host a third information session to provide details on the upcoming construction.

HydroOttawa

Your input is important to us

Thank you for joining us at our community information session.

We will continue to provide early, ongoing and respectful communications about the project and our plans.

Your feedback during the consultation process will be used to refine our project implementation plans and determine appropriate ways to minimize and mitigate impacts, where feasible.

Our goal is to achieve a high level of community acceptance for the project.

Join our project mailing list:

piperville@hydroottawa.com

Visit our website for updates:

hydroottawa.com/piperville

Second Public Open House Session

Piperville Municipal Transformer Station

HydroOttawa

Community Information Session 2

November 30, 2023

Outline

Welcome to our community information session

- Energy partners
- Why is a new station necessary?
- Community benefits
- Example of what’s being proposed
- Where - Project area map
- How electricity is delivered to your community
- Connecting to Hydro One’s system
- Structure examples
- Further community engagement
- Environmental Assessment process & study findings
- Next steps

Partners

Hydro Ottawa
Builds, owns, operates and maintains the distribution of electricity facilities to more than 354,000 homes and businesses in Ottawa and Casselman.

Hydro One Networks Inc.
Builds, owns, operates and maintains the electricity transmission and distribution facilities across Ontario.

Independent Electricity System Operator
Operates the provincial electricity system, and is responsible for planning to ensure electricity needs are met both now and in the future.

Ministry of the Environment, Conservation and Parks
The legislative authority responsible for environmental assessments in the province of Ontario.

Why

Why is a new station necessary?

- Existing Hydro Ottawa infrastructure in the area does not have the capacity to supply current, or anticipated future demand in the near or long-term.
- In March 2020, the need for a new station was identified in a twenty-year Integrated Regional Resource Plan (IRRP).
- A reliable source of electricity is essential to supporting community growth - powering homes, schools, businesses, hospitals and transportation.
- The Piperville Municipal Transformer Station (MTS) project is being proposed to support projected growth in electricity demand in the southeast parts of the city of Ottawa in the coming years.

Benefits

Community benefits

- Improve electricity service reliability to customers in the community.
- Protect customers from prolonged outages caused by extreme weather-related events.
- After events like the tornadoes and derecho, we are building back stronger and investing in the grid and new technology to mitigate risks in the community.
- Maximize the use of existing provincial infrastructure such as Hydro One’s 230kV transmission line, which is consistent with good planning practices.
- The station’s close proximity to the transmission system will minimize the need for new land rights from public and private landowners
- Help to make the community’s electricity system as clean, reliable and resilient as possible.

Example of what’s being proposed

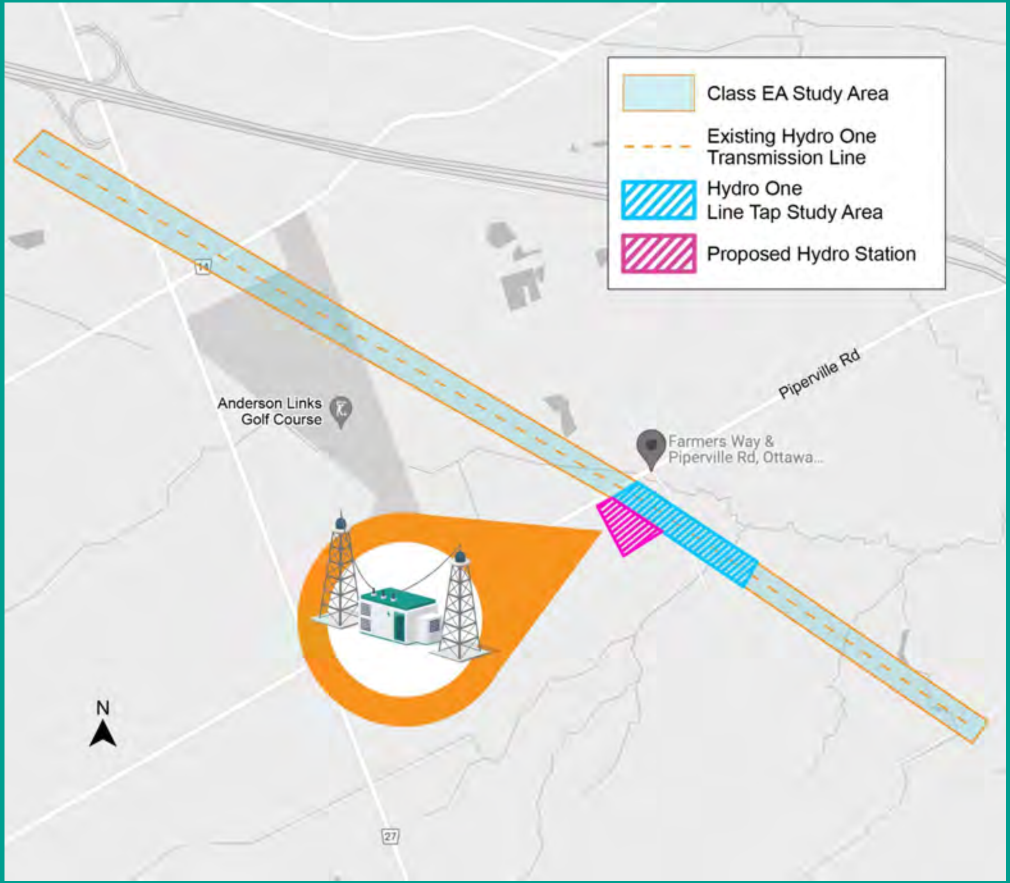
What

What's being proposed *Cont'd*

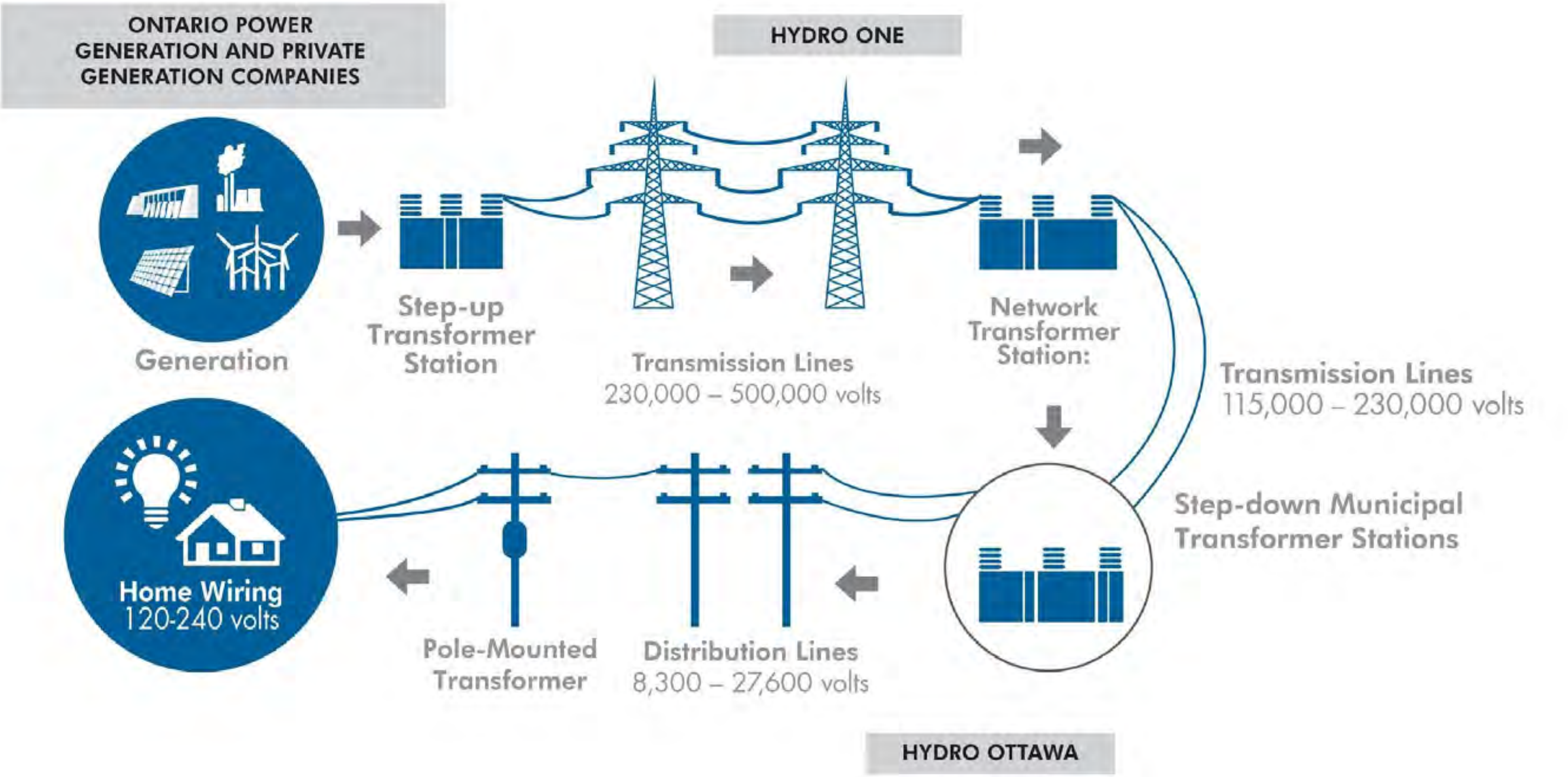
- To meet future electricity needs responsibly, this project proposes:
    - to construct a new 27.6kV municipal transformer station (MTS) near the intersection of Piperville Road and Farmers Way (located on the west side of Highway 417); and
    - to connect the new power station to Hydro One's existing 230 kV transmission line, also located on the west side of Highway 417.
- Upon completion, Piperville MTS will be similar to the station and tree screening shown here.
    - The tree screening is being planned on the north side of the station and along Piperville Road.

What

Where


Class EA Study Area
Existing Hydro One Transmission Line
Hydro One Line Tap Study Area
Proposed Hydro Station
Piperville Rd
Anderson Links Golf Course
Farmers Way & Piperville Rd, Ottawa...
N
27

Electricity



Connecting to Hydro One's System

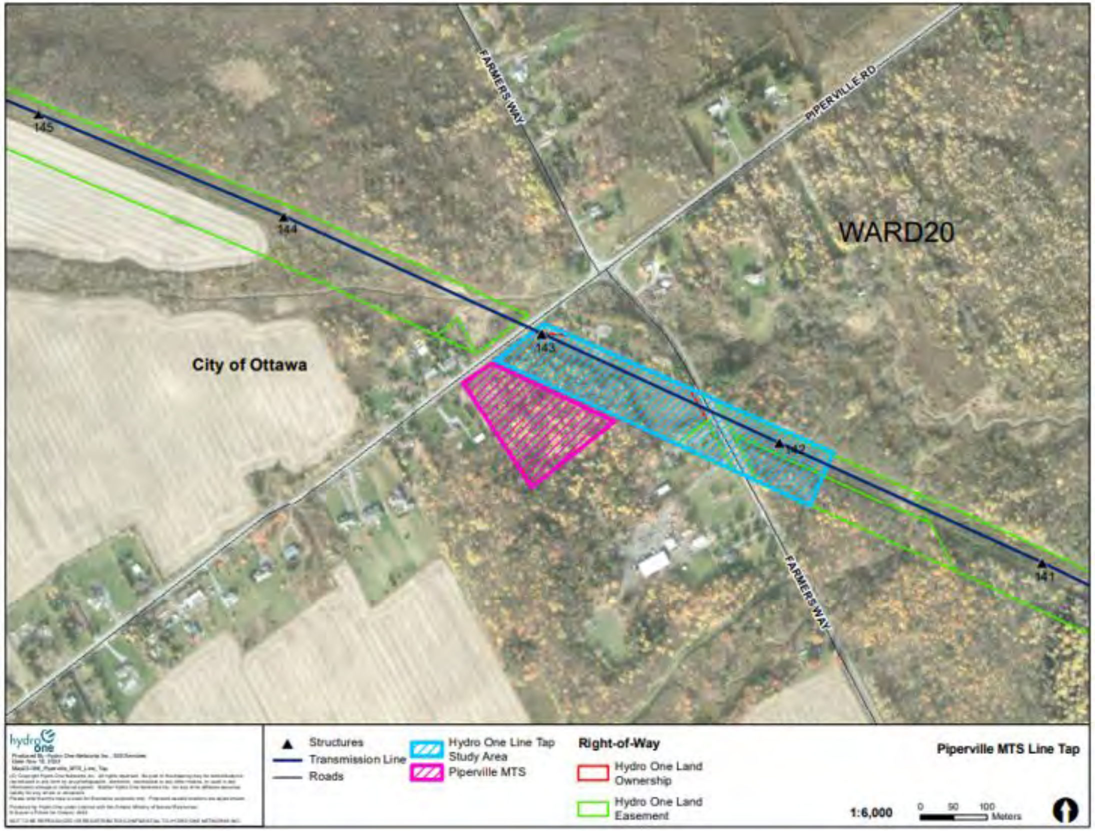
hydro one

To energize the Piperville Municipal Transformer Station, Hydro One will connect the new power station to Hydro One's existing 230kV transmission line, also located on the west side of Highway 417.

The new station will be connected within the existing hydro corridor as shown in blue.

We are working with Hydro Ottawa on the Class EA Study to plan for the new station and its connection to our high-voltage system.

Connection Study Area



Structure Examples

Our team is in the early planning stage and have not confirmed the specific connection details or the exact structures that will be used.

When determining the location of these structures, our team will consider:

- Construction requirements
- Safe clearances between the lines and the surrounding environment
- Accessibility for future maintenance
- Socioeconomic and natural environment considerations

Hydro One's Next Steps

We expect to have our design finalized by early 2025 although timelines may change as the project develops.

Once our design has been finalized, we will share more information with the community.

We understand how important preserving natural vegetation is and we are working to identify opportunities for replanting following construction.

Process

Environmental Assessment

This class environmental assessment sets out a planning process for specific minor transmission line and transmission station projects. Potential effects of the project were examined through a number of detailed studies, taking into consideration factors relating to:

- the natural and socio-economic environments;
- cultural/heritage resources;
- recreational resources;
- existing and planned land uses;
- visual landscapes;
- technical/cost considerations; and
- the concerns and interests of local business and residential property owners, Indigenous communities, government agencies and other interested parties.

Environmental Assessment *Cont'd*

A number of natural environment field studies were undertaken in the project area as part of the Class EA process. This includes:

- Species at Risk (SAR) surveys, as required by government agencies;
- Ecological Land Classification;
- botanical and tree surveys;
- aquatic habitat assessments;
- incidental wildlife observations; and,
- potential significant wildlife habitat mapping.

Where effects on the natural environment cannot be avoided, appropriate mitigation measures were proposed.

Process

Archeology

Environmental Study Report findings

The execution of this assessment was entrusted to a licensed archaeologist, who produced the complete Archaeological Stage 1 and 2 Report. The following summary outlines the notable findings.

- The results of the background research discussed by the archaeological consultant in the Archeological Stage 1 Report indicated that the study area exhibited potential for the presence of significant archaeological resources.
- Consequently, the archeological consultant recommended that areas of the study site showing archaeological potential should undergo a Stage 2 archaeological assessment before any sub-surface soil disturbances or other alterations are initiated in the future.
- The Stage 2 Archaeological field survey has confirmed that there are no archaeological resources of concern, ensuring that there is no need for any additional archaeological assessment in the study area.

Environmental Study Report findings *Cont'd*

The project site was assessed by a professional biologist. The following summary outlines the notable findings.

Results:

- No Species at Risk (SAR) birds were detected or audibly identified from the August 2023 survey.
- No significant animal movement corridors exist on the project site.
- Additionally, no evidence of SAR presence or any indications thereof were recorded during the surveys.
- Butternut trees were not observed on the project site.
- There were no sightings of SAR insects or appropriate host plants.
- The surveys did not reveal the presence of reptiles or suitable turtle habitats.
- Furthermore, evening exit surveys yielded no observations of bats roosting in trees with cavities, and no SAR bats were identified.

Next steps of the project

Following this community information session, the project team will:

- Consider all feedback received from stakeholders and respond to inquiries in a timely manner.
- Complete the Environmental Study Report (ESR).
  - The ESR is part of the Class EA process;
  - Address and/or document any outstanding concerns; and
  - Issue the final ESR following the review period and incorporate feedback received from stakeholders.
- Prepare for permitting and approvals
- Host a pre-construction community information session.

Next Steps

HydroOttawa

Schedule

Piperville Municipal Transformer Station

Anticipated Project Schedule

March 2020	The need for a new station is identified in the twenty-year Integrated Regional Resource Plan by Hydro Ottawa, Hydro One and the Independent Electricity System Operator.
2020 - 2023	Development work begins, including planning, pre-construction studies and identifying possible site locations for the new station.
February - December 2023	**Environmental Assessment.**
November 2023 - April 2024	Pre-construction planning and site prep.
February - March 2024	Third series of community information sessions (pre-construction).
April 2024	Anticipated start of construction.
September 2026	Target in-service date for new facility.

Class Environmental Assessment for Minor Transmission Facilities Schedule

February - August 2023	Environmental analysis.
March 2023	Notice of commencement of Class Environmental Assessment (Class EA).
April 2023	First series of community information sessions.
November 2023	Notice of completion of draft Environmental Study Report (ESR).
November 2023	Second series of community information sessions.
November - December 2023	Public review and comment period for draft Environmental Study Report.
November - December 2023	Submit final Environmental Study Report to the Ministry of the Environment, Conservation and Parks.

Your input is important to us

Thank you for joining us at our community information session.

We will continue to provide early, ongoing and respectful communications about the project and our plans.

Your feedback during the consultation process will be used to refine our project implementation plans and determine appropriate ways to minimize and mitigate impacts, where feasible.

Thank you

Join our project mailing list:
pipervillle@hydroottawa.com

Visit our website for updates:
hydroottawa.com/piperville

B6 – Comment Forms

HydroOttawa

Feedback Form
Community Information Session

Piperville Municipal Transformer Station

April 20, 2023, Anderson Links Golf Club

Thank you for attending Hydro Ottawa's Community Information Session. Please take a moment to answer a few questions. Your input and comments are important to us and helpful in planning this project.

1. How did you learn about this evening's Community Information Session? (Please check all that apply)

☐ Notice / invitation sent to me
☐ Social media (Facebook, Twitter)
☐ From a friend / neighbour
☐ Local community association
☐ Other (please specify):

____

2. Please rate your level of satisfaction with tonight's information session on a scale of 1 to 10, with 1 being the lowest and 10 being the highest?

1	2	3	4	5	6	7	8	9	10

Comments (optional):

____

____

3. Were the materials clear and have the information you were looking for?

Yes / No

Comments (optional):

____

____

4. Did you have an adequate opportunity to express your views and ask questions to the project team?

Yes / No

Comments (optional):

____

____

5. Were the experts knowledgeable and able to answer your questions?

Yes / No

Comments (optional):

____

____

6. Please provide any additional comments or feedback you may have about the project below. (optional)

____

____

____

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____

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____

____

Please provide your contact information so that we can follow-up with you on your comments or questions, and add you to our project contact list for future communications.

Name: ____

Mailing address and postal code:

____

____

Telephone: ____________________________________

Email: ____

Please leave your comment form with a Hydro Ottawa team member. Thank you for attending our community information session.

Formulaire de commentaires
Séance d'information publique

Poste de transformation municipal Piperville
20 avril 2023, Club de golf Anderson Links

Merci d'avoir assisté à la séance d'information publique d'Hydro Ottawa. Veuillez prendre un instant pour répondre à quelques questions. Votre opinion et vos commentaires sont importants pour nous; ils seront utiles pour planifier ce projet.

1. Comment avez-vous appris l'existence de la séance d'information de ce soir? (Veuillez cocher toutes les réponses qui s'appliquent)

- ☐ Avis / réception d'une invitation
- ☐ Réseaux sociaux (Facebook,Twitter)
- ☐ Par un ami / voisin
- ☐ Association communautaire locale
- ☐ Autre (veuillez préciser) :

____

2. Veuillez évaluer votre degré de satisfaction relativement à la séance d'information de ce soir sur une échelle de 1 à 10 (1 étant le degré de satisfaction le plus bas et 10 étant le plus élevé)

1	2	3	4	5	6	7	8	9	10

Commentaires (facultatif) :

____

____

3. Est-ce que le matériel utilisé était clair et contenait toute l'information que vous souhaitiez obtenir?

Oui / Non

Commentaires (facultatif) :

____

____

4. Avez-vous eu l'occasion d'exprimer votre point de vue et de poser des questions à l'équipe de projet?

Oui / Non

Commentaires (facultatif) :

____

____

5. Est-ce que les experts maîtrisaient bien leur sujet et étaient en mesure de répondre à vos questions?

Oui / Non

Commentaires (facultatif) :

____

____

6. Si vous avez d’autres commentaires ou remarques sur le projet, veuillez les inscrire ci-dessous (facultatif).

____

____

____

____

____

____

____

Veuillez fournir vos coordonnées pour que nous puissions faire un suivi avec vous relativement à vos commentaires ou questions. Nous ajouterons également votre nom à notre liste d’envoi de mises à jour concernant le projet.

Nom : ____

Adresse et code postal :

____

____

Téléphone : ____

Courriel : ____

Veuillez remettre votre formulaire de commentaires à un membre de l’équipe d’Hydro Ottawa. Merci d’avoir assisté à notre séance d’information.

B7 – Feedback and Responses

Correspondence Date	Communication Method	Event	Communication Summary
November 30, 2022	Email - Incoming	Post consent application	Email received from the City of Ottawa Committee of Adjustment with questions from a local resident regarding a proposed severance for the property located at 5134 Piperville Road.
December 07, 2022	Email - Outgoing	Post consent application	Email in response to a resident’s questions raised during post consent application and received from the City of Ottawa Committee of Adjustment. Hydro Ottawa ensured that measures will be implemented in accordance with the recommendations of the class EA.
March 16, 2023	Email - Incoming	Notice of Commencement (From NoC to POHS #1)	Email from a resident requesting signing up to receive updates on the project and wanted to know where the transformer will be located and curious about visual as the proposed site is adjacent to their property.
March 16, 2023	Email - Outgoing	Notice of Commencement (From NoC to POHS #1)	Email in response to a resident confirming the participant on the future correspondence list and gently reminding for the public open house which was scheduled on April 20, 2023.
March 16, 2023	Email - Incoming	Notice of Commencement (From NoC to POHS #1)	Email from a resident requesting signing up to receive updates on the project.
March 16, 2023	Email - Outgoing	Notice of Commencement (From NoC to POHS #1)	Email in response to a resident confirming the participant on the future correspondence list and gently reminding for the public open house which was scheduled on April 20, 2023.

March 16, 2023	Email - Incoming	Notice of Commencement (From NoC to POHS #1)	Email from a resident inquiring about whether the study area will possibly have another transmission line beside the existing one and curios to know given the approval of this station, if any expropriation of lands in the vicinity of the proposed station and study area.
March 16, 2023	Email - Outgoing	Notice of Commencement (From NoC to POHS #1)	Email responding to a resident inquiring about a possibility of a new transmission line, Hydro Ottawa clarified that this project will not require adding any new transmission lines in parallel to the existing one. It was mentioned that no expropriation of lands is proposed or anticipated.
March 17, 2023	Email - Incoming	Notice of Commencement (From NoC to POHS #1)	Email from a resident requesting to be added to a mailing list to receive updates on the new station. Questions have been raised about whether the power will be switched to Hydro One and about the Roof solar contract with Hydro Ottawa. A resident was curious to know whether the new station will likely return power to the area, in case of lengthier power outages such as a recent derecho.
March 17, 2023	Email - Outgoing	Notice of Commencement (From NoC to POHS #1)	Email in response to a resident acknowledging that the sender will continue to be a customer of Hydro Ottawa and their roof solar contract won't be affected by this project. Hydro Ottawa ensured that this project would support projected growth in electricity demand for the area and provide redundancy to the grid system in the event of future extreme weather events.
April 20, 2023	Feedback Form - Incoming	Survey Response	In a survey after virtual session of POHS #1, the average level of satisfaction was 6.5 with 10 being highest and 1 being lowest.
April 20, 2023	Feedback Form - Incoming	Survey Response	In a survey after virtual session of POHS #1, 100% participants believed that an adequate opportunity to express their views and ask questions to the project team was given.
April 20, 2023	Feedback Form - Incoming	Survey Response	In a survey after virtual session of POHS #1, 75% participants believe that the experts were knowledgeable and able to answer the questions.
April 20, 2023	Feedback Form - Incoming	Survey Response	In a survey after virtual session of POHS #1, 75% participants believe that given materials were clear and have the information that participants were looking for.

April 20, 2023	Feedback Form - Incoming	Survey Response	In a survey after virtual session of POHS #1, all participants believe that they learned about the POHS #1 through invitation sent.
April 20, 2023	Feedback Form - Incoming	Post Virtual POHS #1	Email from a resident questioning the proposed site at Piperville Road and wanted to know whether the site on Anderson Road near 417 exit was considered or not as the area is a part of NCC land and has less residential properties.
April 20, 2023	Email - Incoming	Post Virtual & In-person POHS #1	Email from a resident to know more about the electric magnetic field/radiation.
April 20, 2023	Email - Incoming	Post Virtual & In-person POHS #1	Email from a resident looking for a copy of all the laws, regulations and potential impacts of radiation, noise, heat and on environment.
April 21, 2023	Email - Incoming	Post Virtual & In-person POHS #1	Email from a resident looking for information on the noise level that will be emitted from transformers, radiation levels, impact on property values, wildlife and a same question of why not building the new station near 417 where less populated and bush land area is located.
April 26, 2023	Email - Outgoing	Post Virtual & In-person POHS #1	Email responding to a resident about radiation level, Hydro Ottawa ensured that like other stations across the city, radiation levels will be low and at levels not requiring mitigation. This is extremely low frequency, non-ionizing radiation. Hydro Ottawa referenced experts' advice from Health Canada that "You don't need to take precautions to protect yourself from these kinds of exposures."
April 26, 2023	Email - Outgoing	Post Virtual & In-person POHS #1	Email responding to a resident that required studies will be conducted such as noise, environmental impact study. Hydro Ottawa ensured that like other stations across the city, radiation levels will be low and at levels not requiring mitigation. This is extremely low frequency, non-ionizing radiation. It was mentioned that Hydro Ottawa takes cars to respects the aesthetic of community as much as possible, in accordance with Class EA and stakeholder input and even after pursing the interest in other location, the lot near intersection of Piperville and Farmers Way was the only property available for purchase.

April 26, 2023	Email - Outgoing	Post Virtual & In-person POHS #1	Email in response to resident on how the potential sites were evaluated and why the proposed site was selected as it was the only land available to purchase.
April 26, 2023	Email - Outgoing	Post Virtual & In-person POHS #1	Email to a resident with useful resources link to conduct research. Useful sources such as noise by-law, Health Canada/ Extremely low frequency electric and magnetic fields, Class EA for minor transmission facilities from government of Ontario were shared. For impact assessment and mitigation, a timeline on receiving the Environmental Study Report was shared with a resident.
April 30, 2023	Email - Incoming	Post Virtual & In-person POHS #1	Email from resident stating the concern about the aesthetic impact that this proposed project could generate, as the adjacent property owner could clearly see the side face of the proposed site. A request was made to make the south face of the preferred site more visually appealing.
April 30, 2023	Email - Outgoing	Post Virtual & In-person POHS #1	Email responding the concerns reading visual impact and ensured that potential mitigation measures will take place. In order to show the interested party how Hydro Ottawa mitigates such visual impacts; Hydro Ottawa requested a meeting and sent a few site photos from a prior project that was similar.
May 1, 2023	Email – Incoming	Post POHS #1	Email from resident appreciating Hydro Ottawa's willingness to address concerns from local resident and provided availability to schedule a meeting with Hydro Ottawa.
May 1, 2023	Email - Outgoing	Post POHS #1	Email providing the resident with Hydro Ottawa's availability in the week and following week.
May 3, 2023	Email - Outgoing	Post POHS #1	Email thanking a resident for their time and recapping the discussion mentioning the potential negative impact on view by the development of the new station. Hydro Ottawa did not commit to any specific design or vegetative screening at that time. Hydro Ottawa took pictures from a resident's property and shared with them acknowledging that pictures were intended to internally use by the design team.
August 17, 2023	Email - Incoming	From POHS #1 to NoPOHS #2	Email from a resident inquiring about the tree clearing timeline with reference to Migratory Bird Conservation Act (1994).

October 1, 2023	Email - Incoming	From POHS #1 to NoPOHS #2	Email from a resident for a follow up on previous email from August to make a submission to the City's Agricultural and Rural Affairs Committee. A copy of all the feedback received from the Public Open House Session #1 was requested.
October 1, 2023	Email – Incoming	From POHS #1 to NoPOHS #2	Email from a resident looking for information on an alternate location considered for the new station by Hydro Ottawa.
October 2, 2023	Email – Outgoing	From POHS #1 to NoPOHS #2	Email responding to a resident who followed up few times since August 17th, 2023, Hydro Ottawa clarified the reasons behind a delay in responding to a resident. The delay was a result of the labour disruption. Hydro Ottawa mentioned that the exact distance of the new station could not be released as the design phase is in progress. A draft ESR will be made available encompassing all the relevant feedback received. A frequently asked questions section from the Hydro Ottawa project web page was shared in the same email.
October 2, 2023	Email - Incoming	From POHS #1 to NoPOHS #2	Email from a resident looking an answer for as why the public feedback and environmental assessment was not made available to the local resident and the individuals not given the chance to provide their comments on Stantec Consulting Report (July, 2022) and the Zoning By-law Amendment Proposal Summary. A resident was curious to know why all affected residents were not notified.
October 5, 2023	Email – Outgoing	From POHS #1 to NoPOHS #2	Email responding to a resident included Hydro Ottawa's explanation Stantec Report which was submitted to the city as a requirement of the zoning amendment, which was intended to eliminate other future used of the property. The amendment made, at the city's requirement, prevents future residential uses. Hydro Ottawa ensured that the environmental Study report will be made available, when received and will be circulated for public review and comment. In regard to September 18, Zoning By—law Amendment Proposal Summary, Hydro Ottawa responded that the city controls the circulation within the area.
October 12, 2023	Email – Incoming	From POHS #1 to NoPOHS #2	Email from a resident requesting a copy of the severance agreement made with the property owner and attached a submission file which was filed at Agriculture and Rural Affairs Committee.

October 12, 2023	Email - Outgoing	From POHS #1 to NoPOHS #2	Email responding to a resident requesting a copy of severance agreement was provided with a contact information of Hydro Ottawa's Privacy Office to make a freedom of Information request.
December 10, 2023	Letter - Incoming	From POHS #2	Letter from a resident to HOL related to devaluation in property values, species at risk, wireless radiation from telecommunication signals impairing Monarch navigation ability, consultation guidelines related to the EIS report, electromagnetic radiation (EMR), wildlife travel corridor, safety and fire concerns related to transformenr sattion, abuse of Class EA process, misinformation, Tewin project, setbacks from the roads, deinterest and negativity relatined to public engagement, zoning process, presentation slides not readily available, Agriculture and Rural Affairs Committee (ARAC) meeting contents missing, etc.
January 22, 2024	Letter - Outgoing	From POHS #2	Response letter from HOL to a resident related to the points noted above.

B8 – Preliminary Site Plan

REVISION NOTES

REV	DATE	DESCRIPTION	PREP	CHKD	APPD
1	14/04/2023	ISSUED FOR OPEN HOUSE	SVP	AA	AA
2	05/07/2023	ISSUED FOR BOREHOLE LAYOUT	SVP	AA	AA
3	18/08/2023	ISSUED FOR REVISED BOREHOLE LAYOUT	SVP	GB	AA
4	07/11/2023	ISSUED FOR DRAFT ESR REPORT	SVP	GB	AA

STANDARDS:

1. All symbols and nomenclature to be in accordance with Hydro Ottawa Limited standard SRS0002 -substation symbology and nomenclature

GENERAL NOTES:

1. Contact the designer indicated below for any and all questions and / or discrepancies between this copy and equipment as found on site.
2. This drawing not considered valid unless approved and stamped in the area provided.
3. All field markups to follow convention
   GREEN ink - elements to be removed from DWG
   RED ink - elements to be added to DWG

Consultant:

exp Services Inc.
t: +1.613.688.1899 | f: +1.613.225.7330
2650 Queensview Drive, Unit 100
Ottawa, ON K2B 8H6
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

Consultant Drawing Ref: OTT-22017543-A0

Manufacturer:

Manufacturer Drawing Ref:

Stamp:

Signature: Date:

Prepared By: Shivam Patel, M.Eng, Civil Designer
Checked By: Alam Ansari, P. Eng
Approved By: Alam Ansari, P. Eng

HydroOttawa
WWW.HYDROOTTAWA.COM
2711 HUNT CLUB ROAD
OTTAWA, ONTARIO K1G 3S4

Title:

HYDRO OTTAWA NEW EAST SUB-STATION
5134 PIPERVILLE ROAD
CONCEPTUAL SITE PLAN

Date:	Scale:	Revision:
04.05.2023	1:300	2

Drawing: C1

B9 - NCC Rejection Letter for Purchase or Lease of NCC Lands at 3925 Anderson Road

NATIONAL CAPITAL COMMISSION
COMMISSION DE LA CAPITALE NATIONALE

March 3, 2022

James MacRae
verTerra Corp.
899-891 Bank Street, Suite 202A
Ottawa, Ontario
K1S 3W4

VIA EMAIL: james.macrae@verterracorp.com

SUBJECT: Purchase or Lease of NCC Lands at 3925 Anderson Rd. for Hydro Ottawa Substation

Dear Mr. MacRae,

The National Capital Commission (NCC) has reviewed and analyzed your proposal for the purchase or lease of NCC lands at 3925 Anderson Road for a new Hydro Ottawa power substation. As the project involves the use of Federal Property in Canada's Capital Region, a Federal Approval granted under the National Capital Act is required.

The parcel of land under consideration holds a "Natural Link" designation under the NCC's Greenbelt Master Plan (2013) and forms an important ecological connection between significant natural areas. These protected lands are not suitable for disruptive activities, and the construction of new facilities that negatively impact or interfere with existing and developing natural link functions are prohibited.

Following analysis and interdepartmental discussions, the NCC has determined that this site is not an appropriate location for the construction of a new power substation. We encourage you to further consider the use of lands outside of the Greenbelt to meet the forecasted demand for municipal hydroelectric services.

If you require any further information with respect to the NCC's position in this matter, please do not hesitate to contact Jordan Suffel, Federal Approvals Manager at jordan.suffel@ncc-ccn.ca

Regards,

DocuSigned by:

Martin Barakengera

9CEDC2B2B1924ED...

Martin Barakengera
A/Director, Federal Approvals, Heritage & Archaeology Programs
Capital Planning Branch
National Capital Commission

cc. Isabelle Hughes, NCC
Eva Katic, NCC
Chantal Miner, NCC

B10 – Statement of Completion

Ontario

Ministry of the Environment, Conservation and Parks

Statement of Completion Electricity Projects

For Office Use Only		
Reference Number	Initials	Date (yyyy/mm/dd)

General Information and Instructions

General

The information provided on this form is collected under authority of the Ministry of the Environment, Conservation and Parks Environmental Screening Process for electricity projects.

Instructions

1. Questions regarding the completion and submission of this form should be directed to the Client Services and Permissions Branch at 416-314-8001 or 1-800-461-6290.
2. Please send the completed form to:
   Ministry of the Environment, Conservation and Parks
   Director, Environmental Assessment Branch
   135 St. Clair Avenue West, 1st Floor
   Toronto ON M4V 1P5
   Fax: 416-314-8452

Proponent Information

Proponent Name (legal name of organization)
Hydro Ottawa Limited

Contact Person

Last Name	First Name	Middle Initial
Campbell	Michael	

Telephone Number	Fax Number	Email Address
613-738-5499 ext. 7478		michaelcampbell@hydroottawa.com

Proponent Type

☑ Municipal ☐ Provincial ☐ Crown Corporation ☐ Federal ☐ Private Sector
☐ Other (describe) ▶

Proponent Mailing Address

Civic Address

Unit Number	Street Number	Street Name	PO Box
	2711	Hunt Club Road	8700

Delivery Designator

☐ Rural Route ☐ Suburban Service ☐ Mobile Route ☐ General Delivery ☐ N/A

Delivery Identifier

Municipality/Unorganized Township	Province	Country	Postal Code
Ottawa	Ontario	Canada	K1G 3S4

Site Address

☑ Civic Address

Unit Number	Street Number	Street Name	PO Box
	5134	Piperville Road	

Municipality/Unorganized Township	Province	Country	Postal Code
Carlsbad Springs	Ontario	Canada	K0A 1K0

☐ **Survey Address**

Lot	Concession	Part	Reference Plan

Municipality/Unorganized Township	Province	Country	Postal Code

Geo Reference (Non Address Information)

Description	Map Datum	Zone	Accuracy Estimate	Geo-Referencing Method	UTM Easting	UTM Northing
Southwest corner of property						
Physical location of front door						

Project Information

Project Name
Piperville Municipal Transformer Station (MTS) Project

Nameplate Capacity of Facility (in megawatts)
N/A

Power Source or Fuel Type
☐ Wind ☐ Water (hydroelectric) ☐ Natural gas ☐ Biomass ☐ Landfill gas ☐ Waste biomass ☐ Oil ☐ Coal
☐ Municipal solid waste ☐ Hazardous waste ☐ Liquid industrial waste
☑ Other (describe) ►

Brief Project Description
This project includes a 27.6 kV Municipal Transformer Station to be owned/operated by Hydro Ottawa. The requirement for a new MTS was identified as a near-term initiative in the Independent Electricity System Operator's (IESO) Ottawa Area Integrated Regional Resource Planning (IRRP) (dated March 04, 2020) process to ensure an adequate and reliable supply of electricity to the region. The proposed station will receive electrical energy from a 230 kV transmission line in the existing Hydro One Networks Inc. transmission corridor (HONI Corridor) and convert this energy to lower voltages so that it can be distributed through Hydro Ottawa's electrical systems to homes and businesses in the communities of Carlsbad Spring. The new station is required by 2026 and will improve the reliability of supply to the area.

Was a Screening Report prepared?
☐ Yes ☑ No

Was an Environmental Review Report prepared?
☑ Yes ☐ No

Was an Equivalent Review Report prepared?
☐ Yes ☑ No

Availability of Documentation

☐ Same as Site Address

Proponents are required to retain, either on site or in another location where they will be readily available, any Screening Report, Environmental Review Report, Equivalent Review Report, Addendum, and related notices and Statements of Completion prepared under the Environmental Screening Process, as well as documentation of any commitments made by the proponent to address concerns after one of the above-noted reports was prepared.

☑ **Civic Address**

Unit Number	Street Number	Street Name	PO Box
	2711	Hunt Club Road	8700

Municipality/Unorganized Township	Province	Country	Postal Code
Ottawa	Ontario	Canada	K1G 3S4

☐ **Survey Address**

Lot	Concession	Part	Reference Plan

Municipality/Unorganized Township	Province	Country	Postal Code

Geo Reference (Non Address Information)

Description	Map Datum	Zone	Accuracy Estimate	Geo-Referencing Method	UTM Easting	UTM Northing
Southwest corner of property						
Physical location of front door						

Contact Information about project documentation

Contact Person

Last Name	First Name	Middle Initial
Beauchesne	Gaëtan	

Telephone Number	Email Address	Website containing project documentation
613-223-8105 ext.	gaetan.beauchesne@exp.com	www.hydrootawa.com/piperville

Elevation Requests

Were any Elevation Requests Received?

☐ Yes ☑ No

If Yes, how were they resolved?

Statement of Proponent

I, the undersigned hereby declare that, to the best of my knowledge, the information contained in this statement is complete and accurate in every way, and I have complied with the Environmental Screening Process established under *the Environmental Assessment Act* of Ontario in the environmental review of the above-noted project.

Name	Title
Michael Campbell	Project Manager
Signature	Date (yyyy/mm/dd) 2023/12/11

Appendix C - Environmental Features in the Study Area

C1 – Archaeological Assessements

Stage 1 – Archealogical Assessment

STAGE 1 ARCHAEOLOGICAL ASSESSMENT FOR A PROPOSED OTTAWA HYDRO SUBSTATION AND A SECTION OF THE HYDRO ONE L24A TRANSMISSION CORRIDOR

PARTS OF LOTS 7 & 8, CONCESSION 9, LOTS 7-11, CONCESSION 8, LOTS 11-15 CONCESSION 7, AND LOTS 15 & 16, CONCESSION 6

OTTAWA FRONT

GEOGRAPHIC TOWNSHIP OF GLOUCESTER

NOW THE CITY OF OTTAWA

Past Recovery
Archaeological Services Inc.

STAGE 1 ARCHAEOLOGICAL ASSESSMENT FOR A PROPOSED OTTAWA HYDRO SUBSTATION AND A SECTION OF THE HYDRO ONE L24A TRANSMISSION CORRIDOR, PARTS OF LOTS 7 & 8, CONCESSION 9, LOTS 7-11, CONCESSION 8, LOTS 11-15, CONCESSION 7, AND LOTS 15 & 16, CONCESSION 6, OTTAWA FRONT, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, NOW IN THE CITY OF OTTAWA

Prepared for:	Chris Collins Manager, Infrastructure Services Senior Land Development EXP Services Inc. 2650 Queensview Drive Ottawa, ON K2N 8H6 Phone: (613) 688-1899 Email: chris.collins@exp.com
Re:	*Class Environmental Assessment for Minor Transmission Facilities*
Prepared by:	Past Recovery Archaeological Services Inc. 99c, Unit 1 Dufferin Street Perth, ON K7H 3A5 Phone: (613) 267-7028 Email: pras@pastrecovery.com
Project No.:	PR22-058
Licensee:	Caitlyn Howard, M.A., Licence P1074 Staff Archaeologist Past Recovery Archaeological Services Inc.
P.I.F. No.:	P1074-0023-2022
Date:	September 7th, 2023 Original Report

ACKNOWLEDGMENTS

Chris Collins, Manager of Infrastructure Projects for EXP Services Inc., provided project mapping and logistical assistance.

PROJECT PERSONNEL

Licence Holder	Caitlyn Howard, M.A. (P1074)
Historical Research	Gabryell Kurtzrock Belyea, M.A. (R1195)
Stage 1 Site Visit	Gabryell Kurtzrock Belyea Morgan Ward, B.A.
Report Writing	Gabryell Kurtzrock Belyea
Report GIS	Gabryell Kurtzrock Belyea
Report Review	Jeff Earl, M.Soc.Sc.

EXECUTIVE SUMMARY

Past Recovery Archaeological Services Inc. was retained by EXP Services Inc., on behalf of Ottawa Hydro, to undertake a Stage 1 archaeological assessment as part of a *Class Environmental Assessment for Minor Transmission Facilities* for a proposed substation located at 5134 Piperville Road and along Hydro One – L24A corridor from Thunder Road to the west of Leitrim Road. The subject property was located on parts of Lots 7 and 8, Concession 9, Lots 7 to 11, Concession 8, Lots 11 to 15, Concession 7, and Lots 15 and 16, Concession 6, Ottawa Front, of the geographic Township of Gloucester, now part of the City of Ottawa (see Maps 1 and 2). The area covered by the proposed substation and hydro corridor was approximately 15.9 hectares (or 39.29 acres) in size.

The purpose of the Stage 1 investigation was to evaluate the archaeological potential of the study area and present recommendations for the mitigation of any significant known or potential archaeological resources. To this end, historical, environmental and archaeological research was conducted in order to make a determination of archaeological potential. A site visit was undertaken on September 14th, 2022, to review current conditions on the proposed substation property and along the corridor from public access points. The results of this study indicated that most of the subject property possessed potential for archaeological resources.

The results of the Stage 1 research documented in this report form the basis for the following recommendations:

1) The portions of the study area that have been determined to exhibit archaeological potential should be subject to Stage 2 archaeological assessment prior to the initiation of future below-grade soil disturbances or other alterations (see Map 6).

2) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MCM 2011). There is currently a mixture of an active

field and other non-agricultural lands within the study area; all portions identified as exhibiting archaeological potential should therefore be assessed by means of a pedestrian survey or shovel test pit survey conducted at 5 metre intervals, as appropriate.

The reader is also referred to Section 7.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project. In the event that any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, in addition to following the *Advice on Compliance with Legislation* (see Section 7.0), the Indigenous communities listed below should be contacted:

a. Algonquins of Ontario
b. Algonquins of Pikwakanagan
c. Kitigan Zibi Anishinabeg

Contact information for the above communities can be found in the Supplementary Document entitled "*Indigenous Community Contacts.*"

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1.0 INTRODUCTION

Past Recovery Archaeological Services Inc. was retained by EXP Services Inc., on behalf of Ottawa Hydro, to undertake a Stage 1 archaeological assessment as part of a Class Environmental Assessment for Minor Transmission Facilities for a proposed substation located at 5134 Piperville Road and along Hydro One – L24A corridor from Thunder Road to the west of Leitrim Road. The subject property was located on parts of Lots 7 and 8, Concession 9, Lots 7 to 11, Concession 8, Lots 11 to 15, Concession 7, and Lots 15 and 16, Concession 6, Ottawa Front, of the geographic Township of Gloucester, now part of the City of Ottawa (Maps 1 and 2).

The objectives of the Stage 1 archaeological assessment were as follows:

- To provide information concerning the geography, history, previous archaeological fieldwork and current land condition of the study area;
- To evaluate the potential for the subject property to contain significant archaeological resources; and,
- To recommend appropriate strategies for Stage 2 archaeological assessment in the event further assessment is warranted.

2.0 PROJECT CONTEXT

This section of the report provides the context for the archaeological work undertaken, including a description of the study area, the related legislation or directives triggering the assessment, any additional development-related information, the confirmation of permission to access the study area for the purposes of the assessment, and an acknowledgement of Indigenous territorial rights and interests.

2.1 Property Description

The subject property was located within parts of Lots 7 & 8, Concession 9, Lots 7-11, Concession 8, Lots 11-15, Concession 7, and Lots 15 & 16, Concession 6, Ottawa Front, of the geographic Township of Gloucester, now part of the City of Ottawa, and consisted of 15.9 hectares (39.29 acres) of land (see Maps 1 and 2). The containing section of the L24A hydro corridor consisted of wooded forested areas, part of a golf course, an active farm field, areas of low brush, and several watercourses and wetland areas, crossed by Leitrim Road, Anderson Road, Piperville Road, Farmers Way and Thunder Road. The site for the proposed substation is currently wooded, with low and wet areas associated with a branch of Bear Brook.

2.2 Development Context

Exp Services Inc. is preparing a *Class Environmental Assessment for Minor Transmission Facilities* on behalf of Ottawa Hydro in advance of a proposed substation to be erected at 5134 Piperville Road. A section of the Hydro One - L24A hydro corridor has been included in case the proposed substation location needs to be shifted. An archaeological assessment is required as part of the environmental assessment, and Past Recovery was retained to complete this work. As noted above, the overall Stage 1 study area consisted of a 15.9 hectare (39.29 acre) parcel.

2.3 Access Permission

Permission to access the proposed substation property and adjacent Hydro One corridor to complete all aspects of the archaeological assessment, including photography, was granted by Ottawa Hydro.

2.4 Territorial Acknowledgement

The study area falls within the traditional territory of the Anishinabe Algonquin, and forms part of the Algonquins of Ontario (AOO) Settlement Area set out by the current

Agreement-in-Principle between the AOO and the federal and provincial governments, signed in 2016.[1]

[1] The Algonquins of Ontario are composed of ten communities: The Algonquins of Pikwakanagan First Nation, Antoine, Kijicho Manito Madaouskarini (Bancroft), Bonnechere, Greater Golden Lake, Mattawa/North Bay, Ottawa, Shabot Obaadjiwan (Sharbot Lake), Snimikobi (Ardoch), Whitney and Area. Federally unrecognized Algonquin communities, including Ardoch First Nation, also live in the territory but do not form part of the AOO (see Lawrence 2012). The Agreement-In-Principle is between the Algonquins of Ontario and the Governments of Ontario and Canada. Algonquins have sought recognition and protection of their traditional territory dating back to 1772 and in 1983 the Algonquins of Pikwàkanagàn First Nation (previously Algonquins of Golden Lake) formally submitted a petition to the Government of Canada, and in 1985 to the Government of Ontario. The claim was accepted for negotiations in 1991 and 1992, an Agreement-In-Principle was signed in 2016, and negotiations are on-going. For further information see www.tanakiwin.com.

3.0 HISTORICAL CONTEXT

This section of the report is comprised of an overview of human settlement in the region using information derived from background historical research. The purpose of this research is to describe the known settlement history of the local area, with the intention of providing a context for the evaluation of known and potential archaeological sites, as well as a review of property-specific information presenting a record of settlement and land use history.

3.1 Regional Pre-Contact Cultural Overview

While our understanding of the pre-Contact sequence of human activity in the region is limited, it is possible to provide a general outline of pre-Contact relationships with the land based on archaeological, historical, and environmental research conducted across what is now eastern Ontario.[2] Archaeologists divide the long sequence of Indigenous history into both temporal periods and regional groups based primarily on the presence and/or style of various artifact types. While this provides a means of discussing the past, it is an archaeological construct and interpretation based only on a few surviving artifact types; it does not reflect the generally gradual nature of change over time, nor the complexities of interactions between different Indigenous groups. It also does not reflect Indigenous world views and histories as detailed in the oral traditions of Indigenous communities who have long-standing relationships with the land. The following summary uses the generally accepted archaeological chronology for the pre-Contact period while recognizing its limitations.

Across the region, glaciers began to retreat around 15,000 years ago (Munson 2013:21). Archaeological evidence indicates that humans have inhabited what is now called Ontario for at least 13,500 years, beginning with the arrival of small groups of hunter-gatherers referred to by archaeologists as Paleo-Indigenous (Ellis 2013:35; Ellis and Deller 1990:39). These groups gradually moved northward as the glaciers and glacial lakes retreated. While very little is known about their lifestyle, it is likely that Palaeo-Indigenous groups travelled widely relying on the seasonal migration of caribou as well as small animals and wild plants for subsistence in a sub-arctic environment. They produced a variety of distinctive stone tools including fluted projectile points, scrapers, burins and gravers. Their sites are rare, and most are quite small (Ellis 2013:35-36). Palaeo-Indigenous peoples tended to camp along shorelines, and because of the changing environment, many of these areas are now inland. Indigenous settlement of much of eastern Ontario was late in comparison to other parts of Ontario as a result of the high-water levels associated with glacial Lake Algonquin, the early stages of glacial Lake Iroquois and the St. Lawrence Marine Embayment of the post-glacial Champlain Sea. In

[2] Current common place names are used throughout this report while recognizing that the many Indigenous peoples who have lived in the region for thousands of years had, and often maintain, their own names for these places and natural features.

eastern Ontario, the old shoreline ridges of Lake Algonquin, Lake Iroquois, the Champlain Sea and of the emergent St. Lawrence and Ottawa river channels and their tributaries would be the most likely areas to find evidence of the Palaeo-Indigenous presence in the landscape (see AOO 2017; Ellis 2013; Ellis and Deller 1990; Watson 1999).

During the succeeding Archaic period (c. 10,000 to c. 3,000 B.P.), the environment of the region approached modern conditions and more land became habitable as water levels in the glacial lakes dropped. Populations continued to follow a mobile hunter-gatherer subsistence strategy, although there appears to have been a greater reliance on fishing and gathered food (e.g. plants and nuts) and more diversity between regional groups. The tool kit also became increasingly diversified, reflecting an adaptation to environmental conditions more similar to those of today. This included the presence of adzes, gouges and other ground stone tools believed to have been used for heavy woodworking activities such as the construction of dug-out canoes, grinding stones for processing nuts and seeds, specialized fishing gear including net sinkers, and a general reduction in the size of projectile points. The middle and late portions of the Archaic period saw the development of trading networks spanning the Great Lakes, and by 6,000 years ago copper was being mined in the Upper Great Lakes and traded into southern Ontario. There was increasing evidence of ceremonialism and elaborate burial practices and a wide variety of non-utilitarian items such as gorgets, pipes and ‘birdstones’ were being manufactured. By the end of this period populations had increased substantially over the preceding Palaeo-Indigenous period (Ellis 2013; Ellis et al. 1990).

More extensive Indigenous settlement of the region began during this period, sometime between 7,500 and 6,500 B.P. Artifacts from Archaic sites suggest a close relationship between these communities and what archaeologists refer to as the Laurentian Archaic stage peoples who inhabited the Canadian biotic province transition zone between the deciduous forests to the south and the boreal forests to the north. This region included northern New York State, the upper St. Lawrence Valley across southern Ontario and Quebec, and the state of Vermont (Ritchie 1969; Clermont et al. 2003). The ‘tradition’ associated with this period is characterized by a more or less systematic sharing of several technological features, including large, broad bladed, chipped stone and ground slate projectile points, and heavy ground stone tools. This stage is also known for the extensive use of cold-hammered copper tools including “*bevelled spear points, bracelets, pendants, axes, fishhooks and knives*” (Kennedy 1970:59). The sharing of this set of features is generally perceived as a marker of historical relatedness and inclusion in the same interaction network (Clermont et al. 2003). Cemeteries also appear for the first time during the Late Archaic. Evidence of Archaic inhabitation has been found across eastern Ontario (see Clermont 1999; Clermont et al. 2003; Ellis 2013; Kennedy 1962, 1970; Laliberté 2000; Watson 1990).

Archaeologists use the appearance of ceramics in the archaeological record to mark the beginning of the Woodland period (c. 3,000 B.P. to c. 350 B.P.). Ceramic styles and decorations suggest the continued differentiation between regional populations and are commonly used to distinguish between three periods: Early Woodland (2,900 to 2,300 B.P.), Middle Woodland (2,300 to 1,200 B.P.), and Late Woodland (1,200 to 400 B.P.). The introduction of ceramics to southern Ontario does not appear to have been associated with significant changes to lifeways, as hunting and gathering remained the primary subsistence strategy throughout the Early Woodland and well into the Middle Woodland. It does, however, appear that regional populations continued to grow in size, and communities continued to participate in extensive trade networks that, at their zenith c. 1,750 B.P., spanned much of the continent and included the movement of conch shell, fossilized shark teeth, mica, copper and silver; a large number of other items that rarely survive in the archaeological record would also have been exchanged, as well as knowledge.[3] Social structure appears to have become increasingly complex, with some status differentiation evident in burials. In southeastern Ontario, the first peoples to adopt ceramics are identified by archaeologists as belonging to the Meadowood Complex, characterized by distinctive biface preforms, side-notched points, and Vinette I ceramics which are typically crude, thick, cone-shaped vessels made with coils of clay shaped by cord-wrapped paddles. Meadowood material has been found on sites across southern Ontario extending into southern Quebec and New York State (Fox 1990; Spence et al. 1990).

In the Middle Woodland period increasingly distinctive trends or 'traditions' continued to evolve in different parts of Ontario (Spence et al. 1990). Although regional patterns are poorly understood and there may be distinctive traditions associated with different watersheds, the appearance of more refined ceramic vessels decorated with dentate or pseudo-scallop impressions have been used by archaeologists to distinguish the Point Peninsula Complex. These ceramics are identified as Vinette II and are typically found in association with evidence of distinct bone and stone tool industries. Sites exhibiting these traits are known from throughout south-central and eastern Ontario, northern New York, and northwestern Vermont, and are often found overlying earlier site components. Some groups appear to have practiced elaborate burial ceremonialism that involved the construction of large earthen mortuary mounds and the inclusion of numerous and often exotic materials in burials, construed as evidence of influences from northern Ontario and the Hopewell area to the south in the Ohio River valley. Archaeological evidence suggests that during this time period groups utilized a variety of resources within a home territory. Through the late fall and winter, small groups would coalesce at an inland 'family' hunting area. In the spring, these dispersed families would congregate at specific lakeshore sites to fish, hunt in the surrounding forest, and socialize. This gathering

[3] For example, the recent discovery of a cache of charred quinoa seeds, dating to 3,000 B.P. at a site in Brantford, Ontario, indicates that crops were part of this extensive exchange network, which in this case travelled from the Kentucky-Tennessee region of the United States. Thus far, there is no indication that these seeds were locally grown (Crawford et al. 2019).

would last through to the late summer when large quantities of food would be stored up for the approaching winter (Spence et al. 1990).

Towards the end of the Middle Woodland period (1200 B.P.), groups living in southern Ontario included horticulture in their subsistence strategy. Available archaeological evidence, which comes primarily from the vicinity of the Grand and Credit rivers, suggests that this development was not initially widespread. The adoption of maize horticulture instead appears to be linked to the emergence of the Princess Point Complex which is characterized by decorated ceramics combining cord roughening, impressed lines, and punctate designs; triangular projectile points; T-based drills; steatite and ceramic pipes; and ground stone chisels and adzes (Fox 1990).

Archaeologists have distinguished the Late Woodland period by the widespread adoption of maize horticulture by some Indigenous groups primarily across much of southern Ontario and portions of the southeast with favourable soils. Michi Saagiig oral histories recall that corn came to what is now Ontario with the arrival of the Wendat (Gitiga Migizi 2018:34). Initially only a minor addition to the diet, the cultivation of corn, beans, squash, sunflowers, and tobacco radically altered subsistence strategies and gained economic importance in the region over time. This change is associated with increased sedentarism, and with larger and more dense settlements focused on areas of easily tillable farmland. In some areas, semi-permanent villages, with communal 'longhouse' dwellings, appeared for the first time. These villages were inhabited year-round for 12 to 20 years until local firewood and soil fertility had been exhausted. Many were surrounded by defensive palisades, evidence of growing hostilities between neighbouring groups. Associated with these sites is a burial pattern of individual graves occurring within the village. Upon abandonment, the people of one or more villages often exhumed the remains of their dead for reburial in a large communal burial pit or ossuary outside of the village(s) (Wright 1966; Williamson 2014). More temporary habitations such as small hamlets, agricultural cabin sites, and hunting and fishing camps were also used. Throughout the parts of what is now Ontario situated on the Canadian Shield, however, the terrain limited horticulture and Indigenous groups continued to move frequently across their territories hunting, fishing, and gathering (Pilon 1999).

Along the St. Lawrence River valley from the east end of Lake Ontario to the Quebec City region and beyond, archaeologists have identified a distinctive material culture associated with what they refer to as the St. Lawrence Iroquoians. The material culture and settlement patterns of the fourteenth and fifteenth century St. Lawrence Iroquoian sites are directly related to the Iroquoian-speaking groups that Jacques Cartier and his crew encountered in 1535 at Stadacona (Quebec City) and Hochelaga (Montreal Island) (Jamieson 1990:386). Like those peoples inhabiting what would become southern and southcentral Ontario, the St. Lawrence Iroquoians practised horticulture and supplemented their diet with fishing, hunting and gathering. They lived in large semi-permanent villages as well as smaller camps. Numerous discrete settlement clusters have been identified across this large territory; however, the political and social relationships between these populations is unclear (Tremblay 2006).

By the late sixteenth century all of the St. Lawrence Iroquoian settlements appear to have been abandoned. Long characterized by archaeologists as a 'mysterious disappearance,' recent scholarship instead highlights several lines of evidence that suggest a series of planned migrations by St. Lawrence Iroquoian groups to other Indigenous populations, including the Huron-Wendat, during a period of coalescence and social realignment (Micon et al. 2021; Lesage and Williamson 2020).[4] Horticultural villages have also been recorded along the north shore of Lake Ontario and up the Trent River dating to c. 550 B.P. (c. 1400 C.E.). By c. 450 B.P. (c. 1500 C.E), the easternmost of these settlements were located between Balsam Lake and Lake Simcoe in the region that would become historic Huronia. These population movements are also reflected in the oral histories of the Michi Saagiig (Mississauga Anishinaabeg), which recall St. Lawrence Iroquois moving westwards into their territory around 1000 A.D. (Gitiga Migizi 2018:121).

While this significant population movement is not fully understood, it undoubtedly involved complex interactions between different cultural groups including the Anishinaabeg, the Huron-Wendat and, as noted above, may also have included St. Lawrence Iroquoians. As such, there are conflicting interpretations of the archaeological and historical records related to this period (see Gaudreau and Lesage 2016; Gitiga Migizi 2018; Gitiga Migizi and Kapyrka 2015; Lainey 2006; Richard 2016; Pendergast 1972).

Anishinaabe oral histories suggest a broad homeland extending far to the west of Ontario and include references to a migration from the Atlantic seaboard, as well as a subsequent return via the St. Lawrence River to the Great Lakes region, with the latter having occurred around 500 B.P. (Hessel 1993; Sherman 2015:27). Those who became known as the Anishinabe Algonquin[5] settled along the Ottawa River or Kichi-Sibi[6] and its tributaries in eastern Ontario and western Quebec; the Ojibwa and Nipissing were located further to the north and west. Living on and around the Canadian Shield, all Anishinaabeg maintained a more nomadic lifestyle than their agricultural neighbours to

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[4] This period also saw the coalescence of horticultural communities associated with a northward territorial expansion and a concomitant abandonment of the north shore of Lake Ontario, changes that have been suggested to have been driven, in large part, by an increase in conflict with the Haudenosaunee over control of trade routes and access to European trade goods.

[5] The Anishinabe Algonquin of eastern Ontario increasingly use the Anishinaabemowin word Omàmiwinini to refer to themselves. Omàmiwinini describes the relationship with the land in the language, and though it was largely replaced by 'Algonquin' for many years, efforts are underway to reintroduce the term (Sherman 2008:77).

[6] The Anishinabe Algonquin have various names specific to each part of the Ottawa River. The lower part of the river from Mattawa down to Lake of Two Mountains is traditionally known as the Kichi-Sibi, also spelled Kiji Sibi, Kichisipi, Kichissippi, and Kichisippi (AOO 2020; Morrison 2005:9; Sherman 2015:27).

the south, and accordingly their presence is less visible in the archaeological record (Morrison 2005; Sherman 2015:28).

Finally, while the Iroquois or Haudenosaunee[7] homeland was initially south of Ontario in New York state, their oral histories suggest their hunting grounds extended along the north shore of Lake Ontario and the St. Lawrence River into southeastern Ontario and Quebec (Hill 2017). Archaeological data indicates some Haudenosaunee were living year-round in Ontario by the early seventeenth century (Konrad 1981).

The Indigenous population shifts and relationships of the late sixteenth and early seventeenth centuries through the period of initial contact with Europeans were complex and are not fully understood. They were certainly in part a result of the disruption of traditional trade and exchange patterns among all Indigenous peoples brought about by the arrival of the French, Dutch and British along the Atlantic seaboard the subsequent emergence of the lucrative St. Lawrence River trade route.

3.2 Regional Post-Contact Cultural Overview

The first Europeans to travel into eastern Ontario arrived in the early seventeenth century; predominantly French, they included explorers, fur traders and missionaries. While exploring eastern Ontario and the Ottawa River watershed between c. 1610 and 1613,[8] Samuel de Champlain and others documented encounters with different Indigenous groups speaking Anishinaabemowin, including the Matouweskarini along the Madawaska River, the Kichespirini at Morrison Island on the Ottawa River, the Otaguottouemin along the river northwest of Morrison Island, the Weskarini in the Petite Nation River basin,[9] and the Onontchataronon[10] living in the South Nation River basin as far west as the Gananoque River basin (Hanewich 2009; Hessel 1993; Sherman 2015:29). These extended family communities subsisted by hunting, fishing, and gathering, and undertook some horticulture (see also Pendergast 1999; Trigger 1987). The Anishinaabeg living in the Upper Ottawa Valley and northeastward towards the headwaters of the Ottawa River included the Nipissing, Timiskaming, Abitibi (Wahgoshig), and others. As

[7] Sometime between A.D. 1142 and A.D. 1451 the Mohawk, Oneida, Onondaga, Cayuga, and Seneca united to form the Haudenosaunee Confederacy, also known as the League of Five Nations, and called the Iroquois by the French. When the Tuscarora Nation joined the confederacy in 1722, it became the League of Six Nations.

[8] From this section onwards all dates are presented as A.D.

[9] The Petite Nation River is in Quebec, with its mouth on the north side of the Ottawa River between Ottawa and Hawkesbury. It is sometimes confused with the South Nation River in eastern Ontario which empties into the south side Ottawa River opposite the Petite Nation River. Consequently, the Weskarini territory is sometimes associated with the South Nation River, but this appears to be an error (*cf.* Hessel 1993).

[10] This is a Haudenosaunee term and is, therefore, thought to be an Anishinabe Algonquin community that adopted Iroquoians who had been displaced from their territory along the St. Lawrence River near Montreal (Fox and Pilon 2016).

the French moved inland, however, they referred to all these groups who spoke different dialects of Anishinabemowin as 'Algonquin' (Morrison 2005:18).

At the time of Champlain's travels, the Anishinabe Algonquin were already acting as brokers in the fur trade and exacting tolls from those using the Ottawa River waterway which served as a significant trade route connecting the Upper Great Lakes via Lake Nipissing and Georgian Bay to the west and the St. Maurice and Saguenay via the Rivières des Outaouais (the portion of the Ottawa River extending eastward into Quebec from Lake Timiskaming). These northern routes avoided the St. Lawrence River and Lower Great Lakes route and, therefore, potential conflict with the Haudenosaunee (Joan Holmes & Associates Inc. 1993:2-3). Access to this southern route and the extent of settlement in the region fluctuated with the state of hostilities (Joan Holmes & Associates Inc. 1993:3). As the fur trade in New France was Montreal-based, Ottawa River navigation routes were of strategic importance in the movement of goods inland and furs down to Montreal and, in the wake of Champlain's travels, the Ottawa River became the principal route to the interior for the French. The recovery of European trade goods (e.g., iron axes, copper kettle pieces, glass beads, etc.) from sites throughout the Ottawa River drainage basin provides some evidence of the extent of interaction between Indigenous groups and the French during this period (Kennedy 1970).

With Contact, major population disruptions were brought about by the introduction of European diseases against which Indigenous populations had little resistance; severe smallpox epidemics in 1623-24 and again between 1634 and 1640 resulted in drastic population decline among all Indigenous peoples living in the Great Lakes region (Konrad 1981). The expansion of hunting for trade with Europeans also accelerated decline in the beaver population, such that by the middle of the seventeenth century the centre of the fur trade had shifted northward from what became the northeastern states into southern Ontario. The French, allied with the Huron-Wendat, the Petun, and the Anishinaabeg, refused advances by the Haudenosaunee to trade with them directly. Seeking to expand their territory and disrupt the French fur trade, the Haudenosaunee launched raids into the region and established a series of winter hunting bases and trading settlements near the mouths of the major rivers flowing into the north shore of Lake Ontario and the St. Lawrence River.[11] The first recorded Haudenosaunee settlements were two Cayuga villages established at the northeastern end of Lake Ontario (Konrad 1981). Between 1640 and 1650 conflict with the Haudenosaunee Confederacy culminated in the near complete abandonment of what is now southern Ontario by Anishinaabeg and Huron-Wendat groups. In the face of continued harassment, resident Indigenous communities appear to have opted to disperse further afield or to join other

[11] These settlements included: Quinaouatoua near present day Hamilton, Teiaiagon on the Humber River, Ganatswekwyagon on the Rouge River, Ganaraske on the Ganaraska River, Kentsio on Rice Lake, Kente on the Bay of Quinte, and Ganneious, near Napanee (Adams 1986).

communities, settling to the north and west of the Ottawa Valley,[12] and at the French posts of Montreal, Quebec City, Sillery, and Trois Rivières (Joan Holmes & Associates Inc. 1993:3; Trigger 1987:610, 637-638).[13] It should be noted, however, that available evidence suggests that segments of these groups either remained in their traditional territories or returned seasonally to hunt, fish and trap.

Fort Frontenac was established by the French at the present site of Kingston in 1673, and another fort was constructed at La Presentation (Ogdensburg, New York) in 1700. These forts served to solidify control of the fur trade and to enhance French ties with local Indigenous populations. To this end, the French also encouraged the establishment of Indigenous villages near their settlements (Adams 1986). The full extent of Indigenous settlement in eastern Ontario through to the end of the seventeenth century, however, is uncertain. The Odawa appear to have been using the Ottawa River for trade from c. 1654 onward and some Anishinabe Algonquin remained within the area under French influence, possibly having withdrawn to the headwaters of various tributaries in the watershed. In 1677 the Sulpician Mission of the Mountain was established near Montreal where the Ottawa River empties into the St. Lawrence River. While it was mostly a Mohawk community that became known as Kahnawake, some Anishinabe Algonquin who had converted to Christianity settled at the mission for part of the year and were known as the Oka Algonquin (Joan Holmes & Associates Inc. 1993).

As a result of increased tensions between the Haudenosaunee and the French, and declining population from disease and warfare, the Cayuga villages were abandoned in 1680 (Edwards 1984:17). Around this time, Anishinaabeg began to mount an organized counter-offensive against the Haudenosaunee who were pushed back to their traditional lands further south, resulting in a Mississauga presence in southern and south-eastern Ontario. This change saw Anishinaabeg gain wider access to European trade goods and allowed them to use their strategic position to act as intermediaries in trade between the British and Indigenous communities to the north (Edwards 1984:10,17; Ripmeester 1995; Surtees 1982).

Following almost a century of warfare, the Great Peace was signed in Montreal in 1701 between New France and 39 Indigenous Nations, including the Anishinaabeg, Huron-Wendat and Haudenosaunee. This led to a period of relative peace and stability. During the first half of the eighteenth century, the Haudenosaunee appear to have been largely confined to south of the St. Lawrence River, while Mississauga and Ojibwa were living in southern and central Ontario, generally beyond the Ottawa River watershed (Joan

[12] Some Nipissing, for example, re-located to the Lake Nipigon region (Joan Holmes & Associates Inc. 1993:3).

[13] In the case of the 1649-1650 move of a group of Huron-Wendat from Gahoendoe (Christian) Island to the area of Quebec City, the relocation was the result of careful consideration and was planned well in advance, with a diplomatic mission having been sent in advance to discuss the move with their French allies (see Lesage and Williamson 2020).

Holmes & Associates Inc. 1993:3). Anishinabe Algonquin were residing along the Ottawa River and its tributaries, as well as outside the Ottawa River watershed at Trois-Rivières; Nipissing were located around Lake Nipissing and at Lake Nipigon. Reports from c. 1752 suggest that some non-resident Anishinabe Algonquin and Nipissing were trading at the mission at Lake of Two Mountains during the summer but returning to their hunting grounds "*far up the Ottawa River*" for the winter, and there is some indication that they may have permitted Haudenosaunee residents of the mission to hunt in their territory (Joan Holmes & Associates Inc. 1993:3; Heidenreich and Noël 1987:Plate 40).

In 1754, hostilities over trade and the territorial ambitions of the French and British led to the Seven Years' War, in which many Anishinaabeg fought on behalf of the French. With the French surrender in 1760, Britain gained control over New France, though in recognition of Indigenous title to the land the British government issued the Royal Proclamation of 1763. This created a boundary line between the British colonies on the Atlantic coast and the 'Indian Reserve' west of the Appalachian Mountains. This line then extended from where the 45th parallel of latitude crossed the St. Lawrence River near present day Cornwall northwestward to the southeast shore of Lake Nipissing and then northeastward to Lac St. Jean. The proclamation specified that "*Indians should not be molested on their hunting grounds*" (Joan Holmes & Associates Inc. 1993:4) and outlawed the private purchase of Indigenous land, instead requiring all future land purchases to be made by Crown officials "*at some public Meeting or Assembly of the said Indians*" living upon the land in question (cited in Surtees 1982: 9). In 1764, the post at Carillon on the Ottawa River was identified as the point beyond which traders could only pass with a specific licence to trade in "*Indian Territory.*" Petitions in 1772 and again in 1791 described Anishinabe Algonquin and Nipissing territory as the lands on both sides of the Ottawa River from Long Sault to Lake Nipissing. Settlers continued to trespass into this territory, however, cutting trees and driving away game vital to Indigenous lifeways (Joan Holmes & Associates Inc. 1993:5). Akwesasne, within the Haudenosaunee hunting territory, became a permanent settlement towards the middle of the eighteenth century.[14]

At first, the end of the French Regime brought little change to eastern Ontario. Between 1763 and 1776 some British traders traveled to the Kingston area, but the British presence remained sporadic until 1783 when Fort Frontenac was officially re-occupied. With the conclusion of the American Revolutionary War (1775 to 1783), however, the British sought additional lands on which to settle United Empire Loyalists fleeing the United States, disbanded soldiers, and the Mohawk who had fought with the British under Thayendanegea (Joseph Brant) and Chief Deserontyon and were, therefore, displaced from their lands in New York State. To this end, the British government undertook hasty negotiations with Indigenous groups to acquire rights to lands; however, these negotiations did not include Anishinabe Algonquin and Nipissing who were continuously ignored, despite much of the area being their traditional territory (Lanark

[14] www.firstbatuibs.info/akwesasne.html

County Neighbours for Truth and Reconciliation 2019). Initially the focus for settlement was the north shore of Lake Ontario and the St. Lawrence River, resulting in a series of 'purchases' and treaties beginning with the Crawford Purchases of 1783. As noted, these treaties did not include all of the Indigenous groups who lived and hunted in the region and the recording of the purchases – including the boundaries – and their execution were problematic; they also did not extinguish Indigenous rights and title to the land (Joan Holmes & Associates Inc. 1993:5; Royal Commission on Aboriginal Peoples 1996). The *Crown Grant to the Mohawks of the Bay of Quinte* was issued in 1784 in recognition of the Six Nations' support during the American Revolutionary War. It included lands on the Bay of Quinte, originally part of the Crawford Purchases, on which Chief Deserontyon and other Haudenosaunee settled.[15]

Major Samuel Holland, Surveyor General for Canada, began laying out the land within the Crawford Purchases in 1784 with such haste that the newly established townships were assigned numbers instead of names. Euro-Canadian settlement along the north shore of the St. Lawrence River and the eastern end of Lake Ontario began in earnest about this time. By the late 1780s the waterfront townships were full and more land was required to meet both an increase in the size of grants to all Loyalists and grant obligations to the children of Loyalists who were now entitled to 200 acres in their own right upon reaching the age of 21 (H. Belden & Co. 1880:16). In 1792 John Graves Simcoe, Lieutenant Governor of the Province of Upper Canada, offered free land grants to anyone who would swear loyalty to the King, a policy aimed at attracting more American settlers. As government policy also dictated the setting aside of one seventh of all land for the Protestant Clergy and another seventh as Crown reserves, pressure mounted to open up more of the interior. As a result, between 1790 and 1800 most of the remainder of the Crawford Purchases was divided into townships (H. Belden & Co. 1880:16).

A number of other purchases during the late eighteenth century between representatives of the Crown and certain Anishinaabe covered lands immediately west of the Crawford Purchases, from the north shore of Lake Ontario northward to Lake Simcoe and Georgian Bay/Lake Huron. These included the John Collins Purchase of 1785, the Johnson-Butler Purchase[16] of 1787-88, and the 1798 Penetanguishene Purchase (Treaty 5) aimed at acquiring a harbour on Lake Huron for British vessels.[17] The lands purportedly covered by these purchases were often poorly defined and were thus included in the later Williams Treaties of 1923 (see below).

The *Constitution Act* of 1791, which created the provinces of Upper and Lower Canada (later Ontario and Quebec) used the Ottawa River as the boundary between the two. This

[15] https://www.ontario.ca/page/map-ontario-treaties-and-reserves
[16] Sometimes referred to as the 'Gunshot Treaty' as it reportedly covered the land as far back from the lake shore as a person could hear a gunshot (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).
[17] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

effectively divided the Anishinabe Algonquin and Nipissing territories, both of which straddled the river. The Anishinabe Algonquin and Nipissing sent a letter to the Governor General of the Province of Canada in 1798, requesting that settlers be restricted to the banks of the Ottawa River and detailing the difficulties caused by encroaching settlement (Joan Holmes & Associates Inc. 1993:5; see also Lanark County Neighbours for Truth and Reconciliation 2019). In this letter the Chiefs noted the belt of wampum and map of their lands that was given to Governor Carleton some years earlier, pleading for no more of the encroachment that was driving away game and pushing them into infertile lands; however, there was no response. In the early 1800s, a few Anishinabe Algonquin and Nipissing settled on the shores of Golden Lake, known to them as 'Peguakonagang;' they called themselves 'Ininwezi,' which they translated as 'we people here along' (Johnson 1928; MacKay 2016).[18] The Golden Lake band, as they initially came to be known, resided in this area for at least part of the year, with various band members maintaining traplines, hunting territories, and sugar bushes.

The War of 1812 between the United States and Great Britain (along with its colonies in North America and its Indigenous allies) brought another period of conflict to the region. In 1815, at the conclusion of the war, the British government issued a proclamation in Edinburgh to further encourage settlement in British North America. The offer included free passage and 100 acres of land for each head of family, with each male child to receive his own 100 acre parcel upon reaching the age of 21 (H. Belden & Co. 1880:16). At the same time, the government was seeking additional land on which to resettle disbanded soldiers from the War of 1812. Demobilized forces could thereby act as a 'force-in-being' to oppose any possible future incursions from the United States. Veterans were encouraged to take up residence within a series of newly created 'military settlements' including those at Perth (1816) and Richmond (1818). The pressure to find more land was exacerbated by the sheer number of settlers moving into the region as a result of these initiatives, which began to push settlement beyond the acquired territory into what had formally been protected as 'Indian Land.'[19]

Additional 'purchases' were signed in the early nineteenth century between the Crown and certain Anishinaabe communities including the Lake Simcoe Purchase (Treaty 16) signed in 1815 and covering lands between Lake Simcoe and Georgian Bay, the Nottawasaga Purchase (Treaty 18) of 1818 to the south and west of the Lake Simcoe Purchase, and the Rice Lake Purchase or Treaty 20 of 1818 which covered a large area around Rice Lake.[20]

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[18] The Algonquin of River Desert identified The Golden Lake Band using the name "Nozebi'wininiwag," translated as "Pike-Water People" (Speck in Johnson 1928:174).

[19] Between 1815 and 1850 over an estimated 800,000 Euro-Canadian settlers moved into the region (https://www. lanarkcountyneighbours.ca/the-petitions-of-chief-shawinipinessi.html).

[20] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

Further east, with the settlement of the region underway, Lieutenant Governor Gore ordered Captain Ferguson, the Resident Agent of Indian Affairs at Kingston, to arrange the purchase of additional lands from the chiefs of the Ojibwa and Mississauga or Michi Saagiig Nishnaabeg. The resulting Rideau Purchase (Treaty 27 and 27¼) extended from the rear of the earlier Crawford Purchases to the Ottawa River and was signed by the Michi Saagiig Nishnaabeg or Mississauga in 1819 and confirmed in 1822. This 'purchase' was also problematic and excluded the Anishinabe Algonquin whose traditional territory it covered (Canada 1891:62; Surtees 1994:115). As this purchase included lands within the Ottawa River watershed, the Anishinabe Algonquin and Nipissing protested in 1836 when they became aware of its terms (Joan Holmes & Associates Inc. 1993:6).

As Euro-Canadian settlement spread, Indigenous groups were increasingly pushed out of southern and eastern Ontario, generally moving further to the north and west, although some families remained in their traditional lands, at least seasonally. Records relating to the Hudson's Bay Company, the diaries of provincial land surveyors, the reports of geologists sent in by the Geological Survey of Canada, census returns,[21] store account books and settler's diaries all provide indications of the continued Indigenous settlement in the region, as does Indigenous oral history. In addition to their interactions with the Anishinabe Algonquin who remained in the area, the nineteenth century settlers found evidence of the former extent of Indigenous inhabitation, particularly as they began to clear the land. In 1819, Andrew Bell wrote from Perth:

> *All the country hereabouts has evidently been once inhabited by the Indians, and for a vast number of years too. The remains of fires, with the bones and horns of deers (sic) round them, have often been found under the black mound... A large pot made of burnt clay and highly ornamented was lately found near the banks of the Mississippi, under a large maple tree, probably two or three hundred years old. Stone axes have been found in different parts of the settlement.*
>
> (cited in Brown 1984:8)

While some Anishinabe Algonquin and Nipissing continued to spend part of the summer at Lake of Two Mountains through this period, most of the year appears to have been spent on their traditional hunting grounds, and by the 1830s there were specific claims for land by individuals such as Mackwa on the Bonnechere River and Constant Pennecy on the Rideau waterway. In 1842, Chief Pierre Shawinipinessi,[22] an Anishinabe Algonquin leader, petitioned the Crown for a land tract of 2,000 acres between the townships of Oso, Bedford and South Sherbrooke to enable his people to sustain

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[21] While Indigenous peoples were clearly still residing in the area and making use of the land, they often do not appear in the 1851 to 1871 census records. Huitema (2001:129) notes that 'Algonquin' were sometimes listed in these records as 'Frenchmen' or 'halfbreeds' because they had utilized the mission at Lake of Two Mountains as their summer gathering place and, therefore, were thought of as being French.
[22] There are numerous variations in the spelling of Chief Shawinipinessi's name; he is also known by the name of Peter Stephens or Stevens).

themselves (Huitema 2001; Ripmeester 1995:164-166; Sherman 2008:32-33).[23] A licence of occupation for the 'Bedford Algonquin' was granted in 1844, with Mississauga (Michi Saagiig Nishnaabeg) from Alnwick reportedly also living at Bedford (Joan Holmes & Associates Inc. 1993:7-8). Illegal logging operations, however, interfered with life on the reserve, and despite protests from Chief Shawinipinessi and legislation passed in 1838 and then later in 1850 to protect Indigenous lands,[24] it was allowed to continue, depleting the local food resources. In response to an 1861 petition to address the trespassing of settlers, the existence of the Bedford tract was denied (LAC microfilm reel C-13419). At this time some of the community moved to nearby lands while others joined the Anishinabe Algonquin at Kitigan Zibi, and at Pikwàkanagàn where the 'Golden Lake Reserve' was created in 1873 (Hanewich 2009; Joan Holmes & Associates Inc. 1993:9). Around 1836 some consideration was given to facilitating Anishinabe Algonquin and Nipissing settlement in the Grand Calumet Portage and Allumette Island area, but this was not pursued (Joan Holmes & Associates Inc. 1993).

Other treaties signed in the mid-nineteenth century included the St. Regis Purchase (Treaty 57) signed in 1847 between the Crown and the Mohawk and covering a narrow parcel of land, known as the 'Nutfield Tract' extending north of the St. Lawrence River at Cornwall towards the Ottawa River, and the Robson-Huron Treaty (Treaty 61) of 1850 between the Crown and certain Anishinaabeg for lands east of Georgian Bay and the northern shore of Lake Huron eastward to the Ottawa River.[25]

Through the early twentieth century, off-reserve Anishinabe Algonquin and Nipissing were told to move to established reserves at Golden Lake (Pikwàkanagàn), Maniwaki (Desert River) and at Gibson on Georgian Bay (which had been established for the re-settlement of both Anishinabe Algonquin and Mohawk from Lake of Two Mountains), but many remained in their traditional hunting territories. There is also evidence to suggest that Akwesasne Mohawk trapped and hunted north of their reserve as far as Smiths Falls and Rideau Ferry between c. 1924 and 1948 (Joan Holmes & Associates Inc. 1993:10-11; Sherman 2008:33).

The Williams Treaties of 1923 were signed between the Crown and seven Anishinaabe First Nations to address lands that had not been surrendered via a formal treaty process (see above).[26] These lands covered a large area from the north shore of Lake Ontario to

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[23] July 17, 1842 petition 115 addressed to Sir Charles Bagot, Governor General, Library and Archives Canada RG10, V186 part 2, as transcribed in Joan Holmes & Associates Inc. (1993) *Report on the Algonquins of Golden Lake Claim* Vol. 10-12:101.

[24] Chapter XV. An Act for the protection of the Lands of the Crown in this Province, from Trespass and Injury. Thirteenth Parliament, 2nd Victoria, A.D. 1839. An Act for the Protection of the Indians in Upper Canada from Imposition and the Property Occupied or Enjoyed by Them from Trespass and Injury; passed by the government of Upper Canada on August 10, 1850. Available from https://bnald.lib.unb.ca/node/5342; United Canadas (1841-1857) 13 & 14 Victoria – Chapter 74:1409.

[25] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

[26] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

Lake Nipissing and overlapped with a number of other treaties and 'purchases.' The Williams Treaties First Nations include the Chippewas of Beausoleil, Georgina Island and Rama, and the Mississaugas of Alderville, Curve Lake, Hiawatha and Scugog Island. To address further issues with a number of the pre-confederation purchases and treaties, the Williams Treaties First Nations ratified the Williams Treaties Settlement Agreement with Canada and Ontario in June, 2018. This agreement recognized harvesting rights in Treaties 5, 16, 18, 20, 27 and 27¼, the Crawford Purchase, the Gunshot Treaty and Lake Simcoe.[27]

As noted above, lands considered traditional Anishinabe Algonquin territory were included in various nineteenth century purchases from which they were excluded. Anishinabe Algonquin claims to these lands include a series of petitions to the Crown going back to 1772 that asserted rights to land and resources. An official land claim was made in the 1980s and, in 2016, an Agreement-in-Principle was signed by Ontario, Canada and the Algonquins of Ontario, a step towards a treaty recognizing Anishinabe Algonquin rights across much of eastern Ontario.[28]

Gloucester Township

In 1792 the township was originally surveyed as Township B., but was eventually called Gloucester after William Frederick, second Duke of Gloucester and Edinburgh, and nephew of King George III. In 1792-93, Thomas and William Fraser petitioned Lieutenant Governor John Graves Simcoe for substantial land grants within the new township, with William's petition viewed favourably such that on July 13th, 1793 the Legislative Council ordered that "*the township of Gloster* (Gloucester) *be granted to him*." Although Fraser had implied that he represented a large number of families interested in settling in the area, there is no indication that anyone from his party actually came to the township, nor was the land officially transferred to him (Golder 2019:7).

Land registry records indicate that patents for some of the lots in Gloucester, Osgoode, and North Gower townships were issued shortly after the turn of the nineteenth century, but the majority of these were granted to United Empire Loyalists or their family members, most of whom never actually settled on these properties, instead holding them for speculation purposes. The abundant stands of red and white pine in the Ottawa Valley proved to be one of the most important factors in attracting settlers to the area. At the beginning of the nineteenth century there was an economic shift from the fur trade to the lumber industry as the Napoleonic blockades increased demand in Europe for quality pine. Settlement followed and a large number of farms and lumber camps began to appear in the area. A mutually beneficial relationship soon developed between the lumber and farming industries: the lumber camps and shanties depended on the local farmers to supply food stuffs and the farmers depended on the lumber industry for

[27] www.williamstreatiesfirstnations.ca
[28] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

seasonal work in the winter (Mercer 1998:5). Farming communities in the region grew with the development of the squared timber industry, until much of the stands of pine in the areas immediately surrounding the Ottawa region were exhausted, with the focus then shifting to the sawn lumber trade.

Logging on the Rideau River and its tributaries began in 1810 when Braddish Billings, who had worked for Philemon Wright cutting timber on the upper Ottawa River, built a shanty on the Rideau below the Hog's Back (Passfield 1982:72). While the Billings family cleared some land, farming was a secondary consideration in favour of lumbering. Logs were hand squared with axes and adzes and floated down the river on spring floods for sale to Philemon Wright and Sons in what would later become Gatineau. Billings was reportedly the only settler on the eastern bank of the Rideau River within Gloucester Township until sometime around 1819 when several more families moved into the area (Passfield 1982:72).

The construction of the Rideau Canal between 1826 and 1832 accelerated settlement of the region, as the immense project required thousands of labourers. Built as a preventive military measure to provide a secure supply and communications route between Montreal and the British naval base at Kingston, the canal created a means by which to bypass the stretch of the St. Lawrence River bordering New York State. By the mid-nineteenth century, however, the canal also served commercial purposes, as it afforded a more easily navigated route than the rapid-filled section of the St. Lawrence between Montreal and Kingston. As a result, the Rideau Canal became a busy commercial artery (though by 1849 the rapids of the St. Lawrence had been tamed by a series of locks and commercial shippers were quick to revert to this more direct route).

During the first part of the nineteenth century, settlement in Gloucester Township was largely restricted to road frontages and the Rideau River. Most of the lots in the Rideau Front portion of Gloucester remained largely rural through the remainder of the nineteenth century, and, indeed, through most of the twentieth. Nineteenth century maps of the township show the intensification of rural settlement that occurred through the late nineteenth century, as most of the land came to be settled and the original lots were subdivided (Watson 2009:29).

The first influx of settlers generally favoured locating along the rivers and creeks that dotted the landscape of Gloucester township, as early transportation was water-borne. It was for this reason that the Junction Gore on the southeast side of the Rideau, the River Road towards Black Rapids and Manotick, the Montreal Road bordering Green's Creek, and the Bear Brook from Cumberland to Carlsbad were favoured in early settlement locations (Walker & Walker 1968:162). The community of Ramsayville, located to the northwest of the study area, was founded in the 1830s when fifteen families from the north of Ireland and Scotland settled along Ramsay Creek. Originally named Ramsay Corners, the settlement was named after pioneer Alexander Ramsay. The name was changed when the locality received a post office in 1873. In 1964 the property in the area was acquired by the National Capital Commission as part of the 'Greenbelt' (Walker & Walker 1968:202).

The community of Carlsbad Springs, located to the northeast of the study area, was founded around its healing springs. The springs had been used by Indigenous communities for centuries before the founding of the Euro-Canadian community as it was rumoured that Haudenosaunee chief Donnaconna had recommended its curative waters to Jacques Cartier and his scurvy-ridden crew. The Bear Brook, which meanders through the springs, was originally wide enough for timber to float to Judge Musgrove's mill, built in 1854. The wood processed at this mill was used to help power the engines of the pioneer Canada Atlantic Railway until this source of fuel was replaced by coal. About a year after confederation innkeeper Danny Eastman built a guesthouse at the site of the springs which evolved into a popular resort spa. The settlement was thereafter known as Eastman's Springs until 1902 when the name was changed to Carlsbad Springs after the famous Bohemian spa constructed in the mid-nineteenth century. While the larger settlement still exists today, the spa complex itself burned in 1876 and after its reconstruction was owned by the Boyd family (Walker & Walker 1968:202-205).

In 1854 Thomas McKay helped finance the construction of the Bytown and Prescrott Railway on the condition that it go through Gloucester with the station near his New Edinburgh mills (Walker & Walker 1968: 178). The 1879 Belden map depicts this railway as running along the Rideau River several kilometres to the west of the study area. The east-west running Canada Atlantic Railway was constructed to the north of the corridor in 1882 (shown as having been assumed by the Grand Trunk Railway Co. on the topographic map dating to 1906), and the Ottawa and New York Railway was completed directly to the south in 1899 (Map 3; Andreae 1997:119-125, 199).

The community of Piperville, located just to the west of the study area, was founded during the 1880s when marshes in the area were drained by the Canada Atlantic Railway Company. The core of the community was the church built at the corner of the 8th Concession and Farmers Way (Kemp 1991:67). The community was likely named after the Piper family which owned the lot on which the church was built. By 1875 a school had been erected for the community on part of Lot 10, Concession 8 (Kempt 1991:50). The school is shown on the 1879 Belden map at the south end of the lot near the intersection of Thunder Road and Farmer's Way (see Map 3). The area remained poor, however, as the land was not conducive to farming.

Beginning in 1957, Highway 417 was constructed north of the study area, with the eastern section connecting Ottawa and the Province of Quebec being completed in 1975. In 1981 the Township of Gloucester was incorporated as a city before being amalgamated into the City of Ottawa in 2001.

3.3 Property History

Lots 7 and 8, Concession 9, Lots 8 to 11, Concession 8, Lots 11 to 15 Concession 7, Lots 15 and 16, Concession 6

Archival research was conducted in order to develop a general picture of the land use history for the study area through the nineteenth and twentieth centuries, particularly as it relates to the archaeological potential of the property. Information was compiled from a variety of sources, including nineteenth and early twentieth century maps, as well as twentieth century aerial photographs (Maps 3 and 4).[29] Land records held in the Ottawa-Carleton Land Registry Office (OCLRO) were also consulted. For the purposes of this study, the property history will be exclusively focused on lots on which mid-nineteenth century homesteads were constructed, as observed on the 1863 Walling map of Carleton County and the 1879 Belden map of Gloucester Township (see Map 3). In Gloucester settlements were concentrated along transportation routes given the dense forested land which made up the area. The homesteads within the study area were all located along the shores of Bear Brook. As such, the following will focus on Lot 8 Concession 8, Lots 10 and 11 Concession 8, and Lots 11 to 13 Concession 7. Of relevance to all of the lots in the study area, the Ontario Hydro Electric Commission purchased an easement through them with the right to build and maintain towers for a hydro corridor in 1957 (see, for example, OCLRO Instrument 58257).

The Crown patent for the south half of Lot 8, Concession 8 (100 acres) was granted to Elisha Hall in 1856. In 1858 Hall sold the land to Donald Grant, who then sold it to James Brown in 1861 (OCLRO Instruments 1199 and 17245). James Brown is shown in a residence on Lot 7 on the 1863 Walling map, though this was likely an error as he is placed on Lot 8 on the later 1879 Belden map, which depicts his homestead directly southwest of the study area (see Map 3). By 1908 this residence had disappeared, though a new home had been constructed within the study area on the south side of Thunder Road (see Map 3). The area remained unchanged through much of the twentieth century, though by 1987 there were additional residences within the study corridor along either side of Thunder Road (see Map 4).

The Crown patent for the north half of Lot 10, Concession 8 was granted to Mathew Dancy in 1858, who sold the east half of his property to William Dancy in 1861 (OCLRO 17445). The 1863 Walling map depicts only one residence, however, located in the

[29] Historical maps and aerial photographs have been geo-referenced using Geographic Information Systems (GIS) software to generate the mapping contained in this report. Geo-referencing is the name given to the process of transforming a map or image by assigning X and Y coordinates to features, allowing the software to rotate, stretch, and in some cases warp the original image to best match the supplied coordinates. Owing to considerable variation in the scale, accuracy, and resolution of historical maps and aerial photographs, there is often an unknown degree of error introduced in the process of geo-referencing and, as for this reason, the location and extent of the study area overlain on these maps should be considered approximate.

northwest corner of the lot, which is labelled as being occupied by both William and Mathew Dancy (see Map 3). By 1879 they were in separate residences, both of which the Belden map illustrates along the north side of Bear Brook, just to the north of the study corridor (see Map 3). Both residences were still depicted on either the 1906 or 1908 first edition one-inch-to-one-mile topographic maps Mathew's home appears to have been removed by the mid-twentieth century though William's farm was still in place; a new house had been constructed at the intersection of Thunder Road and Farmers Way in the northwest corner of the lot by 1978 (see Map 4).

The Crown patent for the north half of Lot 11, Concession 8 was granted to John McLatchie in 1856. A Hugh McLatchie is listed as an owner on Lot 11, Concession 8 in the 1873 directory and he is the first McLatchie to be listed in a directory or census (Irwin & Co. 1873). The McLatchie homestead was located squarely within the study area on the 1879 Belden map; however by 1906 it appears to have been abandoned (see Map 3). The 1904 farmer's directory also does not list Hugh McLatchie as the owner of the property (Union Publishing Company 1904). The McLatchie family sold the land to Wesley Farmer, the owner of the lot directly north of their land, in 1906; it is likely that the Farmer family simply used the property as farmland (OCLRO Instrument 19284).

The Crown patent for the south half of Lot 11, Concession 7 was granted to Alexander Gibb in 1866. In 1867 Gibb sold his land to Robert Farmer, who was shown as the landowner on the 1879 Belden map, with a homestead along Bear Brook directly northeast of the study area (OCLRO Instrument 26983; see Map 3). A building is illustrated in the same area as the Farmer homestead on aerial photographs and topographic mapping until 1976 (see Map 4).

The Crown patent for all 200 acres Lot 12, Concession 7 was granted to James Cawthorp in 1844. The lot changed hands several times, and was then divided into east and west halves in 1871 (OCLRO Instruments 4193, 9857, 941, 943 and 944). The east half was sold to Francis Arnaud, who in turn sold to the southeast 50 acres to Isaac Normand in 1878 (OCLRO Instrument 4489). The 1879 Belden map depicts a homestead on this parcel squarely within the study area; however the lot is only marked with the acrage and not Normand's name (see Map 3). In 1888 Normand sold his corner of the study area to J.B. Montreuil (OCLRO Instrument 11999). The 1906 topographic map depicts a building in the general area of Normand's homestead; however, by 1976 the area was open farm land (see Maps 3 and 4). The western half of the lot was sold to Denis Laporte in 1871, who is illustrated as the landowner of this part of the property on the 1879 Belden map (OCLRO Instrument 941). The western half had been divided into north and south sections by 1879; however it appears that Laporte owned both, with a homestead south of Leitrim Road and another north of Bear Brook (see Map 3). Laporte sold the southern portion of his property to G. Montreuil in 1894 (OCLRO Instrument 11287). Both homesteads are also visible on the 1906 topographic map; however the residence near Bear Brook had been removed by 1953 (see Map 4).

The Crown patent for Lot 13, Concession 7 was granted to John Graham in 1862, who in 1871 sold all 200 acres to Edward Beaudoin (OCLRO Instrument 655). Beaudoin sold part of the western half of the lot to Louis Garinpy in 1874; both are listed as the owners of homesteads south of the study area along the north shore of Bear Brook on the 1879 Belden map (see Map 3; OCLRO Instrument 1817). Only the Beaudoin residence remained by 1906, with that also having been removed by 1976 (see Maps 3 and 4).

4.0 ARCHAEOLOGICAL CONTEXT

This section describes the archaeological context of the study area, including known archaeological research, known cultural heritage resources (including archaeological sites), and environmental conditions. In combination with the historical context outlined above, this provides the necessary background information to evaluate the archaeological potential of the property.

4.1 Previous Archaeological Research

In order to determine whether any previous archaeological fieldwork has been conducted within or in the immediate vicinity of the present study area, a search of the titles of reports in the *Public Register of Archaeological Reports* maintained by the Ministry of Citizenship and Multiculturalism (MCM) was undertaken. To augment these results, a search of the Past Recovery corporate library was also conducted.[30]

Previous archaeological assessments conducted within or in the vicinity of the study area include the following:

- Stage 1 and Stage 2 archaeological assessments were completed directly north of the northern tip of the study area in 2012 by Golder Associates Ltd. (PIFs: P311-049-2011 & P311-080-2011) in advance of Highway 417 rehabilitation and improvements. Nothing was found as a result of the Stage 2 assessment.
- A Stage 1 archaeological assessment was completed 2.78 km to the east of the study area in 2014 by Golder Associates Ltd. (PIF: P366-0026-2013) in advance of the construction of the Capital Region Resource Recovery Centre. A Stage 2 assessment was not recommended.
- Stage 1 and Stage 2 archaeological assessments were completed 1.75 km to the northeast of the study area in 2014 by URS (PIF: P123-0257-2014) in advance of Highway 417 rehabilitation and improvements. Nothing was found as a result of the Stage 2 assessment.
- Stage 1 and Stage 2 archaeological assessments were completed 3 km to the northwest of the study area in 2018 by Stantec (PIF: P362-0184-2017) for temporary workspaces and access roads associated with TransCanada Pipeline's existing infrastructure. Nothing was found as a result of the Stage 2 assessment.

[30] In compiling the results, it should be noted that archaeological fieldwork conducted for research purposes should be distinguished from systematic property surveys conducted during archaeological assessments associated with land use development planning (generally after the introduction of the *Ontario Heritage Act* in 1974 and the *Environmental Assessment Act* in 1975), in that only those studies undertaken to current standards can be considered to have adequately assessed properties for the presence of archaeological sites with cultural heritage value or interest. In addition, it should be noted that the vast majority of the research work undertaken in the area has been focussed on the identification of pre-Contact Indigenous sites, while current MCM requirements minimally require the evaluation of the material remains of occupations and or land uses pre-dating 1900.

- A Stage 1 archaeological assessment was completed for some portions of the current study area in 2018 by Stantec (PIF: P415-0160-2018) on behalf of Infrastructure Ontario in advance of possible sale of lands to the Algonquins of Ontario. These portions of the current study area were found to retain archaeological potential and Stage 2 assessment was recommended. This recommendation has been incorporated into the analysis and archaeological potential determination below (see Section 5.3).

4.2 Previously Recorded Archaeological Sites

The primary source for information regarding known archaeological sites in Ontario is the *Archaeological Sites Database* maintained by MCM. The database largely consists of archaeological sites discovered by professional archaeologists conducting archaeological assessments required by legislated processes under land use development planning (largely since the late 1980s). A search of the *Sites Database* indicated that there are no known archaeological sites within 1 km of the study area.

A prime source for unregistered archaeological finds is the initial series of *Annual Archaeological Reports for Ontario* (AARO), which were published as appendices to the report of the Minister of Education in the *Ontario Sessional Papers*. In these reports, dating between 1887 and 1928, staff of the provincial museum (which eventually became the Royal Ontario Museum) published articles by several of Ontario's most prominent collectors, amateur archaeologists, and museum staff. The articles provide a record of some of the earliest archaeological fieldwork to have taken place in the province, as well as documentation of the private collections that were donated to the museum. These articles report on extensive artifact collecting in the late nineteenth and early twentieth centuries with artifacts being found across eastern Ontario. No artifacts or findspots in the vicinity of the study area, however, were reported in these volumes.

4.3 Cultural Heritage Resources

The recognition or designation of cultural heritage resources (here referring only to built heritage features and cultural heritage landscapes) may provide valuable insight into aspects of local heritage, whether identified at the local, provincial, national, or international level. As some of these cultural heritage resources may be associated with significant archaeological features or deposits, the background research conducted for this assessment included the compilation of a list of cultural heritage resources that have previously been identified within or immediately adjacent to the current study area. The following sources were consulted:

- Federal Heritage Buildings Review Office online Directory of Heritage Designations (http://www.pc.gc.ca/eng/progs/beefp-fhbro/index.aspx);
- Canada's Historic Places website (http://www.historicplaces.ca/en/home accueil.aspx);

- Ontario Heritage Properties Database (http://www.hpd.mcl.gov.on.ca/scripts/hpdsearch/english/default.asp);
- Ministry of Citizenship and Multiculturalism's List of Heritage Conservation Districts (http://www.mtc.gov.on.ca/en/heritage/heritage_conserving_list.shtml); and,
- Ontario Heritage Trust website (heritagetrust.on.ca).

No designated heritage properties are located within the study area; however beginning 400 m to the north is a system of hot springs associated with Mer Bleue. This area was the site of a hotel and spa complex named the Dominion House Hotel, constructed 1868 and quickly becoming the most prestigious Ottawa area spa resort for the elite. In 1906 the hotel was renamed Carlsbad Springs. Though the resort is no longer operational, the Carlsbad Springs Bath House still stands along Russell Road 3 km north of the study area.[31]

4.4 Heritage Plaques and Monuments

The recognition of a place, person, or event through the erection of a plaque or monument may also provide valuable insight into aspects of local history, given that these markers typically indicate some level of heritage recognition. As with cultural heritage resources (built heritage features and/or cultural heritage landscapes), some of these places, persons, or events may be associated with significant archaeological features or deposits. Accordingly, this study included the compilation of a list of heritage plaques and/or markers in the vicinity of the study area. The following sources were consulted:

- The Ontario Heritage Trust inventory of provincial plaques across Ontario (2021-Provincial-plaques-Open-data-v02-FINAL-ENG.pdf (heritagetrust.on.ca);
- A listing of plaques transcribed at www.readtheplaque.com;
- Parks Canada Directory of Federal Heritage Designations (https://www.pc.gc.ca/apps/dfhd/default_eng.aspx); and,
- A listing of historical plaques of Ontario maintained by Sarah J. McCabe (https://ontarioplaques.omeka.net/).

A plaque marking the location of the springhouse associated with Boyd spa, which was one of four hotels located at Carlsbad Springs, is located 3 km north of the study area. The plaque provides information about the founding inn at the springs erected by Daniel Eastman and its growth into a complex of hotels and fashionable meeting place for the elite of Ottawa.[32]

4.5 Cemeteries

[31] https://ncc-ccn.gc.ca/places/mer-bleue
[32] https://www.ontarioplaques.com/Plaques/Plaque_Ottawa10.html

The presence of historical cemeteries in proximity to a parcel undergoing archaeological assessment can pose archaeological concerns in two respects. First, cemeteries may be associated with related structures or activities that may have become part of the archaeological record, and thus may be considered features indicating archaeological potential. Second, the boundaries of historical cemeteries may have been altered over time, as all or portions may have fallen out of use and been forgotten, leaving potential for the presence of unmarked graves. For these reasons, the background research conducted for this assessment included a search of available sources of information regarding historical cemeteries. For this study, the following sources were consulted:

- A complete listing of all registered cemeteries in the province of Ontario maintained by the Consumer Protection Branch of the Ministry of Consumer Services (last updated 06/07/2011);
- Field of Stones website; Field of Stones (rootsweb.com);
- Ontario Cemetery Locator website maintained by the Ontario Genealogical Society (https://vitacollections.ca/ogscollections/2818487/data?g=d);
- Ontario Headstones Photo Project website (https://canadianheadstones.ca/wp/cemetery-lookup/); and,
- Available historical mapping and aerial photography.

No cemeteries were noted within or immediately adjacent to the study area. The Ramsayville Cemetery is located 2.8 km to the west of the study area just south of Highway 417 where Russel Road meets Ramsayville Road. An National Capital Commission trail runs from the location of the cemetery west towards Hawthorne Road.

4.6 Mineral Resources

The presence of scarce mineral resources on or near to a property may indicate potential for archaeological resources associated with both pre-Contact and post-Contact exploration and exploitation. For this reason, the background research conducted for the assessment includes a search of available sources of information on the locations of outcrops of rare and highly valued minerals, such as quartz, chert, ochre, copper, and soapstone, as well as minerals sought out by post-Contact prospectors and miners for more industrial-scale exploitation (i.e. gold, copper, iron, mica, etc.). Useful tools in this search are provided by databases maintained by the Ontario Geological Survey and the Ministry of Northern Development and Mines, including:

- *Abandoned Mines Information System* which contains a list of all known abandoned and inactive mine sites and associated features in the province;
- *Mining Claims* which contains a list of all active claims, alienations, and dispositions;
- *Mineral Deposits Inventory* which contains a list of known mineral occurrences of economic value in the province;

- *Bedrock Geology Data Set*, which shows the distribution of bedrock units and illustrates geologic rock types, major faults, iron formations, kimberlite intrusions, and dike swarms.

A review of the above-mentioned databases revealed no evidence of mineral resources located within the study area. It is worth noting, however, that the Mer Bleue located 2 km to the north of the study area was a significant source of peat which has been exploited by Indigenous communities as early at the 1500s. In the 1840s European settlers attempted to dry the wetland by burning its peat soil; however it remains the second largest bog in Ontario and the location of a permanent research station.[33]

4.7 Local Environment

The assessment of present and past environmental conditions in the region containing the study area is a necessary component in determining the potential for past occupation as well as providing a context for the analysis of archaeological resources discovered during an assessment. Factors such as local water sources, soil types, vegetation associations and topography all contribute to the suitability of the land for human exploitation and/or settlement. For the purposes of this assessment, information from local physiographic, geological and soils research has been compiled to create a picture of the environmental context for both past and present land uses.

The physiography and distribution of surficial material in this area are largely the result of glacial activity that took place in the Late Wisconsinan. This period, which lasted from approximately 23,000 to 10,000 years before present, was marked by the repeated advance and retreat of the massive Laurentide Ice Sheet (Barnett 1992 in Rowell 1997:12). As the ice advanced, debris from the underlying sediments and bedrock accumulated within and beneath the ice. The debris, a mixture of stones, sand, silt, and clay, was deposited over large areas as till plains, drumlins, and moraines. During deglaciation, as the Late Wisconsinan ice margin receded to the north, waters from the Atlantic Ocean flooded the isostatically-depressed upper St. Lawrence and Ottawa valleys and formed the Champlain Sea. Landforms and deposits north of the Ottawa River suggest that the maximum elevation reached by the Champlain Sea was between approximately 180-190 metres above the present sea level, which would have covered the region containing the current study area (Rowell 1997:12). Extensive deposits of fine-grained sediments, representative of deep-water environments, were laid down during this time. Continued isostatic rebound lead to the retreat of the glaciomarine waters, leaving behind boulder gravel spits, bars, and beaches at elevations between 120 and 60 metres (Rowell 1997:12). During the regression of the Champlain Sea, the ancestral Ottawa River and its north bank tributaries created extensive deposits of deltaic sands and formed numerous sand bars. Owing to poor drainage characteristics associated with the underlying clays,

[33] https://ncc-ccn.gc.ca/places/mer-bleue

extensive bogs subsequently developed, in low-lying areas, accumulating peat and other organic deposits.

The study area is located within the Ottawa Valley Clay Plain physiographic region, which consists of clay plains interrupted by rock and sand ridges. Most of the clay beds are level, with a few areas of elevation and scarce swamps. Within the Ottawa Valley there are areas where the bedrock has been faulted, causing it to appear above some of the clay beds. The clay sediments themselves are deep and silty, and are likely derived from the rocks of the Canadian Shield (Chapman and Putnam 1984:205).

Provincial topographic mapping shows the study area to sit at an elevation between 72 m and 80 m amsl and generally sloping up from southeast to northwest (Map 5; see Map 1). Surficial geology mapping, completed at 1:50,000 scale, indicates that the study area is comprised of two different types of Champlain Sea sediments (see Map 5). The northern section is comprised of deltaic and estuarine deposits of medium to fine grained sand which developed as the Champlain Sea water levels fell. The southern section consists of offshore marine deposits of clay, silty clay and silt (Richard 1976). Soil survey mapping, also completed at a 1:50,000 scale, indicates that the study area is comprised of four soil types: Rubicon sand, Castor silt loam, Allendale sandy loam and an Eroded channel (see Map 5). Rubicon sand consists of shallow layers of organic matter, brown sand, grey sand and mottled brown and yellow sand. The soil supports woodlots and general farm crops, and varies between good and poor drainage. Castor silt loam consists of brown silt loam and fine sandy loam over grey brown fine sand. This soil supports general farming and has moderate to poor drainage. Allendale sandy loam consists of stone free, fine sandy loam soils overlying clay deposits and consequently which has poor drainage. Eroded channels consist of stream banks and channels carved through the existing soils (Hills et al. 1944).

The area belongs to the Upper St. Lawrence Division of the Great Lakes-St. Lawrence Forest Region of Canada. This region is characterized by a mixture of coniferous and deciduous tree species, dominated by sugar maple and beech, with red maple, yellow birch, basswood, white ash, largetooth aspen, and road and bur oaks. Local occurrences of white oak, red ash, grey birch, rock elm, blue-beech, and bitternut hickory are also known. Butternut, eastern cottonwood, and slippery elm have a sporadic distribution in river valleys, and some small pure stands of black and silver maple have been reported on fertile, fine-textured lowland soils. Poorly-drained depressions frequently carry a hardwood swamp type in which black ash is prominent (Rowe 1972:94).

Mer Bleue, a significant provincially regulated peat bog, is located 2 km to the north of the study area. There are a number of provincially recognized wetlands which border Mer Bleue and lie adjacent to the study area on the north side of the Hydro corridor. The bog is 7,700 years old and provides a habitat for many species of regionally rare and significant plants, birds and other wildlife. The study area is located in both the Ramsay Creek catchment area and the Upper Bear Brook catchment area of the Bear Brook subwatershed. Ramsay Creek is a tributary of Greens Creek which flows into the Ottawa river 12 km to the north of the study area. This creek measures approximately 10 km in length and has its headwaters near Leitrim Road, with its confluence into Greens Creek north of Walkley Road (RCVA 2019). The Bear Brook flows eastward from the Mer Bleue catchment to its mouth at the South Nation River in Clarence-Rockland Township, but includes many feeder creeks to the south or the Mer Bleue. The brook was named after the formerly high population of bears who foraged acorns alongside the water source. Historically Bear Brook was used to float timber to sawmills in Carlsbad Springs and by settlers as transportation to their homesteads (SNCA 2016). There is a high percentage of wetland cover throughout the study area as a result of the proximity of these catchment areas.

5.0 STAGE 1 ARCHAEOLOGICAL ASSESSMENT

This section of the report includes an evaluation of the archaeological potential within the study area, in which the results of the background research described above are synthesized to determine the likelihood of the property to contain significant archaeological resources.

5.1 Optional Property Inspection

An optional site inspection was undertaken on September 14th, 2022 by a crew consisting of a licensed field director and a field technician; the weather fluctuated from overcast skies to precipitation with temperatures ranging from 15° to 22° Celsius. This inspection was conducted according to archaeological fieldwork standards outlined in *Standards and Guidelines for Consultant Archaeologists* (MCM 2011), with field conditions and features influencing archaeological potential documented through digital photography. The complete Stage 1 photographic catalogue is included as Appendix 1 and the locations and orientations of all photographs referenced in this section of the report are shown on Map 6. As per the *Terms and Conditions for Archaeological Licences* in Ontario, curation of all photographs generated during the Stage 1 archaeological assessment is being provided by Past Recovery pending the identification of a suitable repository. An inventory of the records generated during the inspections is provided below in Table 1. The property inspection has been used to supplement the background information to help inform the archaeological potential model developed below.

The property inspection for the proposed location of the substation at 5134 Piperville Road began at the corner of Piperville Road and Farmers Way. The southwestern corner of this intersection consisted of a residential lot and the hydro corridor which had been maintained by the homeowner of the adjacent residence lot (Image 1). Bear Brook was noted to flow from north of Piperville Road to the east of Farmers Way (Image 2). The brook was surrounded by a low, wet area which extended south of Piperville Road into the proposed location of the substation. As such, the north end of the property was noted to contain several inundated areas and small creeks both natural and man made (Image 3 and 4). Dryer soils were encountered within the forested section further to the west (Image 5).

A cursory inspection of the longer hydro corridor from publicly accessible areas revealed that the study area west of Anderson Road was partially disturbed with some locations containing inundated soils (Image 6). There also appeared to be a wetland east of Anderson Road. Looking south from Leitrim Road the study area consisted of a meadow and low brush, with sections further away a golf course, a woodlot, and a farmer's field (Image 7; see Map 6). South of Piperville Road Bear Brook intersected with the study area several times and is shown on provincial topographic mapping to be associated with several wetland areas (see Map 6). The study area south of Thunder Road consisted of an inundated ditch and a farm field (Image 8).

Table 1. Inventory of the Stage 1 Documentary Record.

Type of Document	Description	Number of Records	Location
Photographs	Digital photographs documenting the subject property and conditions at the time of the property survey	35 digital photographs (JPG)	On Past Recovery computer network – file PR22-058
Field Notes	One PDF of digital field notes	1 .pdf file	Past Recovery office (Perth) – file PR22-058
Field Maps	One PDF of project mapping containing digital sketch overlays	1 map in 1 .pdf file	Past Recovery office (Perth) – file PR22-058

5.2 Evaluation of Archaeological Potential

The evaluation of the potential of a particular parcel of land to contain significant archaeological resources is based on the identification of local features that have demonstrated associations with known archaeological sites. For instance, archaeological sites associated with pre-Contact settlements and land uses are typically found in close physical association with environmental features such as sources of potable water, transportation routes (navigable waterways and trails), accessible shorelines, areas of elevated topography (i.e. knolls, ridges, eskers, escarpments, and drumlins), areas of sandy and well-drained soils, distinctive land formations (i.e. waterfalls, rock outcrops, caverns, mounds, and promontories and their bases), as well as resource-rich areas (e.g. migratory routes, spawning areas, scarce raw materials, etc.). Similarly, post-Contact archaeological sites are often found in association with many of these same environmental features, though they are also commonly connected with known areas of early Euro-Canadian settlement, early historical transportation routes (e.g. roads, trails, railways, etc.), and areas of early Euro-Canadian industry (i.e. the fur trade, logging and mining). For this reason, assessments of the potential of a particular parcel of land to contain post-Contact archaeological sites rely heavily on historical and archival research, including reviews of available land registry records, census returns and assessment rolls, historical maps, and aerial photographs. The locations of previously discovered archaeological sites can also be used to shed light on the chances that a particular location contains an archaeological record of past human activities.

Archaeological assessment standards established in the *Standards and Guidelines for Consultant Archaeologists* (MCM 2011) specify which factors, at a minimum, must be considered when evaluating archaeological potential. Licensed consultant archaeologists are required to incorporate these factors into potential determinations and account for all features on the property that can indicate the potential for significant archaeological sites.

If this evaluation indicates that any part of a subject property exhibits potential for archaeological resources, the completion of a Stage 2 archaeological assessment is commonly required prior to the issuance of approvals for activities that would involve soil disturbances or other alterations.

The *Standards and Guidelines for Consultant Archaeologists* (MCM 2011) also establish minimum distances from features of archaeological potential that must be identified as exhibiting potential for sites. For instance, this includes all lands within 300 metres of primary and secondary water sources, past water sources (i.e. glacial lake shorelines), registered archaeological sites, areas of early Euro-Canadian settlement, or locations identified as potentially containing significant archaeological resources by local histories or informants. It also includes all lands within 100 metres of early historic transportation routes (e.g. roads, trails, and portage routes). Further, any portion of a property containing elevated topography, pockets of well-drained sandy soils, distinctive land formations, resource-rich/harvesting areas, and/or previously identified cultural heritage resources (i.e. built heritage properties and/or cultural heritage landscapes that may be associated with significant archaeological resources) must also be identified as exhibiting archaeological potential.

5.3 Analysis and Conclusions

The background research undertaken for this assessment indicates that the subject property exhibits potential for the presence of significant archaeological resources associated with pre-Contact settlement and/or land uses. Specifically:

- Bear Brook flows through portions of the study area, a source of potable water and potential food resources; the banks of the creek might have served as suitable locations for temporary camps for pre-Contact hunter-gatherer populations;
- Bear Brook flows through portions of the study area, which is part of the South Nation River drainage system, and may therefore potentially have been a transportation route used by pre-Contact hunter-gatherer populations;
- Portions of the study area contain or lie within 300 m of provincially recognized wetlands whose biodiversity medicinal plants were exploited by pre-Contact hunter-gatherer populations; and,
- Portions of the study area contain well-drained sandy soils, of a type preferred for pre-Contact campsites.

The study area also exhibits characteristics that indicate potential for the presence of archaeological resources associated with post-Contact settlement and/or land uses. Specifically:

- Bear Brook flows through portions of the study area, a source of potable water and potential food resources that would have continued to serve post-Contact and early Euro-Canadian populations;

- Bear Brook flows through portions of the study area and several roadways depicted on nineteenth century mapping cross through or lie within 100 m of the corridor, both considered to be historical transportation corridors; and,
- Historical research has indicated that while this part of Gloucester Township was settled later than the remainder given the poor soil conditions for farming, the corridor contained at least three now removed mid-nineteenth century residences as depicted on the 1863 Walling map and/or the 1879 Belden map, including one in the vicinity of the proposed sub-station (see Map 3).

The evaluation of archaeological potential also included a review of available sources of information (i.e. high resolution aerial photographs and satellite imagery) to determine if part or all of the study area had been subject to deep and intensive soil disturbance (i.e. quarrying, road construction, major landscaping involving grading below topsoil, former building footprints, sewage and infrastructure development, etc.) in the recent past, as these activities would have severely damaged the integrity of or removed any archaeological resources that might have been present. Further, the review included an assessment of the property for additional factors that might limit archaeological potential such as land with permanent water saturation, exposed bedrock or steep slope of greater than 20 degrees in elevation. The five roadbeds that run through the study area and accompanying ditching to either side can be determined to have been deeply disturbed. Further, some development disturbance could clearly be seen in either the 2019 satellite image (see Map 2) or along the road fronts. Some additional disturbance is likely within the grounds of the golf course in the northern section of the corridor, though in the absence of a site inspection in this area the exact limits would have to be determined during a subsequent Stage 2 assessment. The low and wet areas associated with Bear Brook and the wetlands noted of provincial mapping would also be considered to retain low archaeological potential, though once again the exact limits of these areas would need to be determined in the field. The remaining property examined as part of the Stage 1 study has been found to retain archaeological potential, including most of the area recommended for Stage 2 work by Stantec in 2018. The archaeological potential associated with the overall study area has been illustrated on Map 6.

5.4 Stage 1 Recommendations

The results of the background research discussed above have indicated that the study area exhibits potential for the presence of significant archaeological resources. Accordingly, it is recommended that:

1) The portions of the study area that have been determined to exhibit archaeological potential should be subject to Stage 2 archaeological assessment prior to the initiation of future below-grade soil disturbances or other alterations (see Map 6).

2) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for*

Consultant Archaeologists (MCM 2011). There is currently a mixture of an active field and other non-agricultural lands within the study area; all portions identified as exhibiting archaeological potential should therefore be assessed by means of a pedestrian survey or shovel test pit survey conducted at 5 metre intervals, as appropriate.

The reader is also referred to Section 7.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project. In the event that any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, in addition to following the *Advice on Compliance with Legislation* (see Section 7.0), the Indigenous communities listed below should be contacted:

a. Algonquins of Ontario
b. Algonquins of Pikwakanagan
c. Kitigan Zibi Anishinabeg

Contact information for the above communities can be found in the Supplementary Document entitled "*Indigenous Community Contacts.*"

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

In order to ensure compliance with relevant Provincial legislation as it may relate to this project, the reader is advised of the following:

1) This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

2) It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

3) Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

4) The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Public and Business Service Delivery.

5) Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

7.0 LIMITATIONS AND CLOSURE

Past Recovery Archaeological Services Inc. has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made.

This report has been prepared for the specific site, design objective, developments and purpose prescribed in the client proposal and subsequent agreed upon changes to the contract. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the client in the design of the specific project.

Special risks occur whenever archaeological investigations are applied to identify subsurface conditions and even a comprehensive investigation, sample and testing program may fail to detect all or certain archaeological resources. The sampling strategies in this study comply with those identified in the Ministry of Citizenship and Multiculturalism's *Standards and Guidelines for Consultant Archaeologists* (2011).

The documentation related to this archaeological assessment will be curated by Past Recovery Archaeological Services Inc. until such a time that arrangements for their ultimate transfer to an approved and suitable repository can be made to the satisfaction of the project owner(s), the Ontario Ministry of Citizenship and Multiculturalism and any other legitimate interest group.

We trust that this report meets your current needs. If you have any questions or if we may be of further assistance, please do not hesitate to contact the undersigned.

Jeff Earl

Jeff Earl, M.Soc.Sc.
Principal
Past Recovery Archaeological Services Inc.

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Year	*Roll#*	*Flight Line*	*Photo*	*Scale*
1953	4516	3	10 & 12	35,000
1978	4525	88	144 &146	35,000

Ontario Archives (OA):

Crown Land Surveys
Catalogue# I0043687 *Survey Plan of Gloucester Township* (1821)

Ontario Council of University Libraries – Historical Topographic Map Digitization Project (accessed online at: https://ocul.on.ca/topomaps/):

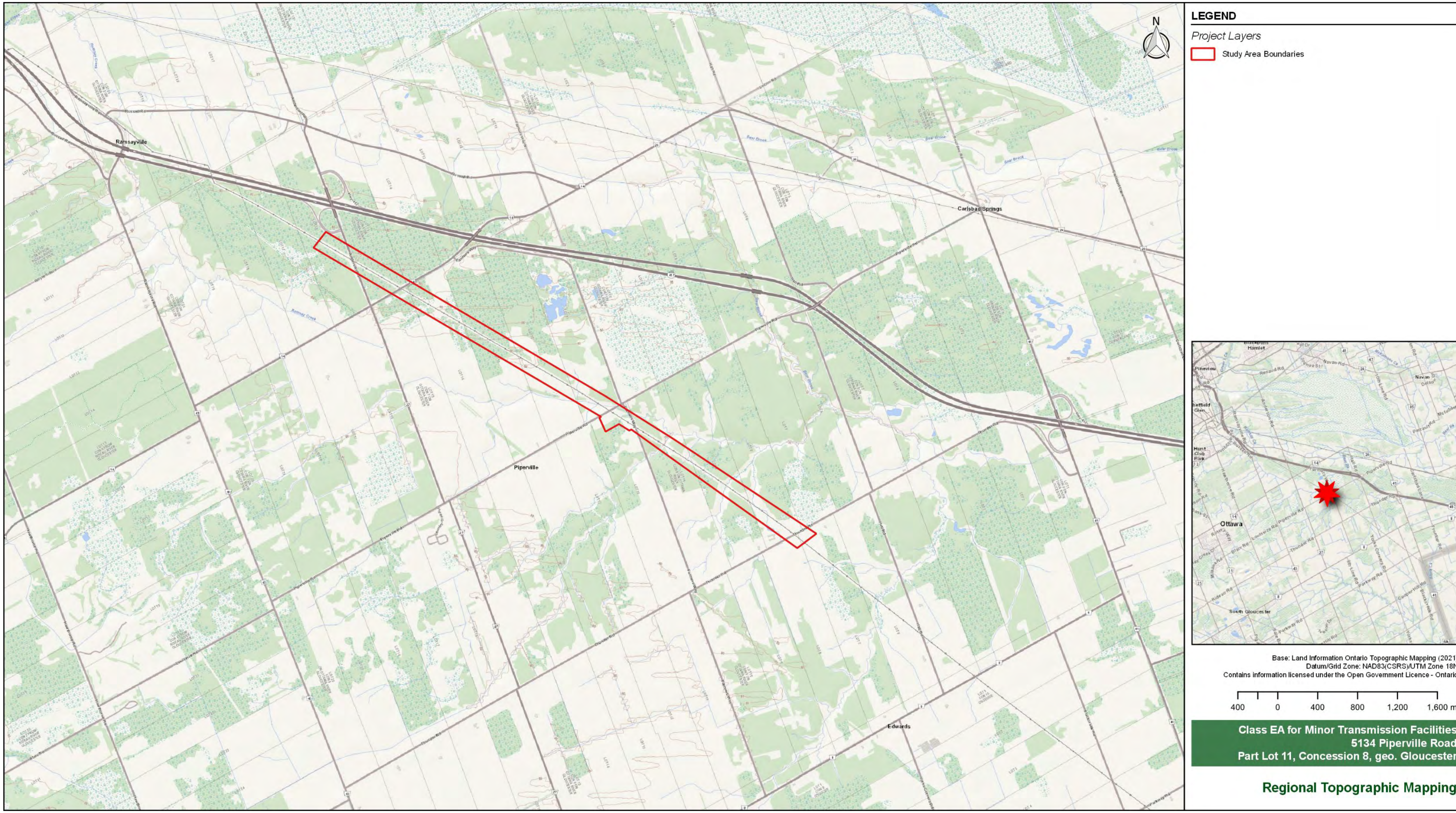
National Topographic System (NTS) Map Sheets

31G06	Ottawa Sheet	1906	1:63,360
31G06	Russell Sheet	1908	1:63,360
31G05	Ottawa Sheet	1976	1:50,000
31G05	Russell Sheet	1983	1:50,000

Ottawa Carleton Land Registry Office (OCLRO)

Land Registry Abstract Index Lots 7 & 8, Concession 9, Lots 8-11, Concession 8, Lots 11-15, Concession 7, Lots 15 & 16, Concession 6, Township of Gloucester

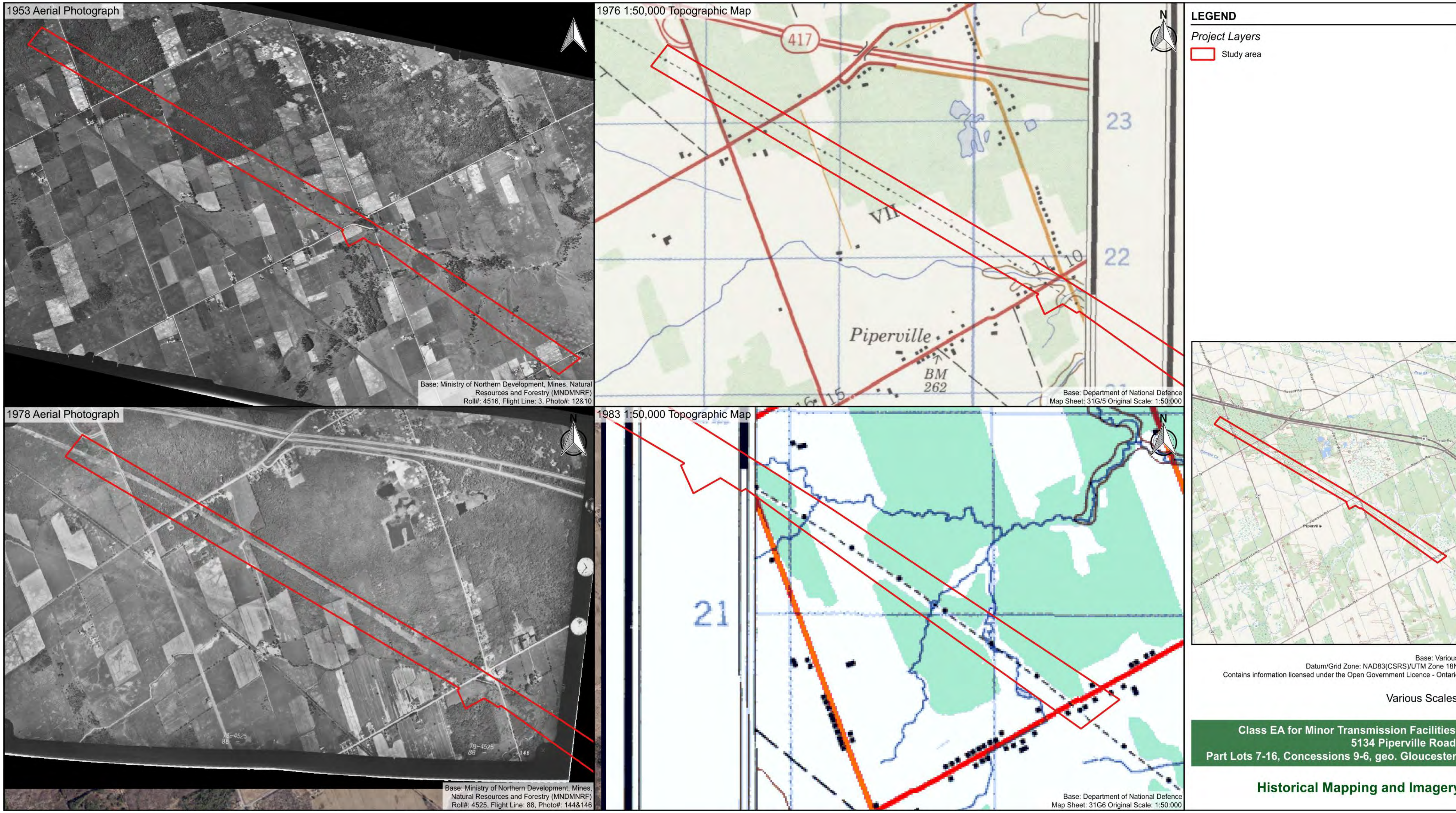
9.0 MAPS



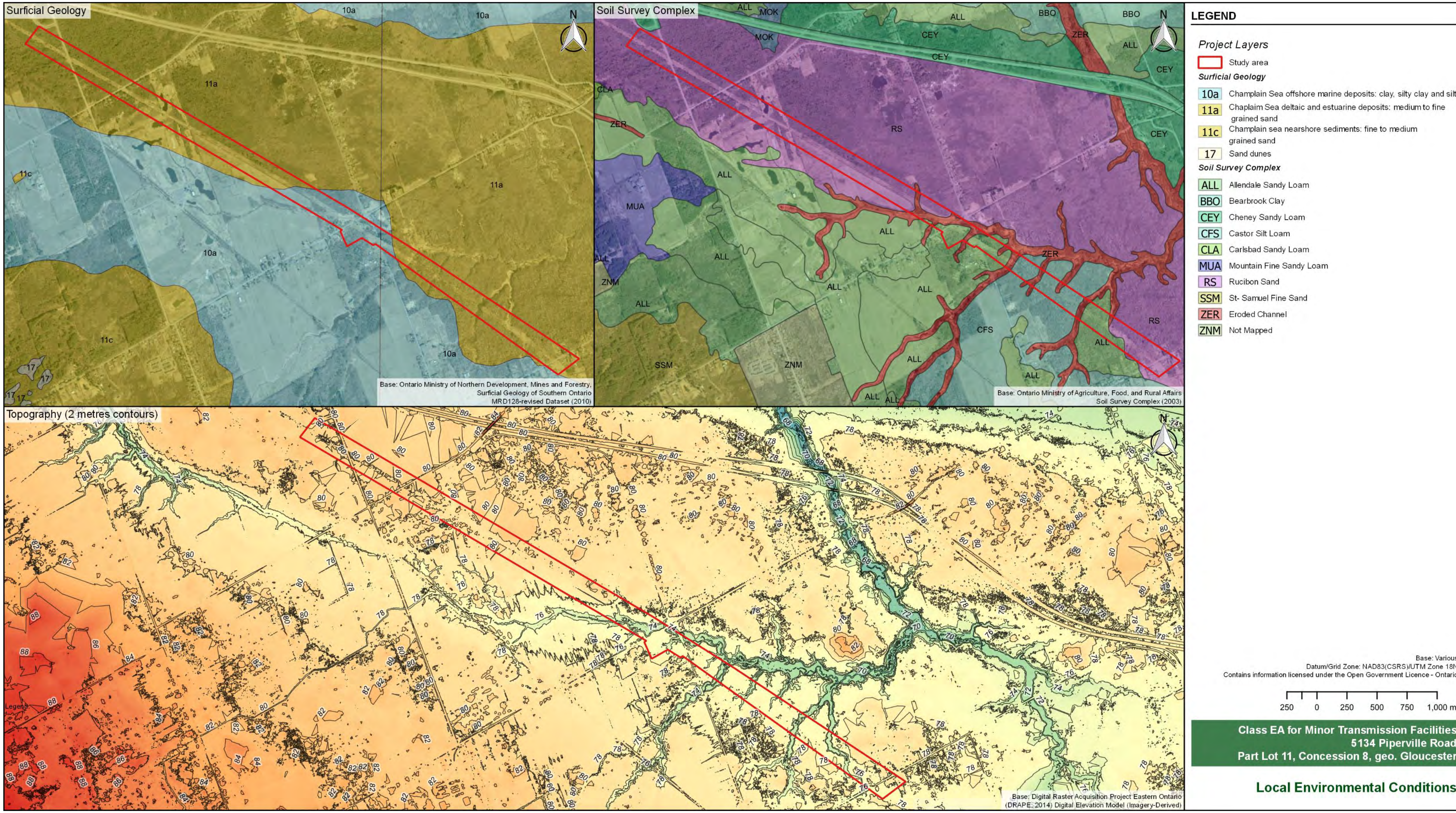
Map 1. Regional topographic mapping showing the location of the study area.

Map 2. Recent (2019) orthographic imagery showing the limits of the study area.

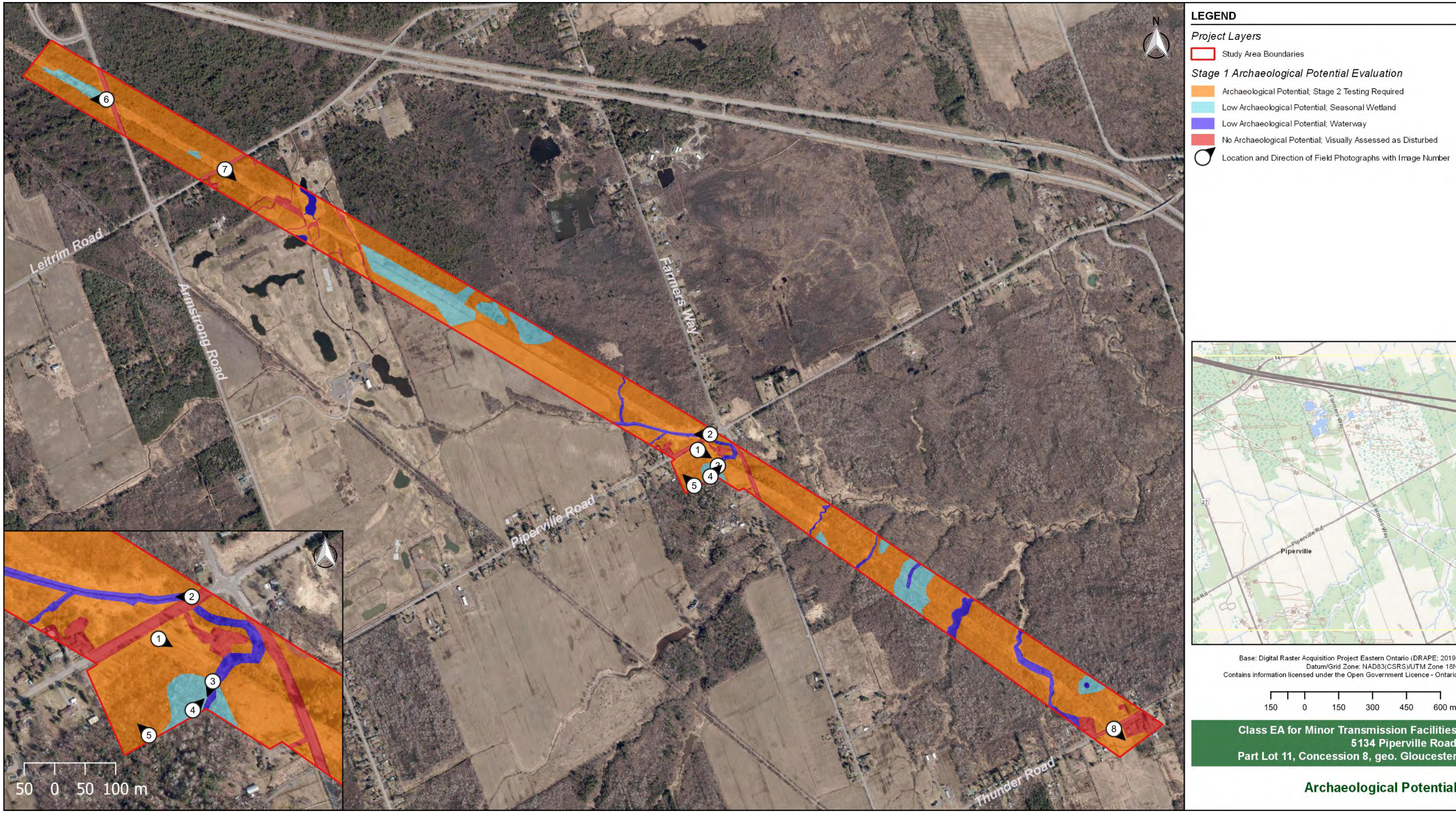
Map 3. Segments of historical maps showing the approximate limits of the study area.



Map 4. Segments of historical maps and aerial imagery showing the approximate limits of the study area.



Map 5. Local environmental conditions including surficial geology, elevation, and soil survey mapping, showing the limits of the study area.



Map 6. Recent (2019) orthographic imagery showing the archaeological potential within the study area.

10.0 IMAGES

Image 1. View of manicured lawn south of Piperville Road and use of the hydro corridor by a landowner, looking southeast. (PR22-058D009)

Image 2. View of the study area north of Piperville Road showing Bear Brook and associated wetlands, looking northeast. (PR22-058D001)

Image 3. View of the creek which runs along the northern border of the woodlot south of Piperville Road, looking east. (PR22-058D014)

Image 4. View of a drainage ditch in the woodlot south of Piperville Road and associated disturbance, looking northeast. (PR22-058D017)

Image 5. View of the conditions within the woodlot selected for the substation south of Piperville Road, looking northwest. (PR22-058D021)

Image 6. View of the study area west of Anderson Road showing ground disturbance and saturated soils, facing west. (PR22-058_D027)

Image 7. View of conditions within the study area between Piperville Road and Leitrim Road, looking southeast. (PR22-058D031)

Image 8. View of a former farm field and saturated drainage ditch to the south of Thunder Road, looking southwest. (PR22-058D35)

APPENDIX 1: Photographic Catalogue

Camera: IPhone 6c

Catalogue No.	Description	Dir.
PR22-058D001	View of Bearbrook Creek within the study area north of Piperville Road	N
PR22-058D002	View of hydro corridor southwest of the intersection of Piperville Road and Farmers Way, showing manicured lawn directly north of Piperville Road	SE
PR22-058D003	View of hydro corridor southwest of the intersection of Piperville Road and Farmers Way	SE
PR22-058D004	View of wetlands which surround Bear Brook north of Piperville Road	NE
PR22-058D005	View of wetlands which surround Bear Brook north of Piperville Road	NE
PR22-058D006	View of wetlands and surrounding forest around Bear Brook north of Piperville Road	N
PR22-058D007	View of wetlands which surround Bear Brook	NW
PR22-058D008	View of wetlands directly south of Piperville Road	S
PR22-058D009	View of manicured lawn along hydro corridor south of Piperville Road	SE
PR22-058D010	View of use of hydro corridor south of Piperville Road by landowner	N
PR22-058D011	View of wetland along hydro corridor south of Piperville Road	W
PR22-058D012	View of wetland along hydro corridor south of Piperville Road	SW
PR22-058D013	View of creek which runs through the northern border of woodlot south of Piperville Road	SE
PR22-058D014	View of creek which runs through the northern border of woodlot south of Piperville Road	W
PR22-058D015	View of drainage creek which runs through the northern border of woodlot south of Piperville Road	E
PR22-058D016	View of drainage creek which runs through the northern border of woodlot south of Piperville Road	E
PR22-058D017	View of drainage creek which runs through the northern border of woodlot south of Piperville Road	E
PR22-058D018	View of woodlot conditions south of Piperville Road	NW
PR22-058D019	View of wetland extending into woodlot south of Piperville Road	W
PR22-058D020	View of wetland extending into woodlot south of Piperville Road	W
PR22-058D021	View of woodlot conditions south of Piperville Road	W
PR22-058D022	View of woodlot conditions south of Piperville Road	W
PR22-058D023	View of woodlot conditions south of Piperville Road	W
PR22-058D024	View of western edge of the study area in the woodlot south of Piperville Road	W
PR22-058D025	View of wetland north of woodlot and directly south of Piperville Road	N
PR22-058D026	View of wetland north of woodlot and directly south of Piperville Road	S
PR22-058D027	View of the study area west of Anderson Road showing construction disturbance and saturated soils	NW
PR22-058D028	View of the study area west of Anderson Road showing construction disturbance and saturated soils	N
PR22-058D029	View of the study area west of Anderson Road showing construction disturbance and saturated soils	NW
PR22-058D030	View of study area east of Anderson Road showing wetland conditions directly adjacent to the roadway	E
PR22-058D031	View of study area which is comprised of a meadow south of Leitrim Road	SE
PR22-058D032	View of study area north of Leitrim Road looking towards Anderson Road showing low brush	NW

Catalogue No.	Description	Dir.
PR22-058D033	View of Anderson Links golf course which is located towards the center of the study area showing extensive land alternation	N
PR22-058D034	View of the study area south of Thunder Road which is comprised of a former farm field	SE
PR22-058D035	View of study area north of Thunder Road which is comprised of low brush	NW

APPENDIX 2: Glossary of Archaeological Terms

Archaeology:
The study of human past, both prehistoric and historic, by excavation of cultural material.

Archaeological Sites:
The physical remains of any building, structure, cultural feature, object, human event or activity which, because of the passage of time, are on or below the surface of the land or water.

Archaic:
A term used by archaeologists to designate a distinctive cultural period dating between 8000 and 1000 B.C. in eastern North America. The period is divided into Early (8000 to 6000 B.C.), Middle (6000 to 2500 B.C.) and Late (2500 to 1000 B.C.). It is characterized by hunting, gathering and fishing.

Artifact:
An object manufactured, modified or used by humans.

B.P.:
Before Present. Often used for archaeological dates instead of B.C. or A.D. Present is taken to be 1951, the date from which radiocarbon assays are calculated.

Backdirt:
The soil excavated from an archaeological site. It is usually removed by shovel or trowel and then screened to ensure maximum recovery of artifacts.

Chert:
A type of silica rich stone often used for making chipped stone tools. A number of chert sources are known from southern Ontario. These sources include outcrops and nodules.

Contact Period:
The period of initial contact between Indigenous and European populations. In Ontario, this generally corresponds to the seventeenth and eighteen centuries depending on the specific area. See also Protohistoric.

Cultural Resource / Heritage Resource:
Any resource (archaeological, historical, architectural, artifactual, archival) that pertains to the development of our cultural past.

Cultural Heritage Landscapes:
Cultural heritage landscapes are groups of features made by people. The arrangement of features illustrate noteworthy relationships between people and their surrounding environment. They can provide information necessary to preserve, interpret or reinforce the understanding of important historical settings and changes to past patterns of land use. Cultural landscapes include neighbourhoods, townscapes and farmscapes.

Diagnostic:
An artifact, decorative technique or feature that is distinctive of a particular culture or time period.

Disturbed:
In an archaeological context, this term is used when the cultural deposit of a certain time period has been intruded upon by a later occupation.

Excavation:
The uncovering or extraction of cultural remains by digging.

Feature:
This term is used to designate modifications to the physical environment by human activity. Archaeological features include the remains of buildings or walls, storage pits, hearths, post moulds and artifact concentrations.

Flake:
A thin piece of stone (usually chert, chalcedony, etc.) detached during the manufacture of a chipped stone tool. A flake can also be modified into another artifact form such as a scraper.

Fluted:
A lanceolate shaped projectile point with a central channel extending from the base approximately one third of the way up the blade. One of the most diagnostic Palaeo-Indigenous artifacts.

Historic:
Period of written history. In Ontario, the historic period begins with European settlement.

Lithic:
Stone. Lithic artifacts would include projectile points, scrapers, ground stone adzes, gun flints, etc.

Lot:
The smallest provenience designation used to locate an artifact or feature.

Midden:
An archaeological term for a garbage dump.

Mitigation:
To reduce the severity of development impact on an archaeological or other heritage resource through preservation or excavation. The process for minimizing the adverse impacts of an undertaking on identified cultural heritage resources within an affected area of a development project.

Multicomponent:
An archaeological site which has seen repeated occupation over a period of time. Ideally, each occupation layer is separated by a sterile soil deposit that accumulated during a period when the site was not occupied. In other cases, later occupations will be directly on top of earlier ones or will even intrude upon them.

Operation:
The primary division of an archaeological site serving as part of the provenience system. The operation usually represents a culturally or geographically significant unit within the site area.

Palaeo-Indigenous:
The earliest human occupation of Ontario designated by archaeologists. The period dates between 9000 and 8000 B.C. and is characterized by small mobile groups of hunter-gatherers.

Pre-Contact:
Before written history. In Ontario, this term is used for the period of Indigenous occupation up until the first contact with European groups.

Profile:
The profile is the soil stratigraphy that shows up in the cross-section of an archaeological excavation. Profiles are important in understanding the relationship between different occupations of a site.

Projectile Point:
A point used to tip a projectile such as an arrow, spear or harpoon. Projectile points may be made of stone (either chipped or ground), bone, ivory, antler or metal.

Provenience:
Place of origin. In archaeology this refers to the location where an artifact or feature was found. This may be a general location or a very specific horizontal and vertical point.

Salvage:
To rescue an archaeological site or heritage resource from development impact through excavation or recording.

Stratigraphy:
The sequence of layers in an archaeological site. The stratigraphy usually includes natural soil deposits and cultural deposits.

Sub-operation:
A division of an operation unit in the provenience system.

Survey:
To examine the extent and nature of a potential site area. Survey may include surface examination of ploughed or eroded areas and sub-surface testing.

Test Pit:
A small pit, usually excavated by hand, used to determine the stratigraphy and presence of cultural material. Test pits are often used to survey a property and are usually spaced on a grid system.

Woodland:
The most recent major division in the prehistoric sequence of Ontario. The Woodland period dates from 1000 B.C. to A.D. 1550. The period is characterized by the introduction of ceramics and the beginning of agriculture in southern Ontario. The period is further divided into Early (1000 B.C. to A.D. 0), Middle (A.D. 0 to A.D. 900) and Late (A.D. 900 to A.D.1550).

Stage 2 – Archealogical Assessment

STAGE 2 ARCHAEOLOGICAL ASSESSMENT FOR A PROPOSED OTTAWA HYDRO SUBSTATION AND A SECTION OF THE HYDRO ONE L24A TRANSMISSION CORRIDOR

PART OF LOT 11, CONCESSION 8
OTTAWA FRONT
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
NOW THE CITY OF OTTAWA

Past Recovery
Archaeological Services Inc.

STAGE 2 ARCHAEOLOGICAL ASSESSMENT FOR A PROPOSED OTTAWA HYDRO SUBSTATION AND A SECTION OF THE HYDRO ONE L24A TRANSMISSION CORRIDOR, PART OF LOT 11, CONCESSION 8, OTTAWA FRONT, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, NOW IN THE CITY OF OTTAWA

Prepared for:	Alam Ansari, M. Sc., P. Eng. Director of Operations, Eastern Ontario EXP Services Inc. 2650 Queensview Drive Ottawa, ON K2N 8H6 Phone: (613) 688-1899 Email: alam.ansari@exp.com
Re:	Class Environmental Assessment for Minor Transmission Facilities
Prepared by:	Past Recovery Archaeological Services Inc. 99c, Unit 1 Dufferin Street Perth, ON K7H 3A5 Phone: (613) 267-7028 Email: pras@pastrecovery.com
Project No.:	PR23-011
Licensee:	Caitlyn Howard, M.A. (P1074) Staff Archaeologist Past Recovery Archaeological Services Inc.
P.I.F. No.:	P1074-0079-2023
Date:	September 11th, 2023 — Original Report

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EXECUTIVE SUMMARY

Past Recovery Archaeological Services Inc. was retained by EXP Services Inc. to undertake a Stage 2 archaeological assessment in support of a *Class Environmental Assessment for Minor Transmission Facilities* for a proposed substation located at 5134 Piperville Road. The subject property was located on part of Lot 11, Concession 8 in the geographic Township of Gloucester, now part of the City of Ottawa (see Maps 1 to 3). A Stage 1 assessment was completed in 2022 for a larger corridor, with the determination that parts of the study area for the present assessment required Stage 2 field testing (Past Recovery 2022). The scoped Stage 2 study area, including the proposed substation location and the adjacent section of the Hydro One corridor, was approximately 4.03 hectares (9.97 acres) in size.

The purpose of the Stage 2 assessment was to determine whether or not the property contained archaeological resources requiring further assessment, and if so to recommend an appropriate Stage 3 assessment strategy. The assessment was completed on June 6th, 2023, conducted by means of a shovel test pit survey across all parts of the study area determined to retain archaeological potential. Archaeological resources of concern were not recovered during the survey.

The results of the Stage 2 property survey documented in this report form the basis for the following recommendations:

1) As the Stage 2 property survey did not result in the identification of any archaeological resources requiring further assessment or mitigation of impacts, no further archaeological assessment of the study area as defined on Map 2 is required.

2) In the event that future planning results in the identification of additional areas of impact beyond the limits of the present study area, further Stage 2 archaeological assessment may be required. It should be noted that impacts include all aspects

of the proposed development causing soil disturbances or other alterations, including additional temporary property needs (i.e. access roads, staging/lay down areas, associated works etc.).

3) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MCM 2011).

The reader is also referred to Section 7.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project. In the event that any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, in addition to following the *Advice on Compliance with Legislation* (see Section 7.0), the Indigenous communities listed below should be contacted:

a. Algonquins of Ontario
b. Algonquins of Pikwakanagan
c. Kitigan Zibi Anishinabeg

Contact information for the above communities can be found in the Supplementary Document entitled "*Indigenous Community Contacts.*"

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1.0 INTRODUCTION

Past Recovery Archaeological Services Inc. was retained by EXP Services Inc., on behalf of Ottawa Hydro, to undertake a Stage 2 archaeological assessment in support of a *Class Environmental Assessment for Minor Transmission Facilities* for a proposed substation located at 5134 Piperville Road. The subject property was located on part of Lot 11, Concession 8, Ottawa Front, in the geographic Township of Gloucester, now part of the City of Ottawa (Maps 1 to 3). A Stage 1 assessment was completed in 2022 for a larger corridor, with the determination that parts of the study area for the present assessment required Stage 2 field testing (Past Recovery 2022). The scoped Stage 2 study area, including the proposed substation location and the adjacent section of the Hydro One corridor, was approximately 4.03 hectares (9.97 acres) in size.

The objectives of the Stage 2 archaeological assessment were as follows:

- To document all archaeological resources on the property;
- To determine whether the property contains archaeological resources requiring further assessment; and,
- In the event that an archaeological site requiring further assessment is discovered, to recommend an appropriate Stage 3 assessment strategy.

2.0 PROJECT CONTEXT

This section of the report provides the context for the archaeological work undertaken, including a description of the study area, the related legislation or directives triggering the assessment, any additional development-related information, and the confirmation of permission to access the study area as required for the purposes of the assessment, and an acknowledgement of Indigenous territorial rights and interests.

2.1 Development Context

EXP Services Inc. is preparing a *Class Environmental Assessment for Minor Transmission Facilities* on behalf of Ottawa Hydro in advance of a proposed substation to be erected at 5134 Piperville Road. Given the proximity of historical transportation routes and possible early Euro-Canadian occupation of the lot, an archaeological assessment was listed by Hydro Ottawa as a requirement for the approval of the proposed substation. A Stage 1 assessment was completed in 2022 for a larger corridor, with the determination that parts of the study area for the present assessment required Stage 2 field testing (Past Recovery 2022). The scoped Stage 2 study area consisted of the proposed substation location (to be acquired through a severance) and the adjacent section of the Hydro One corridor (see Map 2). Past Recovery was retained to complete this work.

2.2 Property Description

The subject property was located on part of Lot 11, Concession 8, Ottawa Front, in the geographic Township of Gloucester, now part of the City of Ottawa, and consisted of approximately 4.03 hectares (9.97 acres) including a large woodlot, a partially cleared hydro corridor and permanently wet areas (see Maps 1 to 3). The property was irregularly shaped and contained a hydro tower associated with the corridor. The property was bordered to the north by Piperville Road, and by residential lots to the northeast, northwest, and southeast. The study area was in places directly adjacent to or within 100 m of Bearbrook Creek and associated wetlands.

2.3 Access Permission

Permission to access the subject property and complete all aspects of the archaeological assessment, including photography, and test excavation was granted by Ottawa Hydro and Hydro One.

2.4 Territorial Acknowledgement

The study area falls within the traditional territory of the Anishinabe Algonquin, and forms part of the Algonquins of Ontario (AOO) Settlement Area set out by the current

Agreement-in-Principle between the AOO and the federal and provincial governments, signed in 2016.[1]

[1] The Algonquins of Ontario are composed of ten communities: The Algonquins of Pikwakanagan First Nation, Antoine, Kijicho Manito Madaouskarini (Bancroft), Bonnechere, Greater Golden Lake, Mattawa/North Bay, Ottawa, Shabot Obaadjiwan (Sharbot Lake), Snimikobi (Ardoch), Whitney and Area. Federally unrecognized Algonquin communities, including Ardoch First Nation, also live in the territory but do not form part of the AOO (see Lawrence 2012). The Agreement-In-Principle is between the Algonquins of Ontario and the Governments of Ontario and Canada. Algonquins have sought recognition and protection of their traditional territory dating back to 1772 and in 1983 the Algonquins of Pikwàkanagàn First Nation (previously Algonquins of Golden Lake) formally submitted a petition to the Government of Canada, and in 1985 to the Government of Ontario. The claim was accepted for negotiations in 1991 and 1992, an Agreement-In-Principle was signed in 2016, and negotiations are on-going. For further information see www.tanakiwin.com.

3.0 HISTORICAL CONTEXT

This section of the report is comprised of an overview of human settlement in the region using information derived from background historical research. The purpose of this research is to describe the known settlement history of the local area, with the intention of providing a context for the evaluation of known and potential archaeological sites, as well as a review of property-specific information presenting a record of settlement and land use history.

3.1 Regional Pre-Contact Cultural Overview

While our understanding of the pre-Contact sequence of human activity in the region is limited, it is possible to provide a general outline of pre-Contact relationships with the land based on archaeological, historical, and environmental research conducted across what is now eastern Ontario.[2] Archaeologists divide the long sequence of Indigenous history into both temporal periods and regional groups based primarily on the presence and/or style of various artifact types. While this provides a means of discussing the past, it is an archaeological construct and interpretation based only on a few surviving artifact types; it does not reflect the generally gradual nature of change over time, nor the complexities of interactions between different Indigenous groups. It also does not reflect Indigenous world views and histories as detailed in the oral traditions of Indigenous communities who have long-standing relationships with the land. The following summary uses the generally accepted archaeological chronology for the pre-Contact period while recognizing its limitations.

Across the region, glaciers began to retreat around 15,000 years ago (Munson 2013:21). Archaeological evidence indicates that humans have inhabited what is now called Ontario for at least 13,500 years, beginning with the arrival of small groups of hunter-gatherers referred to by archaeologists as Paleo-Indigenous (Ellis 2013:35; Ellis and Deller 1990:39). These groups gradually moved northward as the glaciers and glacial lakes retreated. While very little is known about their lifestyle, it is likely that Palaeo-Indigenous groups travelled widely relying on the seasonal migration of caribou as well as small animals and wild plants for subsistence in a sub-arctic environment. They produced a variety of distinctive stone tools including fluted projectile points, scrapers, burins and gravers. Their sites are rare, and most are quite small (Ellis 2013:35-36). Palaeo-Indigenous peoples tended to camp along shorelines, and because of the changing environment, many of these areas are now inland. Indigenous settlement of much of eastern Ontario was late in comparison to other parts of Ontario as a result of the high-water levels associated with glacial Lake Algonquin, the early stages of glacial Lake Iroquois and the St. Lawrence Marine Embayment of the post-glacial Champlain Sea. In

[2] Current common place names are used throughout this report while recognizing that the many Indigenous peoples who have lived in the region for thousands of years had, and often maintain, their own names for these places and natural features.

eastern Ontario, the old shoreline ridges of Lake Algonquin, Lake Iroquois, the Champlain Sea and of the emergent St. Lawrence and Ottawa river channels and their tributaries would be the most likely areas to find evidence of the Palaeo-Indigenous presence in the landscape (see AOO 2017; Ellis 2013; Ellis and Deller 1990; Watson 1999).

During the succeeding Archaic period (c. 10,000 to c. 3,000 B.P.), the environment of the region approached modern conditions and more land became habitable as water levels in the glacial lakes dropped. Populations continued to follow a mobile hunter-gatherer subsistence strategy, although there appears to have been a greater reliance on fishing and gathered food (e.g. plants and nuts) and more diversity between regional groups. The tool kit also became increasingly diversified, reflecting an adaptation to environmental conditions more similar to those of today. This included the presence of adzes, gouges and other ground stone tools believed to have been used for heavy woodworking activities such as the construction of dug-out canoes, grinding stones for processing nuts and seeds, specialized fishing gear including net sinkers, and a general reduction in the size of projectile points. The middle and late portions of the Archaic period saw the development of trading networks spanning the Great Lakes, and by 6,000 years ago copper was being mined in the Upper Great Lakes and traded into southern Ontario. There was increasing evidence of ceremonialism and elaborate burial practices and a wide variety of non-utilitarian items such as gorgets, pipes and 'birdstones' were being manufactured. By the end of this period populations had increased substantially over the preceding Palaeo-Indigenous period (Ellis 2013; Ellis et al. 1990).

More extensive Indigenous settlement of the region began during this period, sometime between 7,500 and 6,500 B.P. Artifacts from Archaic sites suggest a close relationship between these communities and what archaeologists refer to as the Laurentian Archaic stage peoples who inhabited the Canadian biotic province transition zone between the deciduous forests to the south and the boreal forests to the north. This region included northern New York State, the upper St. Lawrence Valley across southern Ontario and Quebec, and the state of Vermont (Ritchie 1969; Clermont et al. 2003). The 'tradition' associated with this period is characterized by a more or less systematic sharing of several technological features, including large, broad bladed, chipped stone and ground slate projectile points, and heavy ground stone tools. This stage is also known for the extensive use of cold-hammered copper tools including "*bevelled spear points, bracelets, pendants, axes, fishhooks and knives*" (Kennedy 1970:59). The sharing of this set of features is generally perceived as a marker of historical relatedness and inclusion in the same interaction network (Clermont et al. 2003). Cemeteries also appear for the first time during the Late Archaic. Evidence of Archaic inhabitation has been found across eastern Ontario (see Clermont 1999; Clermont et al. 2003; Ellis 2013; Kennedy 1962, 1970; Laliberté 2000; Watson 1990).

Archaeologists use the appearance of ceramics in the archaeological record to mark the beginning of the Woodland period (c. 3,000 B.P. to c. 350 B.P.). Ceramic styles and decorations suggest the continued differentiation between regional populations and are commonly used to distinguish between three periods: Early Woodland (2,900 to 2,300 B.P.), Middle Woodland (2,300 to 1,200 B.P.), and Late Woodland (1,200 to 400 B.P.). The introduction of ceramics to southern Ontario does not appear to have been associated with significant changes to lifeways, as hunting and gathering remained the primary subsistence strategy throughout the Early Woodland and well into the Middle Woodland. It does, however, appear that regional populations continued to grow in size, and communities continued to participate in extensive trade networks that, at their zenith c. 1,750 B.P., spanned much of the continent and included the movement of conch shell, fossilized shark teeth, mica, copper and silver; a large number of other items that rarely survive in the archaeological record would also have been exchanged, as well as knowledge.[3] Social structure appears to have become increasingly complex, with some status differentiation evident in burials. In southeastern Ontario, the first peoples to adopt ceramics are identified by archaeologists as belonging to the Meadowood Complex, characterized by distinctive biface preforms, side-notched points, and Vinette I ceramics which are typically crude, thick, cone-shaped vessels made with coils of clay shaped by cord-wrapped paddles. Meadowood material has been found on sites across southern Ontario extending into southern Quebec and New York State (Fox 1990; Spence et al. 1990).

In the Middle Woodland period increasingly distinctive trends or 'traditions' continued to evolve in different parts of Ontario (Spence et al. 1990). Although regional patterns are poorly understood and there may be distinctive traditions associated with different watersheds, the appearance of more refined ceramic vessels decorated with dentate or pseudo-scallop impressions have been used by archaeologists to distinguish the Point Peninsula Complex. These ceramics are identified as Vinette II and are typically found in association with evidence of distinct bone and stone tool industries. Sites exhibiting these traits are known from throughout south-central and eastern Ontario, northern New York, and northwestern Vermont, and are often found overlying earlier site components. Some groups appear to have practiced elaborate burial ceremonialism that involved the construction of large earthen mortuary mounds and the inclusion of numerous and often exotic materials in burials, construed as evidence of influences from northern Ontario and the Hopewell area to the south in the Ohio River valley. Archaeological evidence suggests that during this time period groups utilized a variety of resources within a home territory. Through the late fall and winter, small groups would coalesce at an inland 'family' hunting area. In the spring, these dispersed families would congregate at specific lakeshore sites to fish, hunt in the surrounding forest, and socialize. This gathering

[3] For example, the recent discovery of a cache of charred quinoa seeds, dating to 3,000 B.P. at a site in Brantford, Ontario, indicates that crops were part of this extensive exchange network, which in this case travelled from the Kentucky-Tennessee region of the United States. Thus far, there is no indication that these seeds were locally grown (Crawford et al. 2019).

would last through to the late summer when large quantities of food would be stored up for the approaching winter (Spence et al. 1990).

Towards the end of the Middle Woodland period (1200 B.P.), groups living in southern Ontario included horticulture in their subsistence strategy. Available archaeological evidence, which comes primarily from the vicinity of the Grand and Credit rivers, suggests that this development was not initially widespread. The adoption of maize horticulture instead appears to be linked to the emergence of the Princess Point Complex which is characterized by decorated ceramics combining cord roughening, impressed lines, and punctate designs; triangular projectile points; T-based drills; steatite and ceramic pipes; and ground stone chisels and adzes (Fox 1990).

Archaeologists have distinguished the Late Woodland period by the widespread adoption of maize horticulture by some Indigenous groups primarily across much of southern Ontario and portions of the southeast with favourable soils. Michi Saagiig oral histories recall that corn came to what is now Ontario with the arrival of the Wendat (Gitiga Migizi 2018:34). Initially only a minor addition to the diet, the cultivation of corn, beans, squash, sunflowers, and tobacco radically altered subsistence strategies and gained economic importance in the region over time. This change is associated with increased sedentarism, and with larger and more dense settlements focused on areas of easily tillable farmland. In some areas, semi-permanent villages, with communal 'longhouse' dwellings, appeared for the first time. These villages were inhabited year-round for 12 to 20 years until local firewood and soil fertility had been exhausted. Many were surrounded by defensive palisades, evidence of growing hostilities between neighbouring groups. Associated with these sites is a burial pattern of individual graves occurring within the village. Upon abandonment, the people of one or more villages often exhumed the remains of their dead for reburial in a large communal burial pit or ossuary outside of the village(s) (Wright 1966; Williamson 2014). More temporary habitations such as small hamlets, agricultural cabin sites, and hunting and fishing camps were also used. Throughout the parts of what is now Ontario situated on the Canadian Shield, however, the terrain limited horticulture and Indigenous groups continued to move frequently across their territories hunting, fishing, and gathering (Pilon 1999).

Along the St. Lawrence River valley from the east end of Lake Ontario to the Quebec City region and beyond, archaeologists have identified a distinctive material culture associated with what they refer to as the St. Lawrence Iroquoians. The material culture and settlement patterns of the fourteenth and fifteenth century St. Lawrence Iroquoian sites are directly related to the Iroquoian-speaking groups that Jacques Cartier and his crew encountered in 1535 at Stadacona (Quebec City) and Hochelaga (Montreal Island) (Jamieson 1990:386). Like those peoples inhabiting what would become southern and southcentral Ontario, the St. Lawrence Iroquoians practised horticulture and supplemented their diet with fishing, hunting and gathering. They lived in large semi-permanent villages as well as smaller camps. Numerous discrete settlement clusters have been identified across this large territory; however, the political and social relationships between these populations is unclear (Tremblay 2006).

By the late sixteenth century all of the St. Lawrence Iroquoian settlements appear to have been abandoned. Long characterized by archaeologists as a 'mysterious disappearance,' recent scholarship instead highlights several lines of evidence that suggest a series of planned migrations by St. Lawrence Iroquoian groups to other Indigenous populations, including the Huron-Wendat, during a period of coalescence and social realignment (Micon et al. 2021; Lesage and Williamson 2020).[4] Horticultural villages have also been recorded along the north shore of Lake Ontario and up the Trent River dating to c. 550 B.P. (c. 1400 C.E.). By c. 450 B.P. (c. 1500 C.E), the easternmost of these settlements were located between Balsam Lake and Lake Simcoe in the region that would become historic Huronia. These population movements are also reflected in the oral histories of the Michi Saagiig (Mississauga Anishinaabeg), which recall St. Lawrence Iroquois moving westwards into their territory around 1000 A.D. (Gitiga Migizi 2018:121).

While this significant population movement is not fully understood, it undoubtedly involved complex interactions between different cultural groups including the Anishinaabeg, the Huron-Wendat and, as noted above, may also have included St. Lawrence Iroquoians. As such, there are conflicting interpretations of the archaeological and historical records related to this period (see Gaudreau and Lesage 2016; Gitiga Migizi 2018; Gitiga Migizi and Kapyrka 2015; Lainey 2006; Richard 2016; Pendergast 1972).

Anishinaabe oral histories suggest a broad homeland extending far to the west of Ontario and include references to a migration from the Atlantic seaboard, as well as a subsequent return via the St. Lawrence River to the Great Lakes region, with the latter having occurred around 500 B.P. (Hessel 1993; Sherman 2015:27). Those who became known as the Anishinabe Algonquin[5] settled along the Ottawa River or Kichi-Sibi[6] and its tributaries in eastern Ontario and western Quebec; the Ojibwa and Nipissing were located further to the north and west. Living on and around the Canadian Shield, all Anishinaabeg maintained a more nomadic lifestyle than their agricultural neighbours to

[4] This period also saw the coalescence of horticultural communities associated with a northward territorial expansion and a concomitant abandonment of the north shore of Lake Ontario, changes that have been suggested to have been driven, in large part, by an increase in conflict with the Haudenosaunee over control of trade routes and access to European trade goods.

[5] The Anishinabe Algonquin of eastern Ontario increasingly use the Anishinaabemowin word Omàmiwinini to refer to themselves. Omàmiwinini describes the relationship with the land in the language, and though it was largely replaced by 'Algonquin' for many years, efforts are underway to reintroduce the term (Sherman 2008:77).

[6] The Anishinabe Algonquin have various names specific to each part of the Ottawa River. The lower part of the river from Mattawa down to Lake of Two Mountains is traditionally known as the Kichi-Sibi, also spelled Kiji Sibi, Kichisipi, Kichissippi, and Kichisippi (AOO 2020; Morrison 2005:9; Sherman 2015:27).

the south, and accordingly their presence is less visible in the archaeological record (Morrison 2005; Sherman 2015:28).

Finally, while the Iroquois or Haudenosaunee[7] homeland was initially south of Ontario in New York state, their oral histories suggest their hunting grounds extended along the north shore of Lake Ontario and the St. Lawrence River into southeastern Ontario and Quebec (Hill 2017). Archaeological data indicates some Haudenosaunee were living year-round in Ontario by the early seventeenth century (Konrad 1981).

The Indigenous population shifts and relationships of the late sixteenth and early seventeenth centuries through the period of initial contact with Europeans were complex and are not fully understood. They were certainly in part a result of the disruption of traditional trade and exchange patterns among all Indigenous peoples brought about by the arrival of the French, Dutch and British along the Atlantic seaboard the subsequent emergence of the lucrative St. Lawrence River trade route.

3.2 Regional Post-Contact Cultural Overview

The first Europeans to travel into eastern Ontario arrived in the early seventeenth century; predominantly French, they included explorers, fur traders and missionaries. While exploring eastern Ontario and the Ottawa River watershed between c. 1610 and 1613,[8] Samuel de Champlain and others documented encounters with different Indigenous groups speaking Anishinaabemowin, including the Matouweskarini along the Madawaska River, the Kichespirini at Morrison Island on the Ottawa River, the Otaguottouemin along the river northwest of Morrison Island, the Weskarini in the Petite Nation River basin,[9] and the Onontchataronon[10] living in the South Nation River basin as far west as the Gananoque River basin (Hanewich 2009; Hessel 1993; Sherman 2015:29). These extended family communities subsisted by hunting, fishing, and gathering, and undertook some horticulture (see also Pendergast 1999; Trigger 1987). The Anishinaabeg living in the Upper Ottawa Valley and northeastward towards the headwaters of the Ottawa River included the Nipissing, Timiskaming, Abitibi (Wahgoshig), and others. As

[7] Sometime between A.D. 1142 and A.D. 1451 the Mohawk, Oneida, Onondaga, Cayuga, and Seneca united to form the Haudenosaunee Confederacy, also known as the League of Five Nations, and called the Iroquois by the French. When the Tuscarora Nation joined the confederacy in 1722, it became the League of Six Nations.

[8] From this section onwards all dates are presented as A.D.

[9] The Petite Nation River is in Quebec, with its mouth on the north side of the Ottawa River between Ottawa and Hawkesbury. It is sometimes confused with the South Nation River in eastern Ontario which empties into the south side Ottawa River opposite the Petite Nation River. Consequently, the Weskarini territory is sometimes associated with the South Nation River, but this appears to be an error (*cf.* Hessel 1993).

[10] This is a Haudenosaunee term and is, therefore, thought to be an Anishinabe Algonquin community that adopted Iroquoians who had been displaced from their territory along the St. Lawrence River near Montreal (Fox and Pilon 2016).

the French moved inland, however, they referred to all these groups who spoke different dialects of Anishinabemowin as 'Algonquin' (Morrison 2005:18).

At the time of Champlain's travels, the Anishinabe Algonquin were already acting as brokers in the fur trade and exacting tolls from those using the Ottawa River waterway which served as a significant trade route connecting the Upper Great Lakes via Lake Nipissing and Georgian Bay to the west and the St. Maurice and Saguenay via the Rivières des Outaouais (the portion of the Ottawa River extending eastward into Quebec from Lake Timiskaming). These northern routes avoided the St. Lawrence River and Lower Great Lakes route and, therefore, potential conflict with the Haudenosaunee (Joan Holmes & Associates Inc. 1993:2-3). Access to this southern route and the extent of settlement in the region fluctuated with the state of hostilities (Joan Holmes & Associates Inc. 1993:3). As the fur trade in New France was Montreal-based, Ottawa River navigation routes were of strategic importance in the movement of goods inland and furs down to Montreal and, in the wake of Champlain's travels, the Ottawa River became the principal route to the interior for the French. The recovery of European trade goods (e.g., iron axes, copper kettle pieces, glass beads, etc.) from sites throughout the Ottawa River drainage basin provides some evidence of the extent of interaction between Indigenous groups and the French during this period (Kennedy 1970).

With Contact, major population disruptions were brought about by the introduction of European diseases against which Indigenous populations had little resistance; severe smallpox epidemics in 1623-24 and again between 1634 and 1640 resulted in drastic population decline among all Indigenous peoples living in the Great Lakes region (Konrad 1981). The expansion of hunting for trade with Europeans also accelerated decline in the beaver population, such that by the middle of the seventeenth century the centre of the fur trade had shifted northward from what became the northeastern states into southern Ontario. The French, allied with the Huron-Wendat, the Petun, and the Anishinaabeg, refused advances by the Haudenosaunee to trade with them directly. Seeking to expand their territory and disrupt the French fur trade, the Haudenosaunee launched raids into the region and established a series of winter hunting bases and trading settlements near the mouths of the major rivers flowing into the north shore of Lake Ontario and the St. Lawrence River.[11] The first recorded Haudenosaunee settlements were two Cayuga villages established at the northeastern end of Lake Ontario (Konrad 1981). Between 1640 and 1650 conflict with the Haudenosaunee Confederacy culminated in the near complete abandonment of what is now southern Ontario by Anishinaabeg and Huron-Wendat groups. In the face of continued harassment, resident Indigenous communities appear to have opted to disperse further afield or to join other

[11] These settlements included: Quinaouatoua near present day Hamilton, Teiaiagon on the Humber River, Ganatswekwyagon on the Rouge River, Ganaraske on the Ganaraska River, Kentsio on Rice Lake, Kente on the Bay of Quinte, and Ganneious, near Napanee (Adams 1986).

communities, settling to the north and west of the Ottawa Valley,[12] and at the French posts of Montreal, Quebec City, Sillery, and Trois Rivières (Joan Holmes & Associates Inc. 1993:3; Trigger 1987:610, 637-638).[13] It should be noted, however, that available evidence suggests that segments of these groups either remained in their traditional territories or returned seasonally to hunt, fish and trap.

Fort Frontenac was established by the French at the present site of Kingston in 1673, and another fort was constructed at La Presentation (Ogdensburg, New York) in 1700. These forts served to solidify control of the fur trade and to enhance French ties with local Indigenous populations. To this end, the French also encouraged the establishment of Indigenous villages near their settlements (Adams 1986). The full extent of Indigenous settlement in eastern Ontario through to the end of the seventeenth century, however, is uncertain. The Odawa appear to have been using the Ottawa River for trade from c. 1654 onward and some Anishinabe Algonquin remained within the area under French influence, possibly having withdrawn to the headwaters of various tributaries in the watershed. In 1677 the Sulpician Mission of the Mountain was established near Montreal where the Ottawa River empties into the St. Lawrence River. While it was mostly a Mohawk community that became known as Kahnawake, some Anishinabe Algonquin who had converted to Christianity settled at the mission for part of the year and were known as the Oka Algonquin (Joan Holmes & Associates Inc. 1993).

As a result of increased tensions between the Haudenosaunee and the French, and declining population from disease and warfare, the Cayuga villages were abandoned in 1680 (Edwards 1984:17). Around this time, Anishinaabeg began to mount an organized counter-offensive against the Haudenosaunee who were pushed back to their traditional lands further south, resulting in a Mississauga presence in southern and south-eastern Ontario. This change saw Anishinaabeg gain wider access to European trade goods and allowed them to use their strategic position to act as intermediaries in trade between the British and Indigenous communities to the north (Edwards 1984:10,17; Ripmeester 1995; Surtees 1982).

Following almost a century of warfare, the Great Peace was signed in Montreal in 1701 between New France and 39 Indigenous Nations, including the Anishinaabeg, Huron-Wendat and Haudenosaunee. This led to a period of relative peace and stability. During the first half of the eighteenth century, the Haudenosaunee appear to have been largely confined to south of the St. Lawrence River, while Mississauga and Ojibwa were living in southern and central Ontario, generally beyond the Ottawa River watershed (Joan

[12] Some Nipissing, for example, re-located to the Lake Nipigon region (Joan Holmes & Associates Inc. 1993:3).

[13] In the case of the 1649-1650 move of a group of Huron-Wendat from Gahoendoe (Christian) Island to the area of Quebec City, the relocation was the result of careful consideration and was planned well in advance, with a diplomatic mission having been sent in advance to discuss the move with their French allies (see Lesage and Williamson 2020).

Holmes & Associates Inc. 1993:3). Anishinabe Algonquin were residing along the Ottawa River and its tributaries, as well as outside the Ottawa River watershed at Trois-Rivières; Nipissing were located around Lake Nipissing and at Lake Nipigon. Reports from c. 1752 suggest that some non-resident Anishinabe Algonquin and Nipissing were trading at the mission at Lake of Two Mountains during the summer but returning to their hunting grounds "*far up the Ottawa River*" for the winter, and there is some indication that they may have permitted Haudenosaunee residents of the mission to hunt in their territory (Joan Holmes & Associates Inc. 1993:3; Heidenreich and Noël 1987:Plate 40).

In 1754, hostilities over trade and the territorial ambitions of the French and British led to the Seven Years' War, in which many Anishinaabeg fought on behalf of the French. With the French surrender in 1760, Britain gained control over New France, though in recognition of Indigenous title to the land the British government issued the Royal Proclamation of 1763. This created a boundary line between the British colonies on the Atlantic coast and the 'Indian Reserve' west of the Appalachian Mountains. This line then extended from where the 45th parallel of latitude crossed the St. Lawrence River near present day Cornwall northwestward to the southeast shore of Lake Nipissing and then northeastward to Lac St. Jean. The proclamation specified that "*Indians should not be molested on their hunting grounds*" (Joan Holmes & Associates Inc. 1993:4) and outlawed the private purchase of Indigenous land, instead requiring all future land purchases to be made by Crown officials "*at some public Meeting or Assembly of the said Indians*" living upon the land in question (cited in Surtees 1982: 9). In 1764, the post at Carillon on the Ottawa River was identified as the point beyond which traders could only pass with a specific licence to trade in "*Indian Territory.*" Petitions in 1772 and again in 1791 described Anishinabe Algonquin and Nipissing territory as the lands on both sides of the Ottawa River from Long Sault to Lake Nipissing. Settlers continued to trespass into this territory, however, cutting trees and driving away game vital to Indigenous lifeways (Joan Holmes & Associates Inc. 1993:5). Akwesasne, within the Haudenosaunee hunting territory, became a permanent settlement towards the middle of the eighteenth century.[14]

At first, the end of the French Regime brought little change to eastern Ontario. Between 1763 and 1776 some British traders traveled to the Kingston area, but the British presence remained sporadic until 1783 when Fort Frontenac was officially re-occupied. With the conclusion of the American Revolutionary War (1775 to 1783), however, the British sought additional lands on which to settle United Empire Loyalists fleeing the United States, disbanded soldiers, and the Mohawk who had fought with the British under Thayendanegea (Joseph Brant) and Chief Deserontyon and were, therefore, displaced from their lands in New York State. To this end, the British government undertook hasty negotiations with Indigenous groups to acquire rights to lands; however, these negotiations did not include Anishinabe Algonquin and Nipissing who were continuously ignored, despite much of the area being their traditional territory (Lanark

[14] www.firstbatuibs.info/akwesasne.html

County Neighbours for Truth and Reconciliation 2019). Initially the focus for settlement was the north shore of Lake Ontario and the St. Lawrence River, resulting in a series of 'purchases' and treaties beginning with the Crawford Purchases of 1783. As noted, these treaties did not include all of the Indigenous groups who lived and hunted in the region and the recording of the purchases – including the boundaries – and their execution were problematic; they also did not extinguish Indigenous rights and title to the land (Joan Holmes & Associates Inc. 1993:5; Royal Commission on Aboriginal Peoples 1996). The *Crown Grant to the Mohawks of the Bay of Quinte* was issued in 1784 in recognition of the Six Nations' support during the American Revolutionary War. It included lands on the Bay of Quinte, originally part of the Crawford Purchases, on which Chief Deserontyon and other Haudenosaunee settled.[15]

Major Samuel Holland, Surveyor General for Canada, began laying out the land within the Crawford Purchases in 1784 with such haste that the newly established townships were assigned numbers instead of names. Euro-Canadian settlement along the north shore of the St. Lawrence River and the eastern end of Lake Ontario began in earnest about this time. By the late 1780s the waterfront townships were full and more land was required to meet both an increase in the size of grants to all Loyalists and grant obligations to the children of Loyalists who were now entitled to 200 acres in their own right upon reaching the age of 21 (H. Belden & Co. 1880:16). In 1792 John Graves Simcoe, Lieutenant Governor of the Province of Upper Canada, offered free land grants to anyone who would swear loyalty to the King, a policy aimed at attracting more American settlers. As government policy also dictated the setting aside of one seventh of all land for the Protestant Clergy and another seventh as Crown reserves, pressure mounted to open up more of the interior. As a result, between 1790 and 1800 most of the remainder of the Crawford Purchases was divided into townships (H. Belden & Co. 1880:16).

A number of other purchases during the late eighteenth century between representatives of the Crown and certain Anishinaabe covered lands immediately west of the Crawford Purchases, from the north shore of Lake Ontario northward to Lake Simcoe and Georgian Bay/Lake Huron. These included the John Collins Purchase of 1785, the Johnson-Butler Purchase[16] of 1787-88, and the 1798 Penetanguishene Purchase (Treaty 5) aimed at acquiring a harbour on Lake Huron for British vessels.[17] The lands purportedly covered by these purchases were often poorly defined and were thus included in the later Williams Treaties of 1923 (see below).

The *Constitution Act* of 1791, which created the provinces of Upper and Lower Canada (later Ontario and Quebec) used the Ottawa River as the boundary between the two. This

[15] https://www.ontario.ca/page/map-ontario-treaties-and-reserves
[16] Sometimes referred to as the 'Gunshot Treaty' as it reportedly covered the land as far back from the lake shore as a person could hear a gunshot (https://www.ontario.ca/page/map-ontario-treaties-and-reserves).
[17] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

effectively divided the Anishinabe Algonquin and Nipissing territories, both of which straddled the river. The Anishinabe Algonquin and Nipissing sent a letter to the Governor General of the Province of Canada in 1798, requesting that settlers be restricted to the banks of the Ottawa River and detailing the difficulties caused by encroaching settlement (Joan Holmes & Associates Inc. 1993:5; see also Lanark County Neighbours for Truth and Reconciliation 2019). In this letter the Chiefs noted the belt of wampum and map of their lands that was given to Governor Carleton some years earlier, pleading for no more of the encroachment that was driving away game and pushing them into infertile lands; however, there was no response. In the early 1800s, a few Anishinabe Algonquin and Nipissing settled on the shores of Golden Lake, known to them as 'Peguakonagang;' they called themselves 'Ininwezi,' which they translated as 'we people here along' (Johnson 1928; MacKay 2016).[18] The Golden Lake band, as they initially came to be known, resided in this area for at least part of the year, with various band members maintaining traplines, hunting territories, and sugar bushes.

The War of 1812 between the United States and Great Britain (along with its colonies in North America and its Indigenous allies) brought another period of conflict to the region. In 1815, at the conclusion of the war, the British government issued a proclamation in Edinburgh to further encourage settlement in British North America. The offer included free passage and 100 acres of land for each head of family, with each male child to receive his own 100 acre parcel upon reaching the age of 21 (H. Belden & Co. 1880:16). At the same time, the government was seeking additional land on which to resettle disbanded soldiers from the War of 1812. Demobilized forces could thereby act as a 'force-in-being' to oppose any possible future incursions from the United States. Veterans were encouraged to take up residence within a series of newly created 'military settlements' including those at Perth (1816) and Richmond (1818). The pressure to find more land was exacerbated by the sheer number of settlers moving into the region as a result of these initiatives, which began to push settlement beyond the acquired territory into what had formally been protected as 'Indian Land.'[19]

Additional 'purchases' were signed in the early nineteenth century between the Crown and certain Anishinaabe communities including the Lake Simcoe Purchase (Treaty 16) signed in 1815 and covering lands between Lake Simcoe and Georgian Bay, the Nottawasaga Purchase (Treaty 18) of 1818 to the south and west of the Lake Simcoe Purchase, and the Rice Lake Purchase or Treaty 20 of 1818 which covered a large area around Rice Lake.[20]

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[18] The Algonquin of River Desert identified The Golden Lake Band using the name "Nozebi'wininiwag," translated as "Pike-Water People" (Speck in Johnson 1928:174).

[19] Between 1815 and 1850 over an estimated 800,000 Euro-Canadian settlers moved into the region (https://www. lanarkcountyneighbours.ca/the-petitions-of-chief-shawinipinessi.html).

[20] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

Further east, with the settlement of the region underway, Lieutenant Governor Gore ordered Captain Ferguson, the Resident Agent of Indian Affairs at Kingston, to arrange the purchase of additional lands from the chiefs of the Ojibwa and Mississauga or Michi Saagiig Nishnaabeg. The resulting Rideau Purchase (Treaty 27 and 27¼) extended from the rear of the earlier Crawford Purchases to the Ottawa River and was signed by the Michi Saagiig Nishnaabeg or Mississauga in 1819 and confirmed in 1822. This 'purchase' was also problematic and excluded the Anishinabe Algonquin whose traditional territory it covered (Canada 1891:62; Surtees 1994:115). As this purchase included lands within the Ottawa River watershed, the Anishinabe Algonquin and Nipissing protested in 1836 when they became aware of its terms (Joan Holmes & Associates Inc. 1993:6).

As Euro-Canadian settlement spread, Indigenous groups were increasingly pushed out of southern and eastern Ontario, generally moving further to the north and west, although some families remained in their traditional lands, at least seasonally. Records relating to the Hudson's Bay Company, the diaries of provincial land surveyors, the reports of geologists sent in by the Geological Survey of Canada, census returns,[21] store account books and settler's diaries all provide indications of the continued Indigenous settlement in the region, as does Indigenous oral history. In addition to their interactions with the Anishinabe Algonquin who remained in the area, the nineteenth century settlers found evidence of the former extent of Indigenous inhabitation, particularly as they began to clear the land. In 1819, Andrew Bell wrote from Perth:

> *All the country hereabouts has evidently been once inhabited by the Indians, and for a vast number of years too. The remains of fires, with the bones and horns of deers (sic) round them, have often been found under the black mound... A large pot made of burnt clay and highly ornamented was lately found near the banks of the Mississippi, under a large maple tree, probably two or three hundred years old. Stone axes have been found in different parts of the settlement.*
>
> (cited in Brown 1984:8)

While some Anishinabe Algonquin and Nipissing continued to spend part of the summer at Lake of Two Mountains through this period, most of the year appears to have been spent on their traditional hunting grounds, and by the 1830s there were specific claims for land by individuals such as Mackwa on the Bonnechere River and Constant Pennecy on the Rideau waterway. In 1842, Chief Pierre Shawinipinessi,[22] an Anishinabe Algonquin leader, petitioned the Crown for a land tract of 2,000 acres between the townships of Oso, Bedford and South Sherbrooke to enable his people to sustain

[21] While Indigenous peoples were clearly still residing in the area and making use of the land, they often do not appear in the 1851 to 1871 census records. Huitema (2001:129) notes that 'Algonquin' were sometimes listed in these records as 'Frenchmen' or 'halfbreeds' because they had utilized the mission at Lake of Two Mountains as their summer gathering place and, therefore, were thought of as being French.
[22] There are numerous variations in the spelling of Chief Shawinipinessi's name; he is also known by the name of Peter Stephens or Stevens).

themselves (Huitema 2001; Ripmeester 1995:164-166; Sherman 2008:32-33).[23] A licence of occupation for the 'Bedford Algonquin' was granted in 1844, with Mississauga (Michi Saagiig Nishnaabeg) from Alnwick reportedly also living at Bedford (Joan Holmes & Associates Inc. 1993:7-8). Illegal logging operations, however, interfered with life on the reserve, and despite protests from Chief Shawinipinessi and legislation passed in 1838 and then later in 1850 to protect Indigenous lands,[24] it was allowed to continue, depleting the local food resources. In response to an 1861 petition to address the trespassing of settlers, the existence of the Bedford tract was denied (LAC microfilm reel C-13419). At this time some of the community moved to nearby lands while others joined the Anishinabe Algonquin at Kitigan Zibi, and at Pikwàkanagàn where the 'Golden Lake Reserve' was created in 1873 (Hanewich 2009; Joan Holmes & Associates Inc. 1993:9). Around 1836 some consideration was given to facilitating Anishinabe Algonquin and Nipissing settlement in the Grand Calumet Portage and Allumette Island area, but this was not pursued (Joan Holmes & Associates Inc. 1993).

Other treaties signed in the mid-nineteenth century included the St. Regis Purchase (Treaty 57) signed in 1847 between the Crown and the Mohawk and covering a narrow parcel of land, known as the 'Nutfield Tract' extending north of the St. Lawrence River at Cornwall towards the Ottawa River, and the Robson-Huron Treaty (Treaty 61) of 1850 between the Crown and certain Anishinaabeg for lands east of Georgian Bay and the northern shore of Lake Huron eastward to the Ottawa River.[25]

Through the early twentieth century, off-reserve Anishinabe Algonquin and Nipissing were told to move to established reserves at Golden Lake (Pikwàkanagàn), Maniwaki (Desert River) and at Gibson on Georgian Bay (which had been established for the re-settlement of both Anishinabe Algonquin and Mohawk from Lake of Two Mountains), but many remained in their traditional hunting territories. There is also evidence to suggest that Akwesasne Mohawk trapped and hunted north of their reserve as far as Smiths Falls and Rideau Ferry between c. 1924 and 1948 (Joan Holmes & Associates Inc. 1993:10-11; Sherman 2008:33).

The Williams Treaties of 1923 were signed between the Crown and seven Anishinaabe First Nations to address lands that had not been surrendered via a formal treaty process (see above).[26] These lands covered a large area from the north shore of Lake Ontario to

[23] July 17, 1842 petition 115 addressed to Sir Charles Bagot, Governor General, Library and Archives Canada RG10, V186 part 2, as transcribed in Joan Holmes & Associates Inc. (1993) *Report on the Algonquins of Golden Lake Claim* Vol. 10-12:101.

[24] Chapter XV. An Act for the protection of the Lands of the Crown in this Province, from Trespass and Injury. Thirteenth Parliament, 2nd Victoria, A.D. 1839. An Act for the Protection of the Indians in Upper Canada from Imposition and the Property Occupied or Enjoyed by Them from Trespass and Injury; passed by the government of Upper Canada on August 10, 1850. Available from https://bnald.lib.unb.ca/node/5342; United Canadas (1841-1857) 13 & 14 Victoria – Chapter 74:1409.

[25] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

[26] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

Lake Nipissing and overlapped with a number of other treaties and 'purchases.' The Williams Treaties First Nations include the Chippewas of Beausoleil, Georgina Island and Rama, and the Mississaugas of Alderville, Curve Lake, Hiawatha and Scugog Island. To address further issues with a number of the pre-confederation purchases and treaties, the Williams Treaties First Nations ratified the Williams Treaties Settlement Agreement with Canada and Ontario in June, 2018. This agreement recognized harvesting rights in Treaties 5, 16, 18, 20, 27 and 27¼, the Crawford Purchase, the Gunshot Treaty and Lake Simcoe.[27]

As noted above, lands considered traditional Anishinabe Algonquin territory were included in various nineteenth century purchases from which they were excluded. Anishinabe Algonquin claims to these lands include a series of petitions to the Crown going back to 1772 that asserted rights to land and resources. An official land claim was made in the 1980s and, in 2016, an Agreement-in-Principle was signed by Ontario, Canada and the Algonquins of Ontario, a step towards a treaty recognizing Anishinabe Algonquin rights across much of eastern Ontario.[28]

Geographic Township of Gloucester and Carlsbad Springs, Ramsayville and Piperville

In 1792 the township was originally surveyed as Township B., but was eventually called Gloucester after William Frederick, second Duke of Gloucester and Edinburgh, and nephew of King George III. In 1792-93, Thomas and William Fraser petitioned Lieutenant Governor John Graves Simcoe for substantial land grants within the new township, with William's petition viewed favourably such that on July 13th, 1793 the Legislative Council ordered that "*the township of Gloster* (Gloucester) *be granted to him*." Although Fraser had implied that he represented a large number of families interested in settling in the area, there is no indication that anyone from his party actually came to the township, nor was the land officially transferred to him (Golder 2012:7).

Land registry records indicate that patents for some of the lots in Gloucester, Osgoode, and North Gower townships were issued shortly after the turn of the nineteenth century, but the majority of these were granted to United Empire Loyalists or their family members, most of whom never actually settled on these properties, instead holding them for speculation purposes. The abundant stands of red and white pine in the Ottawa Valley proved to be one of the most important factors in attracting settlers to the area. At the beginning of the nineteenth century there was an economic shift from the fur trade to the lumber industry as the Napoleonic blockades increased demand in Europe for quality pine. Settlement followed and a large number of farms and lumber camps began to appear in the area. A mutually beneficial relationship soon developed between the lumber and farming industries: the lumber camps and shanties depended on the local farmers to supply food stuffs and the farmers depended on the lumber industry for

[27] www.williamstreatiesfirstnations.ca
[28] https://www.ontario.ca/page/map-ontario-treaties-and-reserves

seasonal work in the winter (Mercer 1998:5). Farming communities in the region grew with the development of the squared timber industry, until much of the stands of pine in the areas immediately surrounding the Ottawa region were exhausted, with the focus then shifting to the sawn lumber trade.

Logging on the Rideau River and its tributaries began in 1810 when Braddish Billings, who had worked for Philemon Wright cutting timber on the upper Ottawa River, built a shanty on the Rideau below the Hog's Back (Passfield 1982:72). While the Billings family cleared some land, farming was a secondary consideration in favour of lumbering. Logs were hand squared with axes and adzes and floated down the river on spring floods for sale to Philemon Wright and Sons in what would later become Gatineau. Billings was reportedly the only settler on the eastern bank of the Rideau River within Gloucester Township until sometime around 1819 when several more families moved into the area (Passfield 1982:72).

The construction of the Rideau Canal between 1826 and 1832 accelerated settlement of the region, as the immense project required thousands of labourers. Built as a preventive military measure to provide a secure supply and communications route between Montreal and the British naval base at Kingston, the canal created a means by which to bypass the stretch of the St. Lawrence River bordering New York State. By the mid-nineteenth century, however, the canal also served commercial purposes, as it afforded a more easily navigated route than the rapid-filled section of the St. Lawrence between Montreal and Kingston. As a result, the Rideau Canal became a busy commercial artery (though by 1849 the rapids of the St. Lawrence had been tamed by a series of locks and commercial shippers were quick to revert to this more direct route).

During the first part of the nineteenth century, settlement in Gloucester Township was largely restricted to road frontages and the Rideau River. Most of the lots in the Rideau Front portion of Gloucester remained largely rural through the remainder of the nineteenth century, and, indeed, through most of the twentieth. Nineteenth century maps of the township show the intensification of rural settlement that occurred through the late nineteenth century, as most of the land came to be settled and the original lots were subdivided (Watson 2009:29).

The first influx of settlers generally favoured locating along the rivers and creeks that dotted the landscape of Gloucester township, as early transportation was water-borne. It was for this reason that the Junction Gore on the southeast side of the Rideau, the River Road towards Black Rapids and Manotick, the Montreal Road bordering Green's Creek, and the Bear Brook from Cumberland to Carlsbad were favoured in early settlement locations (Walker & Walker 1968:162). The community of Ramsayville, located to the northwest of the study area, was founded in the 1830s when fifteen families from the north of Ireland and Scotland settled along Ramsay Creek. Originally named Ramsay Corners, the settlement was named after pioneer Alexander Ramsay. The name was changed when the locality received a post office in 1873. In 1964 the property in the area was acquired by the National Capital Commission as part of the 'Greenbelt' (Walker & Walker 1968:202).

The community of Carlsbad Springs, located to the northeast of the study area, was founded around its healing springs. The springs had been used by Indigenous communities for centuries before the founding of the Euro-Canadian community as it was rumoured that Haudenosaunee chief Donnaconna had recommended its curative waters to Jacques Cartier and his scurvy-ridden crew. The Bear Brook, which meanders through the springs, was originally wide enough for timber to float to Judge Musgrove's mill, built in 1854. The wood processed at this mill was used to help power the engines of the pioneer Canada Atlantic Railway until this source of fuel was replaced by coal. About a year after confederation innkeeper Danny Eastman built a guesthouse at the site of the springs which evolved into a popular resort spa. The settlement was thereafter known as Eastman's Springs until 1902 when the name was changed to Carlsbad Springs after the famous Bohemian spa constructed in the mid-nineteenth century. While the larger settlement still exists today, the spa complex itself burned in 1876 and after its reconstruction was owned by the Boyd family (Walker & Walker 1968:202-205).

The community of Piperville, located just to the west of the study area, was founded during the 1880s when marshes in the area were drained by the Canada Atlantic Railway Company. The core of the community was the church built at the corner of the 8th Concession and Farmers Way (Kemp 1991:67). The community was likely named after the Piper family which owned the lot on which the church was built. By 1875 a school had been erected for the community on part of Lot 10, Concession 8 (Kemp 1991:50). The school is shown on the 1879 Belden map at the south end of the lot near the intersection of Thunder Road and Farmer's Way. The area remained poor, however, as the land was not conducive to farming.

3.3 Property History

The following abbreviated review of archival research was conducted in order to develop a picture of the land-use history of the study area through the nineteenth and twentieth centuries, particularly as it relates to the archaeological potential of the property. Information was compiled from a variety of sources, including the 1863 Walling map of Carleton County, the 1879 Belden map, twentieth-century topographic maps and aerial photographs, directories, and survey plans.[29] Records at the Ottawa Carleton Land

[29] Historical maps and aerial photographs have been geo-referenced using Geographic Information Systems (GIS) software to generate the mapping contained in this report. Geo-referencing is the name given to the process of transforming a map or image by assigning X and Y coordinates to features, allowing the software to rotate, stretch, and in some cases warp the original image to best match the supplied coordinates. Owing to considerable variation in the scale, accuracy, and resolution of historical maps and aerial photographs, there is often an unknown degree of error introduced in the process of geo-referencing and, as for this reason, the location and extent of the study area overlain on these maps should be considered approximate.

Registry Office (or OCLRO) were also consulted. A more extensive review of the larger original study corridor can be found in Section 3.4 of the Stage 1 report (Past Recovery 2022).

Lot 11, Concession 8

The Stage 2 study area was located in the northeast corner of Lot 11, Concession 8. The Crown patent for the north half of Lot 11, Concession 8 was granted to John McLatchie in 1856. A Hugh McLatchie is listed as an owner on Lot 11, Concession 8 in the 1873 directory and he is the first McLatchie to be listed in a directory or census (Irwin & Co. 1873). The McLatchie homestead was located squarely within the study area on the 1879 Belden map; however, by 1906 it appears to have been abandoned. The 1904 farmer's directory also does not list Hugh McLatchie as the owner of the property (Union Publishing Company 1904). The McLatchie family sold the land to Wesley Farmer, the owner of the lot directly north of their land, in 1906; it is likely that the Farmer family simply used the property for agricultural purposes (OCLRO Instrument 19284).

Aerial imagery from the twentieth century provides some information about the development of the lot. An aerial image taken in 1953 depicts a roadway running through the northeastern corner of the study area, in the same general area as the modern hydro corridor. The northwestern corner of the study area consisted of a farmer's field; the rest of the property was open, likely used as pasture. A 1976 topographic map made using aerial images from 1975 depicts the hydro corridor having replaced the roadway. The land climbed in elevation very slightly in the northeastern corner of the study area as a result of the flow of Bearbrook Creek. A 1978 aerial image depicts construction disturbance in the northeastern corner of the study area in the general location of a modern residential home. A wood lot had begun to grow in the southwestern corner of the property.

4.0 ARCHAEOLOGICAL CONTEXT

This section of the report summarizes the archaeological and heritage data presented in the initial Stage 1 assessment, with updates as required by *Standards and Guidelines for Consultant Archaeologists* (MCM 2011). In combination with the historical context outlined in Section 3.0, this information helped to provide an indication of the archaeological potential within the study area.

4.1 Previous Archaeological Research

In order to determine whether any previous archaeological fieldwork had been conducted within or in the immediate vicinity of the Stage 1 study area, a search of the titles of reports in the *Public Register of Archaeological Reports* maintained by the Ministry of Citizenship and Multiculturalism (MCM) was undertaken. To augment these results, a search of the Past Recovery corporate library was also conducted.[30] Six previous archaeological assessments were found to have occurred within or in the immediate vicinity of the larger study corridor, including:

- Stage 1 and Stage 2 archaeological assessments were completed directly north of the northern tip of the Stage 1 study area in 2012 by Golder Associates Ltd. (PIFs: P311-049-2011 & P311-080-2011) in advance of Highway 417 rehabilitation and improvements. Nothing was found as a result of the Stage 2 assessment.
- A Stage 1 archaeological assessment was completed 2.78 km to the east of the Stage 1 study area in 2014 by Golder Associates Ltd. (PIF: P366-0026-2013) in advance of the construction of the Capital Region Resource Recovery Centre. A Stage 2 assessment was not recommended.
- Stage 1 and Stage 2 archaeological assessments were completed 1.75 km to the northeast of the Stage 1 study area in 2014 by URS (PIF: P123-0257-2014) in advance of Highway 417 rehabilitation and improvements. Nothing was found as a result of the Stage 2 assessment.
- Stage 1 and Stage 2 archaeological assessments were completed 3 km to the northwest of the Stage 1 study area in 2018 by Stantec (PIF: P362-0184-2017) for temporary workspaces and access roads associated with TransCanada Pipeline's existing infrastructure. Nothing was found as a result of the Stage 2 assessment.

[30] In compiling the results, it should be noted that archaeological fieldwork conducted for research purposes should be distinguished from systematic property surveys conducted during archaeological assessments associated with land use development planning (generally after the introduction of the *Ontario Heritage Act* in 1974 and the *Environmental Assessment Act* in 1975), in that only those studies undertaken to current standards can be considered to have adequately assessed properties for the presence of archaeological sites with cultural heritage value or interest. In addition, it should be noted that the majority of the research work undertaken in the area has been focused on the identification of pre-Contact Indigenous sites, while current MCM requirements minimally require the evaluation of the material remains of occupations and or land uses pre-dating 1900.

- A Stage 1 archaeological assessment was completed for some portions of the larger study corridor in 2018 by Stantec (PIF: P415-0160-2018) on behalf of Infrastructure Ontario in advance of possible sale of lands to the Algonquins of Ontario. These lands were found to retain archaeological potential and Stage 2 assessment was recommended, though they lay to the north of the current Stage 2 study area.
- A Stage 1 archaeological assessment was completed for a large corridor including the current study area in 2022 by Past Recovery (PIF: P1074-023-2022) on behalf of Ottawa Hydro in advance of the construction of the proposed minor transmission facility. The current study area was found to retain archaeological potential and a Stage 2 assessment was recommended.

4.2 Previously Recorded Archaeological Sites

The primary source for information regarding known archaeological sites in Ontario is the *Archaeological Sites Database* maintained by the Ontario Ministry of Citizenship and Multiculturalism. The database largely consists of archaeological sites discovered by professional archaeologists conducting archaeological assessments required by legislated processes under land use development planning (largely since the late 1980s). An updated search of the *Sites Database* indicated that there were still no registered archaeological sites located within a one kilometre radius of the study area.

4.3 Cultural Heritage Resources

The recognition or designation of cultural heritage resources (here referring only to built heritage features and cultural heritage landscapes) may provide valuable insight into aspects of local heritage, whether identified at the local, provincial, national, or international level. As some of these cultural heritage resources may be associated with significant archaeological features or deposits, the background research conducted for this assessment included the compilation of a list of cultural heritage resources that have previously been identified within or immediately adjacent to the current study area. The following sources were consulted:

- Federal Heritage Buildings Review Office online Directory of Heritage Designations (http://www.pc.gc.ca/eng/progs/beefp-fhbro/index.aspx);
- Canada's Historic Places website (https://www.historicplaces.ca/en/rep-reg/search-recherche.aspx);
- Ontario Heritage Properties Database (https://www.heritagetrust.on.ca/en/oha/advanced-search);
- An archived listing of Ministry of Citizenship and Multiculturalism's Heritage Conservation Districts (https://web.archive.org/web/20220325223537/http://www.mtc.gov.on.ca/en/heritage/heritage_conserving_list.shtml);
- Ontario Heritage Trust website (https://www.heritagetrust.on.ca/en/index.php/pages/tools/plaque-database); and,
- City of Ottawa Heritage Properties (https://ottawa.ca/en/planning-

development-and-construction/heritage-conservation/heritage-properties).

No designated heritage properties were located within the study area; however beginning 400 m to the north was a system of hot springs associated with Mer Bleue. This area was the site of a hotel and spa complex named the Dominion House Hotel, constructed in 1868 but quickly becoming the most prestigious Ottawa area spa resort for the elite. In 1906 the hotel was renamed Carlsbad Springs. Though the resort is no longer operational, the Carlsbad Springs Bath House still stands along Russell Road 3 km north of the study area.[31]

4.4 Heritage Plaques and Monuments

The recognition of a place, person, or event through the erection of a plaque or monument may also provide valuable insight into aspects of local history, given that these markers typically indicate some level of heritage recognition. As with cultural heritage resources (built heritage features and/or cultural heritage landscapes), some of these places, persons, or events may be associated with significant archaeological features or deposits. Accordingly, this study included the compilation of a list of heritage plaques and/or markers in the vicinity of the study area. The following sources were consulted:

- The Ontario Heritage Trust Online Plaque Guide (https:// www.heritagetrust.on.ca/ en/index.php/pages/tools/plaque-database);
- A listing of plaques transcribed at www.readtheplaque.com;
- Parks Canada Directory of Federal Heritage Designations (https:// www.pc.gc.ca/apps/dfhd/default_eng.aspx);
- A listing of historical plaques of Ontario maintained by Sarah J. McCabe (https://ontarioplaques.omeka.net/); and,
- City of Ottawa Heritage Awards and Recognition (https:// ottawa.ca/en/planning-development-and-construction/heritage-conservation/awards-and-recognition).

A plaque marking the location of the springhouse associated with Boyd Spa, which was one of four hotels located at Carlsbad Springs, is located 3 km north of the study area. The plaque provides information about the founding inn at the springs erected by Daniel Eastman and its growth into a complex of hotels and fashionable meeting place for the elite of Ottawa.[32]

4.5 Cemeteries

The presence of historical cemeteries in proximity to a parcel undergoing archaeological assessment can pose archaeological concerns in two respects. First, cemeteries may be

[31] https://ncc-ccn.gc.ca/places/mer-bleue
[32] https://www.ontarioplaques.com/Plaques/Plaque_Ottawa10.html

associated with related structures or activities that may have become part of the archaeological record, and thus may be considered features indicating archaeological potential. Second, the boundaries of historical cemeteries may have been altered over time, as all or portions may have fallen out of use and been forgotten, leaving potential for the presence of unmarked graves. For these reasons, the background research conducted for this assessment included a search of available sources of information regarding historical cemeteries. For this study, the following sources were consulted:

- An archived listing of all registered cemeteries in the province of Ontario maintained by the Consumer Protection Branch of the Ministry of Public and Business Service Delivery (last updated 06/07/2011);
- Ontario Cemetery Locator website maintained by the Ontario Genealogical Society (https://vitacollections.ca/ogscollections/2818487/data?g=d);
- Ontario Headstones Photo Project website (https://canadianheadstones.ca/wp/cemetery-lookup/); and,
- Available historical mapping and aerial photography.

No cemeteries were noted within or immediately adjacent to the study area. The Ramsayville Cemetery was located 2.8 km to the west of the property just south of Highway 417 where Russel Road meets Ramsayville Road. A National Capital Commission trail runs from the location of the cemetery west towards Hawthorne Road.

4.6 Mineral Resources

The presence of scarce mineral resources on or near to a property may indicate potential for archaeological resources associated with both pre-Contact and post-Contact exploration and exploitation. For this reason, the background research conducted for the assessment includes a search of available sources of information on the locations of outcrops of rare and highly valued minerals, such as quartz, chert, ochre, copper, and soapstone, as well as minerals sought out by post-Contact prospectors and miners for more industrial-scale exploitation (i.e. gold, copper, iron, mica, etc.). Useful tools in this search are provided by databases maintained by the Ontario Geological Survey and the Ministry of Northern Development and Mines, including:

- *Abandoned Mines Information System* which contains a list of all known abandoned and inactive mine sites and associated features in the Province;
- *Mining Claims* which contains a list of all active claims, alienations, and dispositions;
- *Mineral Deposits Inventory* which contains a list of known mineral occurrences of economic value in the Province; and,
- *Bedrock Geology Data Set*, which shows the distribution of bedrock units and illustrates geologic rock types, major faults, iron formations, kimberlite intrusions, and dike swarms.

A review of the above-mentioned databases revealed no evidence of mineral resources located within the study area. It is worth noting, however, that the Mer Bleue bog located 2 km to the north of the Stage 1 study area was a significant source of peat which has been exploited by Indigenous communities as early at the 1500s. In the 1840s European settlers attempted to dry the wetland by burning its peat soil; however, it remains the second largest bog in Ontario and the location of a permanent research station.[33]

4.7 Local Environment

The assessment of present and past environmental conditions in the region containing the study area is a necessary component in determining the potential for past occupation as well as providing a context for the analysis of archaeological resources discovered during an assessment. Factors such as local water sources, soil types, vegetation associations and topography all contribute to the suitability of the land for human exploitation and/or settlement. For the purposes of this assessment, information from local physiographic, geological and soils research has been compiled to create a picture of the environmental context for both past and present land uses.

The physiography and distribution of surficial material in this area are largely the result of glacial activity that took place in the Late Wisconsinan. This period, which lasted from approximately 23,000 to 10,000 years before present, was marked by the repeated advance and retreat of the massive Laurentide Ice Sheet (Barnett 1992 in Rowell 1997:12). As the ice advanced, debris from the underlying sediments and bedrock accumulated within and beneath the ice. The debris, a mixture of stones, sand, silt, and clay, was deposited over large areas as till plains, drumlins, and moraines. During deglaciation, as the Late Wisconsinan ice margin receded to the north, waters from the Atlantic Ocean flooded the isostatically-depressed upper St. Lawrence and Ottawa valleys and formed the Champlain Sea. Landforms and deposits north of the Ottawa River suggest that the maximum elevation reached by the Champlain Sea was between approximately 180-190 metres above the present sea level, which would have covered the region containing the current study area (Rowell 1997:12). Extensive deposits of fine-grained sediments, representative of deep-water environments, were laid down during this time. Continued isostatic rebound lead to the retreat of the glaciomarine waters, leaving behind boulder gravel spits, bars, and beaches at elevations between 120 and 60 metres (Rowell 1997:12). During the regression of the Champlain Sea, the ancestral Ottawa River and its north bank tributaries created extensive deposits of deltaic sands and formed numerous sand bars. Owing to poor drainage characteristics associated with the underlying clays, extensive bogs subsequently developed, in low-lying areas, accumulating peat and other organic deposits.

The study area is located within the Ottawa Valley Clay Plain physiographic region, which consists of clay plains interrupted by rock and sand ridges. Most of the clay beds

[33] https://ncc-ccn.gc.ca/places/mer-bleue

are level, with a few areas of elevation and scarce swamps. Within the Ottawa Valley there are areas where the bedrock has been faulted, causing it to appear above some of the clay beds. The clay sediments themselves are deep and silty and are likely derived from the rocks of the Canadian Shield (Chapman and Putnam 1984:205). Surficial geological mapping indicates that the property is underlain by Champlain Sea offshore marine deposits of clay and silt. The soil survey of Ottawa-Carleton shows the study area consists of the Allendale sandy loam complex. Topographic mapping at 2 m contours indicates that the property consists of generally flat land at 74 to 76 meters above sea level (masl).

Mer Bleue, a significant provincially regulated peat bog, is located 2 km to the north of the Stage 1 study area. There are a number of provincially recognized wetlands which border Mer Bleue and lie adjacent to the current study area on the north side of the hydro corridor. The bog is 7,700 years old and provides a habitat for many species of regionally rare and significant plants, birds and other wildlife. The Stage 1 corridor was located in both the Ramsay Creek catchment area and the Upper Bear Brook catchment area of the Bear Brook subwatershed. Ramsay Creek is a tributary of Greens Creek which flows into the Ottawa River 12 km to the north of the study area. This creek measures approximately 10 km in length and has its headwaters near Leitrim Road, with its confluence into Greens Creek north of Walkley Road (RCVA 2019). The Bear Brook flows eastward from the Mer Bleue catchment to its mouth at the South Nation River in Clarence-Rockland Township, but includes many feeder creeks to the south or the Mer Bleue. The brook was named after the formerly high population of bears who foraged acorns alongside the water source. Historically Bear Brook was used to float timber to sawmills in Carlsbad Springs and by settlers as transportation to their homesteads (SNCA 2016). There is a high percentage of wetland cover throughout the study area as a result of the proximity of these catchment areas.

The area belongs to the Upper St. Lawrence Division of the Great Lakes-St. Lawrence Forest Region of Canada. This region is characterized by a mixture of coniferous and deciduous tree species, dominated by sugar maple and beech, with red maple, yellow birch, basswood, white ash, largetooth aspen, and road and bur oaks. Local occurrences of white oak, red ash, grey birch, rock elm, blue-beech, and bitternut hickory are also known. Butternut, eastern cottonwood, and slippery elm have a sporadic distribution in river valleys, and some small pure stands of black and silver maple have been reported on fertile, fine-textured lowland soils. Poorly-drained depressions frequently carry a hardwood swamp type in which black ash is prominent (Rowe 1972:94). The area would have been cleared of its original forest cover with the intensification of Euro-Canadian settlement and extensive logging in the early nineteenth century.

5.0 SUMMARY OF THE STAGE 1 ARCHAEOLOGICAL ASSESSMENT

This section of the report includes a summary of the archaeological potential determination within the study area as presented in the Stage 1 report (Past Recovery 2022).

5.1 Property Inspection

Past Recovery completed an optional site inspection as part of the Stage 1 assessment on September 14th, 2022, which documented the property conditions at the time.

5.2 Evaluation of Archaeological Potential

The Stage 1 assessment determined that most of the current study area retained archaeological potential given the proximity of water sources, wetlands, a post-glacial beach ridge, well-drained and/or elevated soils, as well as early Euro-Canadian settlement and historical transportation corridors. The site visit in conjunction with the examination of historical maps and twentieth century aerial photographs, however, permitted the identification of areas which are permanently low-lying and wet, having low archaeological potential. The archaeological potential within the Stage 2 study area has been reproduced as Map 4.

5.3 Stage 1 Recommendations

The results of the Stage 1 background research indicated that the Stage 2 study area retained potential for the presence of significant archaeological resources. Accordingly, it was recommended that:

1) All portions of the study area determined to have archaeological potential should be subject to a Stage 2 archaeological assessment prior to any proposed development that would result in below grade soil disturbance or other alterations (e.g. the addition of fill deposits).

2) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MCM 2011). In so far as the subject property consists of a combination of cultivated fields, pasture lands, and wooded terrain, a combination of pedestrian survey and shovel test pit survey at 5 m intervals would be required as outlined in Sections 2.1.1 and 2.1.2 of *Standards and Guidelines for Consultant Archaeologists* (MCM 2011).

6.0 STAGE 2 ARCHAEOLOGICAL ASSESSMENT

This section of the report describes the methodology used and results of the Stage 2 property survey conducted to determine whether the subject property contains significant archaeological resources.

6.1 Field Methods

The Stage 2 archaeological fieldwork was completed on June 6th, 2023, by a field crew of five people consisting of a licensed field director and four field technicians. Fieldwork was conducted according to archaeological fieldwork standards outlined in *Standards and Guidelines for Consultant Archaeologists* (MCM 2011). Weather conditions were hazy with a high of 20 degrees C. These conditions still permitted adequate to excellent visibility for the identification, documentation, and, where appropriate, recovery of archaeological resources.

In order to ensure full coverage during the Stage 2 property survey, the Past Recovery field crew used 'Mapit Pro' GIS software on a tablet loaded with detailed satellite imagery overlain with the study area. This digital mapping interface, along with a high accuracy, GIS-mapping-grade Global Navigation Satellite System (GNSS) receiver, allowed the field crew to accurately delimit the study area in relation to their 'real time' position and record features of interest. The GNSS unit employed for this purpose was a Trimble Catalyst DA1 antennae connected to a Samsung tablet running Trimble Mobile Manager software and receiving Trimble RTX corrections. While in use, the receiver reported accuracies within the range of plus or minus 2 m.

The study area was comprised of a woodlot and regenerating former field, as well as a hydro corridor. As such the Stage 2 archaeological assessment consisted of a shovel test pit survey at 5 m intervals (Images 1 to 3; Map 5). Survey intervals were maintained wherever possible in order to visually assess all portions of the property and ensure that all areas of archaeological potential were identified and tested. Obviously disturbed or low-lying and wet portions of the subject property were visually surveyed but not tested. Seasonally wet areas were judgmentally tested in order to confirm saturated soils. Survey coverage and field conditions pertaining to refinements of the archaeological potential determination as the assessment progressed were digitally recorded on project mapping and estimates of survey coverage are provided in Table 1.

Thus apart from where indicated, test pit survey was completed at 5 m intervals using shovels and trowels, with back-dirt screened through 6 mm hardware mesh. Shovel test pits were at least 30 cm in diameter and excavation continued for 5 cm into sterile subsoil. All pits were examined for soil stratigraphy, cultural features, and/or evidence of deep and intensive disturbance. Sample test pits were documented with digital photographs and field notes, with soil layers within test pits being assigned lot numbers in order of

Table 1. Estimates of Survey Coverage during the Stage 2 Assessment.

Landscape Unit	Survey Method & Interval Used	Area Covered	Percentage of Study Area
Open grassland/scrub, mixed wood forest	Shovel test pit survey at 5 m intervals	2.67 hectares/ 6.62 acres	66.33%
Seasonally wet soils	Shovel test pit survey at judgemental intervals	1.12 hectares/ 2.78 acres	27.86%
Low lying and wet	Not tested	0.23 hectares/ 0.58 acres	5.81%

appearance. Testing was continued to within 1 m of built structures. Once all required recording had been completed, all test pits were backfilled. As no archaeological resources were found, no test pit intensification was undertaken.

Field activities were recorded through field notes, digital photographs, and digital mapping. A catalogue of the material generated during the Stage 2 property survey is included below in Table 2. The complete photographic catalogue is included as Appendix 1, and the locations and orientations of all photographs referenced in this section of the report are shown on Map 5. As per *Terms and Conditions for Archaeological Licenses in Ontario*, curation of all photographs and field notes generated during the Stage 2 archaeological assessment is being provided by Past Recovery pending the identification of a suitable repository.

Table 2. Inventory of the Stage 2 Documentary Record.

Type of Document	Description	Number of Records	Location
Photographs	Digital photographs documenting the Stage 2 fieldwork	30 photographs	On Past Recovery computer network – file PR23-011
Mapping data	Shapefiles (*.shp)	7 files	On Past Recovery computer network – file PR23-011
Field Notes	Scanned and digital notes on the Stage 2 fieldwork; test pit forms	1 page (1 *.pdf file)	On Past Recovery computer network – file PR23-011

6.2 Fieldwork Results

Within the proposed severance portion of the property, the study area consisted of a small regenerating former agricultural field along the northern extent next to Piperville Road (see Image 1), merging into a large woodlot further to the south. The terrain sloped down towards the south and consisted of increasingly water saturated soils (Image 4).

As such, the southern portion of the wooded area was judgementally tested in order to avoid the seasonally wet and increasingly wetland vegetated areas. The soil stratigraphy within the former field consisted of c. 20 cm to 30 cm of brown to light brown sandy loam over orange-brown sand subsoil (Image 5). Within the wooded area the soil stratigraphy was shallower, consisting of approximately 10 cm of brown sandy loam topsoil over orange-brown sand subsoil with pockets of grey clay reflective of the damper conditions (Image 6).

The hydro corridor contained a small permanently saturated gully with an intermittent creek draining into the seasonally wet wooded area (Image 7). This depression was situated approximately halfway along the corridor, with the land to the north containing a hydro tower and semi-maintained scrub (see Image 2) and that to the south being mostly open with small patches of trees (see Image 3). There was a small wooded area at the south end of the corridor and along the western side south of the gully, which included a deep drainage ditch separating the open area from the seasonally wet wooded area, connecting to the gully (Images 8 and 9). Soils within the hydro corridor were very mixed, particularly to the south of the gully, as result of tree-clearing activities, etc. within the corridor. One sample test pit contained 15 cm of light brown sand topsoil over grey clay subsoil (Image 10), but there were varying degrees of compaction and sand, loam and clay content, with intermittent pockets of more natural dark brown sandy loam topsoil. The strip of coniferous trees along the southwestern edge of the study area contained natural soils, consisting of 5 cm to 10 cm of light brown sand loam topsoil over orange brown sand subsoil (Image 11).

6.3 Record of Finds

No archaeological resources of cultural heritage value or interest were found during the Stage 2 survey.

6.4 Analysis and Conclusions

The Stage 2 archaeological assessment consisted of a shovel test-pit survey at 5 m intervals across all portions of the study area determined to exhibit archaeological potential; the remaining areas were either judgmentally tested as being seasonally wet or not tested as being low and permanently wet (see Map 5). As mentioned above, no archaeological resources were found over the course of this assessment.

6.5 Stage 2 Recommendations

On the basis of the results of the Stage 2 property survey discussed above, this report concludes with the following recommendations:

1) As the Stage 2 property survey did not result in the identification of any archaeological resources requiring further assessment or mitigation of impacts, no

further archaeological assessment of the study area as defined on Map 2 is required.

2) In the event that future planning results in the identification of additional areas of impact beyond the limits of the present study area, further Stage 2 archaeological assessment may be required. It should be noted that impacts include all aspects of the proposed development causing soil disturbances or other alterations, including additional temporary property needs (i.e. access roads, staging/lay down areas, associated works etc.).

3) Any future Stage 2 archaeological assessment should be undertaken by a licensed consultant archaeologist, in compliance with *Standards and Guidelines for Consultant Archaeologists* (MCM 2011).

The reader is also referred to Section 7.0 below to ensure compliance with relevant provincial legislation and regulations as may relate to this project. In the event that any artifacts of Indigenous interest or human remains are encountered during the development of the subject property, in addition to following the *Advice on Compliance with Legislation* (see Section 7.0), the Indigenous communities listed below should be contacted:

a. Algonquins of Ontario
b. Algonquins of Pikwakanagan
c. Kitigan Zibi Anishinabeg

Contact information for the above communities can be found in the Supplementary Document entitled "*Indigenous Community Contacts.*"

7.0 ADVICE ON COMPLIANCE WITH LEGISLATION

In order to ensure compliance with relevant Provincial legislation as it may relate to this project, the reader is advised of the following:

1) This report is submitted to the Ministry of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

2) It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

3) Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.

4) The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Public and Business Service Delivery.

5) Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

8.0 LIMITATIONS AND CLOSURE

Past Recovery Archaeological Services Inc. has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made.

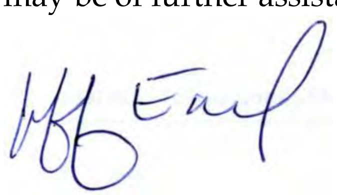
This report has been prepared for the specific site, design objective, developments and purpose prescribed in the client proposal and subsequent agreed upon changes to the contract. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the client in the design of the specific project.

Special risks occur whenever archaeological investigations are applied to identify subsurface conditions and even a comprehensive investigation, sample and testing program may fail to detect all or certain archaeological resources. The sampling strategies in this study comply with those identified in the Ministry of Citizenship and Multiculturalism's *Standards and Guidelines for Consultant Archaeologists* (2011).

The documentation related to this archaeological assessment will be curated by Past Recovery Archaeological Services Inc. until such a time that arrangements for their ultimate transfer to an approved and suitable repository can be made to the satisfaction of the project owner(s), the Ontario Ministry of Citizenship and Multiculturalism and any other legitimate interest group.

We trust that this report meets your current needs. If you have any questions or if we may be of further assistance, please do not hesitate to contact the undersigned.



Jeff Earl, M.Soc.Sc.
Principal
Past Recovery Archaeological Services Inc.

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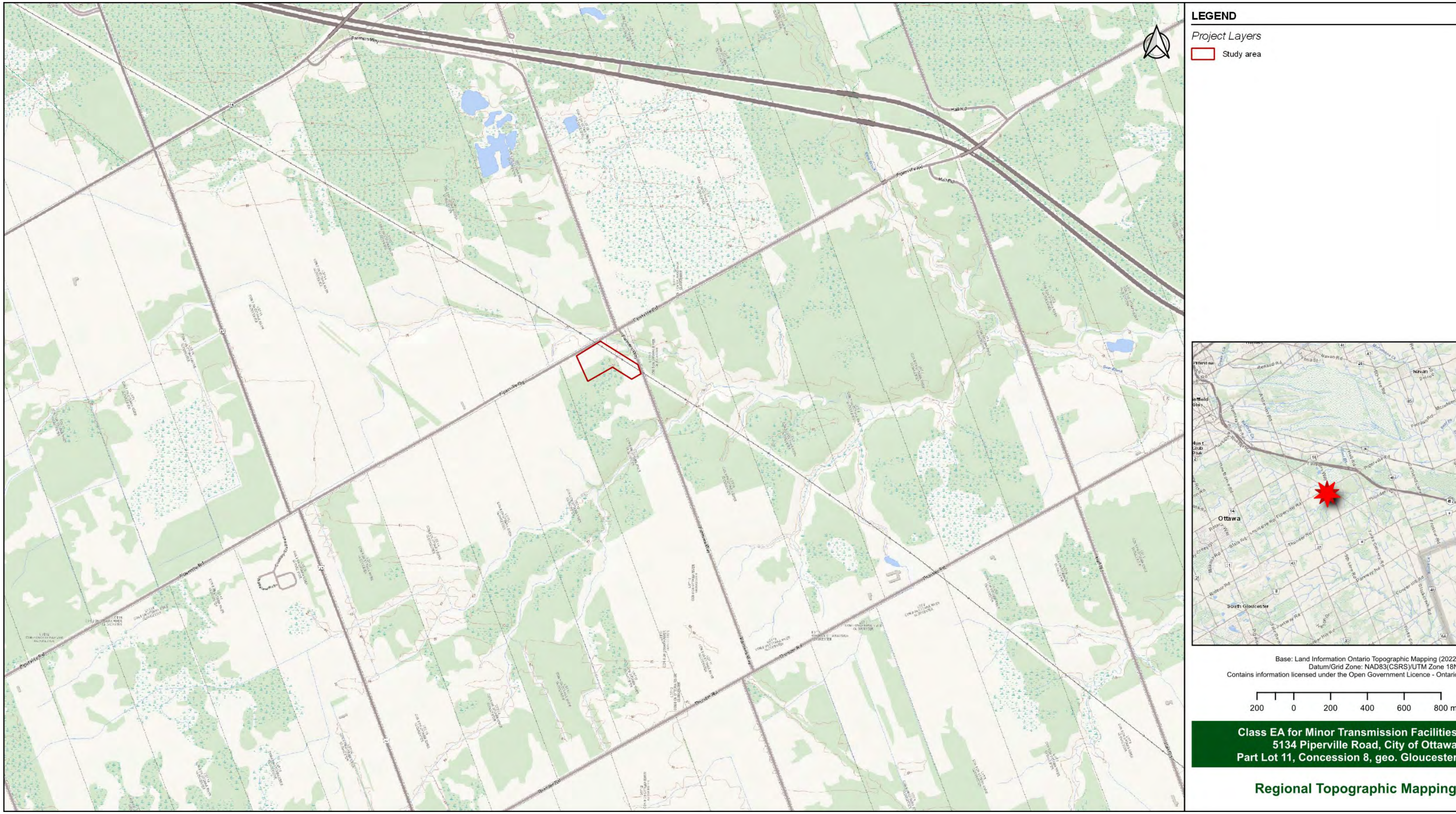
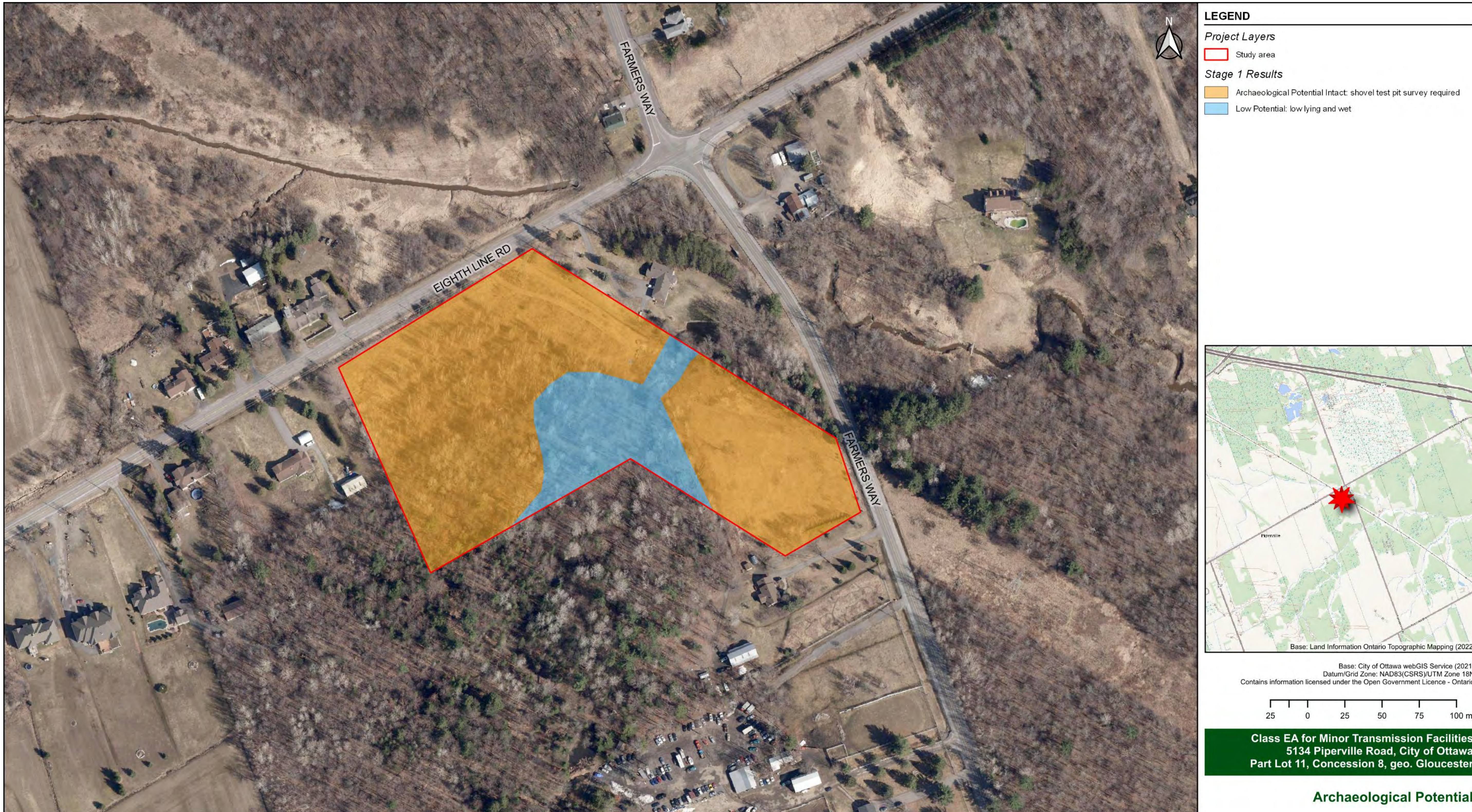
10.0 MAPS



Map 1. Location of the study area.

Map 2. Recent (2021) orthographic imagery showing the study area.

Map 3. Property sketch showing the study area outlined in red. (Courtesy of EXP Services Inc.) Both the proposed severance and the Hydro One transmission property are part of the Stage 2 study area.



Map 4. Recent (2021) orthographic imagery showing areas of archaeological potential within the study area.

Map 5. Recent (2019) orthographic imagery showing the Stage 2 field methods and results as well as field photograph locations, directions, and image numbers.

11.0 IMAGES

Image 1. View of field crew completing shovel test pit survey at 5 m intervals along the northern edge of the study area, looking northwest. (PR23-011D001)

Image 2. View of field crew completing shovel test pit survey at 5 m intervals within the hydro corridor north of the deep gully, looking north. (PR23-011D018)

Image 3. View of field crew completing shovel test pit survey at 5 m intervals in open area at the southeastern edge of the study area, looking north. (PR23-011D027)

Image 4. View of saturated soils in the section of the woodlot judgementally tested, looking southeast. (PR23-011D016)

Image 5. Sample test pit in the overgrown field in the northwestern corner of the study area showing natural soil stratigraphy, looking north. (PR23-011D003)

Image 6. Sample test pit in the woodlot within the proposed severance showing natural soil stratigraphy, looking east. (PR23-011D011)

Image 7. View of the permanently wet gully crossing the hydro corridor, looking northeast. (PR23-011D020)

Image 8. View of the drainage ditch in the southern section of the study area, looking northwest. (PR23-011D028)

Image 9. View of the drainage ditch in the southern section of the study area illustrating the steep slope, looking south. (PR23-011D029)

Image 10. Sample test pit within the hydro corridor in the open area south of the gully showing mixed soils over clay, looking southwest. (PR23-011D022)

Image 11. Sample test pit in the line of coniferous trees along the southeastern edge of the study area showing natural soils, looking north. (PR23-011D025)

APPENDIX 1: Photographic Catalogue

Camera: Samsung SM-T397U

Catalogue No.	Description	Dir.
PR23-011D001	View of field crew testing along the edge of the woodlot at 5 m intervals	NW
PR23-011D002	View of field crew testing woodlot at 5 m intervals	SW
PR23-011D003	Test pit dug in open area of the western portion of the study area showing natural soil profiles	N
PR23-011D004	Test pit dug in open area of the western portion of the study area showing natural soil profiles	N
PR23-011D005	Test pit dug in open area of the western portion of the study area showing deeper soil profiles	N
PR23-011D006	Test pit dug in open area of the western portion of the study area showing deeper soil profiles	N
PR23-011D007	View of field crew testing the open area at 5 m intervals	SW
PR23-011D008	View of field crew testing forested section of the study area at 5 m intervals	SW
PR23-011D009	View of field crew testing sandy rise within the woodlot	SW
PR23-011D010	View of low area surrounding sandy hump in the middle of the study area	SW
PR23-011D011	Test pit dug in wooded area showing natural soil profiles	NW
PR23-011D012	View of deadfall in seasonally wet low area within the woodlot	SE
PR23-011D013	View of seasonal wetland within the woodlot	NE
PR23-011D014	View of crew judgmentally testing wooded area with seasonal wetlands	NE
PR23-011D015	View of low and wet area which was judgmentally tested	E
PR23-011D016	View of low and wet area which was judgmentally tested	E
PR23-011D017	View of field crew testing at 5 m intervals along the hydro corridor	NE
PR23-011D018	View of field crew testing at 5 m intervals just north of gully along hydro corridor	N
PR23-011D019	View of low and wet gully within study area	E
PR23-011D020	View of low and wet gully within study area	NE
PR23-011D021	Test pit dug on the south side of the gully showing wetland soils	SE
PR23-011D022	Test pit dug on the south side of the gully showing wetland soils	SE
PR23-011D023	View of field crew testing open area at 5 m intervals	SW
PR23-011D024	View of field crew testing open area at 5 m intervals	SW
PR23-011D025	Test pit dug in strip of conifers along southwestern edge of the study area showing natural soils	N
PR23-011D026	Test pit dug in strip of conifers along southwestern edge of the study area showing natural soils	N
PR23-011D027	View of field crew testing south side of the study area at 5 m intervals	N
PR23-011D028	View of ditch along the edge of the open field	NW
PR23-011D029	View of ditch along the edge of the open field	S
PR23-011D030	View of ditch along the edge of the open field	S

APPENDIX 2: Glossary of Archaeological Terms

Archaeology:
The study of human past, both prehistoric and historic, by excavation of cultural material.

Archaeological Sites:
The physical remains of any building, structure, cultural feature, object, human event or activity which, because of the passage of time, are on or below the surface of the land or water.

Archaic:
A term used by archaeologists to designate a distinctive cultural period dating between 8000 and 1000 B.C. in eastern North America. The period is divided into Early (8000 to 6000 B.C.), Middle (6000 to 2500 B.C.) and Late (2500 to 1000 B.C.). It is characterized by hunting, gathering and fishing.

Artifact:
An object manufactured, modified or used by humans.

B.P.:
Before Present. Often used for archaeological dates instead of B.C. or A.D. Present is taken to be 1951, the date from which radiocarbon assays are calculated.

Backdirt:
The soil excavated from an archaeological site. It is usually removed by shovel or trowel and then screened to ensure maximum recovery of artifacts.

Chert:
A type of silica rich stone often used for making chipped stone tools. A number of chert sources are known from southern Ontario. These sources include outcrops and nodules.

Contact Period:
The period of initial contact between Indigenous and European populations. In Ontario, this generally corresponds to the seventeenth and eighteen centuries depending on the specific area.

Cultural Resource / Heritage Resource:
Any resource (archaeological, historical, architectural, artifactual, archival) that pertains to the development of our cultural past.

Cultural Heritage Landscapes:
Cultural heritage landscapes are groups of features made by people. The arrangement of features illustrate noteworthy relationships between people and their surrounding environment. They can provide information necessary to preserve, interpret or reinforce the understanding of important historical settings and changes to past patterns of land use. Cultural landscapes include neighbourhoods, townscapes and farmscapes.

Diagnostic:
An artifact, decorative technique or feature that is distinctive of a particular culture or time period.

Disturbed:
In an archaeological context, this term is used when the cultural deposit of a certain time period has been intruded upon by a later occupation.

Excavation:
The uncovering or extraction of cultural remains by digging.

Feature:
This term is used to designate modifications to the physical environment by human activity. Archaeological features include the remains of buildings or walls, storage pits, hearths, post moulds and artifact concentrations.

Flake:
A thin piece of stone (usually chert, chalcedony, etc.) detached during the manufacture of a chipped stone tool. A flake can also be modified into another artifact form such as a scraper.

Fluted:
A lanceolate shaped projectile point with a central channel extending from the base approximately one third of the way up the blade. One of the most diagnostic Palaeo-Indigenous artifacts.

Historic:
Period of written history. In Ontario, the historic period begins with European settlement.

Lithic:
Stone. Lithic artifacts would include projectile points, scrapers, ground stone adzes, gun flints, etc.

Lot:
The smallest provenience designation used to locate an artifact or feature.

Midden:
An archaeological term for a garbage dump.

Mitigation:
To reduce the severity of development impact on an archaeological or other heritage resource through preservation or excavation. The process for minimizing the adverse impacts of an undertaking on identified cultural heritage resources within an affected area of a development project.

Multicomponent:
An archaeological site which has seen repeated occupation over a period of time. Ideally, each occupation layer is separated by a sterile soil deposit that accumulated during a period when the site was not occupied. In other cases, later occupations will be directly on top of earlier ones or will even intrude upon them.

Operation:
The primary division of an archaeological site serving as part of the provenience system. The operation usually represents a culturally or geographically significant unit within the site area.

Palaeo-Indigenous:
The earliest human occupation of Ontario designated by archaeologists. The period dates between 9000 and 8000 B.C. and is characterized by small mobile groups of hunter-gatherers.

Pre-Contact:
Before written history. In Ontario, this term is used for the period of Indigenous occupation up until the first contact with European groups.

Profile:
The profile is the soil stratigraphy that shows up in the cross-section of an archaeological excavation. Profiles are important in understanding the relationship between different occupations of a site.

Projectile Point:
A point used to tip a projectile such as an arrow, spear or harpoon. Projectile points may be made of stone (either chipped or ground), bone, ivory, antler or metal.

Provenience:
Place of origin. In archaeology this refers to the location where an artifact or feature was found. This may be a general location or a very specific horizontal and vertical point.

Salvage:
To rescue an archaeological site or heritage resource from development impact through excavation or recording.

Stratigraphy:
The sequence of layers in an archaeological site. The stratigraphy usually includes natural soil deposits and cultural deposits.

Sub-operation:
A division of an operation unit in the provenience system.

Survey:
To examine the extent and nature of a potential site area. Survey may include surface examination of ploughed or eroded areas and sub-surface testing.

Test Pit:
A small pit, usually excavated by hand, used to determine the stratigraphy and presence of cultural material. Test pits are often used to survey a property and are usually spaced on a grid system.

Woodland:
The most recent major division in the prehistoric sequence of Ontario. The Woodland period dates from 1000 B.C. to A.D. 1550. The period is characterized by the introduction of ceramics and the beginning of agriculture in southern Ontario. The period is further divided into Early (1000 B.C. to A.D. 0), Middle (A.D. 0 to A.D. 900) and Late (A.D. 900 to A.D.1550).

C2 – Phase 1 Environmental Site Assessment (ESA)

Phase One Environmental Site Assessment

New Municipal Transformer Station – Piperville Road, Ottawa, Ontario

Client:
Hydro Ottawa

Type of Document:
Draft

Project Name:
Phase One Environmental Site Assessment

Project Number:
OTT-22017543-A0

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Executive Summary

EXP Services Inc. (EXP) was retained by Hydro Ottawa to complete a Phase One Environmental Site Assessment (ESA) to support a Class Environmental Assessment (EA) for a proposed municipal transformer station (MTS) in the east end of Ottawa. The Phase One property consists of the area along the existing Hydro One – L24A Transmission Line corridor between Highway 417 to the north and Thunder Road to the south, and part of the residential property located at 5134 Piperville Road.

A Phase One ESA is a systematic qualitative process to assess the environmental condition of a site based on its historical and current uses. This Phase One ESA was conducted in accordance with the Phase One ESA standard as defined by Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 9 of this report.

The Phase One ESA is intended to support the to support a Class EA for Hydro Ottawa Limited (Hydro Ottawa) and Hydro One Networks Inc. (Hydro One) for the construction of a new MTS station in the east end of Ottawa. The purpose of this Phase One ESA is to determine if past or present site activities have resulted in actual or potential contamination at the Phase One property

The Phase One property consists of a linear section of property along the existing Hydro One – L24A Transmission Line corridor approximately between Highway 417 to the north and Thunder Road to the south, and a part of the residential property at 5134 Piperville Road.

The Phase One property is linear, with an approximate total length of 5.8 km. The Phase One property is located in primarily an agricultural and undeveloped area, with some residential development along Thunder Road, Piperville Road, Leitrim Road, and Farmers Way. A golf course is located at the north end of the site. At the time of the investigation, the site was in use as a hydro corridor. There were fourteen hydro transmission towers on the Phase One property.

The Phase One property consists of privately owned lands where Hydro One has transmission rights through an easement.

Based on a review of historical aerial photographs, historical maps, and other records, it appears that the Phase One property was developed as a hydro transmission corridor between circa 1957.

The topography of the site varies significantly along the hydro corridor, particularly in the vicinity of the creeks that cross the site.

The Smith Gooding Municipal Drain crosses the Phase One property approximately 70 m north of Piperville Road. The municipal drain flows southeast to an unnamed tributary of Bearbrook Creek. Four branches of an unnamed tributary to Bearbrook Creek traverse the Phase One property between Farmers Way and Thunder Road. Bearbrook Creek is located approximately 1.3 km east of the south part of the Phase One property. Ramsay Creek is located approximately 0.8 km west of the north part of the Phase One property. The Phase One property to the north of Leitrim Road is located in the Greenbelt.

Based on aerial photographs and the topography of the Phase One study area, it is not anticipated that significant quantities of fill material are present on the Phase One property.

No PCAs were identified on the Phase One property.

The following PCAs were identified in the Phase One study area:

- PCA #40 – Pesticides (including herbicides, fungicides, and anti-fouling agents) manufacturing, processing, bulk storage and large-scale applications

It is likely that pesticide application has occurred adjacent to the Phase One property in the vicinity of the golf course. However, as application of pesticides is focused on the greens and fairways, which are not located on the Phase One property, the potential for pesticide application at the golf course to have impacted the Phase One property is considered low.

No areas of potential environmental concern were identified for the Phase One property. As a result, no additional investigative work is considered necessary at this time.

If excess soils are to be generated during site development, studies compliant with *Ontario Regulation 406/19 (as amended) On-Site and Excess Soil Management* should be completed.

This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety.

1.0 Introduction

EXP Services Inc. (EXP) was retained by Hydro Ottawa to complete a Phase One Environmental Site Assessment (ESA) to support a Class Environmental Assessment (EA) for a proposed municipal transformer station (MTS) in the east end of Ottawa. The Phase One property consists of the area along the existing Hydro One – L24A Transmission Line corridor approximately between Highway 417 to the north and Thunder Road to the south, and part of the residential property located at 5134 Piperville Road.

A Phase One ESA is a systematic qualitative process to assess the environmental condition of a site based on its historical and current uses. This Phase One ESA was conducted in accordance with the Phase One ESA standard as defined by Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 9 of this report.

Please note that general environmental management and housekeeping practices were reviewed as part of this assessment insofar as they could impact the environmental condition of the property, however, a detailed review of regulatory compliance issues was beyond the scope of our investigation. This Phase One ESA does not constitute an audit of environmental management practices, indicate geotechnical conditions or identify geologic hazards.

1.1 Objective

The Phase One ESA is intended to support the to support a Class EA for Hydro Ottawa Limited (Hydro Ottawa) and Hydro One Networks Inc. (Hydro One) for the construction of a new MTS station in the east end of Ottawa. The purpose of this Phase One ESA is to determine if past or present site activities have resulted in actual or potential contamination at the Phase One property.

EXP personnel who conducted assessment work for this project included Leah Wells, P.Eng., and Chris Kimmerly, P.Geo. An outline of their qualifications is provided in Appendix A.

1.2 Phase One Property Information

The Phase One property consists of a linear section of property along the existing Hydro One – L24A Transmission Line corridor approximately between Highway 417 to the north and Thunder Road to the south, and a part of the residential property at 5134 Piperville Road as shown on Figure 1 in Appendix A.

The Phase One property is linear, with an approximate total length of 5.8 km. The Phase One property is located in primarily an agricultural and undeveloped area, with some residential development along Thunder Road, Piperville Road, Leitrim Road, and Farmers Way. A golf course is located at the north end of the site. At the time of the investigation, the site was in use as a hydro corridor. There were fourteen hydro transmission towers on the Phase One property.

The Phase One property consists of privately owned lands where Hydro One has transmission rights through an easement. Information pertaining to the property parcels that comprise the Phase One property is summarized in the following table:

Municipal Address	PIN	Legal Description	Current Owner	Approximate Area of Phase One property	Comments
5361 Thunder Road	043240026	PT LT 8 CON 8OF GLOUCESTER AS IN N569211 EXCEPT GL78591; S/T DEBTS IN N569211; S/T GL58636, N429574 GLOUCESTER	Individual Owner	2.1 hectares	One transmission tower is present on the Phase One property. Outside of the Phase One property, the property consists mostly of undeveloped woodlot. One unnamed tributary to Bearbrook Creek crosses the Phase One property.
5401 Thunder Road	043240028	PT LT 8, CON 8, O.F., GLOUCESTER, PTS 1 & 2, 5R13479. S/T GL58636, N429574. CITY OF OTTAWA	Individual Owner	0.2 hectares	Outside of the Phase One property, the property is developed with a residence.
5309 Thunder Road	043240006	PT LT 9 CON 8OF GLOUCESTER AS IN CT166196; S/T GL58067, N442806 GLOUCESTER	Algonquins of Ontario Realty Corp.	2.6 hectares	Two transmission towers are present on the Phase One property. Outside of the Phase One property, the property consists mostly of undeveloped woodlot. One unnamed tributary to Bearbrook Creek crosses the Phase One property.
5262 Piperville Road	043240004	PT LT 8 CON 8OF GLOUCESTER; PT LT 9 CON 8OF GLOUCESTER; PT LT 10 CON 8OF GLOUCESTER AS IN CT165740 & CT165747; S/T GL58256, N442806 GLOUCESTER	Algonquins of Ontario Realty Corp.	2.2 hectares	One transmission tower is present on the Phase One property. Outside of the Phase One Property, the property consists mainly of undeveloped land. Two unnamed tributaries to Bearbrook Creek cross the Phase One property.
5220 Piperville Road	043240364	PART OF LOT 10, CONCESSION 8, O.F. BEING PARTS 1, 2 AND 3 ON 5R4906, EXCEPT PART 1, 4R9361, PART 1, 5R13660, PARTS 1 AND 2 ON 4R15445, PT 1 ON 4R27111, & PARTS 1 & 2 PLAN 4R29970 OTTAWA. S/T GL58257, N429575. SUBJECT TO AN EASEMENT IN GROSS OVER PART 4 ON PLAN 4R-34215 AS IN OC2477740	Individual Owner	1.4 hectares	One transmission tower is present on the Phase One property. Outside of the Phase One property, the property consists mostly of undeveloped woodlot.
Farmers Way ROW					
5134 Piperville Road	043250218	PT LT 11 CON 8OF GLOUCESTER PTS 1 & 2, 5R10011, EXCEPT PTS 18 & 19, 5R11346; GLOUCESTER	Individual Owner	1.2 hectares	The east part of the property consists of the proposed severance for the MTS. Outside the Phase One property, the property is occupied by a residence.

Municipal Address	PIN	Legal Description	Current Owner	Approximate Area of Phase One property	Comments
Part 5134	043250219	PT LT 11 CON 8OF GLOUCESTER PTS 18 & 19, 5R11346; S/T INTEREST IN N463916; S/T GL58258, N429576 GLOUCESTER	Ontario Hydro	2.4 hectares	One transmission tower is present, the remainder of the property is undeveloped.
Pipersville Road ROW					
4468 Farmers Way	043460006	PT LT 11 CON 7OF GLOUCESTER; PT LT 12 CON 7OF GLOUCESTER; PT LT 13 CON 7OF GLOUCESTER AS IN CT165741, CT166131, CT167497, CT168031, CT168336, CT168646 EXCEPT PTS 1,2 & 3, 4R10462; S/T GL58250, GL58251, GL58252, GL58422, N442806 GLOUCESTER	Algonquins of Ontario Realty Corp.	9.8 hectares	Four transmission towers are present on the Phase One property. The Smith Gooding Municipal drain crosses the Phase One property. The property north of the Phase One property consists of woodlot, the property to the south of the Phase One property is residential.
4175 Anderson Road	043460184	PART LOTS 14 & 15 CONCESSION 7 GLOUCESTER (OTTAWA FRONT), BEING PART 4 ON 4R-10462, SAVE & EXCEPT PARTS 1 & 2 ON 4R-20893 & PARTS 1 & 2 ON 4R-30050 SUBJECT TO AN EASEMENT AS IN GL58253 SUBJECT TO AN EASEMENT OVER PART 3 ON 5R-4298 IN FAVOUR OF THE REGIONAL MUNCIPALITY OF OTTAWA-CARLETON AS IN NS191638 SUBJECT TO AN EASEMENT OVER PARTS 8 & 9 ON 5R-11346 IN FAVOUR OF ONTARIO HYDRO AS IN N442806 SUBJECT TO AN EASEMENT OVER PART 1 ON 5R-3173 IN FAVOUR OF THE REGIONAL MUNCIPALITY OF OTTAWA-CARLETON AS IN NS28025 TOGETHER WITH AN EASEMENT OVER PART OF LOTS 14 AND 15, CONCESSION 7, DESIGNATED AS PART 5 ON PLAN 4R-10462, SAVE AND EXCEPT PARTS 3 TO 7 ON PLAN 4R-20893 AS IN OC2190423 CITY OF OTTAWA	Anderson Turf Farms Limited	2.6 hectares	One transmission tower is present on the Phase One property. The property is occupied by a golf course. Several cart paths cross the Phase One property.

Municipal Address	PIN	Legal Description	Current Owner	Approximate Area of Phase One property	Comments
4918 Leitrim Road	043460037	PT LT 14 CON 7 OTTAWA FRONT GLOUCESTER PTS 3 & 4, 5R1278; S/T GL58253, N429580 GLOUCESTER	Vadnais Group Inc.	0.1 hectares	Outside the Phase One property, the property is occupied by a residence.
N/A	043460040	PT LT 15 CON 7 OTTAWA FRONT GLOUCESTER PTS 2,3,4 & 5, 5R11346; S/T N647722; S/T N429581 PARTIALLY ABANDONED BY N647722; S/T GL58254 GLOUCESTER	Individual Owner	0.3 hectares	Outside the Phase One property, the property consists of undeveloped land.
3925 Anderson Road	043520520	PT LTS 13, 14 & 15, CON 6 OF, PARTS 51 TO 55, 5R4140; S/T GL58255, N662202 GLOUCESTER	National Capital Commission	1.9	Two transmission towers are present on the Phase One property. Outside of the Phase One property, the property consists of vacant woodlot.
Anderson Road ROW					
N/A	043480002	PT LTS 16, 17 & 18, CON 6 OF, BEING PTS 22 TO 25, & 27 TO 35, 5R4140; OTTAWA/GLOUCESTER	The Hydro Electric Power Commission of Ontario	2.0	One transmission tower is present on the Phase One property. Outside of the Phase One property, the property consists of vacant woodlot.

Authorization to proceed with this investigation was provided by Mr. Fraser Basten on behalf of the Ottawa Hydro. Contact information for Mr. Basten is 2711 Hunt Club Road, Ottawa, Ontario, K1G 5Z9.

The Phase One property site location and site layout are shown on Figures 1 and 2 in Appendix B.

2.0 Scope of Investigation

The scope of work for the Phase One ESA consisted of the following activities:

- Reviewing the historical occupancy of the Phase One property through the use of available archived and relevant municipal and business directories, fire insurance plans (FIPs), topographical maps, and aerial photographs;
- Reviewing municipal and provincial records to determine whether activities that have occurred within the Phase One study area pose a potential environmental concern to the Phase One property;
- Obtaining an EcoLog Environmental Risk Information Services Ltd. (ERIS) report for the Phase One property and surrounding properties within a 250-metre radius of the Phase One property;
- Reviewing available geological maps, well records and utility maps for the vicinity of the Phase One property;
- Obtaining a search of land title and assessment rolls for the Phase One property;
- Conducting at least one reconnaissance of the Phase One property and surrounding properties within a 250-metre radius of the Phase One property in order to identify the presence of actual and/or potential environmental contaminants or concerns of significance;
- Conducting interviews with designated representative(s) as a resource for current and historical information;
- Reviewing the current use of the Phase One property and any land use practices that may have impacted its environmental condition;
- Reviewing the current use of the surrounding properties and any land use practices that may have impacted the environmental condition of the Phase One property; and,
- Preparing a report to document the findings.

In completing the scope of work, EXP did not conduct any intrusive investigations, including sampling, analyses, or monitoring. EXP has confirmed neither the completeness nor the accuracy of any of the records that were obtained or of any of the statements made by others.

3.0 Records Review

3.1 Phase One ESA Study Area Determination

The Phase One study area comprises the Phase One property and surrounding properties wholly or partly within 250 metres of the property boundaries. The 250-metre radius was used to gain an understanding of the current and past uses of surrounding properties to determine whether such uses may have contributed to subsurface environmental impacts at the Phase One property.

According to the City of Ottawa GeoOttawa on-line mapping tool, with the exception of the parcel owned by Ontario Hydro, the Phase One property south of Piperville Road was zoned RU – Rural Use. The property at 4468 Farmers Way was also zoned RU. The golf course property was zoned O1 – Parks and Open Space. The properties along Leitrim Road (4918 Leitrim Road, and the property with no municipal address) were zoned for residential use.

The properties in the Phase One study area were either zoned O1 or residential.

The Phase One study area is shown on Figures 2 and 3 in Appendix C.

3.2 First Developed Use Determination

Based on a review of historical aerial photographs, historical maps, and other records, it appears that the Phase One property was developed as a hydro transmission corridor between circa 1957.

3.3 Fire Insurance Plans

EXP reviewed the Catalogue of Canadian Fire Insurance Plans 1875-1975. There were no fire insurance plans (FIP) for the Phase One study area.

3.4 Chain of Title

Based on the historical information available, a chain of title was not required for the Phase One. Partial chain of title information was obtained from GeoWarehouse, and is summarized in the table below:

Municipal Address	Year	Owner	Description of Property Use	Property Use
5361 Thunder Road	2012	Vilma Pitman	Developed as a hydro transmission corridor between circa 1957	Industrial
	1991	Margaret, Philip and Michael Pitman		
5401 Thunder Road	2012	Debra Gooding	Developed as a hydro transmission corridor between circa 1957	Industrial
	1996	Kevin Furlotte		
5309 Thunder Road	2020	Algonquins of Ontario Realty Corp.	Developed as a hydro transmission corridor between circa 1957	Industrial
	1973	Ontario Housing Corporation		
5262 Piperville Road	2020	Algonquins of Ontario Realty Corp.	Developed as a hydro transmission corridor between circa 1957	Industrial
	1973	Ontario Housing Corporation		
	2022	Jonathan Juteau		Industrial

Municipal Address	Year	Owner	Description of Property Use	Property Use
5220 Piperville Road	2016	Ronald and Margaret Juteau	Developed as a hydro transmission corridor between circa 1957	
5134 Piperville Road	1998	Luc and Julie Martin	Developed as a hydro transmission corridor between circa 1957	Industrial
Part 5134	1988	Ontario Hydro	Developed as a hydro transmission corridor between circa 1957	Industrial
4468 Farmers Way	2020	Algonquins of Ontario Realty Corp.	Developed as a hydro transmission corridor between circa 1957	Industrial
	1973	Ontario Housing Corporation		
4175 Anderson Road	1994	Anderson Turf Farms Limited	Developed as a hydro transmission corridor between circa 1957	Industrial
4918 Leitrim Road	2020	Vadnais Group	Developed as a hydro transmission corridor between circa 1957	Industrial
	2019	Gabrielle St. Laurent and Olivier Vadnais		
	2004	Betty Ann Warnock		
	1988	William and Heather Anderson		
N/A	2006	Nicholas and Jessica Hearty	Developed as a hydro transmission corridor between circa 1957	Industrial
	1972	Augen and Anneliesel Bednaruk		
3925 Anderson Road	1961	National Capital Commission	Developed as a hydro transmission corridor between circa 1957	Industrial
N/A	1956	The Hydro Electric Power Commission of Ontario	Developed as a hydro transmission corridor between circa 1957	Industrial

3.5 Environmental Reports

No previous environmental reports were provided for review.

3.6 Environmental Source Information

Information pertaining to the Phase One property was obtained by reviewing documents that are available to the public through municipal and provincial sources. EXP did not identify the need to contact any federal agencies.

Written responses from regulatory agencies and copies of documents obtained via searches are provided in Appendix D.

3.6.1 Ontario Ministry of the Environment, Conservation and Parks Records

Records pertaining to the site were requested from the Ministry of the Environment, Conservation and Parks (MECP) through the *Freedom of Information and Protection of Privacy Act* (FOI).

MECP requests were submitted for each of the municipal addresses that form the Phase One property. To date no response has been received. The MECP requests are included in Appendix D.

3.6.2 Historical Land Use Inventory

Records pertaining to the site were requested from the City of Ottawa for the Historical Land Use Inventory (HLUI) through the *Municipal Freedom of Information and Protection of Privacy Act* (FOI).

An unnamed waste disposal site was located approximately 500 m north of the site, on the north side of Highway 417. A gas station is shown on the HLUI map as located along Farmers Road, however the address listed in the table is for 6500 Russell Road, which is located over 3 km east of the Phase One property.

Neither of the records identified in the HLUI report were considered environmental concerns to the Phase One property.

The HLUI response is included in Appendix D.

3.6.3 Environmental Registry

On November 21, 2022, the MECP Environmental Registry website was searched for postings in the vicinity of the Phase One property. Search terms included Hydro One, Piperville Road, Farmers Way, Leitrim Road, and Anderson Road. The following records were found:

- A Permit to Take Water (PTTW) was issued in 2021 for surface water taking from the golf course pond for irrigation purposes.

This record did not represent an environmental concern to the Phase One property.

3.6.4 Environmental Access

On November 21, 2022, the MECP Environmental Access website was searched for postings within the Phase One study area. The following records were found:

- A Certificate of Approval (CA) was issued for the Anderson Road golf course for a stormwater management system servicing the golf course in 2008. The stormwater management system consisted of a series of ponds and drainage ditches throughout the property. A CA for an oil/grease separator, septic tanks, and raised leaching bed was issued in 2005.
- PTTWs were issued in 2004, 2015, and 2021 for surface water taking from the golf course for irrigation purposes.

All of the records were related to the operation of the Anderson Links Golf Course. None of the records represent an environmental concern to the Phase One property.

3.6.5 Hazardous Waste Information Network

On November 21, 2022, the MECP Hazardous Waste Information Network (HWIN) website was searched for registered waste generators within the Phase One study area. No records were found.

3.6.6 Records of Site Condition

On November 21, 2022, the MECP Brownfields Registry website was searched for postings of Records of Site Condition (RSC) within the Phase One study area. No records were found.

3.6.7 Coal Gasification Plants

Documents entitled *Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario* prepared by the MECP and *Inventory of Coal Gasification Plant Waste Sites in Ontario* prepared by Intera Technologies Ltd. were reviewed. There were no coal gasification plants identified within the Phase One study area.

3.6.8 PCB Storage Sites

Documents entitled *National Inventory of PCBs in Use and PCB Wastes in Storage in Canada*, *2003 Annual Report* prepared by Environment Canada and *Ontario Inventory of PCB Storage Sites* prepared by the MECP were reviewed. No records pertaining to PCB storage sites were identified within the Phase One study area.

3.6.9 Waste Disposal Sites

Documents entitled *Old Landfill Management Strategy, Phase 1, Identification of Sites, City of Ottawa, Ontario* prepared by Golder Associates Ltd. and *Waste Disposal Site Inventory* prepared by the MECP were reviewed. No former landfills were located in the Phase One study area.

3.6.10 City Directories

City directories were not available for the Phase One study area.

3.7 EcoLog ERIS Database Search

A search of provincial and federal databases for records pertaining to the Phase One property and properties within the Phase One study area was conducted by EcoLog ERIS. EXP has confirmed neither the completeness nor the accuracy of the records that were provided. A summary of the more significant findings is provided below. A copy of the EcoLog ERIS report is provided in Appendix E.

The following entry from the EcoLog ERIS report was reviewed and summarized below:

- The Permit to Take Ware database identified on e record the for the gold course at 4175 Anderson Road (Airport Golf land Limited).
- There were five records found in the Water Well Information System (WWIS) database for the Phase One study area. One of the well records was for irrigation water supply, two well records were for domestic water supply, and two of the records were for well abandonment.

Based on a review of the Ecolog report, no potentially contaminating activities (PCAs) were identified in the Phase One study area. None of the records represent an environmental concern to the Phase One property.

3.8 Physical Setting Sources

3.8.1 Aerial Photographs

Aerial photographs dated 1946, 1965, 1976, 1991, 1999, 2005, 2019, and 2021 were available for review on the City of Ottawa website. Aerial photographs dated prior to 1946 were not available for review. The following table summarizes the development and land use history of the Phase One property and adjacent properties as depicted on the reviewed aerial photographs. Copies of the aerial photographs are provided in Appendix F.

Year	Details
1946	The Phase One study area mostly consists of agricultural and undeveloped land. The hydro corridor does not appear to be present on the Phase One property. Leitrim Road, Piperville Road, Farmers Way, and Thunder Road are present. The property at 5134 Piperville Road is vacant, and the south part of the site is wooded.
1965	The aerial photographs from 1965 do not show the Phase One property or study area south of Piperville Road. The transmission towers are not visible in the aerial photo; however, it is assumed they are present as the hydro corridor

Year	Details
	is visible on the north part of the Phase One property. The Phase One study area appears similar to the 1946 aerial photograph.
1976	The entirety of the Phase One property and study area are shown the in the 1976 aerial photograph. The Phase One property appears similar to the 1965 aerial photo. The study area consists primarily of undeveloped and agricultural land. Highway 417 has bee constructed to the north of the Phase One property.
1991	The residence at 5134 Piperville Road, west adjacent to the Phase One property, has been constructed. Some additional residential development has occurred along Thunder Road, Piperville Road, and Leitrim Road. The reminder of the Phase One study area appears similar to the 1976 aerial photograph.
1999	The Phase One property and study area appear similar to the 1991 aerial photograph.
2005	The golf course is under construction at 4175 Anderson Road. The Phase One property and study area appear similar to the 1999 aerial photograph.
2019	The Phase One property and study area appear similar to the 2005 aerial photograph.
2021	The Phase One property and study area appear similar to the 2019 aerial photograph.

Based on the review of the aerial photographs, no PCAs were identified in the Phase One study area.

3.8.2 Topography, Hydrology, Geology

The following information sources were reviewed to determine the nature of the subsurface materials at the site:

- Map 1506A, Surficial Geology, Ottawa- Hull. Scale 1:50,000. 1982;
- Map 1508A, Generalized Bedrock Geology, Ottawa- Hull. Scale 1:125,000. 1980; and,
- MECP Water Well Records.

Review of the background mapping information suggests that on a regional scale the study area is underlain by Pleistocene overburden sediments comprised of sand, gravelly sand and gravel deposited as nearshore and beach deposits on the east side of the Phase One study area, and silt and clay deposited under quiet water basin environment on the west side of the Phase One study area. The overburden deposit forms a thin veneer over the bedrock in the area. This thin veneer of Pleistocene overburden material is underlain by the Paleozoic shale and limestone of Georgian Bay formation bedrock.

The topography of the site varies significantly along the hydro corridor, particularly in the vicinity of the creeks that cross the site.

3.8.3 Fill Materials

Based on aerial photographs and the topography of the Phase One property and study area it is not anticipated that significant quantities of fill material are present on the Phase One property.

3.8.4 Water Bodies and Areas of Natural Significance

The Smith Gooding Municipal Drain cross the Phase One property approximately 70m north of Piperville Road. The municipal drain flows southeast to an unnamed tributary of Bearbrook Creek. Four branches of an unnamed tributary to Bearbrook Creek traverse the Phase One property between Farmers Way and Thunder Road.

Bearbrook Creek is located approximately 1.3 km east of the south part of the Phase One property. Ramsay Creek is located approximately 0.8 km west of the north part of the Phase One property.

There are no Area of Natural Significance (ANSI) within the Phase One study area, according to the Ministry of Natural Resources and Forestry Natural Heritage website (www.gisapplication.lrc.gov.on.ca/mamnh/Index.html).

The Phase One property to the north of Leitrim Road is located in the Greenbelt.

3.8.5 Well Records

The Ontario well records website (https://www.ontario.ca/page/map-well-records) was accessed. There were five well records identified within the Phase One study area. All of the records were for water supply wells. Two of the records were domestic supply ones, one record was for an irrigation supply well, and two records were for well abandonment. Well records indicate that surficial geology in the Phase One study area generally consist of silty clay. Shale bedrock was encountered approximately 30 m bgs.

There are no oil, gas, or salt wells within the Phase One study area, according to the Oil, Gas & Salt Resources Library (maps.ogsrlibrary.com/wells/).

3.9 Site Operating Records

No site operating records were available for review.

3.10 Summary of Records Review

Based on a review of the available records, no PCAs resulting in areas of potential environmental concerns (APECs) were identified in the Phase One study area.

4.0 Interviews

Interviews were conducted by EXP with the individuals identified to be the most knowledgeable about both the current and historical Phase One property uses. The purpose of interviews is to obtain information to assist in identifying areas of potential environmental concern and identify details of potentially contaminating activities or potential contaminant pathways, in, on or below the Phase One property.

A request for information regarding the Phase One property was made to Hydro One Networks Inc. (HONI). HONI representatives provided the following information:

- The in-service date for the L24 hydro transmission lines is listed as 1957.
- HONI has no records pertaining to any fill material that may have been brought into level the area around the transmission towers.
- HONI has no records pertaining to any spills on the Phase One property since the early 2000s. There are no records regarding that information prior to that.

5.0 Site Reconnaissance

5.1 General Requirements

On December 3, 2022, Ms. Leah Wells, of EXP conducted the site visit. The site visit was conducted in accordance with EXP's internal health and safety protocols and with the Ministry of Labour health and safety regulations. The purpose of the site visit was to assess the current conditions of the Phase One property.

The general environmental management and housekeeping practices at the Phase One property were reviewed as part of this assessment insofar as they could impact the environmental condition of the property; however, a detailed review of regulatory compliance issues was beyond the scope of EXP's investigation.

Observations of the subject property and surrounding properties were made. The site reconnaissance began at approximately 1:00 p.m. and lasted approximately 3 hours. The weather was approximately 10°C and overcast. Adjacent properties were observed from within the grounds of the Phase One property, as well as publicly accessible areas. Photographs documenting the site visit are included in Appendix G.

5.2 Specific Observations at the Phase One Property

The Phase One property consists of a linear section of hydro transmission corridor between Highway 417 to the north and Leitrim Road to the south. The Phase One property crosses the road right of ways (ROW) for Farmers Way, Piperville Road, and Leitrim Road. The north part of the Phase One property crosses golf course.

Groundcover at the site consists mainly of scrub and bush. The north part of the Phase One property, north of Anderson Road has been recently cleared.

The topography varies significantly across the site, particularly in the vicinity of standing water bodies that cross the site. It is noted that, due to the presence of the water bodies, some areas of the Phase One property could not be accessed.

5.2.1 Buildings and Structures

There are no buildings present on the site. There are 14 transmission towers present along the Phase One property.

5.2.2 Site Utilities and Services

A watermain crosses the Phase One property in the ROWs for Leitrim Road, and Farmers Way. A water service from Leitrim Road to the golf course clubhouse also crosses the Phase One property.

5.3 Storage Tanks

5.3.1 Underground Storage Tanks

No underground storage tanks (USTs) were observed on the Phase One property and there was no evidence of historical UST.

5.3.2 Above Ground Storage Tanks

No above ground storage tanks (ASTs) were observed on the Phase One property.

5.4 Chemical Storage Handling and Floor Condition

No chemicals are stored at the Phase One property.

5.5 Areas of Stained Soil, Pavement or Stressed Vegetation

No areas of significant staining were observed on the Phase One property at the time of EXP's site visit. None of the vegetation on the Phase One property appeared to be stressed.

5.6 Fill and Debris

Several small piles of sand and gravel were present on the Phase One property in the vicinity of the golf course. It is not anticipated that significant quantities of fill material are present on the Phase One property.

5.7 Air Emissions

Regulatory control of air emissions in Ontario is the responsibility of the MECP. According to the Environmental Protection Act (EPA), an ECA (Air) is required for the ongoing operation of any equipment that may discharge a contaminant into the natural environment if the equipment was installed, modified or altered after June 29, 1988.

The Phase One property is undeveloped. No air emissions were identified at the time of the site visit.

5.8 Odours

No strong odours were present during the site visit.

5.9 Noise

No excessive noise was heard during the site visit.

5.10 Other Observations

There were no pits and lagoons, no railways or spurs and no unidentified substances observed on the Phase One property.

5.11 Special Attention Items, Hazardous Building Materials and Designated Substances

The Phase One property has never been developed therefore, there was no evidence of any special attention items, hazardous building materials or designated substances (asbestos, ozone depleting substances, lead, mercury, polychlorinated biphenyls (PCB), urea formaldehyde foam insulation, mould, or other special attention substances).

5.12 Abandoned and Existing Wells

There is no evidence that there are any water wells on the Phase One property.

5.13 Roads, Parking Facilities and Right of Ways

Access to the Phase One property is provided at the intersections with Leitrim Road, Piperville Road, Farmers Way and Thunder Road.

5.14 Adjacent and Surrounding Properties

A visual inspection of the adjacent properties and properties within 250 m of the Phase One property was conducted from publicly accessible areas to identify the occupants and document the uses and sources of potential environmental concerns that may impact the Phase One property. Refer to Figure 2 in Appendix C for the adjacent land uses.

The Phase One property is mostly surrounded by undeveloped, agricultural, and rural residential properties. The Phase One property traverses a golf course immediately south of Leitrim Road. The northernmost part of the Phase One property is located in the Greenbelt.

5.15 Enhanced Investigation Property

Ontario Regulation 153/04 defines an enhanced investigation property as a "property that is used, or has ever been used, in whole or in part for an industrial use or any of the following commercial uses: a garage; a bulk liquid dispensing facility, including a gasoline outlet; or, for the operation of dry-cleaning equipment."

Therefore, in accordance with Regulation 153/04, the property is not considered to be an enhanced investigation property.

5.16 Summary and Written Description of Investigation

Based on the site visit, no PCAs were identified in the Phase One study area.

6.0 Review and Evaluation of Information

6.1 Current and Past Uses

Based on a review of historical aerial photographs, historical maps, and other records, it appears that the Phase One property was developed as a hydro transmission corridor between circa 1957.

6.2 Potentially Contaminating Activity

Ontario Regulation (O. Reg.) 153/04 defines a Potential Contaminating Activity (PCA) as one of fifty-nine (59) industrial operations set out in Table 2 of Schedule D that occurs or has occurred in the Phase One study area.

No PCAs were identified on the Phase One property.

The following PCAs were identified in the Phase One study area:

- PCA #40 – Pesticides (including herbicides, fungicides, and anti-fouling agents) manufacturing, processing, bulk storage and large-scale applications

It is likely that pesticide application has occurred adjacent to the Phase One property in the vicinity of the golf course. However, as application of pesticides is focused on the greens and fairways, which are not located on the Phase One property, the potential for pesticide application at the golf course to have impacted the Phase One property is considered low.

6.3 Areas of Potential Environmental Concern

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. No APECs were identified.

6.4 Phase One Conceptual Site Model

To develop a conceptual model for the Phase One property, the following physical characteristics and pathways were considered. A conceptual site model (CSM) showing the topography of the site, inferred groundwater flow, general site features, APEC, and PCA is shown in Figure 2.

6.4.1 Buildings and Structures

No buildings are present on the site. There are fourteen hydro transmission towers along the Phase One property.

6.4.2 Water Bodies and Groundwater Flow Direction

The Smith Gooding Municipal Drain cross the Phase One property approximately 70 m north of Piperville Road. The municipal drain flows southeast to an unnamed tributary of Bearbrook Creek. Four branches of an unnamed tributary to Bearbrook Creek traverse the Phase One property between Farmers Way and Thunder Road.

Bearbrook Creek is located approximately 1.3 km east of the south part of the Phase One property. Ramsay Creek is located approximately 0.8 km west of the north part of the Phase One property.

6.4.3 Areas of Natural Significance

There are no ANSI within the Phase One study area.

6.4.4 Water Wells

There were five well records identified within the Phase One study area. All of the records were for water supply wells. Two of the records were domestic supply ones, one record was for an irrigation supply well, and two records were for well abandonment. Well records indicate that surficial geology in the Phase One study area generally consist of silty clay. Shale bedrock was encountered approximately 30 m bgs.

6.4.5 Potentially Contaminating Activity

No PCAs were identified on the Phase One property.

The following PCAs were identified in the Phase One study area:

- PCA #40 – Pesticides (including herbicides, fungicides, and anti-fouling agents) manufacturing, processing, bulk storage and large-scale applications

It is likely that pesticide application has occurred adjacent to the Phase One property in the vicinity of the golf course. However, as application of pesticides is focused on the greens and fairways, which are not located on the Phase One property, the potential for pesticide application at the golf course to have impacted the Phase One property is considered low.

6.4.6 Areas of Potential Environmental Concern

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. No AEPCSs were identified.

6.4.7 Underground Utilities

A watermain crosses the Phase One property in the ROWs for Leitrim Road, and Farmers Way. A water service from Leitirm Road to the golf course clubhouse also crosses the Phase One property.

There are fourteen transmission towers along the Phase One property, and overhead transmission cables run the length of the site.

6.4.8 Subsurface Stratigraphy

Review of the background mapping information suggests that on a regional scale the study area is underlain by Pleistocene overburden sediments comprised of sand, gravelly sand and gravel deposited as nearshore and beach deposits on the east side of the Phase One study area, and silt and clay deposited under quiet water basin environment on the west side of the Phase One study area. The overburden deposit forms a thin veneer over the bedrock in the area. This thin veneer of Pleistocene overburden material is underlain by the Paleozoic shale and limestone of Georgian Bay formation bedrock.

6.4.9 Uncertainty Analysis

The CSM is a simplification of reality, which aims to provide a description and assessment of any areas where potentially contaminating activity that occurred within the Phase One study area may have adversely affected the Phase One property. All information collected during this investigation, including records, interviews, and site reconnaissance, has contributed to the formulation of the CSM.

Information was assessed for consistency, however EXP has confirmed neither the completeness nor the accuracy of any of the records that were obtained or of any of the statements made by others. All reasonable inquiries to obtain accessible information were made, as required by Schedule D, Table 1, Mandatory Requirements for Phase One Environmental Site Assessment Reports. The CSM reflects our best interpretation of the information that was available during this investigation.

7.0 Conclusions

The Qualified Person who oversaw this work, Chris Kimmerly, P.Geo., does not recommend that a Phase Two ESA be conducted, as no APECs were identified.

The Qualified Person can confirm that the Phase One Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

8.0 References

- City of Ottawa, GeoOttawa online mapping tool, (maps.ottawa.ca/geoottawa).
- Dubreuil, L. and C. Woods, *Catalogue of Canadian Fire Insurance Plans, 1875 – 1975,* 2002.
- Environment Canada, *National Inventory of PCBs in Use and PCB Wastes in Storage in Canada*, 2003 Annual Report, 2004.
- Golder Associates Ltd., *Old Landfill Management Strategy, Phase 1, Identification of Sites, City of Ottawa, Ontario*, October 2004.
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- Natural Resources Canada, The Atlas of Canada – Toporama website (atlas.gc.ca/toporama/en/)
- Oil, Gas & Salt Resources Library, website (maps.ogsrlibrary.com/wells).
- Ontario Ministry of Energy, Northern Development and Mines, Bedrock Geology Application (www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth/bedrock-geology), March 19, 2018.
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- Ontario Ministry of the Environment, Conservation and Parks, *Guide for Completing Phase One Environmental Site Assessments under Ontario Regulation 153/04*, June 2011.
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- Ontario Ministry of the Environment, Conservation and Parks, *Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario*, November 1988.
- Ontario Ministry of the Environment, Conservation and Parks, *Ontario Inventory of PCB Storage Sites*, October 1995.
- Ontario Ministry of the Environment, Conservation and Parks, *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, July 1, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, Records of Site Condition website (www.lrcsde.lrc.gov.on.ca).
- Ontario Ministry of the Environment, Conservation and Parks, *Waste Disposal Site Inventory*, June 1991.
- Ontario Ministry of the Environment, Conservation and Parks, Water Wells website (www.ontario.ca/environment-and-energy/map-well-records water wells).
- Ontario Ministry of Labour, *Occupational Health and Safety Act*, R.S.O. 1990.
- Ontario Ministry of Natural Resources and Forestry, Natural Heritage website (www.gisapplication.lrc.gov.on.ca/mamnh/Index.html).

9.0 Limitation of Liability, Scope of Report, and Third Party Reliance

Basis of Report

This report ("Report") is based on site conditions known or inferred by the investigation undertaken as of the date of the Report. Should changes occur which potentially impact the condition of the site the recommendations of EXP may require re-evaluation. Where special concerns exist, or the Hydro Ottawa ("the Client") has special considerations or requirements, these should be disclosed to EXP to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

Reliance on Information Provided

The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to EXP by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. EXP has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to exp. If new information about the environmental conditions at the Site is found, the information should be provided to EXP so that it can be reviewed and revisions to the conclusions and/or recommendations can be made, if warranted.

Standard of Care

The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.

Complete Report

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment form part of the Report. This material includes, but is not limited to, the terms of reference given to EXP by the Client, communications between EXP and the Client, other reports, proposals or documents prepared by EXP for the Client in connection with the site described in the Report. In order to properly understand the suggestions, recommendations and opinions expressed in the Report, reference must be made to the Report in its entirety. EXP is not responsible for use by any party of portions of the Report.

Use of Report

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorised use of the Report.

Report Format

Where EXP has submitted both electronic file and a hard copy of the Report, or any document forming part of the Report, only the signed and sealed hard copy shall be the original documents for record and working purposes. In the event of a dispute or discrepancy, the hard copy shall govern. Electronic files transmitted by EXP utilize specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client's current or future software and hardware systems. Regardless of format, the documents described herein are EXP's instruments of professional service and shall not be altered without the written consent of EXP.

10.0 Signatures

We trust this report meets your current needs. If you have any questions pertaining to the investigation undertaken by EXP, please do not hesitate to contact the undersigned. The Qualified Person can confirm that the Phase One Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

Leah Wells, P.Eng.
Environmental Engineer
Earth and Environment

Chris Kimmerly, P.Geo.
Senior Project Manager
Earth and Environment

Appendix A: Qualifications of Assessors

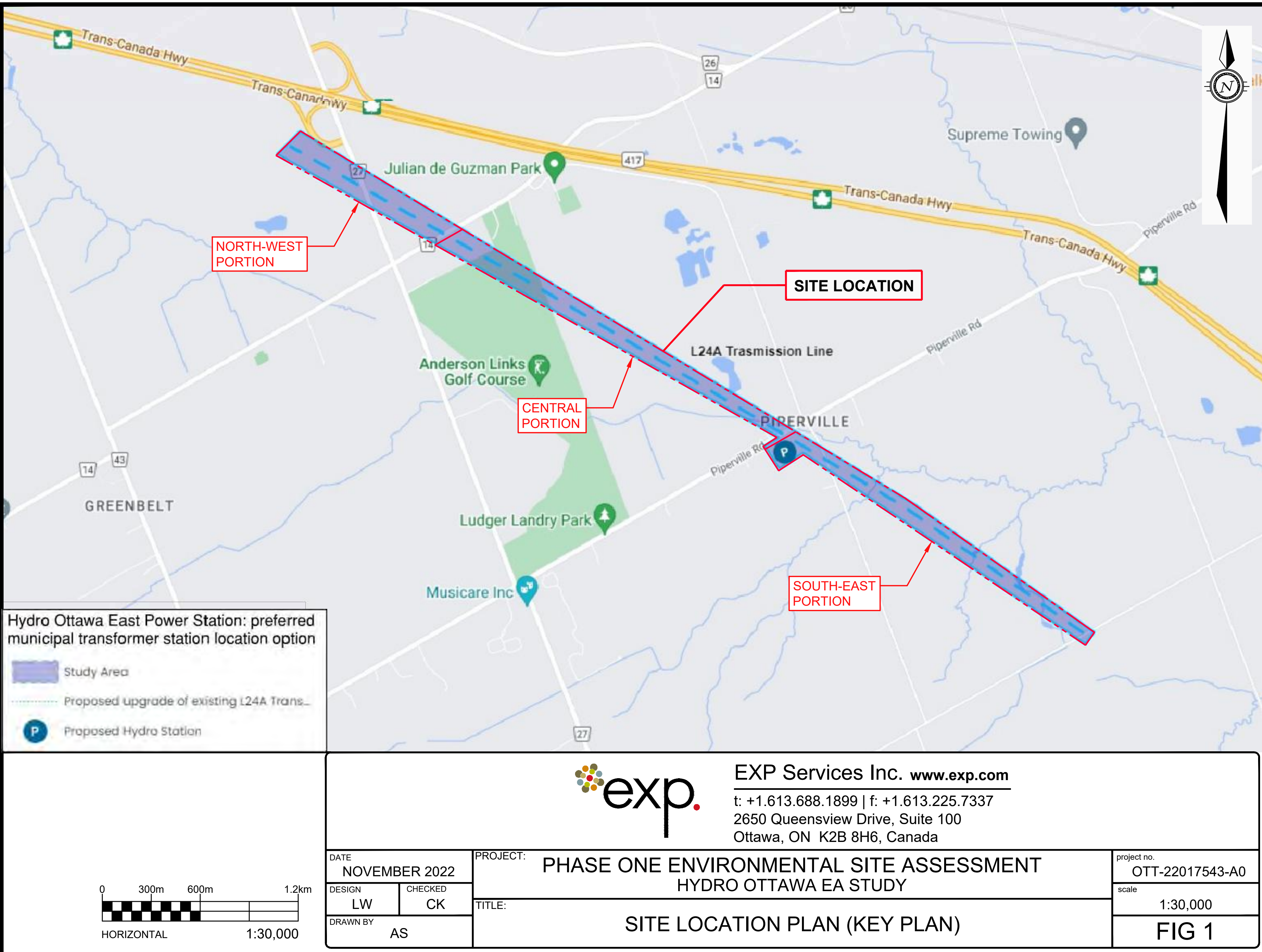
Qualifications of Assessors

EXP provides a full range of environmental services through a full-time Environmental Services Group. EXP's Earth and Environment Group has developed a strong working relationship with clients in both the private and public sectors and has developed a positive relationship with Ontario Ministry of the Environment, Conservation and Parks. Personnel in the numerous branch offices form part of a large network of full-time dedicated environmental professionals in the EXP organization.

Chris Kimmerly, M.Sc., P.Geo., has more than 28 years of environmental consulting experience, 27 of which have been with EXP. A graduate of Brock University with a Master of Science Degree in Geological Science, His technical experience includes managing, coordinating, and conducting environmental site assessments; groundwater sampling programs; soil and groundwater remedial action and risk mitigation plans; mineral aggregate assessments; hydrogeological and terrain analysis assessments; designated substances and hazardous materials surveys.

Leah Wells, P.Eng., has six years of experience in the environmental consulting field. She has worked on numerous Phase I Environmental Site Assessments (ESA); Phase II ESAs, completing soil and groundwater sampling, soil vapour sampling, assisting in report preparation and data entry and analysis.

Appendix B: Figures



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exp.
EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: NOVEMBER 2022		PROJECT: PHASE ONE ENVIRONMENTAL SITE ASSESSMENT HYDRO OTTAWA EA STUDY	project no. OTT-22017543-A0
DESIGN: LW	CHECKED: CK	TITLE: SITE LOCATION PLAN (KEY PLAN)	scale: 1:30,000
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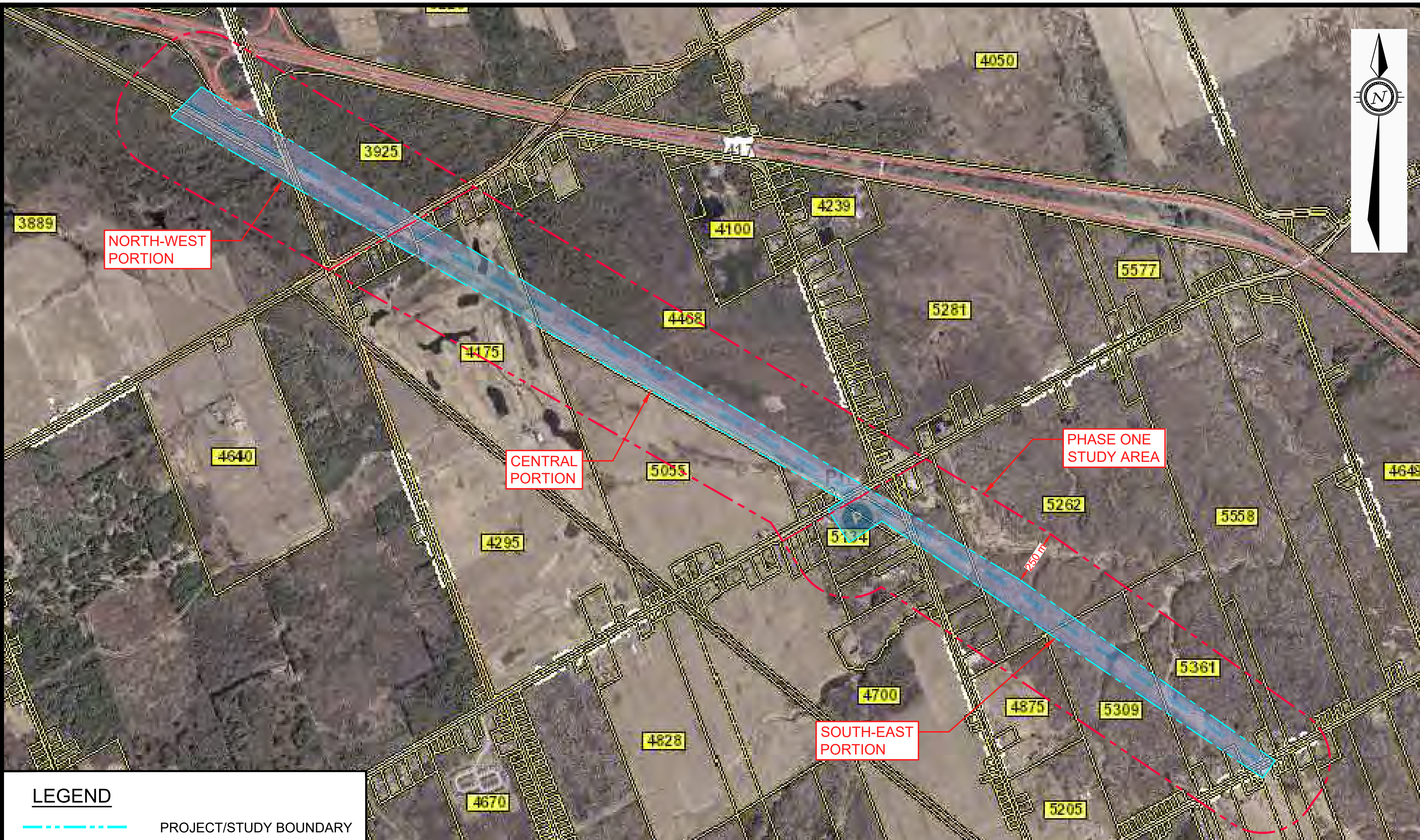

LEGEND

PROJECT/STUDY BOUNDARY

STUDY AREA (250m)

INFERRED GROUNDWATER FLOW DIRECTION

0 250m 500m 1km

HORIZONTAL 1:25,000

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DATE NOVEMBER 2022		PROJECT: PHASE ONE ENVIRONMENTAL SITE ASSESSMENT HYDRO OTTAWA EA STUDY	project no. OTT-22017543-A0
DESIGN LW	CHECKED CK	TITLE: PHASE ONE STUDY AREA (KEY PLAN)	scale 1:25,000
DRAWN BY AS			FIG 2

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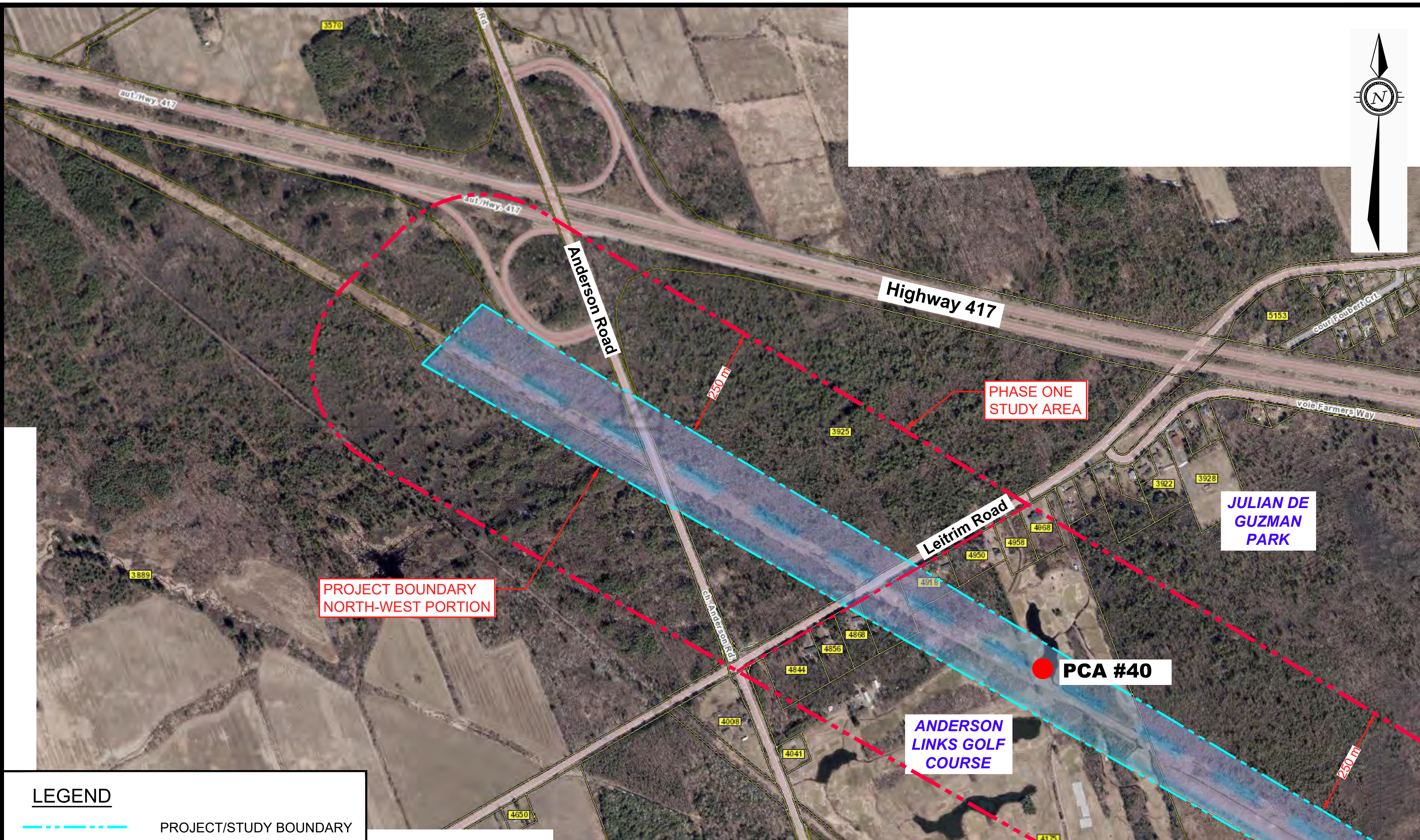

LEGEND

- PROJECT/STUDY BOUNDARY
- STUDY AREA (250m)
- INFERRED GROUNDWATER FLOW DIRECTION
- **PCA #40** POTENTIALLY CONTAMINATING ACTIVITY (PCA)

0 100m 200m 500m

HORIZONTAL 1:12,500

exp.

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DATE: NOVEMBER 2022	PROJECT: PHASE ONE ENVIRONMENTAL SITE ASSESSMENT HYDRO OTTAWA EA STUDY	project no. OTT-22017543-A0
DESIGN: LW / CHECKED: CK	TITLE: PHASE ONE STUDY AREA (NORTH-WEST PORTION)	scale 1:12,500
DRAWN BY: AS		FIG 3.1

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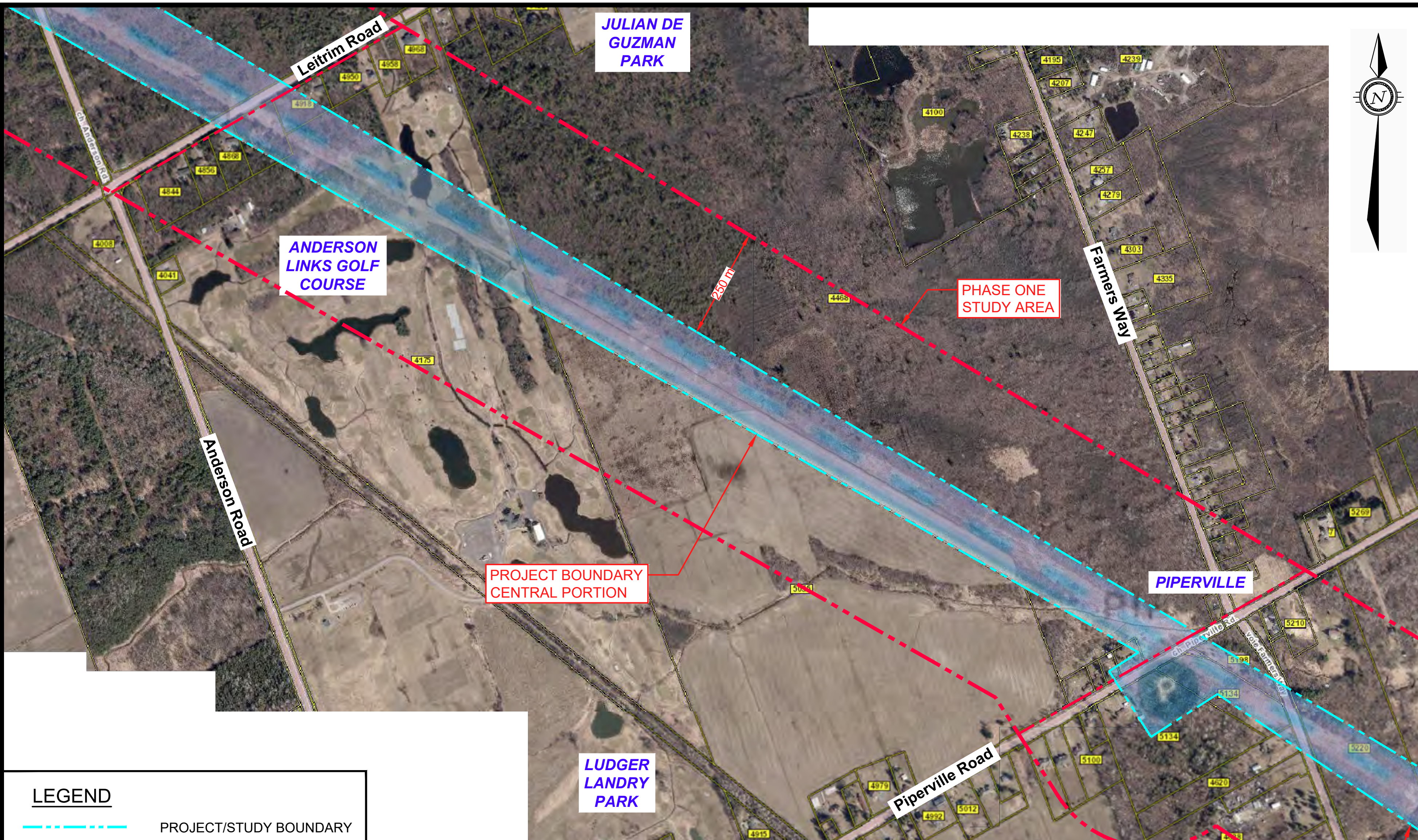

LEGEND

PROJECT/STUDY BOUNDARY

STUDY AREA (250m)

INFERRED GROUNDWATER FLOW DIRECTION

0 100m 200m 500m

HORIZONTAL 1:12,500

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Ottawa, ON K2B 8H6, Canada

DATE	DESIGN	CHECKED	DRAWN BY	PROJECT	TITLE	project no.	scale	
NOVEMBER 2022	LW	CK	AS	PHASE ONE ENVIRONMENTAL SITE ASSESSMENT HYDRO OTTAWA EA STUDY	PHASE ONE STUDY AREA (CENTRAL PORTION)	OTT-22017543-A0	1:12,500	FIG 3.2

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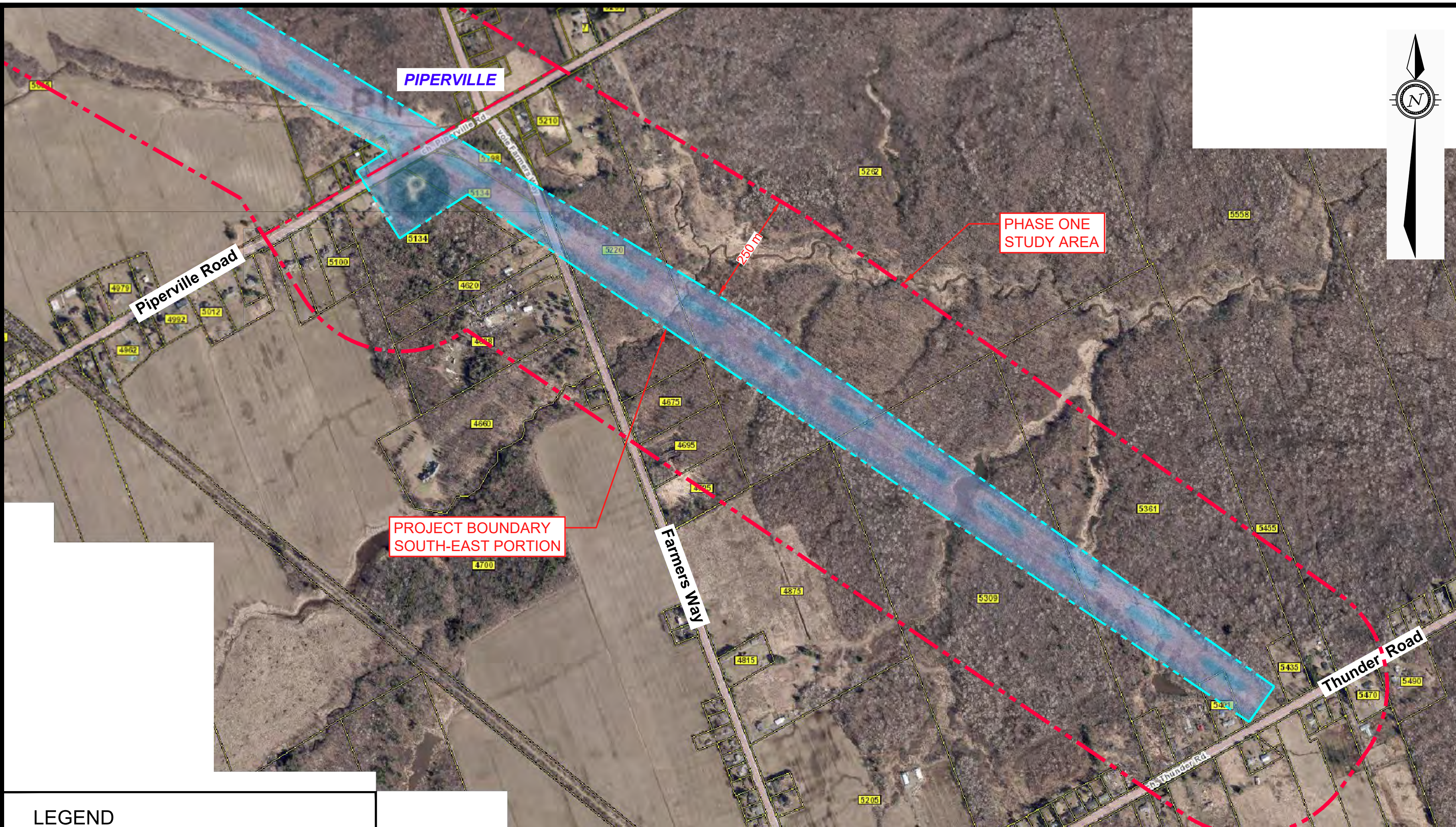

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LEGEND

PROJECT/STUDY BOUNDARY

STUDY AREA (250m)

INFERRED GROUNDWATER FLOW DIRECTION

0 100m 200m 500m

HORIZONTAL 1:12,500

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DATE NOVEMBER 2022		PROJECT: PHASE ONE ENVIRONMENTAL SITE ASSESSMENT HYDRO OTTAWA EA STUDY	project no. OTT-22017543-A0
DESIGN LW	CHECKED CK	TITLE: PHASE ONE STUDY AREA (SOUTH-EAST PORTION)	scale 1:12,500
DRAWN BY AS			FIG 3.3

Appendix C: Fire Insurance Plans, Title Search, Municipal Records & Provincial Records

Ministry of the Environment, Conservation and Parks

Access and Privacy Office

12th Floor
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Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau de l'accès à l'information et de la protection de la vie privée

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December 9, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08549, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 5401 Thunder Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Spyros Ioannou at 416-419-6359 or spyros.ioannou2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

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Ontario

December 12, 2022

Leah Wells
EXP Services Inc.
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leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08550, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 5309 Thunder Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Tolani Abraham at Tolani.Abraham2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

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Ministère de l'Environnement, de la Protection de la nature et des Parcs

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Ontario

December 9, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08551, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 5262 Piperville Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Assessment and Permissions Division (EAPD), Environmental Monitoring and Reporting Branch (EMRB), Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Spyros Ioannou at 416-419-6359 or spyros.ioannou2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

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December 8, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08552, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 5220 Piperville Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Tolani Abraham at Tolani.Abraham2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

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Ministère de l'Environnement, de la Protection de la nature et des Parcs

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December 14, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08553, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 5134 Piperville Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Brandy Booker at, Brandy.Booker@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

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Toronto ON M4V 1M2
Tel: (416) 314-4075

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau de l'accès à l'information et de la protection de la vie privée

12e étage
40, avenue St. Clair ouest
Toronto ON M4V 1M2
Tél. : (416) 314-4075

December 12, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08554, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 4468 Farmers Way, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Tolani Abraham at Tolani.Abraham2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

Access and Privacy Office

12th Floor
40 St. Clair Avenue West
Toronto ON M4V 1M2
Tel: (416) 314-4075

Ministère de l'Environnement, de la Protection de la nature et des Parcs

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Toronto ON M4V 1M2
Tél. :   (416) 314-4075

Ontario

December 13, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08555, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 4918 Leitrim Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Tolani Abraham at Tolani.Abraham2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

Access and Privacy Office

12th Floor
40 St. Clair Avenue West
Toronto ON M4V 1M2
Tel: (416) 314-4075

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau de l'accès à l'information et de la protection de la vie privée

12e étage
40, avenue St. Clair ouest
Toronto ON M4V 1M2
Tél. :   (416) 314-4075

December 15, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08557, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 3925 Anderson Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

If you have any questions, please contact Tolani Abraham at Tolani.Abraham2@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

Ministry of the Environment, Conservation and Parks

Access and Privacy Office

12th Floor
40 St. Clair Avenue West
Toronto ON M4V 1M2
Tel: (416) 314-4075

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau de l'accès à l'information et de la protection de la vie privée

12e étage
40, avenue St. Clair ouest
Toronto ON M4V 1M2
Tél. : (416) 314-4075

December 8, 2022

Leah Wells
EXP Services Inc.
2560 Queensview Drive, Unit 100
Ottawa, Ontario K2B 8H6
leah.wells@exp.com

Dear Leah Wells:

RE: **MECP FOI A-2022-08548, Your Reference OTT-22017543-A0 – Decision Letter**

This letter is in response to your request made pursuant to the Freedom of Information and Protection of Privacy Act (the Act) relating to 5361 Thunder Road, Ottawa.

After a thorough search through the files of the ministry's Ottawa District/Area Office, Environmental Investigations and Enforcement Branch (EIEB), and Safe Drinking Water Branch (SDW) no records were located responsive to your request. **This file is now closed.**

You may request a review of my decision within 30 days from the date of this letter by contacting the Information and Privacy Commissioner/Ontario at http://www.ipc.on.ca. Please note there may be a fee associated with submitting the appeal.

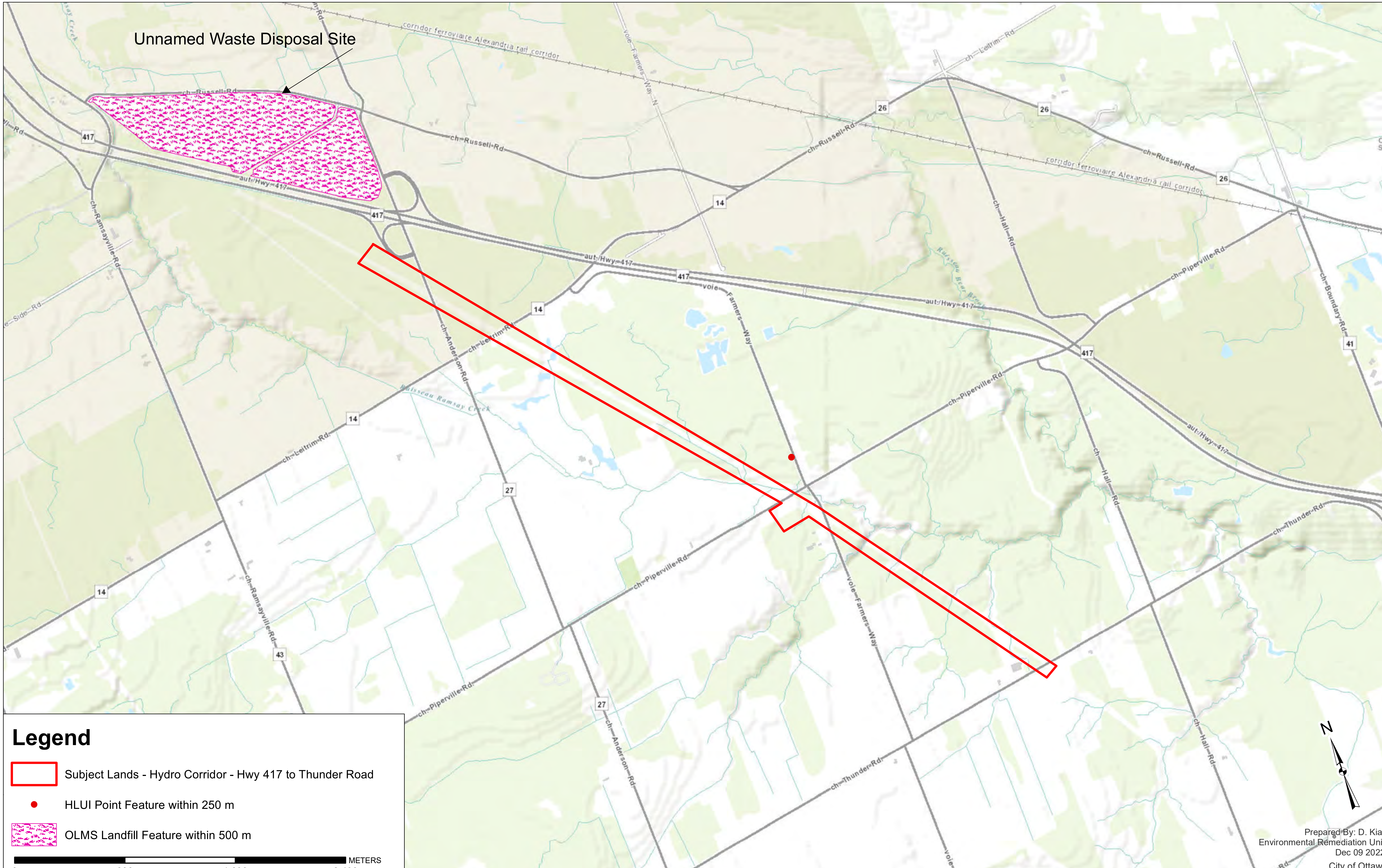
If you have any questions, please contact Brandy Booker at, Brandy.Booker@ontario.ca.

Yours truly,

ORIGINAL SIGNED BY

Ryan Gunn
Manager (A), Access and Privacy Office

HISTORIC LAND USE INVENTORY (HLUI) - REPORT REFERENCE MAP



Legend

Subject Lands - Hydro Corridor - Hwy 417 to Thunder Road

HLUI Point Feature within 250 m

OLMS Landfill Feature within 500 m

0 800 1,600 2,400 METERS

Prepared By: D. Kiar
Environmental Remediation Unit
Dec 09 2022
City of Ottawa

HLUI SUMMARY REPORT
POINT FEATURES

OBJECTID	ACTIVITY_NAME	FACILITY_TYPE	TANK_LOCATION	TANK_CONTENT	TANK_SIZE	TANK_TYPE	TANK_STATUS	SOURCE	INSTALLED_ST_NUM	INSTALLED_ST_NAME	INSTALLED_ST_ABR	INSTALLED_ST_DIR	COMMENT	MTM_X	MTM_Y	TANK_MATERIAL	TANK_ID	TANK_LEAKING	TANK_REMOVED	REMOVED_DATE	DATE_INSTALLED	NATURE_OF_BUSINESS	TEMPRecordID	CAPACITY_UOM	MUNICIPALITY	POSTCODE
8289	827358 ONTARIO LTD	Gasoline Station-FS		gasoline	22700	Licenced	Current	GW Study 2004	6500	RUSSELL	RD	<Null>	6500 RUSSELL RD LOT 17	382906.7713	5024190.802						19830401	Retail	177	L	CARLSBAD SPRINGS	K0A 1K0
8290	827358 ONTARIO LTD	Gasoline Station-FS		gasoline	22700	Licenced	Current	GW Study 2004	6500	RUSSELL	RD	<Null>	6500 RUSSELL RD LOT 17	382906.7713	5024190.802						19830401	Retail	178	L	CARLSBAD SPRINGS	K0A 1K0

Appendix D: EcoLog ERIS Report

ERIS

DATABASE REPORT

Project Property:	*Phase One ESA* *5134 Piperville Road, Hydro One – L24A* *Ottawa ON*
Project No:	*OTT-22017543-A0*
Report Type:	*Quote - Custom-Build Your Own Report*
Order No:	*22110300571*
Requested by:	*exp Services Inc.*
Date Completed:	*November 8, 2022*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Table of Contents

Executive Summary

Property Information:

Project Property:	*Phase One ESA* *5134 Piperville Road, Hydro One – L24A Ottawa ON*
Project No:	*OTT-22017543-A0*

Order Information:

Order No:	*22110300571*
Date Requested:	*November 3, 2022*
Requested by:	*exp Services Inc.*
Report Type:	*Quote - Custom-Build Your Own Report*

Historical/Products:

ERIS Xplorer	*ERIS Xplorer*

Executive Summary: Report Summary

Database	Name	Searched	Project Property	Boundary to 0.25km	Total
AAGR	*Abandoned Aggregate Inventory*	Y	0	0	0
AGR	*Aggregate Inventory*	Y	0	0	0
AMIS	*Abandoned Mine Information System*	Y	0	0	0
ANDR	*Anderson's Waste Disposal Sites*	Y	0	0	0
AST	*Aboveground Storage Tanks*	Y	0	0	0
AUWR	*Automobile Wrecking & Supplies*	Y	0	0	0
BORE	*Borehole*	Y	1	0	1
CA	*Certificates of Approval*	Y	0	0	0
CDRY	*Dry Cleaning Facilities*	Y	0	0	0
CFOT	*Commercial Fuel Oil Tanks*	Y	0	0	0
CHEM	*Chemical Manufacturers and Distributors*	Y	0	0	0
CHM	*Chemical Register*	Y	0	0	0
CNG	*Compressed Natural Gas Stations*	Y	0	0	0
COAL	*Inventory of Coal Gasification Plants and Coal Tar Sites*	Y	0	0	0
CONV	*Compliance and Convictions*	Y	0	0	0
CPU	*Certificates of Property Use*	Y	0	0	0
DRL	*Drill Hole Database*	Y	0	0	0
DTNK	*Delisted Fuel Tanks*	Y	0	0	0
EASR	*Environmental Activity and Sector Registry*	Y	0	0	0
EBR	*Environmental Registry*	Y	0	0	0
ECA	*Environmental Compliance Approval*	Y	0	0	0
EEM	*Environmental Effects Monitoring*	Y	0	0	0
EHS	*ERIS Historical Searches*	Y	0	3	3
EIIS	*Environmental Issues Inventory System*	Y	0	0	0
EMHE	*Emergency Management Historical Event*	Y	0	0	0
EPAR	*Environmental Penalty Annual Report*	Y	0	0	0
EXP	*List of Expired Fuels Safety Facilities*	Y	0	0	0
FCON	*Federal Convictions*	Y	0	0	0
FCS	*Contaminated Sites on Federal Land*	Y	0	0	0
FOFT	*Fisheries & Oceans Fuel Tanks*	Y	0	0	0
FRST	*Federal Identification Registry for Storage Tank Systems (FIRSTS)*	Y	0	0	0
FST	*Fuel Storage Tank*	Y	0	0	0
FSTH	*Fuel Storage Tank - Historic*	Y	0	0	0
GEN	*Ontario Regulation 347 Waste Generators Summary*	Y	0	0	0
GHG	*Greenhouse Gas Emissions from Large Facilities*	Y	0	0	0
HINC	*TSSA Historic Incidents*	Y	0	0	0

Database	Name	Searched	Project Property	Boundary to 0.25km	Total
IAFT	Indian & Northern Affairs Fuel Tanks	Y	0	0	0
INC	Fuel Oil Spills and Leaks	Y	0	0	0
LIMO	Landfill Inventory Management Ontario	Y	0	0	0
MINE	Canadian Mine Locations	Y	0	0	0
MNR	Mineral Occurrences	Y	0	0	0
NATE	National Analysis of Trends in Emergencies System (NATES)	Y	0	0	0
NCPL	Non-Compliance Reports	Y	0	0	0
NDFT	National Defense & Canadian Forces Fuel Tanks	Y	0	0	0
NDSP	National Defense & Canadian Forces Spills	Y	0	0	0
NDWD	National Defence & Canadian Forces Waste Disposal Sites	Y	0	0	0
NEBI	National Energy Board Pipeline Incidents	Y	0	0	0
NEBP	National Energy Board Wells	Y	0	0	0
NEES	National Environmental Emergencies System (NEES)	Y	0	0	0
NPCB	National PCB Inventory	Y	0	0	0
NPRI	National Pollutant Release Inventory	Y	0	0	0
OGWE	Oil and Gas Wells	Y	0	0	0
OOGW	Ontario Oil and Gas Wells	Y	0	0	0
OPCB	Inventory of PCB Storage Sites	Y	0	0	0
ORD	Orders	Y	0	0	0
PAP	Canadian Pulp and Paper	Y	0	0	0
PCFT	Parks Canada Fuel Storage Tanks	Y	0	0	0
PES	Pesticide Register	Y	0	0	0
PINC	Pipeline Incidents	Y	0	0	0
PRT	Private and Retail Fuel Storage Tanks	Y	0	0	0
PTTW	Permit to Take Water	Y	0	1	1
REC	Ontario Regulation 347 Waste Receivers Summary	Y	0	0	0
RSC	Record of Site Condition	Y	0	0	0
RST	Retail Fuel Storage Tanks	Y	0	0	0
SCT	Scott's Manufacturing Directory	Y	0	0	0
SPL	Ontario Spills	Y	0	0	0
SRDS	Wastewater Discharger Registration Database	Y	0	0	0
TANK	Anderson's Storage Tanks	Y	0	0	0
TCFT	Transport Canada Fuel Storage Tanks	Y	0	0	0
VAR	Variances for Abandonment of Underground Storage Tanks	Y	0	0	0
WDS	Waste Disposal Sites - MOE CA Inventory	Y	0	0	0
WDSH	Waste Disposal Sites - MOE 1991 Historical Approval Inventory	Y	0	0	0
WWIS	Water Well Information System	Y	1	4	5
		Total:	2	8	10

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev diff (m)	Page Number
m1d	WWIS		lot 8 con 8 ON ***Well ID:*** 1501577	ESE/0.0	0.05	13
m2d	BORE		ON	ESE/0.0	0.05	16

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	*DB*	*Company/Site Name*	*Address*	*Dir/Dist (m)*	*Elev Diff (m)*	*Page Number*
m3d	WWIS		5100 8TH LINE C. SPRING lot 12 con 6 OTTAWA ON ***Well ID:*** 7147912	SSW/18.2	1.04	17
m4d	EHS		4628 Farmers Way Ottawa ON K0A1K0	SE/31.0	-0.75	24
m5d	WWIS		lot 11 con 7 ON ***Well ID:*** 1516500	ESE/40.7	0.00	24
m6d	WWIS		lot 9 con 8 ON ***Well ID:*** 1529322	ESE/76.6	-0.70	27
m6d	WWIS		lot 9 con 8 ON ***Well ID:*** 1529323	ESE/76.6	-0.70	29
m7d	PTTW	Airport Golfland Limited	4175 Anderson Road Ottawa, ON Canada ON	WNW/177.5	3.04	32
m8d	EHS		Farmers Way & Piperville Rd Ottawa ON K0A 1K0	WSW/178.1	3.04	32
m8d	EHS		Farmers Way & Piperville Rd Ottawa ON K0A 1K0	WSW/178.1	3.04	32

Executive Summary: Summary By Data Source

BORE - Borehole

A search of the BORE database, dated 1875-Jul 2018 has found that there are 1 BORE site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	ON	0.0	2

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Jul 31, 2022 has found that there are 3 EHS site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	4628 Farmers Way Ottawa ON K0A1K0	31.0	4
	Farmers Way & Piperville Rd Ottawa ON K0A 1K0	178.1	8
	Farmers Way & Piperville Rd Ottawa ON K0A 1K0	178.1	8

PTTW - Permit to Take Water

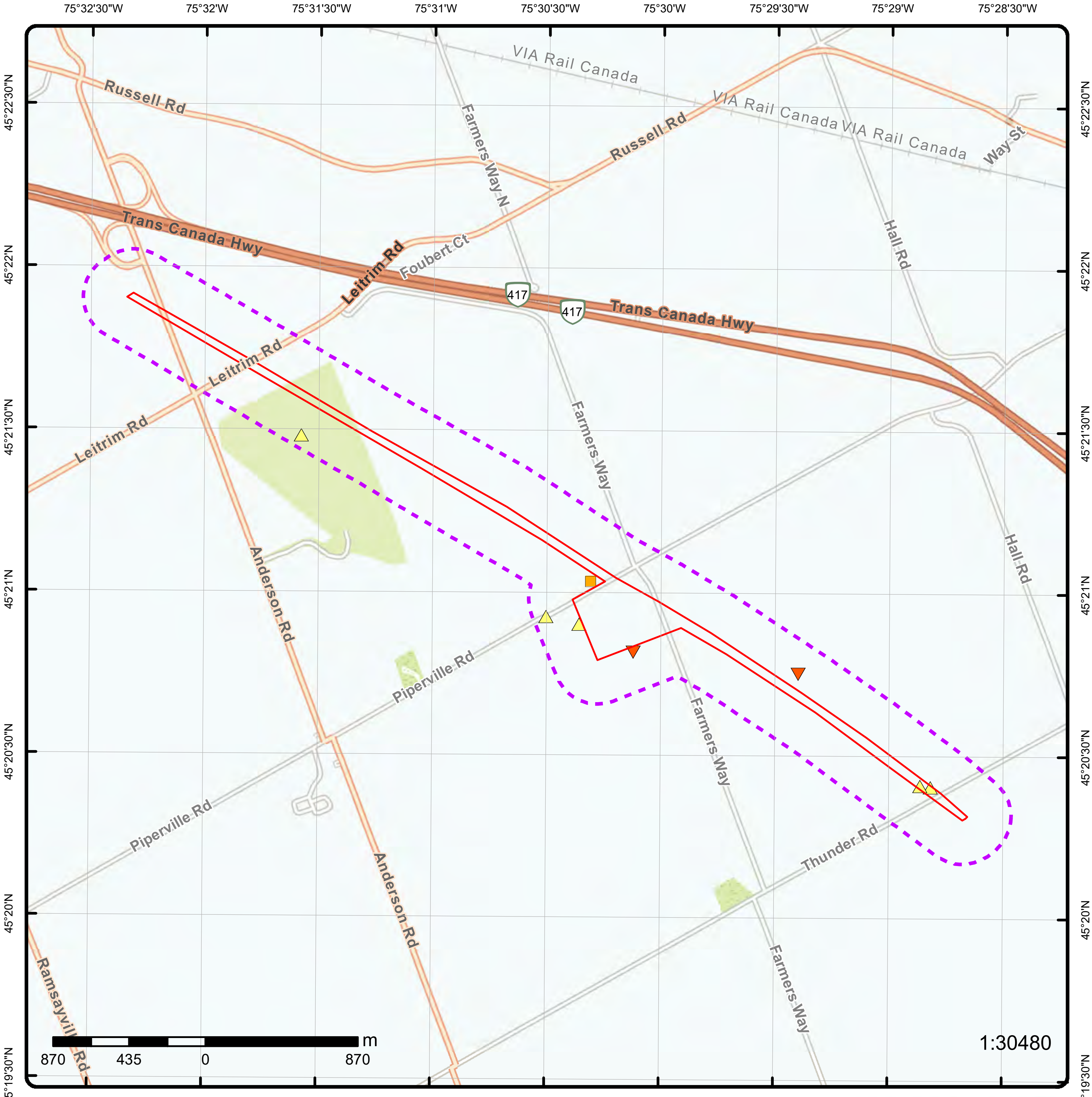
A search of the PTTW database, dated 1994 - Sep 30, 2022 has found that there are 1 PTTW site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
Airport Golfland Limited	4175 Anderson Road Ottawa, ON Canada ON	177.5	7

WWIS - Water Well Information System

A search of the WWIS database, dated Jun 30 2022 has found that there are 5 WWIS site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	lot 8 con 8 ON ***Well ID:*** 1501577	0.0	1
	5100 8TH LINE C. SPRING lot 12 con 6 OTTAWA ON ***Well ID:*** 7147912	18.2	3
	lot 11 con 7 ON ***Well ID:*** 1516500	40.7	5
	lot 9 con 8 ON ***Well ID:*** 1529323	76.6	6
	lot 9 con 8 ON ***Well ID:*** 1529322	76.6	6



Map: 0.25 Kilometer Radius

Order Number: 22110300571

Address: 5134 Piperville Road, Hydro One – L24A, Ottawa, ON

ERIS

Project Property	Freeways; Highways	Beach	Shopping & Sports Area
Buffer Outline	Traffic Circle; Ramp	Airport	University/College
Eris Sites with Higher Elevation	Major Arterial; Minor Arterial	Industrial Area	Cemetery; Golf Course
Eris Sites with Same Elevation	Local Road	Military Base	Parkt (National)
Eris Sites with Lower Elevation	Service Road; Traffic Circle; Ramp	Aircraft Roads	Park (City/County)
Eris Sites with Unknown Elevation	Rail	Native Reservation	
		Hospital	

Source: © 2021 ESRI StreetMap Premium.

Aerial

Year: 2022

Order Number: 22110300571

Address: 5134 Piperville Road, Hydro One – L24A, Ottawa, ON

Source: ESRI World Imagery

Topographic Map

Order Number: 22110300571

Address: 5134 Piperville Road, Hydro One – L24A, ON

Source: ESRI World Topographic Map

Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	ESE/0.0	75.9 / 0.05	lot 8 con 8 ON	WWIS

Well ID:	1501577	**Flowing (Y/N):**	
Construction Date:		**Flow Rate:**	
Use 1st:	Irrigation	**Data Entry Status:**	
Use 2nd:	0	**Data Src:**	1
Final Well Status:	Water Supply	**Date Received:**	25-May-1961 00:00:00
Water Type:		**Selected Flag:**	TRUE
Casing Material:		**Abandonment Rec:**	
Audit No:		**Contractor:**	3113
Tag:		**Form Version:**	1
Constructn Method:		**Owner:**	
Elevation (m):		**County:**	OTTAWA-CARLETON
Elevatn Reliabilty:		**Lot:**	008
Depth to Bedrock:		**Concession:**	08
Well Depth:		**Concession Name:**	OF
Overburden/Bedrock:		**Easting NAD83:**	
Pump Rate:		**Northing NAD83:**	
Static Water Level:		**Zone:**	
Clear/Cloudy:		**UTM Reliability:**	

Municipality: GLOUCESTER TOWNSHIP
Site Info:

PDF URL (Map): https://d2khazk8e83rdv.cloudfront.net/moe_mapping/downloads/2Water/Wells_pdfs/150\1501577.pdf

Additional Detail(s) (Map)

Well Completed Date:	1961/01/18
Year Completed:	1961
Depth (m):	37.7952
Latitude:	45.3401641826583
Longitude:	-75.4810514939967
Path:	150\1501577.pdf

Bore Hole Information

Bore Hole ID:	10023620	**Elevation:**	
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	18
Code OB:		**East83:**	462310.80
Code OB Desc:		**North83:**	5020852.00
Open Hole:		**Org CS:**	
Cluster Kind:		**UTMRC:**	5
Date Completed:	18-Jan-1961 00:00:00	**UTMRC Desc:**	margin of error : 100 m - 300 m
Remarks:		**Location Method:**	p5

Loc Method Desc: Original Pre1985 UTM Rel Code 5: margin of error : 100 m - 300 m
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID:	930992225
Layer:	2
Color:	3
General Color:	BLUE
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	8.0
Formation End Depth:	96.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	930992224
Layer:	1
Color:	7
General Color:	RED
Mat1:	09
Most Common Material:	MEDIUM SAND
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	8.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	930992226
Layer:	3
Color:	
General Color:	
Mat1:	11
Most Common Material:	GRAVEL
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	96.0
Formation End Depth:	102.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	930992227
Layer:	4
Color:	8
General Color:	BLACK
Mat1:	17
Most Common Material:	SHALE
Mat2:	
Mat2 Desc:	

Mat3:	
Mat3 Desc:	
Formation Top Depth:	102.0
Formation End Depth:	124.0
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961501577
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	10572190
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930040091
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	124.0
Casing Diameter:	4.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930040090
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	102.0
Casing Diameter:	4.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pumping Test Method Desc:	PUMP
Pump Test ID:	991501577
Pump Set At:	
Static Level:	11.0
Final Level After Pumping:	11.0
Recommended Pump Depth:	22.0
Pumping Rate:	5.0
Flowing Rate:	
Recommended Pump Rate:	5.0
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1

Pumping Duration MIN: 0
Flowing: No

Water Details

Water ID: 933454295
Layer: 2
Kind Code: 2
Kind: SALTY
Water Found Depth: 124.0
Water Found Depth UOM: ft

Water Details

Water ID: 933454294
Layer: 1
Kind Code: 2
Kind: SALTY
Water Found Depth: 96.0
Water Found Depth UOM: ft

Links

Bore Hole ID: 10023620
Depth M: 37.7952
Year Completed: 1961
Well Completed Dt: 1961/01/18
Audit No:
Tag No:
Contractor: 3113
Path: 150\1501577.pdf
Latitude: 45.3401641826583
Longitude: -75.4810514939967

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
2	1 of 1	ESE/0.0	75.9 / 0.05	ON	BORE

Borehole ID: 616144
OGF ID: 215516933
Status:
Type: Borehole
Use:
Completion Date:
Static Water Level: 3.4
Primary Water Use:
Sec. Water Use:
Total Depth m: -999
Depth Ref: Ground Surface
Depth Elev:
Drill Method:
Orig Ground Elev m: 77.7
Elev Reliabil Note:
DEM Ground Elev m: 78.4
Concession:
Location D:
Survey D:
Comments:

Inclin FLG: No
SP Status: Initial Entry
Surv Elev: No
Piezometer: No
Primary Name:
Municipality:
Lot:
Township:
Latitude DD: 45.340079
Longitude DD: -75.480285
UTM Zone: 18
Easting: 462371
Northing: 5020842
Location Accuracy:
Accuracy: Not Applicable

Borehole Geology Stratum

Geology Stratum ID: 218403164
Top Depth: 2.4
Bottom Depth: 29.3
Material Color:
Material 1: Clay
Material 2:
Mat Consistency:
Material Moisture:
Material Texture:
Non Geo Mat Type:
Geologic Formation:
Geologic Group:

Material 3: ***Geologic Period:***
Material 4: ***Depositional Gen:***
Gsc Material Description:
Stratum Description: CLAY.

Geology Stratum ID: 218403165 ***Mat Consistency:***
Top Depth: 29.3 ***Material Moisture:***
Bottom Depth: 31.1 ***Material Texture:***
Material Color: ***Non Geo Mat Type:***
Material 1: Gravel ***Geologic Formation:***
Material 2: ***Geologic Group:***
Material 3: ***Geologic Period:***
Material 4: ***Depositional Gen:***
Gsc Material Description:
Stratum Description: GRAVEL. WATER STABLE AT 244.0 FEET.

Geology Stratum ID: 218403166 ***Mat Consistency:***
Top Depth: 31.1 ***Material Moisture:***
Bottom Depth: ***Material Texture:***
Material Color: ***Non Geo Mat Type:***
Material 1: Bedrock ***Geologic Formation:***
Material 2: Shale ***Geologic Group:***
Material 3: ***Geologic Period:***
Material 4: ***Depositional Gen:***
Gsc Material Description:
Stratum Description: BEDROCK. = 11500. BEDROCK. SEISMIC VELOCITY = 12500. BEDROCK. SEISMIC VELOCITY = 1750 **Note: Many records provided by the department have a truncated [Stratum Description] field.

Geology Stratum ID: 218403163 ***Mat Consistency:***
Top Depth: 0 ***Material Moisture:***
Bottom Depth: 2.4 ***Material Texture:***
Material Color: ***Non Geo Mat Type:***
Material 1: Sand ***Geologic Formation:***
Material 2: ***Geologic Group:***
Material 3: ***Geologic Period:***
Material 4: ***Depositional Gen:***
Gsc Material Description:
Stratum Description: SAND.

Source

Source Type: Data Survey ***Source Appl:*** Spatial/Tabular
Source Orig: Geological Survey of Canada ***Source Iden:*** 1
Source Date: 1956-1972 ***Scale or Res:*** Varies
Confidence: M ***Horizontal:*** NAD27
Observatio: ***Verticalda:*** Mean Average Sea Level
Source Name: Urban Geology Automated Information System (UGAIS)
Source Details: File: OTTAWA2.txt RecordID: 086520 NTS_Sheet: 31G06D
Confiden 1: Reliable information but incomplete.

Source List

Source Identifier: 1 ***Horizontal Datum:*** NAD27
Source Type: Data Survey ***Vertical Datum:*** Mean Average Sea Level
Source Date: 1956-1972 ***Projection Name:*** Universal Transverse Mercator
Scale or Resolution: Varies
Source Name: Urban Geology Automated Information System (UGAIS)
Source Originators: Geological Survey of Canada

3	1 of 1	SSW/18.2	76.9 / 1.04	5100 8TH LINE C. SPRING lot 12 con 6 OTTAWA ON	WWIS

Well ID: 7147912 ***Flowing (Y/N):***

Construction Date:		***Flow Rate:***	
Use 1st:	Domestic	***Data Entry Status:***	
Use 2nd:		***Data Src:***	
Final Well Status:	Water Supply	***Date Received:***	08-Jul-2010 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	Z40786	***Contractor:***	7199
Tag:	A036935	***Form Version:***	3
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	012
Depth to Bedrock:		***Concession:***	06
Well Depth:		***Concession Name:***	OF
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	GLOUCESTER TOWNSHIP		
Site Info:			

PDF URL (Map): https://d2khazk8e83rdv.cloudfront.net/moe_mapping/downloads/2Water/Wells_pdfs/714\7147912.pdf

Additional Detail(s) (Map)

Well Completed Date:	2010/06/14
Year Completed:	2010
Depth (m):	6.9
Latitude:	45.3483828392048
Longitude:	-75.5059602036108
Path:	714\7147912.pdf

Bore Hole Information

Bore Hole ID:	1003124040	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	460365.00
Code OB Desc:		***North83:***	5021777.00
Open Hole:		***Org CS:***	UTM83
Cluster Kind:		***UTMRC:***	5
Date Completed:	14-Jun-2010 00:00:00	***UTMRC Desc:***	margin of error : 100 m - 300 m
Remarks:		***Location Method:***	wwr
Loc Method Desc:	on Water Well Record		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	1003125902
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	02
Most Common Material:	TOPSOIL
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	

Formation Top Depth: 0.0
Formation End Depth: 46.0
Formation End Depth UOM: cm

Overburden and Bedrock Materials Interval

Formation ID: 1003125903
Layer: 2
Color: 2
General Color: GREY
Mat1: 05
Most Common Material: CLAY
Mat2:
Mat2 Desc:
Mat3:
Mat3 Desc:
Formation Top Depth: 46.0
Formation End Depth: 690.0
Formation End Depth UOM: cm

Annular Space/Abandonment Sealing Record

Plug ID: 1003125905
Layer: 1
Plug From: 0.0
Plug To: 300.0
Plug Depth UOM: cm

Method of Construction & Well Use

Method Construction ID: 1003125936
Method Construction Code: A
Method Construction: Digging
Other Method Construction:

Pipe Information

Pipe ID: 1003125900
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1003125907
Layer: 1
Material: 3
Open Hole or Material: CONCRETE
Depth From: 0.0
Depth To: 627.0
Casing Diameter: 91.0
Casing Diameter UOM: cm
Casing Depth UOM: cm

Construction Record - Screen

Screen ID: 1003125908
Layer:

Slot:	
Screen Top Depth:	
Screen End Depth:	
Screen Material:	
Screen Depth UOM:	m
Screen Diameter UOM:	cm
Screen Diameter:	

Results of Well Yield Testing

Pumping Test Method Desc:	PUMP
Pump Test ID:	1003125901
Pump Set At:	186.0
Static Level:	395.0
Final Level After Pumping:	
Recommended Pump Depth:	607.0
Pumping Rate:	11.0
Flowing Rate:	
Recommended Pump Rate:	18.0
Levels UOM:	cm
Rate UOM:	LPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	

Draw Down & Recovery

Pump Test Detail ID:	1003125914
Test Type:	Recovery
Test Duration:	3
Test Level:	434.0
Test Level UOM:	cm

Draw Down & Recovery

Pump Test Detail ID:	1003125915
Test Type:	Draw Down
Test Duration:	4
Test Level:	398.0
Test Level UOM:	cm

Draw Down & Recovery

Pump Test Detail ID:	1003125922
Test Type:	Recovery
Test Duration:	15
Test Level:	429.0
Test Level UOM:	cm

Draw Down & Recovery

Pump Test Detail ID:	1003125929
Test Type:	Draw Down
Test Duration:	40
Test Level:	423.0
Test Level UOM:	cm

Draw Down & Recovery

Pump Test Detail ID: 1003125932
Test Type: Recovery
Test Duration: 50
Test Level: 422.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125931
Test Type: Draw Down
Test Duration: 50
Test Level: 429.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125909
Test Type: Draw Down
Test Duration: 1
Test Level: 396.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125911
Test Type: Draw Down
Test Duration: 2
Test Level: 397.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125916
Test Type: Recovery
Test Duration: 4
Test Level: 433.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125927
Test Type: Draw Down
Test Duration: 30
Test Level: 417.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125934
Test Type: Recovery
Test Duration: 60
Test Level: 420.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125917
Test Type: Draw Down
Test Duration: 5

Test Level: 399.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125926
Test Type: Recovery
Test Duration: 25
Test Level: 427.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125913
Test Type: Draw Down
Test Duration: 3
Test Level: 398.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125928
Test Type: Recovery
Test Duration: 30
Test Level: 426.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125933
Test Type: Draw Down
Test Duration: 60
Test Level: 434.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125912
Test Type: Recovery
Test Duration: 2
Test Level: 434.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125925
Test Type: Draw Down
Test Duration: 25
Test Level: 414.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125919
Test Type: Draw Down
Test Duration: 10
Test Level: 404.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125920
Test Type: Recovery
Test Duration: 10
Test Level: 430.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125924
Test Type: Recovery
Test Duration: 20
Test Level: 428.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125930
Test Type: Recovery
Test Duration: 40
Test Level: 424.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125910
Test Type: Recovery
Test Duration: 1
Test Level: 434.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125918
Test Type: Recovery
Test Duration: 5
Test Level: 433.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125921
Test Type: Draw Down
Test Duration: 15
Test Level: 407.0
Test Level UOM: cm

Draw Down & Recovery

Pump Test Detail ID: 1003125923
Test Type: Draw Down
Test Duration: 20
Test Level: 410.0
Test Level UOM: cm

Water Details

Water ID: 1003125906
Layer: 1

Kind Code: 1
Kind: FRESH
Water Found Depth: 210.0
Water Found Depth UOM: cm

Hole Diameter

Hole ID: 1003125904
Diameter:
Depth From:
Depth To:
Hole Depth UOM: m
Hole Diameter UOM: cm

Links

Bore Hole ID:	1003124040	**Tag No:**	A036935
Depth M:	6.9	**Contractor:**	7199
Year Completed:	2010	**Path:**	714\7147912.pdf
Well Completed Dt:	2010/06/14	**Latitude:**	45.3483828392048
Audit No:	Z40786	**Longitude:**	-75.5059602036108

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
4	1 of 1	SE/31.0	75.1 / -0.75	4628 Farmers Way Ottawa ON K0A1K0	EHS

Order No:	20150717064	**Nearest Intersection:**	
Status:	C	**Municipality:**	
Report Type:	Custom Report	**Client Prov/State:**	ON
Report Date:	24-JUL-15	**Search Radius (km):**	.25
Date Received:	17-JUL-15	**X:**	-75.502003
Previous Site Name:		**Y:**	45.346951
Lot/Building Size:	16.5 acre		

Additional Info Ordered: Title Searches; Topographic Maps; City Directory

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
5	1 of 1	ESE/40.7	75.8 / 0.00	lot 11 con 7 ON	WWIS

Well ID:	1516500	**Flowing (Y/N):**	
Construction Date:		**Flow Rate:**	
Use 1st:	Domestic	**Data Entry Status:**	
Use 2nd:	0	**Data Src:**	1
Final Well Status:	Water Supply	**Date Received:**	16-Jun-1978 00:00:00
Water Type:		**Selected Flag:**	TRUE
Casing Material:		**Abandonment Rec:**	
Audit No:		**Contractor:**	1843
Tag:		**Form Version:**	1
Constructn Method:		**Owner:**	
Elevation (m):		**County:**	OTTAWA-CARLETON
Elevatn Reliabilty:		**Lot:**	011
Depth to Bedrock:		**Concession:**	07
Well Depth:		**Concession Name:**	OF
Overburden/Bedrock:		**Easting NAD83:**	
Pump Rate:		**Northing NAD83:**	
Static Water Level:		**Zone:**	
Clear/Cloudy:		**UTM Reliability:**	

Municipality: GLOUCESTER TOWNSHIP
Site Info:

PDF URL (Map): https://d2khazk8e83rdv.cloudfront.net/moe_mapping/downloads/2Water/Wells_pdfs/151\1516500.pdf

Additional Detail(s) (Map)

Well Completed Date:	1978/06/09
Year Completed:	1978
Depth (m):	37.4904
Latitude:	45.3505827501659
Longitude:	-75.5051525683632
Path:	151\1516500.pdf

Bore Hole Information

Bore Hole ID:	10038412	**Elevation:**	
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	18
Code OB:		**East83:**	460429.80
Code OB Desc:		**North83:**	5022021.00
Open Hole:		**Org CS:**	
Cluster Kind:		**UTMRC:**	4
Date Completed:	09-Jun-1978 00:00:00	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4

Loc Method Desc:	Original Pre1985 UTM Rel Code 4: margin of error : 30 m - 100 m
Elevrc Desc:	
Location Source Date:	
Improvement Location Source:	
Improvement Location Method:	
Source Revision Comment:	
Supplier Comment:	

Overburden and Bedrock Materials Interval

Formation ID:	931032319
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	02
Most Common Material:	TOPSOIL
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	2.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931032322
Layer:	4
Color:	
General Color:	
Mat1:	13
Most Common Material:	BOULDERS
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	119.0
Formation End Depth:	123.0
Formation End Depth UOM:	ft

Overburden and Bedrock

Materials Interval

Formation ID:	931032321
Layer:	3
Color:	6
General Color:	BROWN
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	85.0
Formation End Depth:	119.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931032320
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	2.0
Formation End Depth:	85.0
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961516500
Method Construction Code:	7
Method Construction:	Diamond
Other Method Construction:	

Pipe Information

Pipe ID:	10586982
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930067498
Layer:	1
Material:	2
Open Hole or Material:	GALVANIZED
Depth From:	
Depth To:	119.0
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pumping Test Method Desc: PUMP
Pump Test ID: 991516500
Pump Set At:
Static Level: 8.0
Final Level After Pumping: 20.0
Recommended Pump Depth:
Pumping Rate: 180.0
Flowing Rate:
Recommended Pump Rate:
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code:
Water State After Test:
Pumping Test Method: 1
Pumping Duration HR: 2
Pumping Duration MIN: 0
Flowing: No

Draw Down & Recovery

Pump Test Detail ID: 934380436
Test Type: Draw Down
Test Duration: 30
Test Level: 20.0
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934641944
Test Type: Draw Down
Test Duration: 45
Test Level: 20.0
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934899429
Test Type: Draw Down
Test Duration: 60
Test Level: 20.0
Test Level UOM: ft

Links

Bore Hole ID: 10038412
Depth M: 37.4904
Year Completed: 1978
Well Completed Dt: 1978/06/09
Audit No:
Tag No:
Contractor: 1843
Path: 151\1516500.pdf
Latitude: 45.3505827501659
Longitude: -75.5051525683632

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
6	1 of 2	ESE/76.6	75.1 / -0.70	lot 9 con 8 ON	WWIS

Well ID: 1529322
Construction Date:
Use 1st: Commerical
Use 2nd:
Final Well Status: Abandoned-Other
Water Type:
Casing Material:
Audit No: 169522
Tag:
Flowing (Y/N):
Flow Rate:
Data Entry Status:
Data Src: 1
Date Received: 14-Feb-1997 00:00:00
Selected Flag: TRUE
Abandonment Rec:
Contractor: 6844
Form Version: 1

Constructn Method:		**Owner:**	
Elevation (m):		**County:**	OTTAWA-CARLETON
Elevatn Reliabilty:		**Lot:**	009
Depth to Bedrock:		**Concession:**	08
Well Depth:		**Concession Name:**	OF
Overburden/Bedrock:		**Easting NAD83:**	
Pump Rate:		**Northing NAD83:**	
Static Water Level:		**Zone:**	
Clear/Cloudy:		**UTM Reliability:**	
Municipality:	GLOUCESTER TOWNSHIP		
Site Info:			

PDF URL (Map): https://d2khazk8e83rdv.cloudfront.net/moe_mapping/downloads/2Water/Wells_pdfs/152\1529322.pdf

Additional Detail(s) (Map)

Well Completed Date:	1997/01/09
Year Completed:	1997
Depth (m):	1.524
Latitude:	45.3458601500164
Longitude:	-75.4899713596902
Path:	152\1529322.pdf

Bore Hole Information

Bore Hole ID:	10050858	**Elevation:**	
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	18
Code OB:		**East83:**	461615.80
Code OB Desc:		**North83:**	5021489.00
Open Hole:		**Org CS:**	
Cluster Kind:		**UTMRC:**	9
Date Completed:	09-Jan-1997 00:00:00	**UTMRC Desc:**	unknown UTM
Remarks:		**Location Method:**	lot
Loc Method Desc:	Lot centroid		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931072399
Layer:	1
Color:	
General Color:	
Mat1:	23
Most Common Material:	PREVIOUSLY DUG
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	5.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID: 933114283
Layer: 1
Plug From: 0.0
Plug To: 1.0
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 933114284
Layer: 2
Plug From: 1.0
Plug To: 5.0
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 961529322
Method Construction Code: B
Method Construction: Other Method
Other Method Construction:

Pipe Information

Pipe ID: 10599428
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930088786
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From:
Depth To: 5.0
Casing Diameter: 1.0
Casing Diameter UOM: inch
Casing Depth UOM: ft

Links

Bore Hole ID:	10050858	**Tag No:**	
Depth M:	1.524	**Contractor:**	6844
Year Completed:	1997	**Path:**	152\1529322.pdf
Well Completed Dt:	1997/01/09	**Latitude:**	45.3458601500164
Audit No:	169522	**Longitude:**	-75.4899713596902

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
6	2 of 2	ESE/76.6	75.1 / -0.70	lot 9 con 8 ON	WWIS

Well ID:	1529323	**Flowing (Y/N):**	
Construction Date:		**Flow Rate:**	
Use 1st:	Commerical	**Data Entry Status:**	
Use 2nd:		**Data Src:**	1
Final Well Status:	Abandoned-Other	**Date Received:**	14-Feb-1997 00:00:00
Water Type:		**Selected Flag:**	TRUE
Casing Material:		**Abandonment Rec:**	
Audit No:	169520	**Contractor:**	6844

Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	009
Depth to Bedrock:		***Concession:***	08
Well Depth:		***Concession Name:***	OF
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	GLOUCESTER TOWNSHIP		
Site Info:			

PDF URL (Map): https://d2khazk8e83rdv.cloudfront.net/moe_mapping/downloads/2Water/Wells_pdfs/152\1529323.pdf

Additional Detail(s) (Map)

Well Completed Date:	1997/01/09
Year Completed:	1997
Depth (m):	1.2192
Latitude:	45.3458601500164
Longitude:	-75.4899713596902
Path:	152\1529323.pdf

Bore Hole Information

Bore Hole ID:	10050859	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	461615.80
Code OB Desc:		***North83:***	5021489.00
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	09-Jan-1997 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	lot
Loc Method Desc:	Lot centroid		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931072400
Layer:	1
Color:	
General Color:	
Mat1:	23
Most Common Material:	PREVIOUSLY DUG
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	4.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID: 933114285
Layer: 1
Plug From: 0.0
Plug To: 1.0
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 933114286
Layer: 2
Plug From: 1.0
Plug To: 4.0
Plug Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 933114287
Layer: 3
Plug From: 4.0
Plug To: 2.0
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 961529323
Method Construction Code: B
Method Construction: Other Method
Other Method Construction:

Pipe Information

Pipe ID: 10599429
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930088787
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From:
Depth To: 2.0
Casing Diameter: 24.0
Casing Diameter UOM: inch
Casing Depth UOM: ft

Links

Bore Hole ID: 10050859
Depth M: 1.2192
Year Completed: 1997
Well Completed Dt: 1997/01/09
Audit No: 169520
Tag No:
Contractor: 6844
Path: 152\1529323.pdf
Latitude: 45.3458601500164
Longitude: -75.4899713596902

7	1 of 1	WNW/177.5	78.9 / 3.04	Airport Golfland Limited 4175 Anderson Road Ottawa, ON Canada ON	PTTW

EBR Registry No: 019-4181
Ministry Ref No: 1365-C5MNQC
Notice Type: Instrument
Notice Stage: Decision
Notice Date:
Proposal Date: August 13, 2021
Year: 2021
Decision Posted: December 13, 2021
Exception Posted:
Section: Section 34
Act 1: Ontario Water Resources Act, R.S.O. 1990
Act 2: Ontario Water Resources Act
Site Location Map: 45.352555,-75.523309
Instrument Type: Permit to take water
Off Instrument Name: Permit to Take Water (OWRA s. 34)
Posted By: Ministry of the Environment, Conservation and Parks
Company Name:
Site Address: 4175 Anderson Road Ottawa, ON Canada
Location Other:
Proponent Name: Airport Golfland Limited
Proponent Address: Airport Golfland Limited 6357 Emerald Links Drive Greely, ON K4P 1M4 Canada
Comment Period: August 13, 2021 - September 12, 2021 (30 days) Closed
URL: https://ero.ontario.ca/notice/019-4181

Site Location Details:

Lot 14, Concession 7 OR

8	1 of 2	WSW/178.1	78.9 / 3.04	Farmers Way & Piperville Rd Ottawa ON K0A 1K0	EHS

Order No: 21091600337
Status: C
Report Type: Standard Report
Report Date: 21-SEP-21
Date Received: 16-SEP-21
Previous Site Name:
Lot/Building Size:
Additional Info Ordered: Aerial Photos
Nearest Intersection:
Municipality:
Client Prov/State: ON
Search Radius (km): .25
X: -75.5083976
Y: 45.3487659

8	2 of 2	WSW/178.1	78.9 / 3.04	Farmers Way & Piperville Rd Ottawa ON K0A 1K0	EHS

Order No: 21091600337
Status: C
Report Type: Standard Report
Report Date: 21-SEP-21
Date Received: 16-SEP-21
Previous Site Name:
Lot/Building Size:
Additional Info Ordered: Aerial Photos
Nearest Intersection:
Municipality:
Client Prov/State: ON
Search Radius (km): .25
X: -75.5083976
Y: 45.3487659

Unplottable Summary

Total: 59 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
CA	Kinross Court	Part of Lot 13, Concession	Ottawa ON	
CA	Ottawa-Carleton District School Board	Part of Lot 10, Concession 8, Geographic Township of Cumberland	Ottawa ON	
CA	City of Ottawa	Lot 13	Ottawa ON	
CA	Landsdown Developments Limited	Lot 11 and Prt Lot 10, Reg. Plan No. 2545	Ottawa ON	
CA	Ottawa-Carleton District School Board	Part of Lot 10, Concession 8, Geographic Township of Cumberland	Ottawa ON	
CA	St. Vincent Hospital	Lot 1, Pt. Lot 14, RP# 11285 & Lots 1-19, RP# 3459	Ottawa ON	
CONV	WEST CARLETON SAND & GRAVEL IN		ON	
CONV	WEST CARLETON SAND & GRAVEL IN		ON	
EBR	Cornwall Gravel Company Limited	Lot:14 and 15 Conc:6 Ottawa Ontario Lot 14, Concession VI City of Ottawa (former Township of Osgoode) Ottawa	ON	
EBR	Cornwall Gravel Company Ltd.	Part Lot 16, Concession VI (6), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry South. CITY OF OTTAWA	ON	
EBR	Cornwall Gravel Company Ltd.	Part Lot 14 & 15, Concession VI (6), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry North. CITY OF OTTAWA	ON	
EBR	Cornwall Gravel Company Ltd.	Part Lot 15, Concession VII (7), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry East. CITY OF OTTAWA	ON	
EBR	West Carleton Sand & Gravel Inc.	Ontario CITY OF OTTAWA	ON	
ECA	Humanics Universal Inc.	Part of Lot 7	Ottawa ON	K4A 1Z6

ECA	City of Ottawa	Part of Lot 15, Gore Junction	Ottawa ON	K2G 6J8
EHS		Leitrim Road	Ottawa ON	
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	
GEN	CORNWALL GRAVEL COMPANY LIMITED	CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15	CITY OF OTTAWA ON	K4P 1N7
LIMO	March Township March Township	RR #1 Part of Lot 10 Ottawa	ON	
NCPL	Cornwall Gravel Company Limited - Ottawa	Lot 15&16Conc VI, Twp of Gloucester	Ottawa ON	
NCPL	Cornwall Gravel Company Limited	Lot 14 and 15, Conc 6	Ottawa ON	
NPCB	ONTARIO HYDRO	TP 2996,LOT 14,15,16 LLSGAR T.S., R.M. OTTAWA-CARLE	OTTAWA ON	
PTTW	Cornwall Gravel Company Limited	Greely Quarry Lot 14, Concession 6, Geo. Twp of Osgoode City of Ottawa OSGOODE	ON	
SPL		Leitrim Rd	Ottawa ON	
SPL	Enbridge Gas Distribution Inc.	Anderson Rd. ¿ 2km South of Renaud Rd.	Ottawa ON	
SPL	Unknown<UNOFFICIAL>	Anderson Road, between Piperville and Thunder Roads	Ottawa ON	K0A 1K0

WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 8	ON
WWIS	lot 13	ON
WWIS	lot 7	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 10	ON
WWIS	lot 12	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON
WWIS	lot 15	ON

Unplottable Report

Site: ***Kinross Court***
Part of Lot 13, Concession Ottawa ON

Database: **CA**

Certificate #:	0660-53CRDY
Application Year:	01
Issue Date:	10/11/01
Approval Type:	Municipal & Private sewage
Status:	Approved
Application Type:	New Certificate of Approval
Client Name:	Tenth Line Development Inc.
Client Address:	210 Gladstone Avenue, Suite 2001
Client City:	Ottawa
Client Postal Code:	K2P 0Y6
Project Description:	Storm sewer construction.
Contaminants:	
Emission Control:	

Site: ***Ottawa-Carleton District School Board***
Part of Lot 10, Concession 8, Geographic Township of Cumberland Ottawa ON

Database: **CA**

Certificate #:	5281-6RNKKS
Application Year:	2006
Issue Date:	11/16/2006
Approval Type:	Municipal and Private Sewage Works
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Site: ***City of Ottawa***
Lot 13 Ottawa ON

Database: **CA**

Certificate #:	3399-6BVHAA
Application Year:	2005
Issue Date:	6/10/2005
Approval Type:	Air
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Site: ***Landsdown Developments Limited***
Lot 11 and Prt Lot 10, Reg. Plan No. 2545 Ottawa ON

Database: **CA**

Certificate #:	1361-5ZRHG3

Application Year: 2004
Issue Date: 6/11/2004
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***Ottawa-Carleton District School Board***
Part of Lot 10, Concession 8, Geographic Township of Cumberland Ottawa ON

Database: **CA**

Certificate #: 2170-6ARMNA
Application Year: 2005
Issue Date: 3/31/2005
Approval Type: Municipal and Private Sewage Works
Status: Approved
Application Type:
Client Name:
Client Address:
Client City:
Client Postal Code:
Project Description:
Contaminants:
Emission Control:

Site: ***St. Vincent Hospital***
Lot 1, Pt. Lot 14, RP# 11285 & Lots 1-19, RP# 3459 Ottawa ON

Database: **CA**

Certificate #: 8685-5BAKLG
Application Year: 02
Issue Date: 6/28/02
Approval Type: Municipal & Private sewage
Status: Approved
Application Type: Amended CofA
Client Name: Sisters of Charity of Ottawa Health Services
Client Address: St. Vincent Hospital, 60 Cambridge Street North
Client City: Ottawa
Client Postal Code: K1R 7A5
Project Description: This application is for the approval to modify stormwater management facilities for reconstruction of an existing parking lot to provide a drive thru on the south side of the site to match the controlled release rate of 15.5 L/s as specified for this area in a 1996 report. The release rates from storage for this area on the south side of the site will be controlled by a hydrovex orifice installed and by replacing the existing orifice in existing catchbasins 3 with a new size. In addition, stormwater management facilities have been designed for the reconstructed parking lot and roof area on the north side of the site. A sanitary drain will be supplied and this service will connect into the combined sewer in Cambridge Street.
Contaminants:
Emission Control:

Site: ***WEST CARLETON SAND & GRAVEL IN***
ON

Database: **CONV**

File No:
Crown Brief No: 97-0102-0063
Court Location:
Publication City:
Publication Title:
Act:
Act(s):
First Matter:

Location:
Region: EASTERN REGION
Ministry District: OTTAWA

Second Matter:
Investigation 1:
Investigation 2:
Penalty Imposed:
Description: CONSTRUCTING AN ASPHALT PLANT THAT MAY DISCHARGE A CONTAMINANT PRIOR TO OBTAINING A CERTIFICATE OF APPROVAL.
Background:
URL:

Additional Details

Publication Date:
Count: 1
Act: EPA
Regulation:
Section: 9 (1)
Act/Regulation/Section: EPA- -9 (1)
Date of Offence:
Date of Conviction:
Date Charged: 9/11/97
Charge Disposition: SUSPENDED SENTENCE
Fine: $1,500.00
Synopsis:

Site: ***WEST CARLETON SAND & GRAVEL IN***
ON

Database: ***CONV***

File No:
Crown Brief No: 98-0000-9004
Court Location:
Publication City:
Publication Title:
Act:
Act(s):
First Matter:
Second Matter:
Investigation 1:
Investigation 2:
Penalty Imposed:
Description: THIS IS THE EASTERN BRIEF FOR ALL P.O.A. TICKETS
Background:
URL:

Location:
Region: EASTERN REGION
Ministry District:

Additional Details

Publication Date:
Count: 1
Act: EPA
Regulation:
Section: 186(3)
Act/Regulation/Section: EPA- -186(3)
Date of Offence:
Date of Conviction:
Date Charged: 5/6/98
Charge Disposition: SUSPENDED SENTENCE
Fine: $300.00
Synopsis:

Site: ***Cornwall Gravel Company Limited***
Lot:14 and 15 Conc:6 Ottawa Ontario Lot 14, Concession VI City of Ottawa (former Township of Osgoode) Ottawa ON

Database: ***EBR***

EBR Registry No: IA07E0072
Ministry Ref No: 9976-6WNJGQ
Notice Type: Instrument Decision
Notice Stage:

Decision Posted:
Exception Posted:
Section:
Act 1:

Notice Date:	June 26, 2007	***Act 2:***	
Proposal Date:	January 16, 2007	***Site Location Map:***	
Year:	2007		
Instrument Type:	(OWRA s. 53(1)) - Approval for sewage works		
Off Instrument Name:			
Posted By:			
Company Name:	Cornwall Gravel Company Limited		
Site Address:			
Location Other:			
Proponent Name:			
Proponent Address:	390 Eleventh Street West, Postal Station Delivery 67, Cornwall Ontario, Canada K6H 5R9		
Comment Period:			
URL:			

Site Location Details:

Lot:14 and 15 Conc:6 Ottawa Ontario Lot 14, Concession VI City of Ottawa (former Township of Osgoode) Ottawa

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Site: ***Cornwall Gravel Company Ltd.***
Part Lot 16, Concession VI (6), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry South. CITY OF OTTAWA ON

Database: ***EBR***

EBR Registry No:	IB05E3051	***Decision Posted:***	
Ministry Ref No:	FSD - KEM 17/05	***Exception Posted:***	
Notice Type:	Instrument Decision	***Section:***	
Notice Stage:		***Act 1:***	
Notice Date:	January 27, 2016	***Act 2:***	
Proposal Date:	June 20, 2005	***Site Location Map:***	
Year:	2005		
Instrument Type:	(ARA s. 7 (2) (a)) - Issuance of a Class A licence to remove more than 20,000 tonnes of aggregate annually from a pit or a quarry		
Off Instrument Name:			
Posted By:			
Company Name:	Cornwall Gravel Company Ltd.		
Site Address:			
Location Other:			
Proponent Name:			
Proponent Address:	P.O. Box #67 - 390, 11th Street West, Cornwall Ontario, K6H 5R9		
Comment Period:			
URL:			

Site Location Details:

Part Lot 16, Concession VI (6), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry South. CITY OF OTTAWA

Site: ***Cornwall Gravel Company Ltd.***
Part Lot 14 & 15, Concession VI (6), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry North. CITY OF OTTAWA ON

Database: ***EBR***

EBR Registry No:	IB05E3050	***Decision Posted:***	
Ministry Ref No:	FSD - KEM 06/05	***Exception Posted:***	
Notice Type:	Instrument Decision	***Section:***	
Notice Stage:		***Act 1:***	
Notice Date:	January 27, 2016	***Act 2:***	
Proposal Date:	June 20, 2005	***Site Location Map:***	
Year:	2005		
Instrument Type:	(ARA s. 7 (2) (a)) - Issuance of a Class A licence to remove more than 20,000 tonnes of aggregate annually from a pit or a quarry		
Off Instrument Name:			
Posted By:			
Company Name:	Cornwall Gravel Company Ltd.		
Site Address:			
Location Other:			

Proponent Name:
Proponent Address: P.O. Box #67 - 390, 11th Street West, Cornwall Ontario, K6H 5R9
Comment Period:
URL:

Site Location Details:

Part Lot 14 & 15, Concession VI (6), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry North. CITY OF OTTAWA

Site: ***Cornwall Gravel Company Ltd.***
Part Lot 15, Concession VII (7), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry East. CITY OF OTTAWA ON

Database: ***EBR***

EBR Registry No:	IB05E3052	***Decision Posted:***	
Ministry Ref No:	FSD - KEM 08/05	***Exception Posted:***	
Notice Type:	Instrument Decision	***Section:***	
Notice Stage:		***Act 1:***	
Notice Date:	January 27, 2016	***Act 2:***	
Proposal Date:	June 20, 2005	***Site Location Map:***	
Year:	2005		

Instrument Type: (ARA s. 7 (2) (a)) - Issuance of a Class A licence to remove more than 20,000 tonnes of aggregate annually from a pit or a quarry
Off Instrument Name:
Posted By:
Company Name: Cornwall Gravel Company Ltd.
Site Address:
Location Other:
Proponent Name:
Proponent Address: P.O. Box #67 - 390, 11th Street West, Cornwall Ontario, K6H 5R9
Comment Period:
URL:

Site Location Details:

Part Lot 15, Concession VII (7), Geographic Township of Osgoode, now City of Ottawa. Proponent has named this site Greely Quarry East. CITY OF OTTAWA

Site: ***West Carleton Sand & Gravel Inc.***
Ontario CITY OF OTTAWA ON

Database: ***EBR***

EBR Registry No:	012-1028	***Decision Posted:***	
Ministry Ref No:	6576-9FCLNY	***Exception Posted:***	
Notice Type:	Instrument Decision	***Section:***	
Notice Stage:		***Act 1:***	
Notice Date:	April 14, 2015	***Act 2:***	
Proposal Date:	February 06, 2014	***Site Location Map:***	
Year:	2014		

Instrument Type: (EPA Part II.1-air) - Environmental Compliance Approval (project type: air)
Off Instrument Name:
Posted By:
Company Name: West Carleton Sand & Gravel Inc.
Site Address:
Location Other:
Proponent Name:
Proponent Address: Karson Konstruction, Post Office Box Delivery 264, Carp Ontario, Canada K0A 1L0
Comment Period:
URL:

Site Location Details:

Ontario CITY OF OTTAWA

Site: ***Humanics Universal Inc.***
Part of Lot 7 Ottawa ON K4A 1Z6

Database: ***ECA***

Approval No:	2541-AK4T53	***MOE District:***	
Approval Date:	2017-03-30	***City:***	
Status:	Approved	***Longitude:***	
Record Type:	ECA	***Latitude:***	
Link Source:	IDS	***Geometry X:***	
SWP Area Name:		***Geometry Y:***	

Approval Type: ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS
Project Type: MUNICIPAL AND PRIVATE SEWAGE WORKS
Business Name: Humanics Universal Inc.
Address: Part of Lot 7
Full Address:
Full PDF Link: https://www.accessenvironment.ene.gov.on.ca/instruments/6813-AA2NAF-14.pdf
PDF Site Location:

Site: ***City of Ottawa***
Part of Lot 15, Gore Junction Ottawa ON K2G 6J8

Database: ***ECA***

Approval No:	5759-6BUQTB	***MOE District:***	
Approval Date:	2005-05-16	***City:***	
Status:	Approved	***Longitude:***	
Record Type:	ECA	***Latitude:***	
Link Source:	IDS	***Geometry X:***	
SWP Area Name:		***Geometry Y:***	

Approval Type: ECA-AIR
Project Type: AIR
Business Name: City of Ottawa
Address: Part of Lot 15, Gore Junction
Full Address:
Full PDF Link: https://www.accessenvironment.ene.gov.on.ca/instruments/4860-69FSV9-14.pdf
PDF Site Location:

Site:
Leitrim Road Ottawa ON

Database: ***EHS***

Order No:	20020522022	***Nearest Intersection:***	Leitrim Road & Albion Road
Status:	C	***Municipality:***	Ottawa
Report Type:	Basic Report	***Client Prov/State:***	ON
Report Date:	5/31/02	***Search Radius (km):***	0.25
Date Received:	5/22/02	***X:***	-75.626738
Previous Site Name:		***Y:***	45.320131
Lot/Building Size:			
Additional Info Ordered:			

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	
SIC Description:	LIMESTONE MINING AND QUARRYING, ASPHALT PAVING MIXTURE AND BLOCK MANUFACTURING	***Choice of Contact:***	
Approval Years:	2013	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:		***MHSW Facility:***	

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	
SIC Description:	Limestone Mining and Quarrying, Asphalt Paving Mixture and Block Manufacturing	***Choice of Contact:***	
Approval Years:	2012	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:		***MHSW Facility:***	

Detail(s)

Waste Class:	252
Waste Class Desc:	WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	Registered
SIC Code:		***Co Admin:***	
SIC Description:		***Choice of Contact:***	
Approval Years:	As of Nov 2021	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:	Canada	***MHSW Facility:***	

Detail(s)

Waste Class:	252 L
Waste Class Desc:	Waste crankcase oils and lubricants

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	Registered
SIC Code:		***Co Admin:***	
SIC Description:		***Choice of Contact:***	
Approval Years:	As of Jul 2020	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:	Canada	***MHSW Facility:***	

Detail(s)

Waste Class:	252 L
Waste Class Desc:	Waste crankcase oils and lubricants

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	Registered
SIC Code:		***Co Admin:***	
SIC Description:		***Choice of Contact:***	
Approval Years:	As of Dec 2018	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:	Canada	***MHSW Facility:***	

Detail(s)

Waste Class:	252 L
Waste Class Desc:	Waste crankcase oils and lubricants

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	Registered
SIC Code:		***Co Admin:***	
SIC Description:		***Choice of Contact:***	
Approval Years:	As of Apr 2022	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:	Canada	***MHSW Facility:***	

Detail(s)

Waste Class: 252 L
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	Crystal Gilpin
SIC Description:	LIMESTONE MINING AND QUARRYING, ASPHALT PAVING MIXTURE AND BLOCK MANUFACTURING	***Choice of Contact:***	CO_OFFICIAL
Approval Years:	2014	***Phone No Admin:***	613-932-6571 Ext.204
PO Box No:		***Contam. Facility:***	No
Country:	Canada	***MHSW Facility:***	No

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	Crystal Gilpin
SIC Description:	LIMESTONE MINING AND QUARRYING, ASPHALT PAVING MIXTURE AND BLOCK MANUFACTURING	***Choice of Contact:***	CO_OFFICIAL
Approval Years:	2015	***Phone No Admin:***	613-932-6571 Ext.204
PO Box No:		***Contam. Facility:***	No
Country:	Canada	***MHSW Facility:***	No

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	
SIC Description:	Limestone Mining and Quarrying, Asphalt Paving Mixture and Block Manufacturing	***Choice of Contact:***	
Approval Years:	2009	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:		***MHSW Facility:***	

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	
SIC Description:	Limestone Mining and Quarrying, Asphalt Paving Mixture and Block Manufacturing	***Choice of Contact:***	
Approval Years:	2010	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:		***MHSW Facility:***	

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	
SIC Description:	Limestone Mining and Quarrying, Asphalt Paving Mixture and Block Manufacturing	***Choice of Contact:***	
Approval Years:	2011	***Phone No Admin:***	
PO Box No:		***Contam. Facility:***	
Country:		***MHSW Facility:***	

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***CORNWALL GRAVEL COMPANY LIMITED***
CONC. 6, PT. LOT 14, 15, 16 CONC.7, PT. LOT 15 CITY OF OTTAWA ON K4P 1N7

Database: ***GEN***

Generator No:	ON0548204	***Status:***	
SIC Code:	212315, 324121	***Co Admin:***	Crystal Gilpin
SIC Description:	LIMESTONE MINING AND QUARRYING, ASPHALT PAVING MIXTURE AND BLOCK MANUFACTURING	***Choice of Contact:***	CO_OFFICIAL
Approval Years:	2016	***Phone No Admin:***	613-932-6571 Ext.204
PO Box No:		***Contam. Facility:***	No
Country:	Canada	***MHSW Facility:***	No

Detail(s)

Waste Class: 252
Waste Class Desc: WASTE OILS & LUBRICANTS

Site: ***March Township March Township***
RR #1 Part of Lot 10 Ottawa ON

Database: ***LIMO***

ECA/Instrument No:	A460301	***Natural Attenuation:***	
Operation Status:	Closed	***Liners:***	
C of A Issue Date:		***Cover Material:***	
C of A Issued to:		***Leachate Off-Site:***	
Lndfl Gas Mgmt (P):		***Leachate On Site:***	
Lndfl Gas Mgmt (F):		***Req Coll Lndfll Gas:***	
Lndfl Gas Mgmt (E):		***Lndfll Gas Coll:***	
Lndfl Gas Mgmt Sys:		***Total Waste Rec:***	
Landfill Gas Mntr:		***TWR Methodology:***	
Leachate Coll Sys:		***TWR Unit:***	
ERC Est Vol (m3):		***Tot Aprv Cap Unit:***	

ERC Volume Unit:
ERC Dt Last Det:
Landfill Type:
Source File Type:
Fill Rate:
Fill Rate Unit:
Tot Fill Area (ha):
Tot Site Area (ha):
Footprint:
Tot Apprv Cap (m3):
Contam Atten Zone:
Grndwtr Mntr:
Surf Wtr Mntr:
Air Emis Monitor:
Approved Waste Type:
Client Site Name:
ERC Methodology:
Site Name: March Township
March Township
Site Location Details:
Service Area:
Page URL:
Financial Assurance:
Last Report Year:
Region:
District Office:
Site County:
Lot:
Concession:
Latitude:
Longitude:
Easting:
Northing:
UTM Zone:
Data Source:

Site: ***Cornwall Gravel Company Limited - Ottawa***
Lot 15&16Conc VI, Twp of Gloucester Ottawa ON

Database: ***NCPL***

Year:	2010
Site Name:	
Facility Owner:	
Discharge Type:	Industrial Sewage
Sector:	Miscellaneous Industrial
District Area:	Ottawa
Type of Concern:	CofA/Permit Non-Compliance
Contaminant:	SUSPENDED SOLIDS
Status Report:	

Details

Incident Date:	8/30/2010
Exceedance Start Date:	8/30/2010
Exceedance End Date:	8/30/2010
Limit/Unit/Freq:	25 mg/L / /mon
Quantity Min/Max:	85/85
Facility Action:	Additional Monitoring Underway
Ministry Action:	Assessment Complete - No Action Required

Site: ***Cornwall Gravel Company Limited***
Lot 14 and 15, Conc 6 Ottawa ON

Database: ***NCPL***

Year:	2006
Site Name:	
Facility Owner:	
Discharge Type:	Air Emissions
Sector:	Miscellaneous
District Area:	Ottawa
Type of Concern:	Legislation Non-Compliance
Contaminant:	SUSPENDED PARTICULATE MATTER
Status Report:	

Details

Incident Date:	5/24/2006
Exceedance Start Date:	5/24/2006
Exceedance End Date:	5/24/2006
Limit/Unit/Freq:	100 µg/m3

Quantity Min/Max: 173/173
Facility Action: Action Plan Submitted - Implementing Improvements
Ministry Action: Assessment Underway

Site: ***ONTARIO HYDRO***
TP 2996,LOT 14,15,16 LLSGAR T.S., R.M. OTTAWA-CARLE OTTAWA ON

Database: ***NPCB***

Company Code: O0902
Industry: UTILITY
Site Status:
Transaction Date: 5/31/1988
Inspection Date:

Site: ***Cornwall Gravel Company Limited***
Greely Quarry Lot 14, Concession 6, Geo. Twp of Osgoode City of Ottawa OSGOODE ON

Database: ***PTTW***

EBR Registry No: IA06E1510
Ministry Ref No: 1340-6W6JFC
Notice Type: Instrument Decision
Notice Stage:
Notice Date: March 26, 2007
Proposal Date: December 05, 2006
Year: 2006
Decision Posted:
Exception Posted:
Section:
Act 1:
Act 2:
Site Location Map:
Instrument Type: (OWRA s. 34) - Permit to Take Water
Off Instrument Name:
Posted By:
Company Name: Cornwall Gravel Company Limited
Site Address:
Location Other:
Proponent Name:
Proponent Address: 390 Eleventh Street West, Postal Station Delivery 67, Cornwall Ontario, Canada K6H 5R9
Comment Period:
URL:

Site Location Details:

Greely Quarry Lot 14, Concession 6, Geo. Twp of Osgoode City of Ottawa OSGOODE

Site:
Leitrim Rd Ottawa ON

Database: ***SPL***

Ref No: 3708-8HTL5H
Site No:
Incident Dt: 6/13/2011
Year:
Incident Cause: Cooling System Leak
Incident Event:
Contaminant Code: 38
Contaminant Name: FREON R-134A (CFC)
Contaminant Limit 1:
Contam Limit Freq 1:
Contaminant UN No 1:
Environment Impact: Confirmed
Nature of Impact: Air Pollution; Other Impact(s)
Receiving Medium:
Receiving Env:
MOE Response: Referral to others
Dt MOE Arvl on Scn:
MOE Reported Dt: 6/14/2011
Dt Document Closed:
Incident Reason:
Discharger Report:
Material Group:
Health/Env Conseq:
Client Type:
Sector Type: Other
Agency Involved:
Nearest Watercourse:
Site Address: Leitrim Rd
Site District Office:
Site Postal Code:
Site Region:
Site Municipality: Ottawa
Site Lot:
Site Conc:
Northing:
Easting:
Site Geo Ref Accu:
Site Map Datum:
SAC Action Class: Air Spills - Gases and Vapours
Source Type:
Site Name: Canadian Military Base<UNOFFICIAL>
Site County/District:
Site Geo Ref Meth:

Incident Summary:	Can.Military Base, Ottaw: 170 lb freon to atm. AC unit
Contaminant Qty:	78 kg

Site: ***Enbridge Gas Distribution Inc.***
Anderson Rd. ¿ 2km South of Renaud Rd. Ottawa ON

Database: ***SPL***

Ref No:	1545-89WMQM	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:		***Health/Env Conseq:***	
Year:		***Client Type:***	
Incident Cause:	Discharge or Emission to Air	***Sector Type:***	Other
Incident Event:		***Agency Involved:***	
Contaminant Code:	35	***Nearest Watercourse:***	
Contaminant Name:	NATURAL GAS (METHANE)	***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site Postal Code:***	
Contaminant UN No 1:		***Site Region:***	
Environment Impact:	Not Anticipated	***Site Municipality:***	
Nature of Impact:		***Site Lot:***	
Receiving Medium:		***Site Conc:***	
Receiving Env:		***Northing:***	
MOE Response:	Referral to others	***Easting:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Accu:***	
MOE Reported Dt:	10/4/2010	***Site Map Datum:***	
Dt Document Closed:	10/8/2010	***SAC Action Class:***	Air Spills - Gases and Vapours
Incident Reason:		***Source Type:***	

Site Name:	Anderson Rd. ¿ 2km South of Renaud Rd. <UNOFFICIAL>
Site County/District:	
Site Geo Ref Meth:	
Incident Summary:	TSSA-FSB: natural gas leak from 16" steel main.
Contaminant Qty:	1000000 L

Site: ***Unknown<UNOFFICIAL>***
Anderson Road, between Piperville and Thunder Roads Ottawa ON K0A 1K0

Database: ***SPL***

Ref No:	6733-BBPNRL	***Discharger Report:***	
Site No:	NA	***Material Group:***	
Incident Dt:	4/17/2019	***Health/Env Conseq:***	0 - No Impact
Year:		***Client Type:***	Individual
Incident Cause:		***Sector Type:***	
Incident Event:		***Agency Involved:***	
Contaminant Code:		***Nearest Watercourse:***	
Contaminant Name:		***Site Address:***	Anderson Road, between Piperville and Thunder Roads
Contaminant Limit 1:		***Site District Office:***	Ottawa
Contam Limit Freq 1:		***Site Postal Code:***	K0A 1K0
Contaminant UN No 1:		***Site Region:***	Eastern
Environment Impact:		***Site Municipality:***	Ottawa
Nature of Impact:		***Site Lot:***	
Receiving Medium:		***Site Conc:***	
Receiving Env:		***Northing:***	
MOE Response:		***Easting:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Accu:***	
MOE Reported Dt:	4/17/2019	***Site Map Datum:***	
Dt Document Closed:		***SAC Action Class:***	
Incident Reason:		***Source Type:***	

Site Name:	Anderson Road, between Piperville and Thunder Roads<UNOFFICIAL>
Site County/District:	
Site Geo Ref Meth:	
Incident Summary:	Chicken Farmer Dumping Manure
Contaminant Qty:	

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526649	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127456	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048340	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	13-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064758
Layer:	2
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	08
Mat2 Desc:	FINE SAND
Mat3:	79
Mat3 Desc:	PACKED
Formation Top Depth:	1.0
Formation End Depth:	4.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064759
Layer:	3
Color:	6
General Color:	BROWN
Mat1:	08

Most Common Material:	FINE SAND
Mat2:	01
Mat2 Desc:	FILL
Mat3:	
Mat3 Desc:	
Formation Top Depth:	4.0
Formation End Depth:	8.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064757
Layer:	1
Color:	2
General Color:	GREY
Mat1:	00
Most Common Material:	UNKNOWN TYPE
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064760
Layer:	4
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	8.0
Formation End Depth:	33.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111863
Layer:	2
Plug From:	3.0
Plug To:	33.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111862
Layer:	1
Plug From:	2.0
Plug To:	3.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526649

Method Construction Code: 0
Method Construction: Not Known
Other Method Construction:

Pipe Information

Pipe ID: 10596910
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930084631
Layer: 1
Material: 5
Open Hole or Material: PLASTIC
Depth From:
Depth To: 30.0
Casing Diameter: 2.0
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 933326425
Layer: 1
Slot: 010
Screen Top Depth: 30.0
Screen End Depth: 33.0
Screen Material:
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter: 1.5

Water Details

Water ID: 933486025
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 5.0
Water Found Depth UOM: ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID: 1526648
Construction Date:
Use 1st: Not Used
Use 2nd:
Final Well Status: Test Hole
Water Type:
Casing Material:
Audit No: 127457
Tag:
Constructn Method:
Elevation (m):
Elevatn Reliabilty:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Clear/Cloudy:

Flowing (Y/N):
Flow Rate:
Data Entry Status:
Data Src: 1
Date Received: 19-Oct-1992 00:00:00
Selected Flag: TRUE
Abandonment Rec:
Contractor: 6571
Form Version: 1
Owner:
County: OTTAWA-CARLETON
Lot: 015
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Municipality:	OTTAWA CITY
Site Info:	

Bore Hole Information

Bore Hole ID:	10048339	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	13-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na

Loc Method Desc:	Not Applicable i.e. no UTM
Elevrc Desc:	
Location Source Date:	
Improvement Location Source:	
Improvement Location Method:	
Source Revision Comment:	
Supplier Comment:	

Overburden and Bedrock Materials Interval

Formation ID:	931064754
Layer:	1
Color:	2
General Color:	GREY
Mat1:	00
Most Common Material:	UNKNOWN TYPE
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064755
Layer:	2
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	79
Mat2 Desc:	PACKED
Mat3:	01
Mat3 Desc:	FILL
Formation Top Depth:	1.0
Formation End Depth:	4.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064756
Layer:	3
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY

Mat2:	08
Mat2 Desc:	FINE SAND
Mat3:	06
Mat3 Desc:	SILT
Formation Top Depth:	4.0
Formation End Depth:	31.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111860
Layer:	1
Plug From:	2.0
Plug To:	3.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111861
Layer:	2
Plug From:	3.0
Plug To:	31.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526648
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596909
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084630
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	28.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326424
Layer:	1
Slot:	010
Screen Top Depth:	28.0
Screen End Depth:	31.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486024
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526647	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127454	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048338	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	14-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064752
Layer:	1
Color:	2
General Color:	GREY
Mat1:	00
Most Common Material:	UNKNOWN TYPE
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	

Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064753
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	08
Most Common Material:	FINE SAND
Mat2:	01
Mat2 Desc:	FILL
Mat3:	
Mat3 Desc:	
Formation Top Depth:	1.0
Formation End Depth:	5.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111858
Layer:	1
Plug From:	0.0
Plug To:	1.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111859
Layer:	2
Plug From:	1.0
Plug To:	5.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526647
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596908
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084629
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	3.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch

Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 933326423
Layer: 1
Slot: 010
Screen Top Depth: 3.0
Screen End Depth: 6.0
Screen Material:
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter: 1.5

Water Details

Water ID: 933486023
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 4.0
Water Found Depth UOM: ft

Site:
lot 15 ON

Database: **WWIS**

Well ID: 1526650
Construction Date:
Use 1st: Not Used
Use 2nd:
Final Well Status: Test Hole
Water Type:
Casing Material:
Audit No: 127455
Tag:
Constructn Method:
Elevation (m):
Elevatn Reliabilty:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Clear/Cloudy:
Municipality: OTTAWA CITY
Site Info:

Flowing (Y/N):
Flow Rate:
Data Entry Status:
Data Src: 1
Date Received: 19-Oct-1992 00:00:00
Selected Flag: TRUE
Abandonment Rec:
Contractor: 6571
Form Version: 1
Owner:
County: OTTAWA-CARLETON
Lot: 015
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10048341
DP2BR:
Spatial Status:
Code OB:
Code OB Desc:
Open Hole:
Cluster Kind:
Date Completed: 12-Aug-1992 00:00:00
Remarks:
Loc Method Desc: Not Applicable i.e. no UTM
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation:
Elevrc:
Zone: 18
East83:
North83:
Org CS:
UTMRC: 9
UTMRC Desc: unknown UTM
Location Method: na

Overburden and Bedrock Materials Interval

Formation ID:	931064762
Layer:	2
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	79
Mat2 Desc:	PACKED
Mat3:	
Mat3 Desc:	
Formation Top Depth:	1.0
Formation End Depth:	2.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064761
Layer:	1
Color:	2
General Color:	GREY
Mat1:	00
Most Common Material:	UNKNOWN TYPE
Mat2:	73
Mat2 Desc:	HARD
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064763
Layer:	3
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Mat2 Desc:	GRAVEL
Mat3:	01
Mat3 Desc:	FILL
Formation Top Depth:	2.0
Formation End Depth:	5.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064764
Layer:	4
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	5.0

Formation End Depth:	33.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111865
Layer:	2
Plug From:	5.0
Plug To:	33.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111864
Layer:	1
Plug From:	2.0
Plug To:	5.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526650
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596911
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084632
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	30.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326426
Layer:	1
Slot:	010
Screen Top Depth:	30.0
Screen End Depth:	33.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486026

Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 8 ON

Database: ***WWIS***

Well ID:	1500396	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Domestic	***Data Entry Status:***	
Use 2nd:	0	***Data Src:***	1
Final Well Status:	Water Supply	***Date Received:***	26-Feb-1948 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:		***Contractor:***	1107
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	008
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	JG
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY (GLOUCESTER)		
Site Info:			

Bore Hole Information

Bore Hole ID:	10022441	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	29-Oct-1947 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	930989161
Layer:	1
Color:	3
General Color:	BLUE
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Mat2 Desc:	STONES
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	28.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	930989162
Layer:	2
Color:	
General Color:	
Mat1:	26
Most Common Material:	ROCK
Mat2:	19
Mat2 Desc:	SLATE
Mat3:	
Mat3 Desc:	
Formation Top Depth:	28.0
Formation End Depth:	51.0
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961500396
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	10571011
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930037815
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	28.0
Casing Diameter:	4.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930037816
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	51.0
Casing Diameter:	4.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pumping Test Method Desc:	BAILER
Pump Test ID:	991500396
Pump Set At:	
Static Level:	6.0
Final Level After Pumping:	6.0
Recommended Pump Depth:	
Pumping Rate:	8.0

Flowing Rate:	
Recommended Pump Rate:	8.0
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	0
Pumping Duration MIN:	30
Flowing:	No

Water Details

Water ID:	933452913
Layer:	1
Kind Code:	5
Kind:	Not stated
Water Found Depth:	51.0
Water Found Depth UOM:	ft

Site:
lot 13 ON

Database: ***WWIS***

Well ID:	1520666	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Domestic	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Water Supply	***Date Received:***	08-Aug-1986 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	NA	***Contractor:***	1517
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	013
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10042508	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	17-Jul-1986 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931045467
Layer:	1
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	75.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933109179
Layer:	1
Plug From:	0.0
Plug To:	30.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961520666
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	10591078
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930074202
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	30.0
Casing Diameter:	6.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pumping Test Method Desc:	BAILER
Pump Test ID:	991520666
Pump Set At:	
Static Level:	1.0
Final Level After Pumping:	40.0
Recommended Pump Depth:	60.0
Pumping Rate:	20.0
Flowing Rate:	
Recommended Pump Rate:	70.0
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	
Water State After Test:	

Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	No

Draw Down & Recovery

Pump Test Detail ID:	934112552
Test Type:	
Test Duration:	15
Test Level:	20.0
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934907199
Test Type:	
Test Duration:	60
Test Level:	40.0
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934648438
Test Type:	
Test Duration:	45
Test Level:	35.0
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934387835
Test Type:	
Test Duration:	30
Test Level:	30.0
Test Level UOM:	ft

Water Details

Water ID:	933477982
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	72.0
Water Found Depth UOM:	ft

Site:
lot 7 ON

Database: ***WWIS***

Well ID:	1524618	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Cooling And A/C	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	21-Jun-1990 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	84331	***Contractor:***	5222
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	007
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	

Pump Rate:
Static Water Level:
Clear/Cloudy:
Municipality: OTTAWA CITY
Site Info:

Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10046366
DP2BR:
Spatial Status:
Code OB:
Code OB Desc:
Open Hole:
Cluster Kind:
Date Completed: 13-Jun-1990 00:00:00
Remarks:
Loc Method Desc: Not Applicable i.e. no UTM
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation:
Elevrc:
Zone: 18
East83:
North83:
Org CS:
UTMRC: 9
UTMRC Desc: unknown UTM
Location Method: na

Overburden and Bedrock Materials Interval

Formation ID: 931058527
Layer: 3
Color: 8
General Color: BLACK
Mat1: 17
Most Common Material: SHALE
Mat2: 85
Mat2 Desc: SOFT
Mat3:
Mat3 Desc:
Formation Top Depth: 12.0
Formation End Depth: 21.0
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931058526
Layer: 2
Color: 2
General Color: GREY
Mat1: 28
Most Common Material: SAND
Mat2: 08
Mat2 Desc: FINE SAND
Mat3:
Mat3 Desc:
Formation Top Depth: 6.0
Formation End Depth: 12.0
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 931058525
Layer: 1
Color: 6

General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	77
Mat2 Desc:	LOOSE
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	6.0
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961524618
Method Construction Code:	5
Method Construction:	Air Percussion
Other Method Construction:	

Pipe Information

Pipe ID:	10594936
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930081182
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	10.0
Casing Diameter:	6.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526637	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127467	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048328	***Elevation:***	

DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	19-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064731
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	3.0
Formation End Depth:	23.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064730
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	38
Mat2 Desc:	CONGLOMERATE
Mat3:	28
Mat3 Desc:	SAND
Formation Top Depth:	0.0
Formation End Depth:	3.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111838
Layer:	1
Plug From:	0.0
Plug To:	3.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111839
Layer:	2
Plug From:	3.0

Plug To:	23.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526637
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596898
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084616
Layer:	1
Material:	
Open Hole or Material:	
Depth From:	
Depth To:	18.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326413
Layer:	1
Slot:	010
Screen Top Depth:	18.0
Screen End Depth:	23.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486013
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site: ***lot 15 ON***

Database: ***WWIS***

Well ID:	1526638	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127466	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	

Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

<u>Bore Hole Information</u>

Bore Hole ID:	10048329	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	19-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

<u>Overburden and Bedrock Materials Interval</u>

Formation ID:	931064733
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	4.0
Formation End Depth:	30.0
Formation End Depth UOM:	ft

<u>Overburden and Bedrock Materials Interval</u>

Formation ID:	931064732
Layer:	1
Color:	2
General Color:	GREY
Mat1:	38
Most Common Material:	CONGLOMERATE
Mat2:	12
Mat2 Desc:	STONES
Mat3:	28
Mat3 Desc:	SAND
Formation Top Depth:	0.0
Formation End Depth:	4.0
Formation End Depth UOM:	ft

<u>Annular Space/Abandonment</u>

Sealing Record

Plug ID:	933111841
Layer:	2
Plug From:	2.0
Plug To:	30.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111840
Layer:	1
Plug From:	0.0
Plug To:	2.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526638
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596899
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084618
Layer:	2
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	25.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930084617
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	18.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326414
Layer:	1
Slot:	010
Screen Top Depth:	18.0
Screen End Depth:	21.0
Screen Material:	

Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter: 1.5

Water Details

Water ID: 933486014
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 5.0
Water Found Depth UOM: ft

Site:
lot 15 ON

Database: **WWIS**

Well ID:	1526639	**Flowing (Y/N):**	
Construction Date:		**Flow Rate:**	
Use 1st:	Not Used	**Data Entry Status:**	
Use 2nd:		**Data Src:**	1
Final Well Status:	Test Hole	**Date Received:**	19-Oct-1992 00:00:00
Water Type:		**Selected Flag:**	TRUE
Casing Material:		**Abandonment Rec:**	
Audit No:	127465	**Contractor:**	6571
Tag:		**Form Version:**	1
Constructn Method:		**Owner:**	
Elevation (m):		**County:**	OTTAWA-CARLETON
Elevatn Reliabilty:		**Lot:**	015
Depth to Bedrock:		**Concession:**	
Well Depth:		**Concession Name:**	
Overburden/Bedrock:		**Easting NAD83:**	
Pump Rate:		**Northing NAD83:**	
Static Water Level:		**Zone:**	
Clear/Cloudy:		**UTM Reliability:**	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048330	**Elevation:**	
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	18
Code OB:		**East83:**	
Code OB Desc:		**North83:**	
Open Hole:		**Org CS:**	
Cluster Kind:		**UTMRC:**	9
Date Completed:	19-Aug-1992 00:00:00	**UTMRC Desc:**	unknown UTM
Remarks:		**Location Method:**	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID: 931064735
Layer: 2
Color: 2
General Color: GREY
Mat1: 05
Most Common Material: CLAY
Mat2: 06

Mat2 Desc:	SILT
Mat3:	08
Mat3 Desc:	FINE SAND
Formation Top Depth:	4.0
Formation End Depth:	27.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064734
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	08
Mat2 Desc:	FINE SAND
Mat3:	01
Mat3 Desc:	FILL
Formation Top Depth:	0.0
Formation End Depth:	4.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111842
Layer:	1
Plug From:	0.0
Plug To:	3.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111843
Layer:	2
Plug From:	3.0
Plug To:	27.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526639
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596900
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084619
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	

Depth To:	9.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930084621
Layer:	3
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	24.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930084620
Layer:	2
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	17.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326415
Layer:	1
Slot:	010
Screen Top Depth:	9.0
Screen End Depth:	12.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486015
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526640	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127464	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015

Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048331	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	18-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064737
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	3.0
Formation End Depth:	35.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064736
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	28
Mat2 Desc:	SAND
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	3.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111844
Layer:	1
Plug From:	0.0
Plug To:	2.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111845
Layer:	2
Plug From:	2.0
Plug To:	35.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526640
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596901
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084622
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	32.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326416
Layer:	1
Slot:	010
Screen Top Depth:	32.0
Screen End Depth:	35.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486016
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database:
WWIS

Well ID:	1526641	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127463	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048332	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	17-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064738
Layer:	1
Color:	2
General Color:	GREY
Mat1:	11
Most Common Material:	GRAVEL
Mat2:	28
Mat2 Desc:	SAND
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	2.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064739
Layer:	2
Color:	2

General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	2.0
Formation End Depth:	32.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111847
Layer:	2
Plug From:	2.0
Plug To:	32.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111846
Layer:	1
Plug From:	0.0
Plug To:	2.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526641
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596902
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084623
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	29.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326417
Layer:	1
Slot:	010
Screen Top Depth:	29.0
Screen End Depth:	32.0
Screen Material:	

Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486017
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526642	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127462	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048333	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	17-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064741
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06

Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	2.0
Formation End Depth:	305.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064740
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	2.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111848
Layer:	1
Plug From:	0.0
Plug To:	3.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111849
Layer:	2
Plug From:	3.0
Plug To:	30.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526642
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596903
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084624
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	

Depth To:	28.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326418
Layer:	1
Slot:	010
Screen Top Depth:	28.0
Screen End Depth:	31.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486018
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526643	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127461	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048334	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	17-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			

Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID:	931064743
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	11
Mat3 Desc:	GRAVEL
Formation Top Depth:	1.0
Formation End Depth:	31.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064742
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111850
Layer:	1
Plug From:	0.0
Plug To:	3.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111851
Layer:	2
Plug From:	3.0
Plug To:	31.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526643
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596904
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084625
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	28.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326419
Layer:	1
Slot:	010
Screen Top Depth:	28.0
Screen End Depth:	31.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486019
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526644	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127460	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048335	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	18-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na

Loc Method Desc: Not Applicable i.e. no UTM
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID:	931064744
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	10
Mat2 Desc:	COARSE SAND
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	3.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064745
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	11
Mat3 Desc:	GRAVEL
Formation Top Depth:	3.0
Formation End Depth:	28.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111852
Layer:	1
Plug From:	0.0
Plug To:	2.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111853
Layer:	2

Plug From:	2.0
Plug To:	21.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526644
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596905
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084626
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	19.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326420
Layer:	1
Slot:	010
Screen Top Depth:	15.0
Screen End Depth:	18.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486020
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	1.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526645	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127459	***Contractor:***	6571
Tag:		***Form Version:***	1

Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048336	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	18-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064747
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	11
Mat3 Desc:	GRAVEL
Formation Top Depth:	1.0
Formation End Depth:	27.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064746
Layer:	1
Color:	2
General Color:	GREY
Mat1:	12
Most Common Material:	STONES
Mat2:	
Mat2 Desc:	
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111854
Layer:	1
Plug From:	0.0
Plug To:	2.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111855
Layer:	2
Plug From:	2.0
Plug To:	26.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526645
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596906
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084627
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	24.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326421
Layer:	1
Slot:	010
Screen Top Depth:	24.0
Screen End Depth:	27.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486021
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0

Water Found Depth UOM: ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526646	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127458	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048337	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	13-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064750
Layer:	3
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	28
Mat3 Desc:	SAND
Formation Top Depth:	6.0
Formation End Depth:	25.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID: 931064749

Layer:	2
Color:	6
General Color:	BROWN
Mat1:	10
Most Common Material:	COARSE SAND
Mat2:	11
Mat2 Desc:	GRAVEL
Mat3:	01
Mat3 Desc:	FILL
Formation Top Depth:	1.0
Formation End Depth:	6.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064751
Layer:	4
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	11
Mat2 Desc:	GRAVEL
Mat3:	77
Mat3 Desc:	LOOSE
Formation Top Depth:	25.0
Formation End Depth:	31.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064748
Layer:	1
Color:	2
General Color:	GREY
Mat1:	00
Most Common Material:	UNKNOWN TYPE
Mat2:	73
Mat2 Desc:	HARD
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	1.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111857
Layer:	2
Plug From:	3.0
Plug To:	31.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111856
Layer:	1
Plug From:	2.0
Plug To:	3.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526646
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596907
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084628
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	28.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326422
Layer:	1
Slot:	010
Screen Top Depth:	28.0
Screen End Depth:	31.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486022
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 10 ON

Database: ***WWIS***

Well ID:	1535825	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:		***Data Entry Status:***	
Use 2nd:		***Data Src:***	
Final Well Status:		***Date Received:***	29-Sep-2005 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	Z17653	***Contractor:***	6907
Tag:		***Form Version:***	3
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	010
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	

Overburden/Bedrock:
Pump Rate:
Static Water Level:
Clear/Cloudy:
Municipality: OTTAWA CITY
Site Info:

Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

<u>Bore Hole Information</u>

Bore Hole ID: 11316364
DP2BR:
Spatial Status:
Code OB:
Code OB Desc:
Open Hole:
Cluster Kind:
Date Completed: 22-Sep-2005 00:00:00
Remarks:
Loc Method Desc: Not Applicable i.e. no UTM
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation:
Elevrc:
Zone:
East83:
North83:
Org CS:
UTMRC:
UTMRC Desc:
Location Method: na

<u>Overburden and Bedrock Materials Interval</u>

Formation ID: 932997254
Layer: 2
Color:
General Color:
Mat1:
Most Common Material:
Mat2:
Mat2 Desc:
Mat3:
Mat3 Desc:
Formation Top Depth: 19.0
Formation End Depth: 77.0
Formation End Depth UOM: ft

<u>Overburden and Bedrock Materials Interval</u>

Formation ID: 932997253
Layer: 1
Color:
General Color:
Mat1:
Most Common Material:
Mat2:
Mat2 Desc:
Mat3:
Mat3 Desc:
Formation Top Depth: 0.0
Formation End Depth: 19.0
Formation End Depth UOM: ft

<u>Method of Construction & Well Use</u>

Method Construction ID: 961535825
Method Construction Code: B

Method Construction:	Other Method
Other Method Construction:	

Pipe Information

Pipe ID:	11331219
Casing No:	1
Comment:	
Alt Name:	

Results of Well Yield Testing

Pumping Test Method Desc:	
Pump Test ID:	11345704
Pump Set At:	75.0
Static Level:	
Final Level After Pumping:	
Recommended Pump Depth:	
Pumping Rate:	
Flowing Rate:	
Recommended Pump Rate:	
Levels UOM:	ft
Rate UOM:	LPM
Water State After Test Code:	
Water State After Test:	
Pumping Test Method:	
Pumping Duration HR:	
Pumping Duration MIN:	
Flowing:	

Site:
lot 12 ON

Database: ***WWIS***

Well ID:	1535508	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:		***Data Entry Status:***	
Use 2nd:		***Data Src:***	
Final Well Status:		***Date Received:***	28-May-2005 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	Z17642	***Contractor:***	6907
Tag:		***Form Version:***	3
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	012
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	11316047	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	
Date Completed:	10-May-2005 00:00:00	***UTMRC Desc:***	
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		

Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Method of Construction & Well Use

Method Construction ID:	961535508
Method Construction Code:	B
Method Construction:	Other Method
Other Method Construction:	

Pipe Information

Pipe ID:	11330902
Casing No:	1
Comment:	
Alt Name:	

Site: ***lot 15 ON***

Database: ***WWIS***

Well ID:	1530391	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:		***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Abandoned-Quality	***Date Received:***	01-Dec-1998 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	194596	***Contractor:***	3749
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10051926	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	10-Sep-1998 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		

Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Annular Space/Abandonment Sealing Record

Plug ID:	933115536
Layer:	2
Plug From:	1.0
Plug To:	25.0
Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933115535
Layer:	1
Plug From:	25.0
Plug To:	378.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961530391
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10600496
Casing No:	1
Comment:	
Alt Name:	

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526653	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127468	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048344	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	

Cluster Kind:		***UTMRC:***	9
Date Completed:	19-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na

Loc Method Desc: Not Applicable i.e. no UTM
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

<u>Overburden and Bedrock Materials Interval</u>

Formation ID:	931064770
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	6.0
Formation End Depth:	32.0
Formation End Depth UOM:	ft

<u>Overburden and Bedrock Materials Interval</u>

Formation ID:	931064769
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	08
Most Common Material:	FINE SAND
Mat2:	01
Mat2 Desc:	FILL
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	6.0
Formation End Depth UOM:	ft

<u>Annular Space/Abandonment Sealing Record</u>

Plug ID:	933111870
Layer:	1
Plug From:	0.0
Plug To:	3.0
Plug Depth UOM:	ft

<u>Annular Space/Abandonment Sealing Record</u>

Plug ID:	933111871
Layer:	2
Plug From:	3.0
Plug To:	32.0
Plug Depth UOM:	ft

<u>Method of Construction & Well Use</u>

Method Construction ID:	961526653
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596914
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084635
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	22.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326429
Layer:	1
Slot:	010
Screen Top Depth:	22.0
Screen End Depth:	32.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486029
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID:	1526652	***Flowing (Y/N):***	
Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127469	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	

Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048343	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	20-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064768
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06
Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	5.0
Formation End Depth:	30.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064767
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	08
Most Common Material:	FINE SAND
Mat2:	01
Mat2 Desc:	FILL
Mat3:	
Mat3 Desc:	
Formation Top Depth:	0.0
Formation End Depth:	5.0
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111868
Layer:	1
Plug From:	1.0
Plug To:	3.0

Plug Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933111869
Layer:	2
Plug From:	3.0
Plug To:	30.0
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	961526652
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	10596913
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930084634
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	27.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	933326428
Layer:	1
Slot:	010
Screen Top Depth:	27.0
Screen End Depth:	30.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486028
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	5.0
Water Found Depth UOM:	ft

Site:
lot 15 ON

Database: ***WWIS***

Well ID: 1526651

Flowing (Y/N):

Construction Date:		***Flow Rate:***	
Use 1st:	Not Used	***Data Entry Status:***	
Use 2nd:		***Data Src:***	1
Final Well Status:	Test Hole	***Date Received:***	19-Oct-1992 00:00:00
Water Type:		***Selected Flag:***	TRUE
Casing Material:		***Abandonment Rec:***	
Audit No:	127470	***Contractor:***	6571
Tag:		***Form Version:***	1
Constructn Method:		***Owner:***	
Elevation (m):		***County:***	OTTAWA-CARLETON
Elevatn Reliabilty:		***Lot:***	015
Depth to Bedrock:		***Concession:***	
Well Depth:		***Concession Name:***	
Overburden/Bedrock:		***Easting NAD83:***	
Pump Rate:		***Northing NAD83:***	
Static Water Level:		***Zone:***	
Clear/Cloudy:		***UTM Reliability:***	
Municipality:	OTTAWA CITY		
Site Info:			

Bore Hole Information

Bore Hole ID:	10048342	***Elevation:***	
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	18
Code OB:		***East83:***	
Code OB Desc:		***North83:***	
Open Hole:		***Org CS:***	
Cluster Kind:		***UTMRC:***	9
Date Completed:	20-Aug-1992 00:00:00	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	na
Loc Method Desc:	Not Applicable i.e. no UTM		
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	931064765
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	11
Most Common Material:	GRAVEL
Mat2:	08
Mat2 Desc:	FINE SAND
Mat3:	01
Mat3 Desc:	FILL
Formation Top Depth:	0.0
Formation End Depth:	5.0
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	931064766
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	06

Mat2 Desc:	SILT
Mat3:	66
Mat3 Desc:	DENSE
Formation Top Depth:	5.0
Formation End Depth:	28.0
Formation End Depth UOM:	ft

<u>Annular Space/Abandonment Sealing Record</u>

Plug ID:	933111867
Layer:	2
Plug From:	2.0
Plug To:	28.0
Plug Depth UOM:	ft

<u>Annular Space/Abandonment Sealing Record</u>

Plug ID:	933111866
Layer:	1
Plug From:	0.0
Plug To:	2.0
Plug Depth UOM:	ft

<u>Method of Construction & Well Use</u>

Method Construction ID:	961526651
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

<u>Pipe Information</u>

Pipe ID:	10596912
Casing No:	1
Comment:	
Alt Name:	

<u>Construction Record - Casing</u>

Casing ID:	930084633
Layer:	1
Material:	5
Open Hole or Material:	PLASTIC
Depth From:	
Depth To:	23.0
Casing Diameter:	2.0
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

<u>Construction Record - Screen</u>

Screen ID:	933326427
Layer:	1
Slot:	010
Screen Top Depth:	23.0
Screen End Depth:	28.0
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	1.5

Water Details

Water ID:	933486027
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	1.0
Water Found Depth UOM:	ft

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ***Note:*** *Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Abandoned Aggregate Inventory: Provincial AAGR

The MAAP Program maintains a database of abandoned pits and quarries. Please note that the database is only referenced by lot and concession and city/town location. The database provides information regarding the location, type, size, land use, status and general comments.*

Government Publication Date: Sept 2002*

Aggregate Inventory: Provincial AGR

The Ontario Ministry of Natural Resources maintains a database of all active pits and quarries. The database provides information regarding the registered owner/operator, location name, operation type, approval type, and maximum annual tonnage.

Government Publication Date: Up to Nov 2021

Abandoned Mine Information System: Provincial AMIS

The Abandoned Mines Information System contains data on known abandoned and inactive mines located on both Crown and privately held lands. The information was provided by the Ministry of Northern Development and Mines (MNDM), with the following disclaimer: "the database provided has been compiled from various sources, and the Ministry of Northern Development and Mines makes no representation and takes no responsibility that such information is accurate, current or complete". Reported information includes official mine name, status, background information, mine start/end date, primary commodity, mine features, hazards and remediation.

Government Publication Date: 1800-Mar 2022

Anderson's Waste Disposal Sites: Private ANDR

The information provided in this database was collected by examining various historical documents which aimed to characterize the likely position of former waste disposal sites from 1860 to present. The research initiative behind the creation of this database was to identify those sites that are missing from the Ontario MOE Waste Disposal Site Inventory, as well as to provide revisions and corrections to the positions and descriptions of sites currently listed in the MOE inventory. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources. Please note that the data is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1860s-Present

Aboveground Storage Tanks: Provincial AST

Historical listing of aboveground storage tanks made available by the Department of Natural Resources and Forestry. Includes tanks used to hold water or petroleum. This dataset has been retired as of September 25, 2014 and will no longer be updated.

Government Publication Date: May 31, 2014

Automobile Wrecking & Supplies: Private AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-May 31, 2022

Borehole: Provincial BORE

A borehole is the generalized term for any narrow shaft drilled in the ground, either vertically or horizontally. The information here includes geotechnical investigations or environmental site assessments, mineral exploration, or as a pilot hole for installing piers or underground utilities. Information is from many sources such as the Ministry of Transportation (MTO) boreholes from engineering reports and projects from the 1950 to 1990's in Southern Ontario. Boreholes from the Ontario Geological Survey (OGS) including The Urban Geology Analysis Information System (UGAIS) and the York Peel Durham Toronto (YPDT) database of the Conservation Authority Moraine Coalition. This database will include fields such as location, stratigraphy, depth, elevation, year drilled, etc. For all water well data or oil and gas well data for Ontario please refer to WWIS and OOGW.

Government Publication Date: 1875-Jul 2018

Certificates of Approval: Provincial CA

This database contains the following types of approvals: Air & Noise, Industrial Sewage, Municipal & Private Sewage, Waste Management Systems and Renewable Energy Approvals. The MOE in Ontario states that any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste, must have a Certificate of Approval before it can operate lawfully. Fields include approval number, business name, address, approval date, approval type and status. This database will no longer be updated, as CofA's have been replaced by either Environmental Activity and Sector Registry (EASR) or Environmental Compliance Approval (ECA). Please refer to those individual databases for any information after Oct.31, 2011.

Government Publication Date: 1985-Oct 30, 2011*

Dry Cleaning Facilities: Federal CDRY

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2020

Commercial Fuel Oil Tanks: Provincial CFOT

Locations of commercial underground fuel oil tanks. This is not a comprehensive or complete inventory of commercial fuel tanks in the province; this listing is a copy of records of registered commercial underground fuel oil tanks obtained under Access to Public Information.
Note that the following types of tanks do not require registration: waste oil tanks in apartments, office buildings, residences, etc.; aboveground gas or diesel tanks. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2022

Chemical Manufacturers and Distributors: Private CHEM

This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).

Government Publication Date: 1999-Jan 31, 2020

Chemical Register: Private CHM

This database includes a listing of locations of facilities within the Province or Territory that either manufacture and/or distributes chemicals.

Government Publication Date: 1999-May 31, 2022

Compressed Natural Gas Stations: Private CNG

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 -Sep 2022

Inventory of Coal Gasification Plants and Coal Tar Sites: Provincial COAL

This inventory includes both the "Inventory of Coal Gasification Plant Waste Sites in Ontario-April 1987" and the Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario-November 1988) collected by the MOE. It identifies industrial sites that produced and continue to produce or use coal tar and other related tars. Detailed information is available and includes: facility type, size, land use, information on adjoining properties, soil condition, site operators/occupants, site description, potential environmental impacts and historic maps available. This was a one-time inventory.*

Government Publication Date: Apr 1987 and Nov 1988*

Compliance and Convictions: Provincial CONV

This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.

Government Publication Date: 1989-Jun 2022

Certificates of Property Use: Provincial CPU

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include CPU's on the registry such as (EPA s. 168.6) - Certificate of Property Use.

Government Publication Date: 1994 - Sep 30, 2022

Drill Hole Database: Provincial DRL

The Ontario Drill Hole Database contains information on more than 113,000 percussion, overburden, sonic and diamond drill holes from assessment files on record with the department of Mines and Minerals. Please note that limited data is available for southern Ontario, as it was the last area to be completed. The database was created when surveys submitted to the Ministry were converted in the Assessment File Research Image Database (AFRI) project. However, the degree of accuracy (coordinates) as to the exact location of drill holes is dependent upon the source document submitted to the MNDM. Levels of accuracy used to locate holes are: centering on the mining claim; a sketch of the mining claim; a 1:50,000 map; a detailed company map; or from submitted a "Report of Work".

Government Publication Date: 1886 - Sep 2020

Delisted Fuel Tanks: Provincial DTNK

List of fuel storage tank sites that were once found in - and have since been removed from - the list of fuel storage tanks made available by the regulatory agency under Access to Public Information.

Government Publication Date: Feb 28, 2022

Environmental Activity and Sector Registry: Provincial EASR

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. The EASR allows businesses to register certain activities with the ministry, rather than apply for an approval. The registry is available for common systems and processes, to which preset rules of operation can be applied. The EASR is currently available for: heating systems, standby power systems and automotive refinishing. Businesses whose activities aren't subject to the EASR may apply for an ECA (Environmental Compliance Approval), Please see our ECA database.

Government Publication Date: Oct 2011- Sep 30, 2022

Environmental Registry: Provincial EBR

The Environmental Registry lists proposals, decisions and exceptions regarding policies, Acts, instruments, or regulations that could significantly affect the environment. Through the Registry, thirteen provincial ministries notify the public of upcoming proposals and invite their comments. For example, if a local business is requesting a permit, license, or certificate of approval to release substances into the air or water; these are notified on the registry. Data includes: Approval for discharge into the natural environment other than water (i.e. Air) - EPA s. 9, Approval for sewage works - OWRA s. 53(1), and EPA s. 27 - Approval for a waste disposal site. For information regarding Permit to Take Water (PTTW), Certificate of Property Use (CPU) and (ORD) Orders please refer to those individual databases.

Government Publication Date: 1994 - Sep 30, 2022

Environmental Compliance Approval: Provincial ECA

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. In the past, a business had to apply for multiple approvals (known as certificates of approval) for individual processes and pieces of equipment. Today, a business either registers itself, or applies for a single approval, depending on the types of activities it conducts. Businesses whose activities aren't subject to the EASR may apply for an ECA. A single ECA addresses all of a business's emissions, discharges and wastes. Separate approvals for air, noise and waste are no longer required. This database will also include Renewable Energy Approvals. For certificates of approval prior to Nov 1st, 2011, please refer to the CA database. For all Waste Disposal Sites please refer to the WDS database.

Government Publication Date: Oct 2011- Sep 30, 2022

Environmental Effects Monitoring: Federal EEM

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches: Private EHS

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Jul 31, 2022

Environmental Issues Inventory System: Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Emergency Management Historical Event: Provincial EMHE

List of locations of historical occurrences of emergency events, including those assigned to the Ministry of Natural Resources by Order-In-Council (OIC) under the Emergency Management and Civil Protection Act, as well as events where MNR provided requested emergency response assistance. Many of these events will have involved community evacuations, significant structural loss, and/or involvement of MNR emergency response staff. These events fall into one of ten (10) type categories: Dam Failure; Drought / Low Water; Erosion; Flood; Forest Fire; Soil and Bedrock Instability; Petroleum Resource Center Event, EMO Requested Assistance, Continuity of Operations Event, Other Requested Assistance. EMHE record details are reproduced by ERIS under License with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2017.

Government Publication Date: Apr 30, 2022

Environmental Penalty Annual Report: Provincial EPAR

This database contains data from Ontario's annual environmental penalty report published by the Ministry of the Environment and Climate Change. These reports provide information on environmental penalties for land or water violations issued to companies in one of the nine industrial sectors covered by the Municipal Industrial Strategy for Abatement (MISA) regulations.

Government Publication Date: Jan 1, 2011 - Dec 31, 2021

List of Expired Fuels Safety Facilities: Provincial EXP

List of facilities and tanks for which there was once a fuel registration. This is not a comprehensive or complete inventory of expired tanks/tank facilities in the province; this listing is a copy of previously registered tanks and facilities obtained under Access to Public Information. Includes private fuel outlets, bulk plants, fuel oil tanks, gasoline stations, marinas, propane filling stations, liquid fuel tanks, piping systems, etc; includes tanks which have been removed from the ground.
Notes: registration was not required for private fuel underground/aboveground storage tanks prior to January 1990, nor for furnace oil tanks prior to May 1, 2002; registration is not required for waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2022

Federal Convictions: Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land: Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government. Includes fire training sites and sites at which Per- and Polyfluoroalkyl Substances (PFAS) are a concern.

Government Publication Date: Jun 2000-Sep 2022

Fisheries & Oceans Fuel Tanks: Federal FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2019

Federal Identification Registry for Storage Tank Systems (FIRSTS): Federal FRST

A list of federally regulated Storage tanks from the Federal Identification Registry for Storage Tank Systems (FIRSTS). FIRSTS is Environment and Climate Change Canada's database of storage tank systems subject to the Storage Tank for Petroleum Products and Allied Petroleum Products Regulations. The main objective of the Regulations is to prevent soil and groundwater contamination from storage tank systems located on federal and aboriginal lands. Storage tank systems that do not have a valid identification number displayed in a readily visible location on or near the storage tank system may be refused product delivery.

Government Publication Date: May 31, 2018

Fuel Storage Tank: Provincial FST

List of registered private and retail fuel storage tanks. This is not a comprehensive or complete inventory of private and retail fuel storage tanks in the province; this listing is a copy of registered private and retail fuel storage tanks, obtained under Access to Public Information.
Notes: registration was not required for private fuel underground/aboveground storage tanks prior to January 1990, nor for furnace oil tanks prior to May 1, 2002; registration is not required for waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2022

Fuel Storage Tank - Historic: Provincial FSTH

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Authority.

Government Publication Date: Pre-Jan 2010*

Ontario Regulation 347 Waste Generators Summary: Provincial GEN

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. It includes data on waste generating facilities such as: drycleaners, waste treatment and disposal facilities, machine shops, electric power distribution etc. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

Government Publication Date: 1986-Apr 30, 2022

Greenhouse Gas Emissions from Large Facilities: Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO_2 eq).

Government Publication Date: 2013-Dec 2019

TSSA Historic Incidents: Provincial HINC

List of historic incidences of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen recorded by the TSSA in their previous incident tracking system. The TSSA's Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of historical fuel spills and leaks in the province. This listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: 2006-June 2009*

Indian & Northern Affairs Fuel Tanks: Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

Fuel Oil Spills and Leaks: Provincial INC

Listing of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen reported to the Spills Action Centre (SAC). This is not a comprehensive or complete inventory of fuel-related leaks, spills, and incidents in the province; this listing in a copy of incidents reported to the SAC, obtained under Access to Public Information. Includes incidents from fuel-related hazards such as spills, fires, and explosions. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2022

Landfill Inventory Management Ontario: Provincial LIMO

The Landfill Inventory Management Ontario (LIMO) database is updated every year, as the Ministry of the Environment, Conservation and Parks compiles new and updated information. Includes small and large landfills currently operating as well as those which are closed and historic. Operators of larger landfills provide landfill information for the previous operating year to the ministry for LIMO including: estimated amount of total waste received, landfill capacity, estimated total remaining landfill capacity, fill rates, engineering designs, reporting and monitoring details, size of location, service area, approved waste types, leachate of site treatment, contaminant attenuation zone and more. The small landfills include information such as site owner, site location and certificate of approval # and status.

Government Publication Date: Mar 21, 2022

Canadian Mine Locations: Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Mineral Occurrences: Provincial MNR

In the early 70's, the Ministry of Northern Development and Mines created an inventory of approximately 19,000 mineral occurrences in Ontario, in regard to metallic and industrial minerals, as well as some information on building stones and aggregate deposits. Please note that the "Horizontal Positional Accuracy" is approximately +/- 200 m. Many reference elements for each record were derived from field sketches using pace or chain/tape measurements against claim posts or topographic features in the area. The primary limiting factor for the level of positional accuracy is the scale of the source material. The testing of horizontal accuracy of the source materials was accomplished by comparing the plan metric (X and Y) coordinates of that point with the coordinates of the same point as defined from a source of higher accuracy.

Government Publication Date: 1846-Feb 2022

National Analysis of Trends in Emergencies System (NATES): Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports: Provincial NCPL

The Ministry of the Environment provides information about non-compliant discharges of contaminants to air and water that exceed legal allowable limits, from regulated industrial and municipal facilities. A reported non-compliance failure may be in regard to a Control Order, Certificate of Approval, Sectoral Regulation or specific regulation/act.

Government Publication Date: Dec 31, 2020

National Defense & Canadian Forces Fuel Tanks: Federal NDFT

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills: Federal NDSP

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites: Federal NDWD

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents: Federal NEBI

Locations of pipeline incidents from 2008 to present, made available by the Canada Energy Regulator (CER) - previously the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Jun 30, 2021

National Energy Board Wells: Federal NEBP

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES): Federal NEES

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory: Federal NPCB

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory: Federal NPRI

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

Oil and Gas Wells: Private OGWE

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Aug 31, 2022

Ontario Oil and Gas Wells: Provincial OOGW

In 1998, the MNR handed over to the Ontario Oil, Gas and Salt Resources Corporation, the responsibility of maintaining a database of oil and gas wells drilled in Ontario. The OGSR Library has over 20,000+ wells in their database. Information available for all wells in the ERIS database include well owner/operator, location, permit issue date, and well cap date, license No., status, depth and the primary target (rock unit) of the well being drilled. All geology/stratigraphy table information, plus all water table information is also provide for each well record.

Government Publication Date: 1800-Aug 2021

Inventory of PCB Storage Sites: Provincial OPCB

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

Government Publication Date: 1987-Oct 2004; 2012-Dec 2013

Orders: Provincial ORD

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include Orders on the registry such as (EPA s. 17) - Order for remedial work, (EPA s. 18) - Order for preventative measures, (EPA s. 43) - Order for removal of waste and restoration of site, (EPA s. 44) - Order for conformity with Act for waste disposal sites, (EPA s. 136) - Order for performance of environmental measures.

Government Publication Date: 1994 - Sep 30, 2022

Canadian Pulp and Paper: Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks: Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register: Provincial PES

The Ontario Ministry of the Environment and Climate Change maintains a database of licensed operators and vendors of registered pesticides.

Government Publication Date: Oct 2011- Sep 30, 2022

Pipeline Incidents: Provincial PINC

List of pipeline incidents (strikes, leaks, spills). This is not a comprehensive or complete inventory of pipeline incidents in the province; this listing in an historical copy of records previously obtained under Access to Public Information. Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2021

Private and Retail Fuel Storage Tanks: Provincial PRT

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks and licensed retail fuel outlets. This database includes an inventory of locations that have gasoline, oil, waste oil, natural gas and/or propane storage tanks on their property. The MCCR no longer collects this information. This information is now collected by the Technical Standards and Safety Authority (TSSA).

Government Publication Date: 1989-1996*

Permit to Take Water: Provincial PTTW

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include PTTW's on the registry such as OWRA s. 34 - Permit to take water.

Government Publication Date: 1994 - Sep 30, 2022

Ontario Regulation 347 Waste Receivers Summary: Provincial REC

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address, and includes receivers of waste such as: landfills, incinerators, transfer stations, PCB storage sites, sludge farms and water pollution control plants. This information is a summary of all years from 1986 including the most currently available data.

Government Publication Date: 1986-1990, 1992-2019

Record of Site Condition: Provincial RSC

The Record of Site Condition (RSC) is part of the Ministry of the Environment's Brownfields Environmental Site Registry. Protection from environmental cleanup orders for property owners is contingent upon documentation known as a record of site condition (RSC) being filed in the Environmental Site Registry. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (such as residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up.
RSCs filed after July 1, 2011 will also be included as part of the new (O.Reg. 511/09).

Government Publication Date: 1997-Sept 2001, Oct 2004-Sep 2022

Retail Fuel Storage Tanks: Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-May 31, 2022

Scott's Manufacturing Directory: Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Ontario Spills: Provincial SPL

List of spills and incidents made available the Ministry of the Environment, Conservation and Parks. This database identifies information such as location (approximate), type and quantity of contaminant, date of spill, environmental impact, cause, nature of impact, etc. Information from 1988-2002 was part of the ORIS (Occurrence Reporting Information System). The SAC (Spills Action Centre) handles all spills reported in Ontario. Regulations for spills in Ontario are part of the MOE's Environmental Protection Act, Part X. The Ministry of the Environment, Conservation and Parks cites the coronavirus pandemic as an explanation for delays in releasing data pursuant to requests.

Government Publication Date: 1988-Sep 2020; Dec 2020-Mar 2021

Wastewater Discharger Registration Database: Provincial SRDS

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

Government Publication Date: 1990-Dec 31, 2020

Anderson's Storage Tanks: Private TANK

The information provided in this database was collected by examining various historical documents, which identified the location of former storage tanks, containing substances such as fuel, water, gas, oil, and other various types of miscellaneous products. Information is available in regard to business operating at tank site, tank location, permit year, permit & installation type, no. of tanks installed & configuration and tank capacity. Data contained within this database pertains only to the city of Toronto and is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1915-1953*

Transport Canada Fuel Storage Tanks: Federal TCFT

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970 - Dec 2020

Variances for Abandonment of Underground Storage Tanks: Provincial VAR

Listing of variances granted for storage tank abandonment. This is not a comprehensive or complete inventory of tank abandonment variances in the province; this listing is a copy of tank abandonment variance records previously obtained under Access to Public Information. In Ontario, registered underground storage tanks must be removed within two years of disuse; if removal of a tank is not feasible, an application may be sought for a variance from this code requirement.

Records are not verified for accuracy or completeness.

Government Publication Date: Feb 28, 2022

Waste Disposal Sites - MOE CA Inventory: Provincial WDS

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known open (active or inactive) and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites are not receiving waste. The data contained within this database was compiled from the MOE's Certificate of Approval database. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number. All new Environmental Compliance Approvals handed out after Oct 31, 2011 for Waste Disposal Sites will still be found in this database.

Government Publication Date: Oct 2011- Sep 30, 2022

Waste Disposal Sites - MOE 1991 Historical Approval Inventory: Provincial WDSH

In June 1991, the Ontario Ministry of Environment, Waste Management Branch, published the "June 1991 Waste Disposal Site Inventory", of all known active and closed waste disposal sites as of October 30st, 1990. For each "active" site as of October 31st 1990, information is provided on site location, site/CA number, waste type, site status and site classification. For each "closed" site as of October 31st 1990, information is provided on site location, site/CA number, closure date and site classification. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number.

Government Publication Date: Up to Oct 1990*

Water Well Information System: Provincial WWIS

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. It includes such information as coordinates, construction date, well depth, primary and secondary use, pump rate, static water level, well status, etc. Also included are detailed stratigraphy information, approximate depth to bedrock and the approximate depth to the water table.

Government Publication Date: Jun 30 2022

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

Appendix E: Aerial Photographs

Appendix F: Site Photographs

Photograph No. 1

View of the Phase One Property, looking south from Leitrim Road.

Photograph No. 2

View of the Phase One property in the vicinity of the golf course, looking south.

Photograph No. 3

View of the Phase One property and the municipal drain, looking north from Piperville Road.

Photograph No. 4

View of the Phase One property adjacent to the proposed severance area, looking south from Piperville Road.

Photograph No. 5

View of area of the proposed severance at 5134 Piperville Road.

Photograph No. 6

View of the Phase One property, looking south from Farmers Way.

Photograph No. 7

View of the Phase One property, looking north from Thunder Road.

C3 – Environmental Impact Study (EIS)

Environmental Impact Statement

In Support of Hydro Ottawa Ltd. Environmental Assessment (EA)

5134 Piperville Road, Ottawa, ON

EXP Services Inc.

FINAL Report

Englobe Reference no. 02208364.000

September 2023

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Property and Confidentiality

Table of Contents

APPENDICES

1 Introduction

Englobe Corp. (Englobe) was retained by EXP Services Inc. (EXP) (herein referred to as the “Client”) on behalf of Hydro Ottawa Ltd. to prepare an Environmental Impact Statement (EIS) in support of a Class Environment Assessment (EA) for Minor Transmission Facilities in relation to the development of a new substation. The new substation is to be located at 5134 Piperville Road (herein referred to as the “Piperville Site”), along the Hydro One – L24A Corridor (herein referred to as the “Corridor”), which runs northwest from Thunder Road to northwest of Leitrim Road, located in Carlsbad Springs, Ontario. See Figure 1 in Appendix B for a Site Location Map.

1.1 Objective

The purpose of this EIS is to document the baseline environmental conditions of the study area prior to any works beginning, in addition to providing details on the potential impacts and recommended mitigation measures associated with the proposed undertaking (e.g., substation development).

1.2 Scope of Work

Englobe’s scope of work (SOW) as part of this project includes the following:

- Desktop analysis and baseline data collection;
- Conduct a field study at 5134 Piperville Road and prepare digitized findings (i.e. maps, figures etc.); and,
- Prepare a report that will include a summary of the field survey, identification of potential environmental effects, and proposed mitigation measures.

2

2 Description of the Site and Natural Environment

2.1 General Property Information & Maps of the Natural Environment

This section summarizes general property information and provides maps of the natural environment of the Site and surrounding area.

2.1.1 Hydro One – L24A Corridor

The Hydro One – L24A Corridor is approximately 5.5 km long and runs southeast from the Highway 417 Anderson Road off-ramp to just south of Thunder Road, in Carlsbad Springs, Ontario (see Figure 2.1.1.1 below). The Corridor is located approximately 12 km southeast of the Ottawa River and is surrounded by agricultural, forested, residential, urban and open space (e.g., golf course) areas. Reported elevations across the Corridor range from 70 metres above sea level (m asl) to 80 m asl (MNRF, 2022). The Corridor is located within Ecoregion 6E, Lake Simcoe-Rideau (Crins et al., 2009).

Based on available GeoOttawa mapping, the Corridor overlays RU (rural), O1P (hydro corridor - parks and open space), O1A (golf course - parks and open space) and EP (environmental protection) zoned areas. The EP zoned area appears to exist only on the approximate 0.5 km stretch of lands located between Leitrim and Anderson Road, on a parcel of National Capital Commission (NCC) owned land. Zoning designations throughout the Corridor are visually depicted on the Study Area Map, Figure 2, Appendix B.

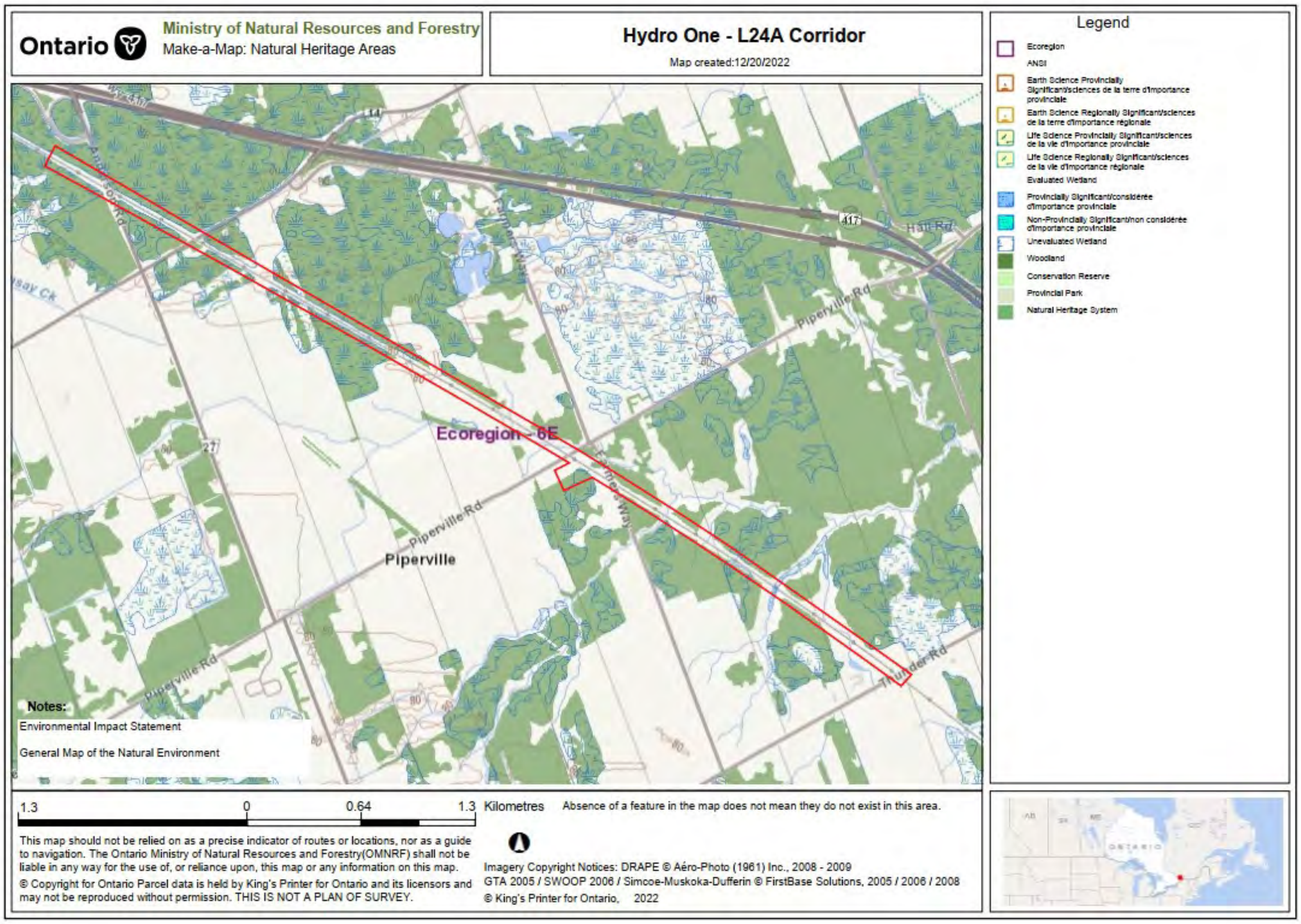

Figure 2.1.1.1: General Map of the Environment – Hydro One L24A Corridor (MNRF, 2022).

2.1.2 5134 Piperville Road

The Piperville Site is located at the municipal address 5134 Piperville Road in Ottawa, Ontario, and is approximately 1.5 hectares (ha) in size (see Figure 2.1.2.1 below). The Site is located approximately 14.5 km southeast of the Ottawa River and is surrounded by forested, residential, and roadway areas. Reported elevations across the Piperville Site range from 75 to 80 m asl (MNRF, 2022). The Piperville Site is located within Ecoregion 6E, Lake Simcoe-Rideau (Crins et al., 2009).

Based on available GeoOttawa mapping, the Piperville Site is located in a RU (rural) zoned area.

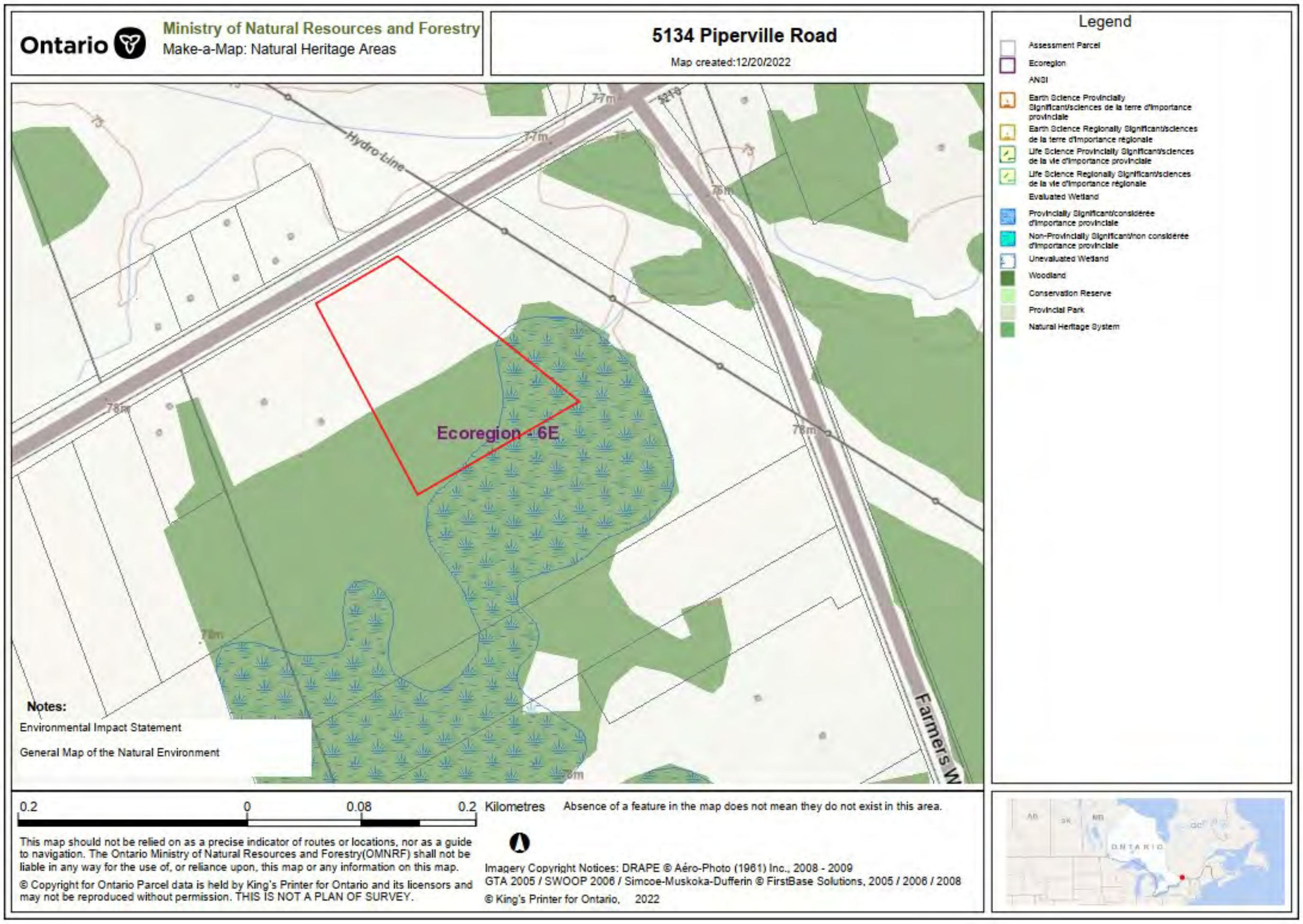

Figure 2.1.2.1: General Map of the Environment – 5134 Piperville Road (MNRF, 2022).

2.2 Landforms, Soils, and Geology

This section summarizes general physical characteristics of the Site and surrounding area.

2.2.1 Hydro One – L24A Corridor

The surficial geology of the Corridor is composed of massive to well laminated fine-textured glaciomarine deposits of silt and clay, minor sand and gravel, as well as coarse-textured deltaic glaciomarine deposits of sand, gravel, minor silt and clay (OGS, 2010). Bedrock geology of the Corridor consists of shale, limestone, dolostone, and siltstone of the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member (OGS, 2011).

Based on available Natural Heritage Mapping, no Areas of Natural and Scientific Interest (ANSIs) are present within the Corridor. The nearest mapped ANSI is the Mer Bleu Bog, located approximately 1.9 km north of the northernmost section of the Corridor (MNRF, 2022). As per the City of Ottawa Official Plan Schedule C11 – Natural Heritage System, East, (Appendix C), portions of the Corridor exist within Natural Heritage System Areas (see Figure 2.2.1.1 below; City of Ottawa, 2022).

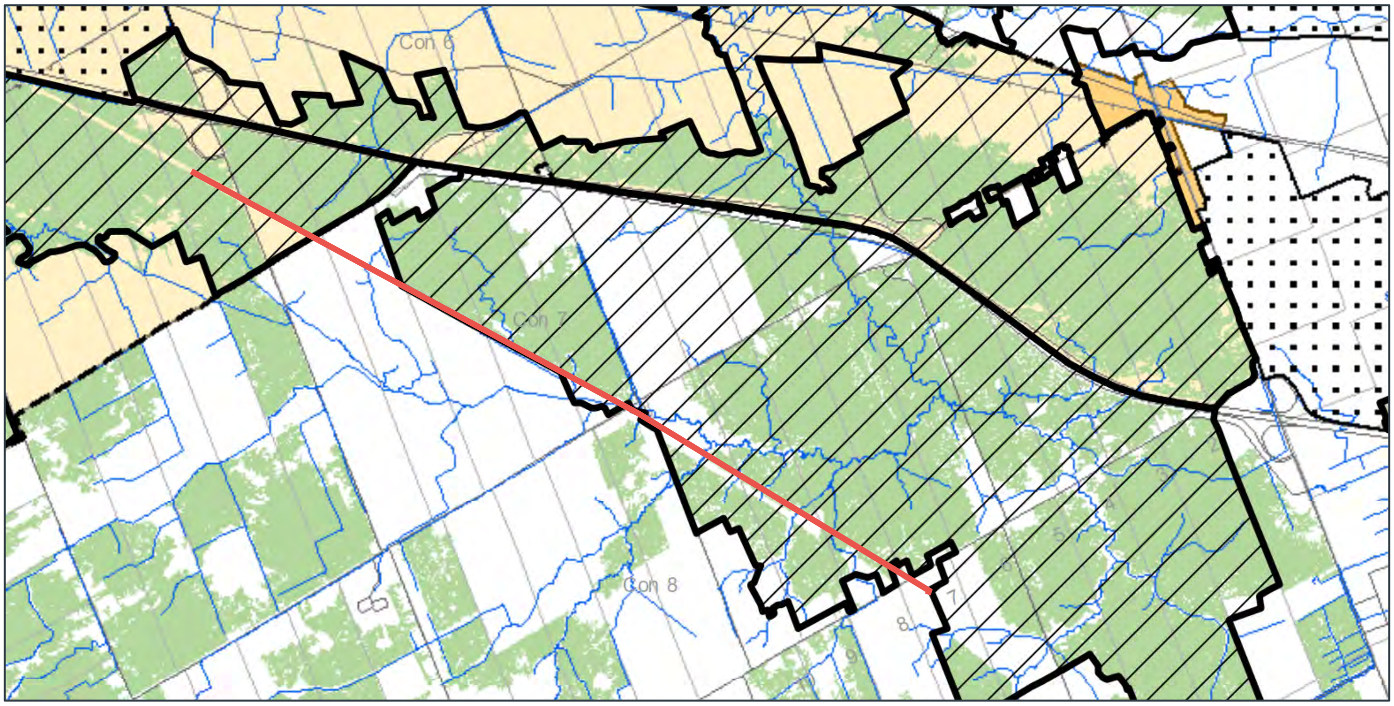

Figure 2.2.1.1: Detailed view of City of Ottawa Official Plan Schedule C11 – Natural Heritage System (East) map showing natural heritage features in green, natural heritage system core areas in diagonally hatched lines, and the Corridor in red.

As per the City of Ottawa Official Plan Schedule C15 – Environmental Constraints (Appendix C), several unstable slope areas and floodplain areas are mapped throughout the Corridor (see Figure 2.2.1.2 below; City of Ottawa, 2022). These appear to coincide with mapped watercourses and wetland areas. Unstable slopes are generally associated with sensitive marine clays and organic soils and unstable bedrock associated with karst topography; these areas are potentially hazardous (City of Ottawa, 2022). Development within mapped unstable slope areas may require additional studies/investigation as part of the development review and approvals process.

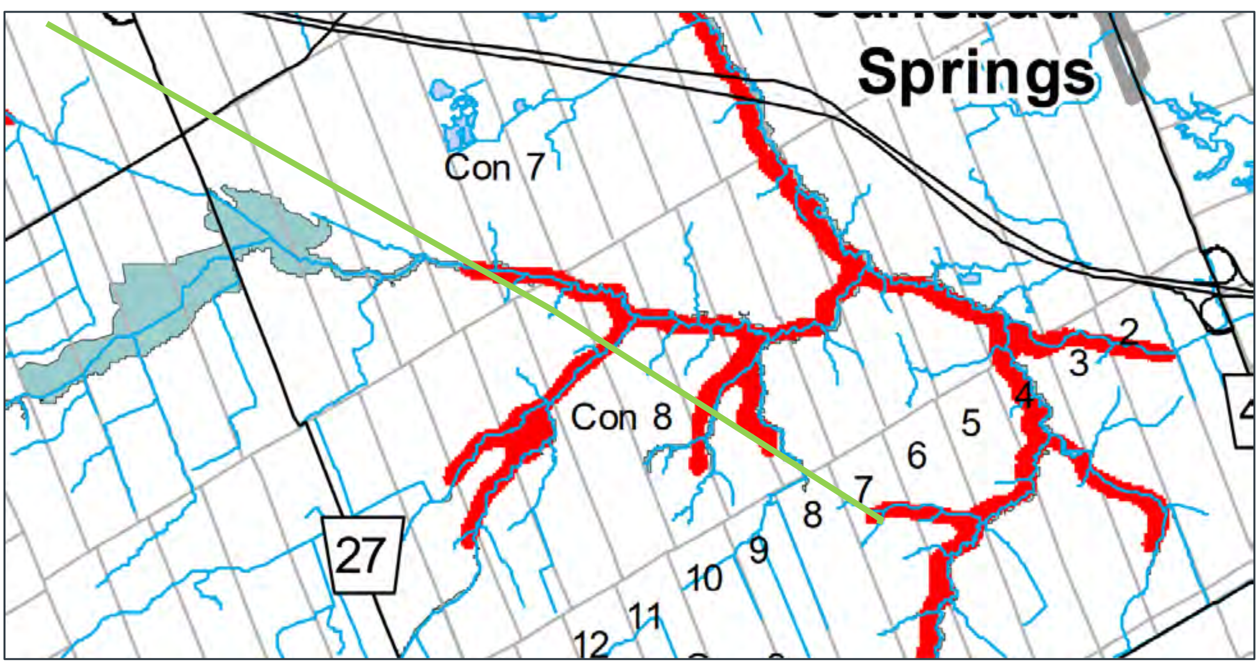

Figure 2.2.1.2: Detailed view of City of Ottawa Official Plan Schedule C15 – Environmental Constraints map showing unstable slope areas in red, floodplain areas in grey/blue, watercourses in blue, and the Corridor in green.

2.2.2 5134 Piperville Road

The surficial geology of the Piperville Site is composed of massive to well laminated fine-textured glaciomarine deposits of silt and clay, minor sand and gravel (OGS, 2010). Bedrock geology of the Piperville Site consists of shale, limestone, dolostone, and siltstone of the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member (OGS, 2011).

Based on available Natural Heritage Mapping, no ANSIs are present at the Piperville Site or in the immediate vicinity (MNRF, 2022). As per the City of Ottawa Official Plan Schedule C11 – Natural Heritage System, East, (Appendix C), portions of the Piperville Site exist within Natural Heritage System Areas (see Figure 2.2.2.1 below; City of Ottawa, 2022).

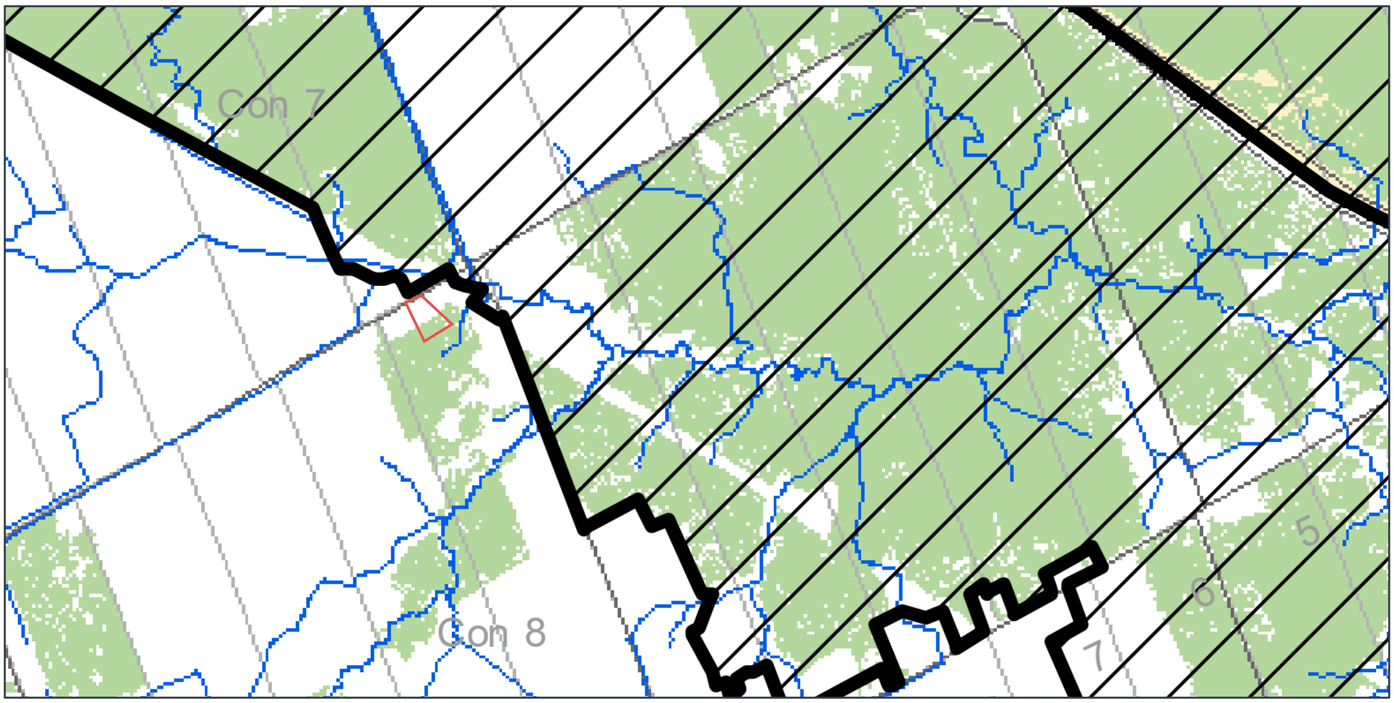

Figure 2.2.2.1: Detailed view of City of Ottawa Official Plan Schedule C11 – Natural Heritage System (East) map showing natural heritage features in green, natural heritage system core areas in diagonally hatched lines, and the Piperville Site in red.

As per the City of Ottawa Official Plan Schedule C15 – Environmental Constraints (Appendix C), lands immediately east of the Piperville Site along the Corridor are mapped as unstable slopes (City of Ottawa, 2022), as shown above in Figure 2.2.1.2. Unstable slopes are generally associated with sensitive marine clays and organic soils and unstable bedrock associated with karst topography; these areas are potentially hazardous (City of Ottawa, 2022). Development within mapped unstable slope areas or adjacent areas may require additional studies/investigations as part of the development review and approvals process.

2.3 Surface Water, Groundwater and Fish Habitat

This section summarizes general hydrogeological characteristics of the Site and surrounding area.

2.3.1 Hydro One – L24A Corridor

The majority of the Corridor falls within the Bear Brook Quaternary Watershed. The northernmost portion of the Corridor, north of Anderson Road, falls within the Grande Presqu'île - Ottawa River Quaternary Watershed. The Bear Brook Grande Presqu'île - Ottawa River Watersheds both fall within the Tertiary

South Nation River - Lower Ottawa River, Secondary Lower Ottawa River, and Primary Great Lakes - St. Lawrence River Watershed (MNRF PMU, 2022).

Based on available Natural Heritage Mapping (MNRF, 2022), many unevaluated wetlands are observed in the vicinity surrounding the Corridor, although none are mapped within the Corridor itself. Several watercourses cross through the Corridor in various locations.

Several areas across the Corridor appear to exist within South Nation Conservation Authority (SNCA) regulated areas (see Figure 2.3.1.1 below). Any proposed development, interference or alteration within a regulated area requires permitting by the SNCA. Consultation with and approval by the SNCA is required prior to undertaking any work within wetland areas, hazardous lands, and/or regulated areas (SNCA, 2020).

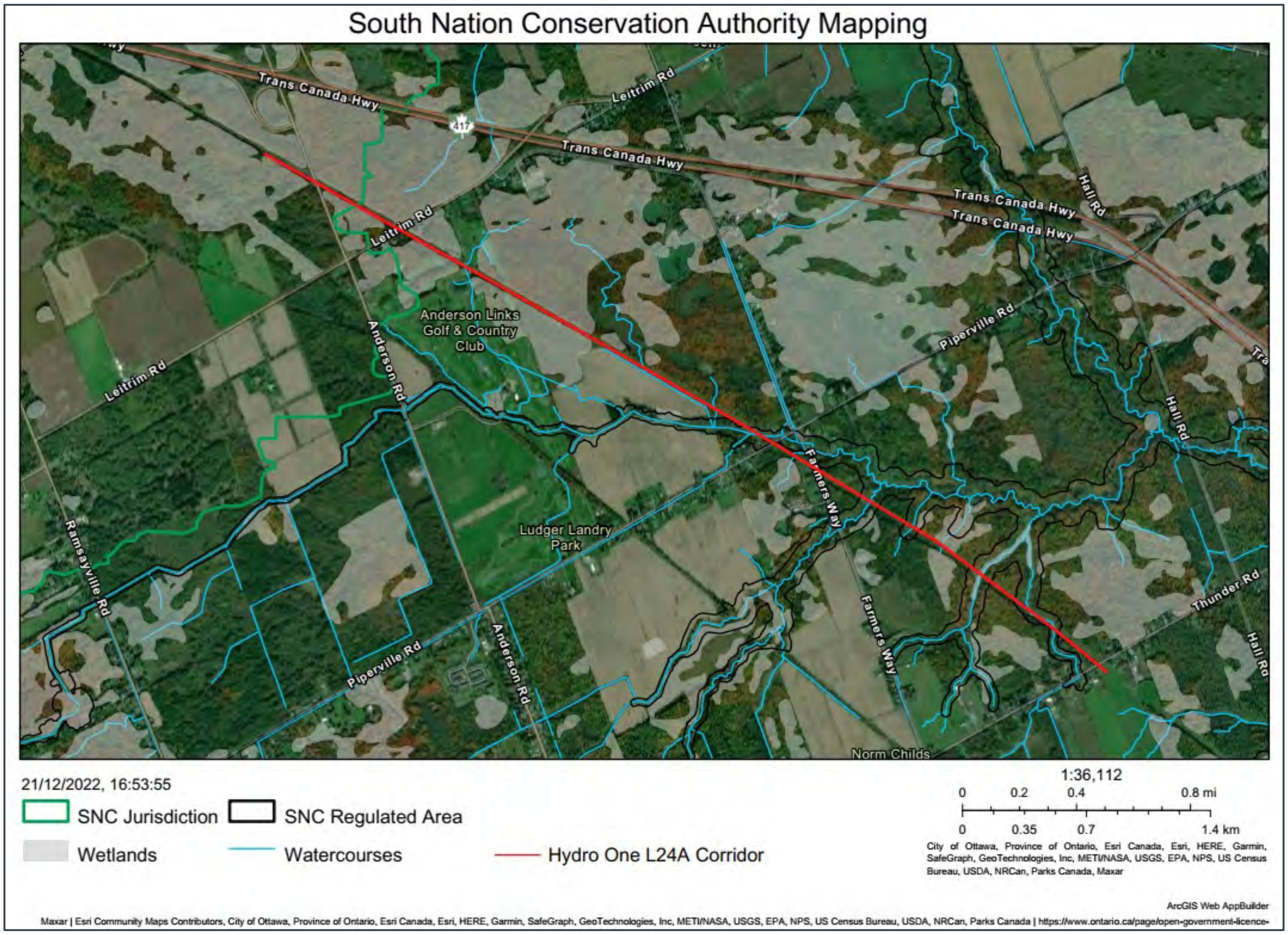

Figure 2.3.1.1: South National Conservation Authority map showing wetlands, watercourses, regulated areas, and the Hydro One L24A Corridor.

2.3.2 5134 Piperville Road

The Piperville Site falls within the Bear Brook Quaternary Watershed; part of the Tertiary South Nation River - Lower Ottawa River, Secondary Lower Ottawa River, and Primary Great Lakes - St. Lawrence River Watersheds (MNRF PMU, 2022).

Based on the nearest Ministry of Environment, Conservation and Parks (MECP) well record (Well ID 1516500), a potable well installation record approximately 55 m northwest of the Piperville Site, the recorded static groundwater level was 2.4 m below ground surface (bgs) in 1978. No well records were identified on the Piperville Site.

Based on available Natural Heritage Mapping (MNRF, 2022), an unevaluated wetland and watercourse connecting to the Smith Crowding Municipal Drain (MNRF, 2015) is present in the southeast section of the Piperville Site; however, no significant evidence of a wetland (e.g., standing water, permanent saturated ground, wetland indicator plant species, etc.) or any open water/fish habitat was observed during Englobe's Site visit on October 24, 2022, and several Site visits during August 2023. No SNCA regulated areas or hazardous lands appear to exist within the Piperville Site boundary based on available mapping (SNCA, 2020); however, they do appear to exist immediately east of the Piperville Site boundary, within Corridor lands.

The nearest surface water is approximately 1 km north-northwest of the Piperville Site.

2.4 Terrestrial Environment and Vegetation Cover

This section summarizes general vegetation characteristics and communities of the Site and surrounding area.

2.4.1 Hydro One – L24A Corridor

Based on available Natural Heritage Mapping, forested areas are present surrounding the Corridor (MNRF, 2022). Roadside field visits of the Corridor were carried out by Englobe in October 2022 and a review of recently available aerial photographs were used to determine vegetation cover across the Corridor. Generally, the Corridor appears to be cleared of all significant vegetation (i.e., trees) such as not to interfere with Hydro One operations. There does however appear to be several areas across the Corridor where grass, wildflower, and/or shrub-like vegetation cover exists.

Select photographs of the Corridor are presented in Appendix D.

2.4.2 5134 Piperville Road

Based on available Natural Heritage Mapping, forested areas are present at the Piperville Site and surrounding areas (MNRF, 2022). An Englobe biologist conducted a field visit of the Piperville Site on October 24, 2022, and several Site visits during August 2023, and observed that the Site appears to contain three distinct separate vegetation communities: 1) wildflower/meadow area, 2) transition area, and 3) mixed deciduous/coniferous forest habitat (see Vegetation Communities, Figure 4, Appendix B). Vegetation community no. 1 (wildflower/meadow) appears to be heavily dominated by Goldenrod (Solidago) species. Vegetation community no. 3 observations included Beech (*Fagus*), Maple (*Acer*), Poplar (*Populus*), Birch (*Betulaceae*), Pine (*Pinaceae*), Oak (*Fagales*), and Fir (*Abies*) tree species. Vegetation community no. 2 (transition area) consists of a mix of vegetation from both communities no. 1 and no. 2. No significant broken/fissured rocks, bedrock outcrops, sand dunes, evidence of significant animal corridors, or nests/dens were noted during Englobe's Site visits.

Based on available historical aerial photography, in 1991 the area of vegetation community no. 3 appears to be forested lands, while the area of vegetation community no. 1 and 2 appear to be grass-covered or of agricultural use. In 1999 and 2002 aerial photography, small clusters of trees can be seen growing in the area referred to as vegetation community no. 2. Ground cover and short vegetation can be seen growing in the vegetation community no. 1 and no. 2 areas in 1999 and 2002 aerial photography, in areas where no tree clusters exist. The tree clusters appear to grow in size over the years to what is present on Site as of the date of Englobe's Site visit.

To determine whether the woodlands on Site classify as significant woodlands, the Ontario Ministry of Natural Resources (OMNR) Significant Wildlife Habitat Technical Guide (OMNR 2000), the City of Ottawa Significant Woodlands Guideline for Identification, Evaluation, and Impact Assessment (City of Ottawa, 2018), and the Natural Heritage Reference Manual (NHRM) for Nature Heritage Polices of the Provincial Policy Statement (PPS, 2020) was consulted. As per the PPS, development and site alteration shall not be permitted in significant woodlands south and east of the Canadian Shield unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions (via an EIS), and furthermore, that development and site alteration shall not be permitted on adjacent lands to natural heritage features and areas identified in section 2.1 of the PPS (2020), unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the adjacent natural features and/or their ecological functions.

Based on the Significant Wildlife Habitat Technical Guide (OMNR 2000) and the City of Ottawa Significant Woodlands Guideline (2018), the percent forest cover in the Ottawa East - Bearbook rural planning area of the Piperville Site is 29.9%. Based on the percentage of woodland cover and observed Site characteristics (rural evaluation process), the Piperville Site does not meet the size, ecological function, or uncommon characteristic criterion for significant woodlands, and therefore, can be classified as non-significant woodlands (City of Ottawa; MNRF 2010).

Based on the Significant Wildlife Habitat Technical Guide (OMNR 2000), aerial imagery, and field observations during Englobe's Site visits, no significant animal movement corridors exist on Site. Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. Animal movement corridors can be identified on aerial imagery as the vegetated links between the largest natural areas within the municipality and adjacent municipalities. These natural areas will be the largest and oldest forests stands, largest and most diverse wetlands, or relatively steep and undeveloped river valleys and riparian zones along lakes, rivers, and streams (OMNR 2000). For the Piperville Site and surrounding area, large natural areas exist to the north, east, and southeast, where undisturbed woodlands, wetlands, and streams exist; however, the Site is removed from connecting these areas (Figures 1 and 2, Appendix B). There is some forest located to the southeast of the Site, but the Site is surrounded by agricultural and residential development, and roadways, and it is unlikely the Site would be utilized by animals as significant movement corridors to the large natural areas described above when more suitable routes are located to the south where fewer humans are present.

Select photographs of the Piperville Site are presented in Appendix D.

2.5 Wildlife and Species at Risk

This section summarizes wildlife and species at risk (SAR) potentially in the vicinity of the Site. A desktop review of existing databases and literature was conducted to gather information related to the potential presence of SAR at the Corridor and Piperville Sites, prior to conducting field visits. Englobe consulted the Ministry of Environment, Conservation and Parks (MECP) Guide for Preliminary Screening for Species at Risk regarding the potential presence of SAR within the area of the Site, and the following sources were reviewed:

— The MNRF Natural Heritage Information Centre (NHIC) online database;

— Department of Fisheries and Oceans Aquatic SAR Map;

— Atlas of Breeding Birds of Ontario;

— Ontario Butterfly Atlas Map;

— Ontario Reptile and Amphibian Atlas;

— Ontario Mammals iNaturalist range maps;

— Aerial and Street View Photography (Google Earth & GeoOttawa);

— Species at Risk Ontario (SARO) Database;

— Species at Risk Ottawa List, City of Ottawa; and

— City of Ottawa Official Plan.

Potentially suitable SAR habitat was then determined based on Site characteristics to determine the probability of each SAR to occur on Site. Results of the SAR screening are presented in the below subsections.

2.5.1 Hydro One – L24A Corridor

2.5.1.1 Wildlife and Habitat Observations

No wildlife observations occurred during Englobe's roadside Site visits along the Corridor. As only roadside observations along the Corridor were made, habitat types throughout the entire Corridor are unconfirmed; however, based on aerial photography and observations from roadside visits, habitat types include wildflower/meadow, wetland, and open space areas.

2.5.1.2 SAR Screening

2.5.1.2.1 NHIC DATABASE

The NHIC database map is divided into 1km^2 grid squares across Ontario where known natural heritage features and SAR occurrences are listed. The following natural/wildlife concentration areas were noted within the vicinity of the Corridor based on available NHIC mapping:

- Anderson Road Natural Area;
- Leitrim Road (North of Hwy 417) Natural Area;
- Ramsayville Hemlock Forest; and,
- Mixed Water Nesting Colony Wildlife Concentration Area.

Wood Thrush, Snapping Turtle, **Black Ash**, and **Butternut** observations were observed within the grid squares overlaying the Site; however, the exact location of these observations cannot be confirmed. The observations may be in relation to other nearby areas. Based on the NHIC records, there is the **potential** for the above-listed SAR to be at or in the vicinity of the Site.

Nearby wetlands may also offer habitat for foraging and gathering nest building materials for avian species and/or suitable habitat for the above and below-listed SAR.

2.5.1.2.2 DEPARTMENT OF FISHERIES AND OCEANS - AQUATIC SPECIES AT RISK

No SAR or SAR critical habitat has been mapped within the Corridor based on the Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Map.

2.5.1.2.3 ONTARIO BREEDING BIRD ATLAS

Based on available mapping, SAR observation records in the overlaying grid squares (18VR52 and 18VR62) include **Least Bittern, Common Nighthawk, Whip-poor-will, Chimney Swift, Eastern Wood-Pewee, Bank Swallow, Barn Swallow, Wood Thrush, Canada Warbler, Bobolink, Eastern Meadowlark, and Evening Grosbeak**. Please note, although the above records were observed within the two approximately 100 km^2 (each) grid squares overlaying the Site, the exact location of these observations cannot be confirmed. Based on the Ontario Breeding Bird Atlas records, there is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.1.2.4 ONTARIO BUTTERFLY ATLAS

Based on available mapping, SAR observation records in the overlaying grid squares (18VR52 and 18VR62) include the **Monarch** Butterfly. Please note, although the above records were observed within the two approximately 100 km^2 (each) grid squares overlaying the Site, the exact location of these observations cannot be confirmed. Based on the Ontario Butterfly Atlas records, there is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.1.2.5 ONTARIO REPTILE AND AMPHIBIAN ATLAS

Based on available mapping, SAR observation records in the overlaying grid squares (18VR52 and 18VR62) include **Blanding's Turtle, Midland Painted Turtle, Snapping Turtle, and Western Chorus Frog**. Please note, although the above records were observed within the two approximately 100 km^2 (each) grid squares overlaying the Site, the exact location of these observations cannot be confirmed. Based on the Ontario Reptile and Amphibian Atlas records, there is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.1.2.6 ONTARIO MAMMALS INATURALIST RANGE MAPS

Based on available mapping, SAR ranges for **Gray Fox, Eastern Small-footed Myotis, Little Brown Myotis, Tricolored Bat, and Northern Myotis** overlay the Corridor. Although the above SAR range maps overlay the Site, this does not mean suitable habitat exists on Site. There is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.1.2.7 SUMMARY OF POTENTIAL SAR WITHIN HYDRO ONE-L24A CORRIDOR

Table 1. Summary of potential SAR present within the Hydro One-L24A Corridor.

Common Name	Scientific Name	Provincial Status (ESA)	Federal Status (SARA)	Habitat Requirements	Potential Presence on Site
Amphibians and Reptiles					
Blanding's Turtle	*Emys blandingii*	THR	END	Occurs in clear water eutrophic wetlands. Have strong site fidelity but may use several connected waterbodies throughout the active season. Typically nest in a variety of substrates including sand, organic soil, gravel, cobblestone, and soil-filled crevices of rock outcrops.	**Possible**; suitable habitat appears to exist on Site.
Midland Painted Turtle	*Chrysemys picta marginata*	N/A	SC	Occurs in aquatic and wetland habitats that provide a soft sediment bottom and basking sites.	**Possible**; suitable habitat appears to exist on Site.
Snapping Turtle	*Chelydra serpentina*	SC	SC	Occurs in aquatic and wetland habitats with abundant vegetation and a soft bottom.	**Possible**; suitable habitat appears to exist on Site.
Western Chorus Frog	*Pseudacris triseriata*	N/A	THR	Occurs in wetlands, vernal pools, woodland ponds, marshes, swamps, usually adjacent to highland forests for overwintering.	**Possible**; suitable habitat appears to exist on Site.
Birds					
Bank Swallow	*Riparia riparia*	THR	THR	Nests on vertical faces on riverbank, gravel pits, or other silt and sand deposits.	**Possible**; suitable habitat may to exist within vicinity of the Site.
Barn Swallow	*Hirundo rustica*	THR	THR	Commonly nests on human-made structures with 90-degree angle ledges.	**Possible**; transmission line structures have potential nesting locations with ledges that are 90-degree angles.
Bobolink	*Dolichonyx oryzivorus*	THR	THR	Occurs in open tall grass areas.	**Possible**; suitable habitat appears to exist on Site.
Canada Warbler	*Cardellina canadensis*	SC	THR	Nests in deciduous and coniferous wet forests, with a well-developed, dense shrub layer.	Not likely; no suitable nesting habitat on Site.

Common Name	Scientific Name	Provincial Status (ESA)	Federal Status (SARA)	Habitat Requirements	Potential Presence on Site
Chimney Swift	*Chaetura pelagica*	THR	THR	Commonly nests in cave walls, chimneys, and hollow trees or cavities.	Not likely; no suitable nesting habitat on Site.
Common Nighthawk	*Chordeiles minor*	SC	THR	Occurs in open areas such as lakeshore, forest clearings, and rock barrens. Nests in open areas such as fields and gravel rooftops.	**Possible**; suitable habitat appears to exist on Site.
Eastern Meadowlark	*Sturnella magna*	THR	THR	Occurs in open grassland areas.	**Possible**; suitable habitat appears to exist on Site.
Eastern Whip-poor-will	*Antrostomus vociferus*	THR	THR	Occurs in open and forested areas. Nests on the ground in woodlands.	**Possible**; suitable habitat appears to exist on Site.
Eastern Wood-Pewee	*Contopus virens*	SC	SC	Occurs in woodland areas, specifically near clearings and forest edges.	**Possible**; suitable habitat may to exist within vicinity of the Site.
Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	Occurs in open mixed-wood forests. Nests in trees and large shrubs, preferably mature coniferous trees or deciduous trees.	Not likely; ideal habitat is not present on Site.
Least Bittern	*Ixobrychus exilis*	THR	THR	Commonly occurs in marshes and shrub swamps, nesting in dense vegetation.	**Possible**; suitable habitat appears to exist on Site.
Wood Thrush	*Hylocichla mustelina*	SC	THR	Inhabits large mature deciduous and mixed forests.	Not likely; ideal habitat does not appear to be present on Site.
Insects					
Monarch	*Danaus plexippus*	SC	SC	Monarch caterpillars feed on milkweed plants, common to meadows and open areas. Adult butterflies can be found in a variety of diverse locations.	**Possible**; Site may contain large patches of host plant (milkweed); unconfirmed.
Mammals					

Common Name	Scientific Name	Provincial Status (ESA)	Federal Status (SARA)	Habitat Requirements	Potential Presence on Site
Eastern Small-footed Myotis	*Myotis leibii*	END	N/A	Inhabits rock outcrops, buildings, bridges, caves, mines, and tree cavities.	Not likely; ideal habitat is not present on Site.
Gray Fox	*Urocyon cinereoargenteus*	THR	N/A	Inhabits deciduous forests and marshes. Dens usually in shrubs, underground burrows, or hollowed out trees.	Not likely; no known local breeding population in Eastern Ontario.
Little Brown Myotis	*Myotis lucifugus*	END	END	Inhabits snag trees, abandoned buildings, barns, and attics.	Not likely; ideal habitat is not present on Site.
Northern Myotis	*Myotis septentrionalis*	END	END	Inhabits boreal forest tree cavities and commonly overwinters in caves and mines.	Not likely; ideal habitat is not present on Site.
Tricolored Bat	*Perimyotis subflavus*	END	END	Inhabits forest habitats and commonly overwinters in caves or underground hibernacula.	Not likely; ideal habitat is not present on Site.
Plants					
Butternut	*Juglans cinerea*	END	END	Prefers deciduous forests and moist, well-drained soils. Species is shade intolerant.	**Possible**; suitable habitat appears to exist on Site.
Black Ash	*Fraxinus nigra*	END as of January 26, 2022; protection deferred for up to 2 years.	N/A	Prefers moist to wet soils, commonly found in wetlands. Species is shade intolerant.	**Possible**; suitable habitat appears to exist on Site.

Notes:
END = Endangered
N/A = Not Applicable (Not considered at Risk)
SC = Special Concern
THR = Threatened

2.5.2 5134 Piperville Road

2.5.2.1 Wildlife

The Piperville Site does not fall within any MNRF mapped Wildlife Value Areas or Sites (e.g., aquatic feeding areas, breeding areas, calving fawning sites, wildlife feeding areas, mast producing areas, wildlife nursery areas, resting areas, wildlife staging areas, wildlife travel corridors, wintering areas, den sites, mineral lick sites, or nesting sites; MNRF 2020; OMNR 2000).

Based on the findings of Englobe's Site surveys (e.g., habitat conditions and Site characteristics), no candidate significant wildlife habitat (SWH) is present at the Piperville Site (e.g., seasonal concentration areas of animals, rare vegetation communities, specialized wildlife habitat, habitats of species of conservation concern as evaluated by the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E). As no SWH has been identified at the Site, no critical animal movement corridors are expected to be present.

2.5.2.2 SAR Screening

2.5.2.2.1 NHIC DATABASE

The NHIC database map is divided into 1km^2 grid squares across Ontario where known natural heritage features and SAR occurrences are listed. No natural and/or wildlife concentration areas were noted within the vicinity of the Piperville Site based on available NHIC mapping. **No SAR observations** were observed within the grid square overlaying the Site.

2.5.2.2.2 DEPARTMENT OF FISHERIES AND OCEANS - AQUATIC SPECIES AT RISK

No SAR or SAR critical habitat has been mapped at the Site based on the DFO Aquatic Species at Risk Map.

2.5.2.2.3 ONTARIO BREEDING BIRD ATLAS

Based on available mapping, SAR observation records in the overlaying grid square (18VR62) include **Least Bittern, Chimney Swift, Eastern Wood-Pewee, Bank Swallow, Barn Swallow, Wood Thrush, Bobolink, and Eastern Meadowlark**. Please note, although the above records were observed within the approximately 100 km^2 grid square overlaying the Site, the exact location of these observations cannot be confirmed. Based on the Ontario Breeding Bird Atlas records, there is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

Nearby wetlands may also offer habitat for foraging and gathering nest building materials.

2.5.2.2.4 ONTARIO BUTTERFLY ATLAS

Based on available mapping, SAR observation records in the overlaying grid square (18VR62) include the **Monarch** Butterfly. Please note, although the above records were observed within the approximately 100 km^2 grid square overlaying the Site, the exact location of these observations cannot be confirmed. Based on the Ontario Butterfly Atlas records, there is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.2.2.5 ONTARIO REPTILE AND AMPHIBIAN ATLAS

Based on available mapping, SAR observation records in the overlaying grid square (18VR62) include **Blanding's Turtle, Midland Painted Turtle, Snapping Turtle, and Western Chorus Frog**. Please note, although the above records were observed within the approximately 100 km^2 grid square overlaying the Site, the exact location of these observations cannot be confirmed. Based on the Ontario Reptile and Amphibian Atlas records, there is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.2.2.6 ONTARIO MAMMALS INATURALIST RANGE MAPS

Based on available mapping, SAR ranges for **Gray Fox, Eastern Small-footed Myotis, Little Brown Myotis, Tricolored Bat, and Northern Myotis** overlay the Corridor. Although the above SAR range maps overlay the Site, this does not mean suitable habitat exists on Site. There is the **potential** for the above-listed SAR to be present at or in the vicinity of the Site.

2.5.2.2.7 SUMMARY OF POTENTIAL SAR WITHIN PIPERVILLE SITE

Table 2. Summary of potential SAR present within the Piperville Site.

Common Name	Scientific Name	Provincial Status (ESA)	Federal Status (SARA)	Habitat Requirements	Potential Presence on Site
Amphibians and Reptiles					
Blanding's Turtle	*Emys blandingii*	THR	END	Occurs in clear water eutrophic wetlands. Have strong site fidelity but may use several connected waterbodies throughout the active season. Typically nest in a variety of substrates including sand, organic soil, gravel, cobblestone, and soil-filled crevices of rock outcrops.	Not likely; suitable habitat does not appear to exist on Site.
Midland Painted Turtle	*Chrysemys picta marginata*	N/A	SC	Occurs in aquatic and wetland habitats that provide a soft sediment bottom and basking sites.	Not likely; suitable habitat does not appear to exist on Site.
Snapping Turtle	*Chelydra serpentina*	SC	SC	Occurs in aquatic and wetland habitats with abundant vegetation and a soft bottom.	Not likely; suitable habitat does not appear to exist on Site.
Western Chorus Frog	*Pseudacris triseriata*	N/A	THR	Occurs in wetlands, vernal pools, woodland ponds, marshes, swamps, usually adjacent to highland forests for overwintering.	Not likely; suitable habitat does not appear to exist on Site.
Birds					
Bank Swallow	*Riparia riparia*	THR	THR	Nests on vertical faces on riverbank, gravel pits, or other silt and sand deposits.	Not likely; suitable habitat does not appear to exist on Site.
Barn Swallow	*Hirundo rustica*	THR	THR	Commonly nests on human-made structures with 90-degree angle ledges.	Not likely; suitable habitat does not appear to exist on Site.
Bobolink	*Dolichonyx oryzivorus*	THR	THR	Occurs in open tall grass areas.	**Possible**; suitable habitat appears to exist on Site.
Chimney Swift	*Chaetura pelagica*	THR	THR	Commonly nests in cave walls, chimneys, and hollow trees or cavities.	Not likely; no suitable nesting habitat on Site.

Common Name	Scientific Name	Provincial Status (ESA)	Federal Status (SARA)	Habitat Requirements	Potential Presence on Site
Eastern Meadowlark	*Sturnella magna*	THR	THR	Occurs in open grassland areas.	**Possible**; suitable habitat appears to exist on Site.
Eastern Wood-Pewee	*Contopus virens*	SC	SC	Occurs in woodland areas, specifically near clearings and forest edges.	**Possible**; suitable habitat may exist on Site.
Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	Occurs in open mixed-wood forests. Nests in trees and large shrubs, preferably mature coniferous trees or deciduous trees.	**Possible**; suitable habitat may exist within the vicinity of the Site. Audibly heard in vicinity of the Site during Englobe's October 2022 field survey.
Least Bittern	*Ixobrychus exilis*	THR	THR	Commonly occurs in marshes and shrub swamps, nesting in dense vegetation.	Not likely; suitable habitat does not appear to exist on Site.
Wood Thrush	*Hylocichla mustelina*	SC	THR	Inhabits large mature deciduous and mixed forests.	**Possible**; suitable habitat may exist on Site.
Insects					
Monarch	*Danaus plexippus*	SC	SC	Monarch caterpillars feed on milkweed plants, common to meadows and open areas. Adult butterflies can be found in a variety of diverse locations.	Not likely; Site did not appear to contain large patches of host plant (milkweed) during Englobe's October 2022 field survey.
Mammals					
Eastern Small-footed Myotis	*Myotis leibii*	END	N/A	Inhabits rock outcrops, buildings, bridges, caves, mines, and tree cavities.	**Possible**; trees on Site may provide suitable bat habitat; however, no significant number of snag trees or tall trees with large cavities (suitable maternity roosts) or suitable hibernation habitat was observed during Englobe's October 2022 field survey.
Gray Fox	*Urocyon cinereoargenteus*	THR	N/A	Inhabits deciduous forests and marshes. Dens usually in shrubs, underground burrows, or hollowed out trees.	Not likely; no known local breeding population in Eastern Ontario.

Common Name	Scientific Name	Provincial Status (ESA)	Federal Status (SARA)	Habitat Requirements	Potential Presence on Site
Little Brown Myotis	*Myotis lucifugus*	END	END	Inhabits snag trees, abandoned buildings, barns, and attics.	**Possible**; trees on Site may provide suitable bat habitat; however, no significant number of snag trees or tall trees with large cavities (suitable maternity roosts) or suitable hibernation habitat was observed during Englobe's October 2022 survey.
Northern Myotis	*Myotis septentrionalis*	END	END	Inhabits boreal forest tree cavities and commonly overwinters in caves and mines.	**Possible**; trees on Site may provide suitable bat habitat; however, no significant number of snag trees or tall trees with large cavities (suitable maternity roosts) or suitable hibernation habitat was observed during Englobe's October 2022 survey.
Tricolored Bat	*Perimyotis subflavus*	END	END	Inhabits forest habitats and commonly overwinters in caves or underground hibernacula.	**Possible**; trees on Site may provide suitable bat habitat; however, no significant number of snag trees or tall trees with large cavities (suitable maternity roosts) or suitable hibernation habitat was observed during Englobe's October 2022 survey.
Plants					
Butternut	*Juglans cinerea*	END	END	Prefers deciduous forests and moist, well-drained soils. Species is shade intolerant.	**Possible**; suitable habitat appears to exist on Site; however, no Butternut trees were observed during Englobe's October 2022 field survey.
Black Ash	*Fraxinus nigra*	END as of Jan. 2022; protection deferred up to 2 years	N/A	Prefers moist to wet soils, commonly found in wetlands. Species is shade intolerant.	Not likely; suitable habitat does not appear to exist on Site.

Notes: END = Endangered; N/A = Not Applicable (Not considered at Risk); SC = Special Concern; THR = Threatened

2.5.2.3 Piperville Site Field Surveys

An Englobe biologist conducted follow up SAR field surveys for the Piperville Site in August, 2023, including three (3) bird point count surveys, three (3) SAR transect surveys, and three (3) evening surveys for bats, including acoustical monitoring. Methodology and results are presented in the following sections below.

2.5.2.3.1 BIRD SURVEYS

Bird Point Count Surveys were conducted during the mornings of August 1st, 10th and 14th, 2023, following the *Technical Field Guide (TFG) for IO Service Providers and Qualified Respondents of the Natural Heritage Services Source List Version 3.2 (March 2020)* Breeding Bird Survey (BBS) method. These surveys utilized a point observation protocol, where a birder walks through the bush stopping approximately every 250 meters. During these stops, monitoring was undertaken for 10 minutes to record all birds seen or heard. All habitat types on Site were surveyed, including the meadow area, forest, and edge habitats. Mornings with no rain and low wind were chosen to optimize survey conditions.

RESULTS

No SAR birds were observed or heard during the August 2023 surveys. Additional survey locations were added to the meadow area where potential habitat for Bobolink and Eastern Meadowlark exists, two species of SAR birds known to occur within 1km of the Site, but none were noted. Birds encountered included Black-capped Chickadee, Brown Creeper, Northern Cardinal, Yellow-rumped Warbler, Mourning Dove, Brown-headed Cowbird, Blue Jay, and American Goldfinch.

During Englobe's Site Visit on October 24, 2022, an Evening Grosbeak was heard. Evening Grosbeak's are listed as Special Concern in Ontario, meaning they do not receive species or habitat protection, but their abundance and distribution is being monitored.

2.5.2.3.2 SAR TRANSECT SURVEYS

Species at Risk transect surveys were conducted on August 1st, 10th and 14th, 2023, where an Englobe biologist surveyed the Site by walking in transects and observed flora and fauna for SAR or signs of SAR (e.g. eggs, nests, dens), including plants, insects, reptiles etc.

RESULTS

No SAR or signs of SAR were noted during the surveys. No Butternut trees were observed on Site. No SAR insects or suitable host plants were observed. No reptiles or suitable turtle habitat was observed. In general, the Site is not overly suitable for SAR given its historically disturbed nature, relatively small footprint with limited mature trees, and confined location being surrounded by agricultural operations and residential dwellings.

2.5.2.3.3 BAT SURVEYS

Englobe deployed two (2) Passive Ultrasonic Bat Recording Devices on Site between August 10th through August 14th, 2023. One device was positioned in the edge habitat between the meadow and forest, and the other device was located in the forest in an open area where a dead tree with some cavities was located (see Photograph 1 below; Figure 3, Appendix B).

Passive Ultrasonic Bat Recording Devices make recordings of bat calls and identify species by using a computer program to analyze calls against a reference collection. The recording device used for this project was the Song Meter Mini Bat (Part # SMMINIBAT) from Wildlife Acoustics, Maynard, MA, USA. The deployment of bat acoustic monitors was completed by an individual knowledgeable of their use, as the placement and orientation of the monitors can greatly impact the number and quality of the bat calls captured. The microphone of the monitor was elevated perpendicular from the ground, and oriented away from areas of clutter (i.e. trees, bush etc.). Each monitor was set to record from one half hour before sunset until one half hour after sunrise, for a minimum of four consecutive nights, only during optimal weather conditions (i.e. low wind and little-to-no rain).

The acoustic recordings were analyzed using Kaleidoscope Pro Analysis Software (Wildlife Acoustics). The software identifies the calls by comparing the acoustic pulses to a library of known reference calls and identifying species-specific characteristics of each pulse (i.e. slope, frequency, duration). A minimum of three clear pulses were required per call to identify the species of bat, and a match ratio of 60% or greater was selected. The Auto-ID in the software is selected by region and included all species of bats present in Ontario.

Photograph 1. Bat acoustical monitors deployed in edge habitat of the meadow and within the forest habitat, respectively.

In addition, three (3) evening habitat exit surveys were conducted by an Englobe biologist on August 2nd, 9th, and 16th, 2023 (Figure 3, Appendix B). Areas of potential bat roosting habitat (e.g. a dead or decaying tree with cavities) were observed with night vision googles and a handheld acoustic monitor for real-time species identification of bats (Echo meter touch; Wildlife Acoustics) 15 mins prior to dusk and for 30 mins afterwards. Cavities were observed to determine if bats were utilizing the trees as roosting habitat and to characterize abundance and species.

RESULTS

Passive Ultrasonic Bat Recordings identified five (5) species of bats on Site, including Big Brown Bat, Red Bat, Hoary Bat, Silver Haired Bat, and Little Brown Myotis. Total number of calls per location over the five nights of monitoring are summarized in Table 3. below, with full monitoring results presented in Appendix C. Of the five species of bats detected, Little Brown Myotis is the only SAR, provincially listed as endangered. Three calls of Little Brown Myotis were recorded during one evening on August 11th, 2023, over a span of 2.5hrs from 9:30pm to 12:00pm at the meadow edge habitat. Given the habitat location and call frequency, it is likely that this was one bat that was passing through the Site and foraging.

Evening exit surveys resulted in no observations of bats roosting in trees with cavities, and no SAR bats were detected. Big Brown Bats, Hoary Bats, and Silver Haired Bats were detected in flight during the evening survey events. In general, the Site does not contain high quality bat roosting habitat as it lacks tall, large diameter snag trees or tall trees with cavities, loose bark etc.

The greatest number of recorded calls of a bat species in an evening was from Passive Ultrasonic monitoring and included 20 calls from Silver Haired Bat in the forest habitat on August 11th, 2023. Although Passive Ultrasonic monitoring records the number of bat calls detected, it does not identify the number of bats present as recordings could be from a single bat or from several. Given the number, timing and spacing in between calls, it is likely that more than one Silver Haired Bat was present but also fewer than 20 individuals as some calls likely originated from the same bats.

Table 3. Number of Calls Detected during Passive Ultrasonic Bat Recording at 5134 Piperville Rd.

Location (GPS)	Species				
	Big Brown Bat	**Red Bat**	**Hoary Bat**	**Silver Haired Bat**	**Little Brown Myotis**
Meadow Edge (18T; 460552.00 m E; 5021935.00 m N)	1	-	16	31	3
Forest (18T; 460590.00 m E; 5021851.00 m N)	33	1	22	52	-

2.6 Limitations

This report has been prepared based on the cited background information and field data collected during roadside visits across the Corridor on October 21, 2022, and one field visit to the Piperville Site on October 24, 2022, and several Site surveys of the Piperville Site in August, 2023. A full statement of limitations relating to this report can be found in Appendix A.

3 Description of the Proposed Project

3.1 Concept Plan and Land Uses

The proposed undertaking involves the construction of a new substation located at the Piperville Site, along the Hydro One – L24A Corridor. A detailed Concept Site Plan is provided in Appendix B. The Site is 16,545m^2 and the substation will occupy the middle portion of the property (approximately 9,850m^2) with an access road through the meadow area (Vegetation Community 1) to Piperville Rd. A temporary staging area for construction will be developed in the meadow area adjacent to the access road on the west side. The undertaking will involve clearing of vegetation, development of the access road and staging area, excavation, grading, construction of a switchgear building and the installation of several transformers, followed by the re-instatement of impacted areas (e.g. removal of debris, re-vegetation, landscaping etc.). A chain link fence will surround the substation.

Clearing of vegetation will be required for the majority of the middle portion of the property in Vegetation Community 2 and 3 (Figure 4, Appendix B), but the meadow area in Vegetation Community 1 will remain largely undisturbed, as will the trees to the south and southeastern portion of the property in Vegetation Community 3. A 3m zone of cleared vegetation will be maintained around the exterior perimeter of the chain link fence for maintenance purposes.

Overall, approximately 6550m^2 of tree clearing will be required for the Site in Vegetation Community 3, with the remaining 3,300m^2 vegetation clearing occurring in the transition/edge areas of Vegetation Community 2 and for the access road in Vegetation Community 1. Of the 16,545m^2 area of the property, approximately 60% of the Site will be cleared for the project, with the remaining 40% left undisturbed (~6,695 m^2), being a mix of meadow and forest habitat.

Following the completion of the project, future land uses of the Site and impacts to the surrounding natural environment will be minimal with limited on-site activities required; the substation will be self operational with periodic maintenance requirements.

3.2 Constraints

Environmental constraints associated with the Piperville Site (i.e., proposed mitigation and avoidance measures) are outlined below in Section 5 of this report.

3.3 Plans and Drawings

A detailed Concept Site Plan for the Hydro One substation project is provided in Appendix B.

4 Description of Environmental Impacts

This section summarizes potential environmental impacts associated with the proposed undertaking at the Piperville Site.

4.1 Potential Impacts to Terrestrial Habitat, Vegetation, and Trees within the Development Area

The proposed undertaking is anticipated to have impacts to the existing vegetation as the shrubs, wildflowers, and trees within the footprint of the substation in Vegetation Community 2 and a portion of Vegetation Community 3 will need to be removed (Figure 4 and Concept Site Plan, Appendix B). Recommended mitigation measures (e.g., tree retention measures and replacement) are presented in Section 5 of this report.

The overall impacts of vegetation removal and installation of the substation are not anticipated to be significantly detrimental to the natural heritage system of the region or its ecological function. The Site does not contain significant woodlands or significant animal movement corridors, as outlined in Section 2.4.2. The Site is removed from nearby natural areas and installation of the substation will not significantly increase the fragmentation of the region as the Site is surrounded by disturbed lands with an existing human presence, including agricultural operations, residential dwellings, and roadways. In addition, 40% of the Site will remain undisturbed with a mixture of forest and meadow habitat, including the southern portion that is the most forested section and will allow for continued use by fauna that may inhabit the region or travel within.

The proposed undertaking is not anticipated to cause any adverse effect to nearby soils or landforms given the relatively non-intrusive nature of the construction project and future operations of the sub-station, and the confined footprint. In addition, the Hydro One - L24A corridor is located to the east of the Site and will remain undisturbed, should animals utilize this feature to access adjacent natural areas.

Recommended mitigation measures for minimizing potential impacts to terrestrial habitat during construction activities (e.g., maintaining a spill kit on Site) are presented in Section 5 of this report.

4.2 Potential Impacts to Aquatic Habitats

The proposed undertaking is not anticipated to cause any adverse effect to nearby groundwater, surface water, and/or fish habitat given the relatively non-intrusive nature of the construction project and future operations of the sub-station, and the confined footprint. Recommended mitigation measures (e.g., maintaining a spill kit on Site, sediment and erosion control measures, etc.) are presented in Section 5 of this report.

4.3 Potential Wildlife and Species at Risk Impacts

The proposed undertaking is anticipated to have a minimal impact on SAR as the Site provides largely unsuitable habitat for the SAR of concern, and no SAR plants, birds, insects or reptiles were observed during the August 2023 survey events.

Overall, it would appear that the Site is being used by several species of bats but not in great abundance. No evidence of maternity roosts or day roosting in general was noted. Given that only one occurrence of an SAR bat was detected on one evening, indicating this individual was likely passing through the Site, no critical habitat for SAR bats is present on Site. Although the Little Brown Myotis may have been utilizing the Site for foraging that evening, much of the meadow habitat will remain undisturbed as a result of project activities, and adequate similar foraging habitat is available nearby and therefore the project is not expected to degrade the foraging habitat or result in significant harm to SAR bats. As such, negative impacts to SAR bats are not anticipated as a result of the project and an authorization under ESA (2007) is not required, at this time.

Although no SAR bats were found to be using the Site for roosting or hibernaculum, all species of bats are considered *Specially Protected Mammals* in Ontario under the Fish and Wildlife Conservation Act (1997), and cannot be killed, trapped or hunted. It is therefore recommended that tree clearing activities take place outside of the bat active season of May 1 to November 1 when bats will not be present on Site.

According to the project concept plan (Section 3), most of the meadow area on Site will be retained, including the foraging habitat for bats. In order to offset the tree clearing and potential habitat loss for bats, bat boxes could be installed on Site as habitat compensation measures. It should be noted that this is not a requirement as roosting habitat for SAR bats has not been identified on Site.

Impacts to wildlife can be minimized by restricting construction activities to only the required development plot for the substation and a designated access route. Timing and avoidance measures will help protect wildlife during sensitive times of the year (e.g. avoiding the breeding bird season). A list of recommended avoidance and mitigation measures has been prepared below in Section 5 of this report to further protect any on or off-site wildlife and SAR that may potentially visit the Piperville Site.

Should any SAR be identified on Site during construction activities, work should be ceased immediately and/or modified to ensure no negative impacts to SAR. A qualified biologist should be retained to conduct the appropriate assessment(s) and the MECP SAR department should be consulted.

4.4 Potential Impacts to Adjacent Natural Environmental Areas

The proposed undertaking is a general construction project and is anticipated to have minimal impacts to nearby environmental areas (e.g., wetlands, forests, watercourses) given the relatively unintrusive nature of the project and future operations of the substation, and the fact that the Site is removed from these areas, assuming the mitigation measures outlined in Section 5 are adhered to.

5 Impact Mitigation

This section summarizes recommended mitigation and avoidance measures to minimize environmental impacts associated with the proposed undertaking at the Piperville Site.

5.1 Terrestrial Habitat and Vegetation Mitigation

To minimize impacts associated with vegetation clearing and the removal of terrestrial habitats, soil compaction, vegetation damage, intrusion of construction equipment and other potential impacts to the critical root zone (CRZ) of trees in areas of tree retention, the following mitigation measures are recommended:

— Direct development should occur outside the mapped areas of unstable soils (as well as determining and securing the applicable permitting in advance of construction operations);

— Restrict grading and other site alternation activities in the vicinity of the CRZ of retained trees;

— Erect fencing (e.g., snow fencing, metal fencing, etc.) to clearly identify the construction area limits with respect to the CRZ of retained trees to ensure no equipment operates or material is stockpiled within this area;

— Do not permit the hanging/attachment of signs, notices, or posters to any trees to be retained;

— Ensure equipment exhaust fumes are not directed to the tree canopy of trees to be retained; and,

— Conduct regular inspections to ensure that damage to trees to be retained does not occur. If damage does occur, a certified arborist should be immediately contacted and consulted on how to proceed.

— Once project specifics have been determined, a Tree Conservation Plan (TRC) should be developed for the project, including tree replacement ratios.

— Re-vegetation and remediation of the Site and areas impacted by construction activities should occur as soon as possible.

In order to minimize impacts to wildlife, the City of Ottawa Protocol for Wildlife Protection during Construction should be followed, including best practices for sensitive timing windows, pre-stressing the Site, Site clearing, wildlife-proofing etc. The protocol can be found at the following link:

https://documents.ottawa.ca/sites/documents/files/documents/construction_en.pdf

In order to avoid potential impacts to birds and bats that may be utilizing trees for nesting and roosting, respectively, it is recommended that tree removal occurs outside of the nesting and roosting period of April 1st through November 1st. See Section 5.3 for further details.

If contaminated soil or groundwater is encountered during constructions activities, work should stop immediately, and the Project Manager should be consulted as to how to proceed. Any investigation and/or remedial work undertaken should be completed in general accordance with applicable regulatory and industry standards by a qualified environmental consultant (i.e., in accordance with O. Reg. 153/04 and overseen by a Qualified Person).

Additionally, the development and implementation of an emergency spill response plan to mitigate any potential negative impacts to the environment from spills is recommended. All vehicle and equipment refueling is recommended to be completed on an impermeable surface and a minimum of 30m away from any waterbody or wetland. An emergency spill kit should be readily available at all times during construction activities and all workers trained on proper use. Should a spill occur, regardless of its severity, it is the responsibility of the Site Supervisor to ensure that the Ministry of Environment, Conservation and Parks is immediately notified through the Ontario Spill Action Centre (1-800-268-6060).

All waste materials, including hazardous wastes, should be handled, managed, and disposed of as per applicable health and safety and environmental legislation.

Given the historically disturbed nature of the Site, impacts to archeological features are not anticipated. If any archaeological features are identified during the course of the proposed undertaking, work must stop immediately. The Project Manager should be contacted to determine appropriate next steps. The Project Manager should ensure that staff are aware of their obligations in the event that archaeological features are encountered. The Project Manager should meet with field staff periodically during any below groundwork to confirm whether any features have been encountered.

The Project Manager should periodically monitor contractor activities to ensure compliance with applicable regulations. Work should be conducted in accordance with applicable regulations, by-laws and permits. The Project Manager will be responsible for identifying and securing all applicable permits prior to commencing work.

Site alteration permits, tree removal permits, and/or any other applicable permitting requirements may stipulate additional mitigation and/or compensation measures.

5.2 Aquatic Habitat Mitigation Measures and Sediment and Erosion Control

To minimize sediment erosion and impacts to potential off-site aquatic habitat the following mitigation measures are recommended:

— Development and implementation of a sediment and erosion control plan prior to the proposed undertaking to mitigate any potential negative impacts to nearby aquatic habitat and the Smith Crowding Municipal Drain; and,

— Development and implementation of an emergency spill response plan to mitigate any potential negative impacts to the environment from spills.

The Project Manager should periodically monitor Contractor activities to ensure compliance with the sediment and erosion control plan and applicable regulations, and work should be conducted in accordance with applicable by-laws and permits.

5.3 Wildlife and Species at Risk Mitigation

To minimize impacts to wildlife and potential SAR, the following avoidance and mitigation measures are recommended:

Table 3. Proposed avoidance and mitigation measures to minimize impacts to SAR and wildlife.

Species	Proposed Avoidance and Mitigation Measures
Birds	Any required vegetation removal should take place outside the active breeding bird season (April 1 to August 31 of any year). If vegetation clearing is necessary during the active breeding bird season, breeding bird surveys and/or nesting surveys shall be conducted within 48hrs of vegetation clearing activities. Migratory birds, nests, and eggs are protected under the Migratory Birds Convention Act (1994). Should any active migratory bird nests containing eggs or chicks be discovered during the proposed undertaking, all activity in the immediate vicinity of the nest must cease immediately. A qualified avian biologist shall be retained to conduct the appropriate assessment(s) and determine an appropriate buffer zone around the nesting area. The buffer zone is based on species and a number of protection factors and site-specific details. It must be maintained until the chicks have naturally left the nesting area permanently, or until construction operations in the vicinity have been completed. Based on the information provide herein. the Piperville Site does not exist within the regulated protected habitat of any extirpated, endangered or threatened bird species (i.e., no species identified on Site or habitat defined in O.Reg. 832/21), therefore, the Site does not receive habitat protection (mitigation or compensation) under the Endangered Species Act (2007). Should any extirpated, endangered or threatened avian SAR be observed at the Site work shall be ceased immediately. A qualified biologist shall be retained to conduct the appropriate assessment(s) and the MECP SAR department will be consulted as required.
Bats	Any required tree removal should take place outside the active bat season (May 1 to November 1 of any year). If tree removal activities must take place during the active bat season, bat exit surveys for individual trees deemed potentially suitable for roosting shall be conducted prior to the tree removal activities. In order to offset the tree clearing and potential habitat loss for bats, bat boxes could be installed on Site as habitat compensation measures. It should be noted that this is not a requirement as roosting habitat for SAR bats has not been identified on Site.
Turtles	No evidence of a wetland (e.g., standing water, saturated ground, wetland indicator plant species, etc.) or any open water/fish habitat was observed during Englobe's Site visit on October 24, 2022, and Site surveys in August, 2023. No turtles were noted on Site during survey events. However, as unevaluated wetlands are mapped on Site and adjacent to the Site (MNRF, 2022), there is the potential for turtle species to exist on or be travelling through the Site. It is recommended that the construction staging and storage areas (e.g., refuelling areas, equipment storage areas, etc.) be located 30 m away from the mapped wetland areas and furthermore, that construction activities take place outside of the active turtle season (April to October of any year). The installation and subsequent regular inspection (e.g., daily) of temporary wildlife exclusion fencing as per the MECP's Best Practices Technical Note for Reptile and Amphibian Exclusion Fencing (https://www.ontario.ca/page/reptile-and-amphibian-exclusion-fencing) is recommended to protect turtle species from entering the work zone between April 1 and October 31 of any year (if Project-related works are scheduled to occur during this time). Reptile and Amphibian Exclusion Fencing should be installed between the work zone and off-site wetland areas and functional in advance of April 1 of any year. If it is installed after this date, turtle removal and/or relocation activities should take place by a qualified biologist to clear the work zone of any potential turtles after the fencing has been installed.
Vegetation	Vegetation clearing shall be minimized as much as possible. All trees to be removed shall be assessed for SAR prior to removal. All trees to be retained within the work zone and all adjacent treed areas shall be protected using tree protection measures. Re-vegetation of impacted areas should be completed as soon as possible.

General	The following general mitigation measures are recommended: - Equipment and staging areas to remain within designated areas only and a designated access route to the work zone established for equipment and vehicles. - To prevent invasive species from entering the Site, equipment shall be decontaminated prior to arriving on Site. - SAR identification training should be provided to the Contractor. - Development of a project-specific wildlife protocol is recommended to inform workers on how to proceed should they encounter wildlife. The City of Ottawa Protocol for Wildlife Protection during Construction should be followed. - Daily wildlife sweeps for wildlife and SAR in the work zone should be conducted by the Contractor. - Erosion and sediment control measures shall be implemented as required to prevent sediment, mud, debris, fill, rock, dust, etc. from entering surface runoff, watercourses, or other sensitive areas. Should any SAR be identified on Site, work shall be ceased immediately and/or modified to ensure no negative impacts to SAR. A qualified biologist shall be retained to conduct the appropriate assessment(s) and the MECP SAR department will be consulted.

5.4 Mitigation of Impacts to Adjacent Natural Environment Areas

To minimize impacts to adjacent natural environment areas (e.g., forested lands to the South of the Piperville Site), the following avoidance and mitigation measures are recommended:

- Restricting grading and other site alternation activities in the vicinity of the CRZ of adjacent forested areas;
- Erecting fencing (e.g., snow fencing, metal fencing, etc.) to clearly identify the construction area limits with respect to the CRZ to ensure no equipment operates or material is stockpiled within this area;
- Not permitting signs, notices, or posters to be attached to any adjacent trees;
- Ensuring equipment exhaust fumes are not directed to any adjacent trees;
- Conducting regular inspections to ensure that damage to any adjacent natural environment areas does not occur. Should any vegetation damage occur to adjacent areas, a certified arborist shall be retained to assess damage and determine next steps;
- Development and implementation of a sediment and erosion control plan prior to the proposed undertaking;
- Development and implementation of an emergency spill response plan prior to the proposed undertaking;
- Installation and subsequent regular inspection (e.g., daily) of temporary exclusion fencing as per the MECP's Best Practices Technical Note for Reptile and Amphibian Exclusion Fencing is required to protect turtle species from entering the work zone between April 1 and October 31 of any year (if Project-related works are scheduled to occur during this time). Reptile and Amphibian Exclusion Fencing should be installed and functional in advance of April 1 of any year. If it is installed after this date, turtle removal and/or relocation activities should take place by a qualified biologist to clear the work zone of any potential turtle after the fencing has been installed;
- Installation of fencing and maintaining a vegetation buffer zone along private and/or public property lines will help to minimize the impact to adjacent property owners; and,
- Re-vegetation and remediation of the Site and areas impacted by construction activities should occur as soon as possible to help mitigate potential off-site impacts.

Detailed specifications shall be developed to address common project-specific environmental effects including, but not limited to, dust suppression, noise and vibration management, waste management, spill protection, sediment and erosion control, and worker health and safety. The Project Manager should meet with field staff at the onset of the project to review the common effects and associated mitigation/monitoring measures.

6 Cumulative Impacts

Cumulative impacts were considered in the design of the mitigation measures outlined in Section 5. The following represent potential cumulative impacts associated with the proposed undertaking:

— Cumulative impact of loss of mixed deciduous/coniferous forest and wildflower/meadow areas (e.g., lost of wildlife habitat); and,

— Cumulative impact of urban development in the area.

The cumulative loss of wildlife habitat and its associated value has been addressed through the retention of nearby natural areas surrounding the Piperville Site (e.g., Smith Crowding Municipal Drain and other nearby forested lands, wetlands, and watercourses), retaining trees and vegetation as much as possible on Site, re-vegetation/ remediating the Site as soon as possible, and obtaining tree removal permits which will require a Tree Conservation Plan and tree replacement ratios.

The cumulative impact of urban development in the area, and its associated value has been addressed through the recommendation of employing fencing and a vegetation buffer zone along private and/or public property lines to help to minimize the impact to adjacent property owners and the public.

7 Monitoring Plan

The Contractor responsible for carrying out the proposed undertaking shall also be responsible for implementing and monitoring the mitigation measures (and when required, developing new measures if new information is discovered after the issuance date of this report) outlined above. Regular inspections of the work area and mitigation measures will include, but will not be limited, to the following:

- Inspection of any and all associated erosion and sediment control measures on a regular basis to ensure proper function (e.g., accumulated sediment will be removed, and sediment fencing will be appropriately installed to ensure no surface water flow and/or sediment can pass through/under/or over the fencing);
- Inspection of any and all associated wildlife exclusion fencing on a regular basis to ensure proper function;
- Ensuring all equipment, vehicles, and fuels remain in the designated controlled areas;
- Ensuring all above-noted mitigation measures (and any additional mitigation/avoidance measures if determined after the issuance date of this report) are adhered to; and,
- Rectifying any deficiencies in relation to the above-noted mitigation measures immediately.

After the construction associated with the proposed substation, the Piperville Site should be re-vegetated, remediated and landscaped as outlined in any applicable development/concept plans. All temporary sediment and erosion control measures and wildlife exclusion fencing should be removed after project completion.

8 Closure

We trust the foregoing will satisfy your present requirements. Should you have any further questions regarding this matter, please do not hesitate to contact the undersigned.

Yours very truly,

Englobe Corp.

Colette Robitaille, B.Sc.

Project Manager

David Vardy, Ph.D., P. Bio.

Senior Biologist / Project Manager

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Appendix A
Statement of Limitations

This report (hereinafter, the “Report”) was prepared by Englobe Corp. (herein the “Company”) and is provided for the sole exclusive use and benefit of Exp Services Inc. (the “Client”). Ownership in and copyright for the contents of the Report belong to the Company.

No other person is authorized to rely on, use, copy, duplicate, reproduce, or disseminate this Report, in whole or in part and for any reason whatsoever, without the express prior written consent of the Company. Any person using this Report, other than the person(s) to whom it is directly addressed, does so entirely at its own risk. The Company assumes no responsibility or liability in connection with decisions made or actions taken based on the Report, or the observations and/or comments contained within the Report. Others with interest in the site and/or subject matter of this Report should undertake their own investigations and studies to determine how or if they or their plans could be affected.

This Report should be considered in its entirety; selecting specific portions of the Report may result in the misinterpretation of the content.

The work performed by the Company was carried out in accordance with the terms and conditions specified in the Professional Services Agreement between the Company and the Client, in accordance with currently accepted engineering standards and practices and in a manner consistent with the level of skill, care and competence ordinarily exercised by members of the same profession currently practicing under similar conditions and like circumstances in the same jurisdiction in which the services were provided. Standards, guidelines, and practices may change over time; those which were applied to produce this Report may be obsolete or unacceptable at a later date.

The findings, recommendations, suggestions, or opinions expressed in this Report reflect the Company’s best professional judgement based on observations and/or information reasonably available at the time the work was performed, as appropriate for the scope, work schedule and budgetary constraints established by the Client. No other warranty or representation, expressed or implied, is included in this Report including, but not limited to, that the Report deals with all issues potentially applicable to the site and/or that the Report deals with any and all of the important features of the Site, except as expressly provided in the scope of work.

This report has been prepared for the specific site, development, building, design or building assessment objectives and/or purposes that were described to the Company by the Client. The applicability and reliability of the content of this Report, subject to the limitations provided herein, are only valid to the extent that there has been no material alteration or variation thereto, and the Company expressly disclaims any obligation to update the Report. However, the Company reserves the right to amend or supplement this Report based on additional information, documentation or evidence made available to it.

The Company makes no representation concerning the legal significance of its findings, nor as to the present or future value of the property, or its fitness for a particular purpose and hereby disclaims any responsibility or liability for consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.

Since the passage of time, natural occurrences, and direct or indirect human intervention may affect the views, conclusions, and recommendations (if any) provided in the Report, it is intended for immediate use.

This Statement of Limitations forms an integral part of the Report.

In preparing this Report, the Company has relied in good faith on information provided by others and has assumed that such information is factual, accurate, and complete. The Company accepts no responsibility or liability for any deficiency, misstatement, or inaccuracy in this Report resulting from the information provided, concealed, or not fully disclosed by those individuals.

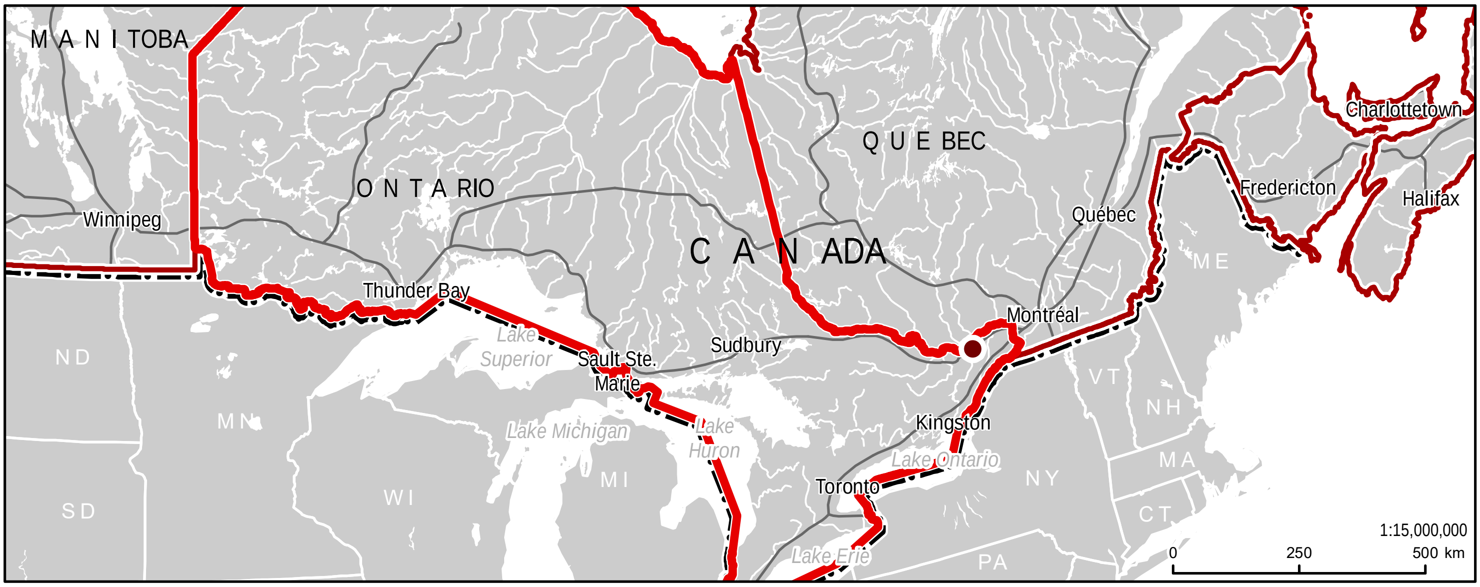
Unless otherwise noted, the information contained herein in no way reflects on environmental aspects of either the site or the subsurface conditions.

Any description of the site and its physical setting documented in this Report is presented for informational purposes only, to provide the reader a better understanding of the site and scope of work. Any topographic benchmarks and elevations are primarily to establish relative elevation differences between sampling locations and should not be used for other purposes such as grading, excavation, planning, development, or similar purposes.

The assessment should not be considered a comprehensive audit that covers and eliminates all present, past and future risks. The information presented in this Report is based on data collected during the completion of the monitoring conducted. The overall site/building/subsurface/groundwater conditions were extrapolated based on information collected at specific sampling locations. Professional judgement was exercised in gathering and analyzing data; however, no monitoring method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Consequently, the actual site/building/subsurface/groundwater conditions between the sampling points may vary.

This Report is based on the assumption that the design features relevant to our work will be in accordance with applicable codes, standards and guidelines of practice and constructed substantially in accordance with the Report. If there are any changes to the site development features, or there is any additional information that was not otherwise available at the time the work was performed, the Company should be retained to review the implications thereof to the contents of this Report. The design recommendations expressed in this Report are applicable only to the project described therein

Appendix B
Figures



Note
1. This drawing shall be read in conjunction with the associated technical report.

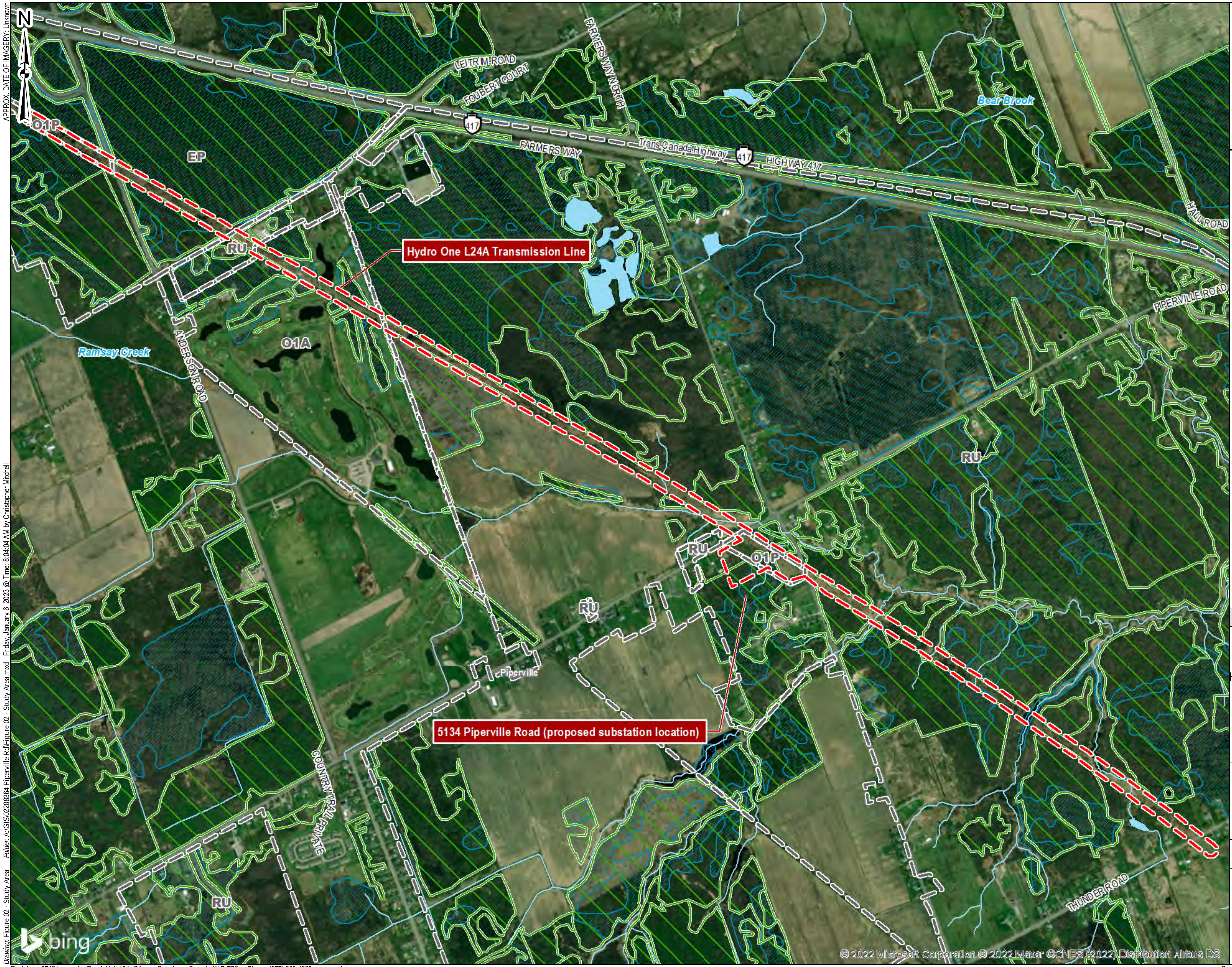
0 500 1,000 1,500 2,000 m

Revision	Date	Issue	Approval
A	2023-01-06	Draft	D.V.

Client: Exp Services Inc.	Site: Hydro One L24A Transmission Line + 5134 Piperville Road
Report Title: Environmental Impact Statement	Designed By: C.R. / Date: January, 2023
	Drawn By: C.M. / Project No. 02208364.000
Drawing Title: Site Location Map	Approved By: D.V. / Figure No. 1
	Scale: 1:50,000

ENGLOBE

Drawing: Figure 01 - Site Location *Folder:* A:\GIS\02208364 Piperville Rd\Figure 01 - Site Location.mxd Friday, January 6, 2023 @ Time: 8:41:12 AM by Christopher Mitchell



APPROX. DATE OF IMAGERY: Unknown

Drawing: Figure 02 - Study Area Folder: A:\GIS\02208364 Piperville Rd\Figure 02 - Study Area.mxd Friday, January 6, 2023 @ Time: 8:04:04 AM by Christopher Mitchell

ENGLOBE

Notes
1. This drawing shall be read in conjunction with the associated technical report.
2. Coordinate System: NAD 1983 CSRS UTM Zone 18 T
Projection: Transverse Mercator
Datum: North American 1983 CSRS

Legend
- Hydro One L24A Transmission Line + 5134 Piperville Road (proposed substation location)
- Zoning
- Forest
- Watercourse
- Waterbody
- Wetland

1:15,000

0 250 500 750 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 inches)

A	2023-01-06	Draft	D.V.
Revision	Date	Issue	Approval

Client
Exp Services Inc.

Site
Hydro One L24A Transmission Line + 5134 Piperville Road

Report Title
Environmental Impact Statement

Drawing Title
Study Area Map

Designed By: C.R.	Scale: 1:15,000
Drawn By: C.M.	Date: January, 2023
Approved By: D.V.	Project No.: 02208364.000

Figure No.
2

APPROX. DATE OF IMAGERY: Unknown

ENGLOBE

Notes

1. This drawing shall be read in conjunction with the associated technical report.
2. Coordinate System: NAD 1983 CSRS UTM Zone 18 T
   Projection: Transverse Mercator
   Datum: North American 1983 CSRS

Legend

- Proposed Severance
- Hydro One L24A Transmission Line
- Zoning
- Forest
- Watercourse
- Wetland
- Bat Acoustical Monitor
- Bat Exit Surveys

1:1,500

0 — 100 m

0 — 1:1 — 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023-01-06	Draft	D.V.

Client
Exp Services Inc.

Site
Hydro One L24A Transmission Line + 5134 Piperville Road

Report Title
Environmental Impact Statement

Drawing Title
5134 Piperville Road Site Plan

Designed By: C.R.	Scale: 1:1,500
Drawn By: C.M.	Date: January, 2023
Approved By: D.V.	Project No.: 02208364.000

Figure No.
3

Drawing: Figure 03 - Site Plan   Folder: A:\GIS\02208364 Piperville Rd\Figure 03 - Site Plan.mxd   Friday, January 6, 2023 @ Time: 8:36:56 AM by Christopher Mitchell

APPROX. DATE OF IMAGERY: Unknown

Drawing: Figure 04 - Vegetation Folder: A:\GIS\02208364 Piperville Rd\Figure 04 - Vegetation.mxd Friday, January 6, 2023 @ Time: 8:37:21 AM by Christopher Mitchell

ENGLOBE

Notes

1. This drawing shall be read in conjunction with the associated technical report.
2. Coordinate System: NAD 1983 CSRS UTM Zone 18 T
   Projection: Transverse Mercator
   Datum: North American 1983 CSRS

Legend

Proposed Severance

Name

Vegetation Community 1

Vegetation Community 2

Vegetation Community 3

Hydro One L24A Transmission Line

Watercourse

1:1,500

0 100 m

0 1:1 5 cm

Scale accurate when printed at 100% using paper size ANSI full bleed B (11.0 x 17.0 Inches)

Revision	Date	Issue	Approval
A	2023-01-06	Draft	D.V.

Client

Exp Services Inc.

Site

Hydro One L24A Transmission Line + 5134 Piperville Road

Report Title

Environmental Impact Statement

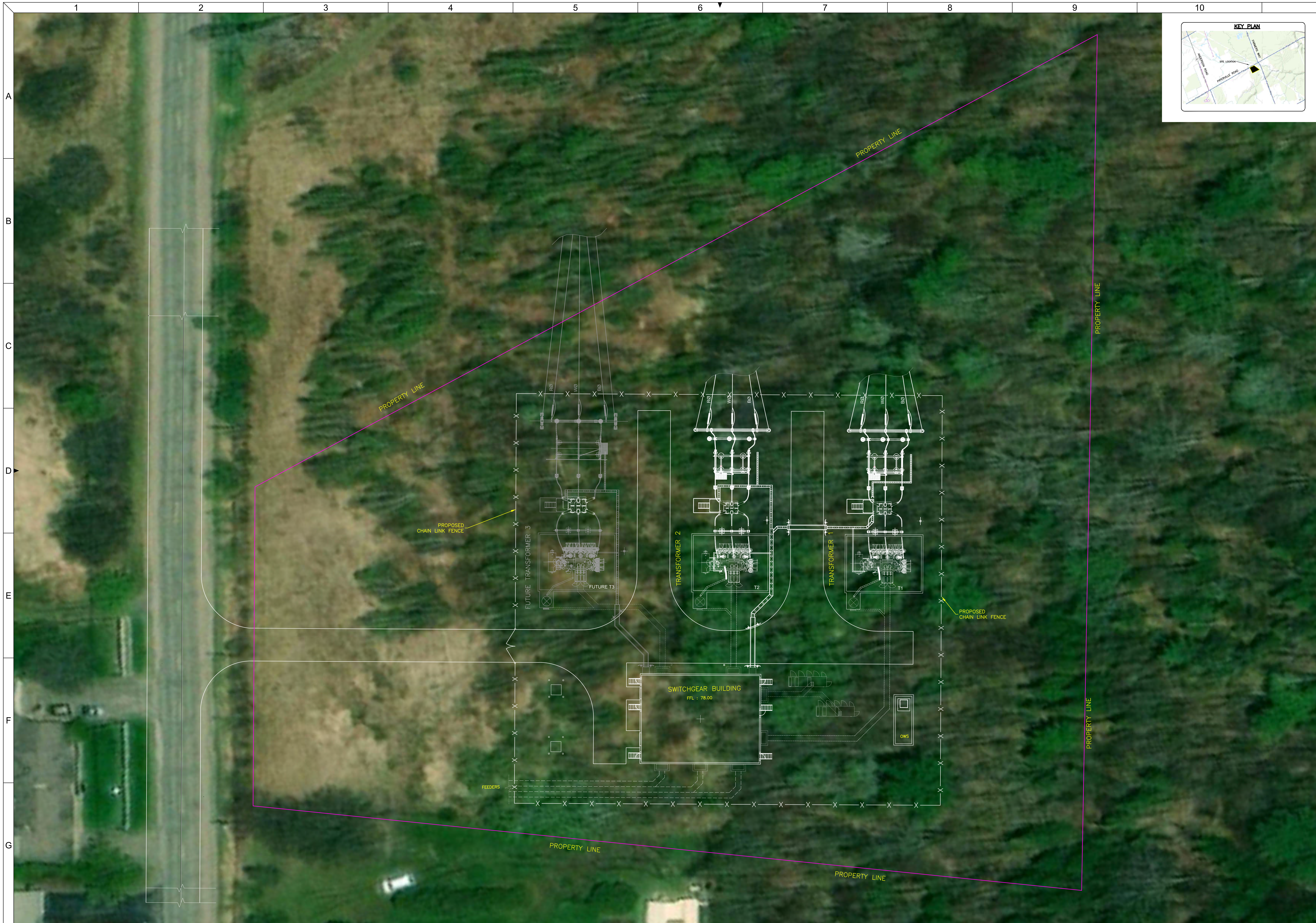
Drawing Title

Vegetation Communities

Designed By	C.R.	Scale	1:1,500
Drawn By	C.M.	Date	January, 2023
Approved By	D.V.	Project No.	02208364.000

Figure No.

4



REVISION NOTES

REV	DATE	DESCRIPTION	PREP	CHKD	APPD
1	14/04/2023	ISSUED FOR OPEN HOUSE	SVP	AA	AA
2	05/07/2023	ISSUED FOR BOREHOLE LAYOUT	SVP	AA	AA

STANDARDS:

1. All symbols and nomenclature to be in accordance with Hydro Ottawa Limited standard SRS0002 -substation symbology and nomenclature

GENERAL NOTES:

1. Contact the designer indicated below for any and all questions and / or discrepancies between this copy and equipment as found on site.
2. This drawing not considered valid unless approved and stamped in the area provided.
3. All field markups to follow convention
   GREEN ink - elements to be removed from DWG
   RED ink - elements to be added to DWG

Consultant:

exp Services Inc.
t: +1.613.688.1899 | f: +1.613.225.7330
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www.exp.com

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• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

Consultant Drawing Ref: OTT-22017543-A0

Manufacturer:

Manufacturer Drawing Ref:

Stamp:

Signature: Date:

Prepared By: Shivam Patel, M.Eng, Civil Designer

Checked By: Alam Ansari, P. Eng

Approved By: Alam Ansari, P. Eng

HydroOttawa
WWW.HYDROOTTAWA.COM

2711 HUNT CLUB ROAD
OTTAWA, ONTARIO K1G 3S4

Title:

HYDRO OTTAWA NEW EAST SUB-STATION
5134 PIPERVILLE ROAD

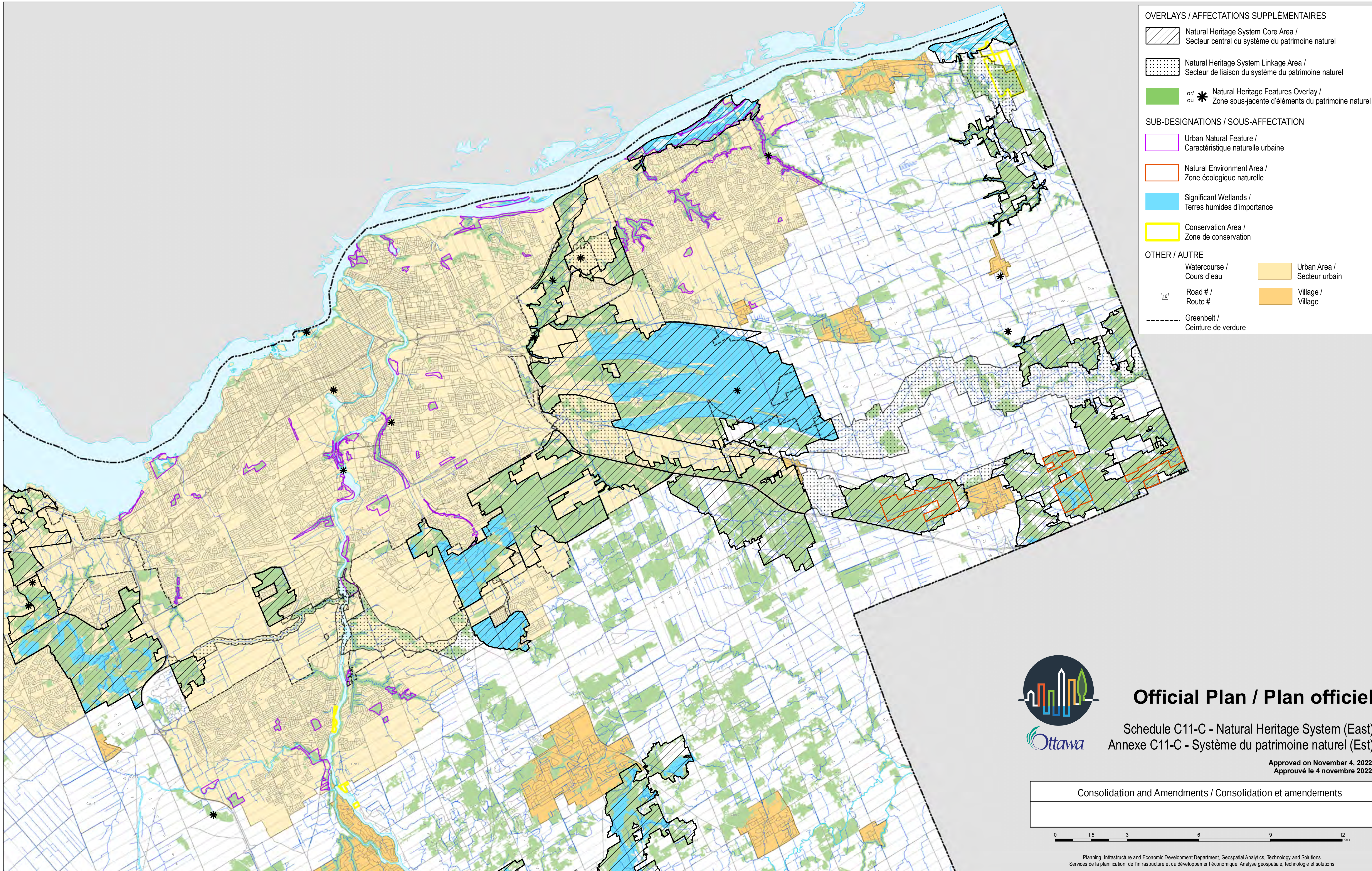
CONCEPTUAL SITE PLAN

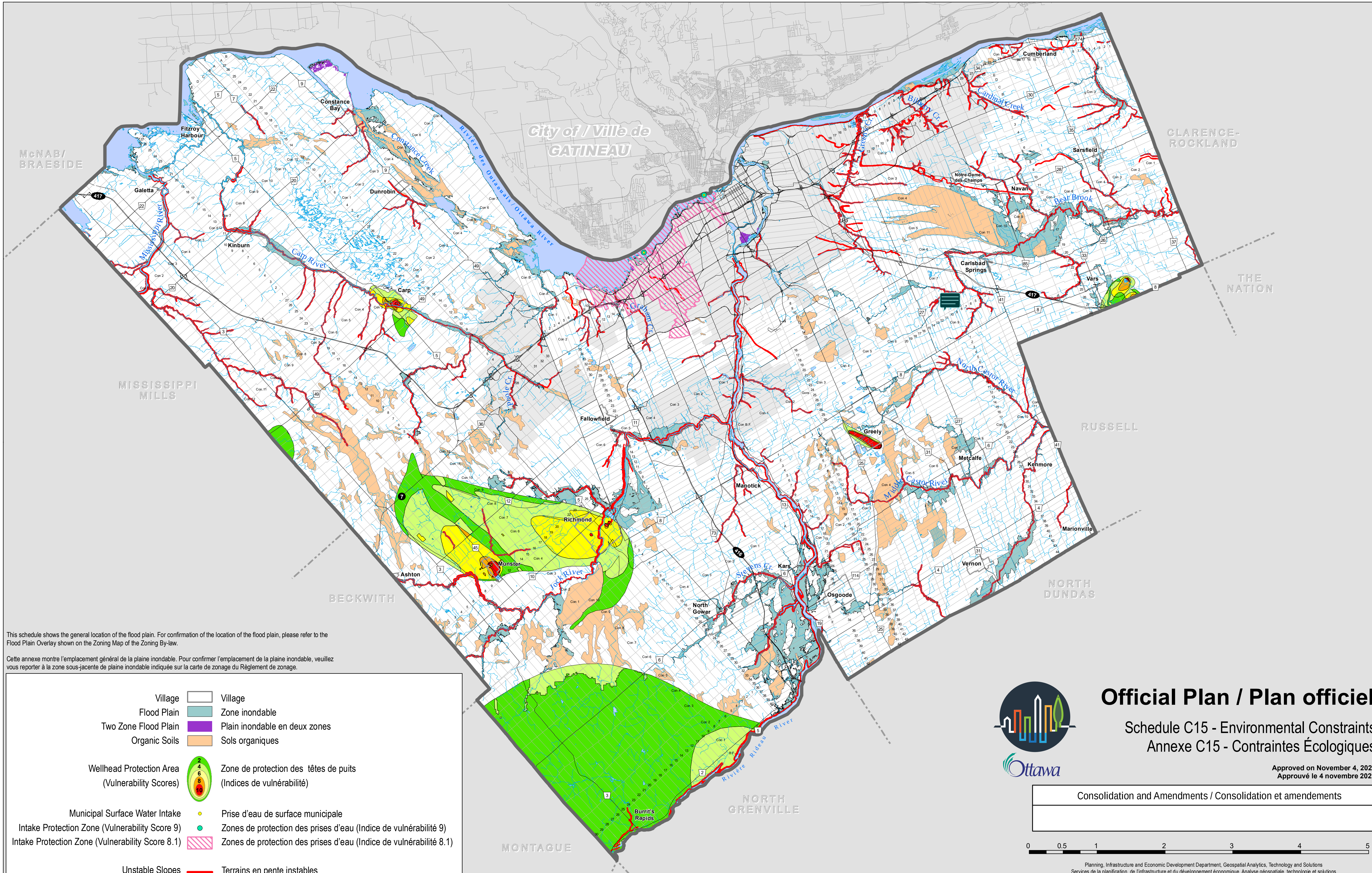
Date:	Scale:	Revision:
04.05.2023	1:300	2

Drawing: C1

Appendix C
Background Data Collection Results

ENGLOBE


OVERLAYS / AFFECTATIONS SUPPLÉMENTAIRES
Natural Heritage System Core Area / Secteur central du système du patrimoine naturel
Natural Heritage System Linkage Area / Secteur de liaison du système du patrimoine naturel
or/ou Natural Heritage Features Overlay / Zone sous-jacente d'éléments du patrimoine naturel
SUB-DESIGNATIONS / SOUS-AFFECTATION
Urban Natural Feature / Caractéristique naturelle urbaine
Natural Environment Area / Zone écologique naturelle
Significant Wetlands / Terres humides d'importance
Conservation Area / Zone de conservation
OTHER / AUTRE
Watercourse / Cours d'eau
Urban Area / Secteur urbain
Road # / Route #
Village / Village
Greenbelt / Ceinture de verdure
Ottawa
Official Plan / Plan officiel
Schedule C11-C - Natural Heritage System (East)
Annexe C11-C - Système du patrimoine naturel (Est)
Approved on November 4, 2022
Approuvé le 4 novembre 2022
Consolidation and Amendments / Consolidation et amendements
0 1.5 3 6 9 12 km
Planning, Infrastructure and Economic Development Department, Geospatial Analytics, Technology and Solutions
Services de la planification, de l'infrastructure et du développement économique, Analyse géospatiale, technologie et solutions



This schedule shows the general location of the flood plain. For confirmation of the location of the flood plain, please refer to the Flood Plain Overlay shown on the Zoning Map of the Zoning By-law.

Cette annexe montre l'emplacement général de la plaine inondable. Pour confirmer l'emplacement de la plaine inondable, veuillez vous reporter à la zone sous-jacente de plaine inondable indiquée sur la carte de zonage du Règlement de zonage.

Village	Village
Flood Plain	Zone inondable
Two Zone Flood Plain	Plain inondable en deux zones
Organic Soils	Sols organiques
Wellhead Protection Area (Vulnerability Scores) 2 4 6 8 10	Zone de protection des têtes de puits (Indices de vulnérabilité)
Municipal Surface Water Intake	Prise d'eau de surface municipale
Intake Protection Zone (Vulnerability Score 9)	Zones de protection des prises d'eau (Indice de vulnérabilité 9)
Intake Protection Zone (Vulnerability Score 8.1)	Zones de protection des prises d'eau (Indice de vulnérabilité 8.1)
Unstable Slopes	Terrains en pente instables

Ottawa

Official Plan / Plan officiel

Schedule C15 - Environmental Constraints
Annexe C15 - Contraintes Écologiques

Approved on November 4, 2022
Approuvé le 4 novembre 2022

Consolidation and Amendments / Consolidation et amendements

0 0.5 1 2 3 4 5 km

Planning, Infrastructure and Economic Development Department, Geospatial Analytics, Technology and Solutions
Services de la planification, de l'infrastructure et du développement économique, Analyse géospatiale, technologie et solutions

South Nation Conservation Authority Mapping

21/12/2022, 16:53:55

SNC Jurisdiction | SNC Regulated Area | Wetlands | Watercourses | Hydro One L24A Corridor

1:36,112

0 | 0.2 | 0.4 | 0.8 mi

0 | 0.35 | 0.7 | 1.4 km

City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada, Maxar

ArcGIS Web AppBuilder

Maxar | Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada | https://www.ontario.ca/page/open-government-licence-

Hydro One – L24A Corridor

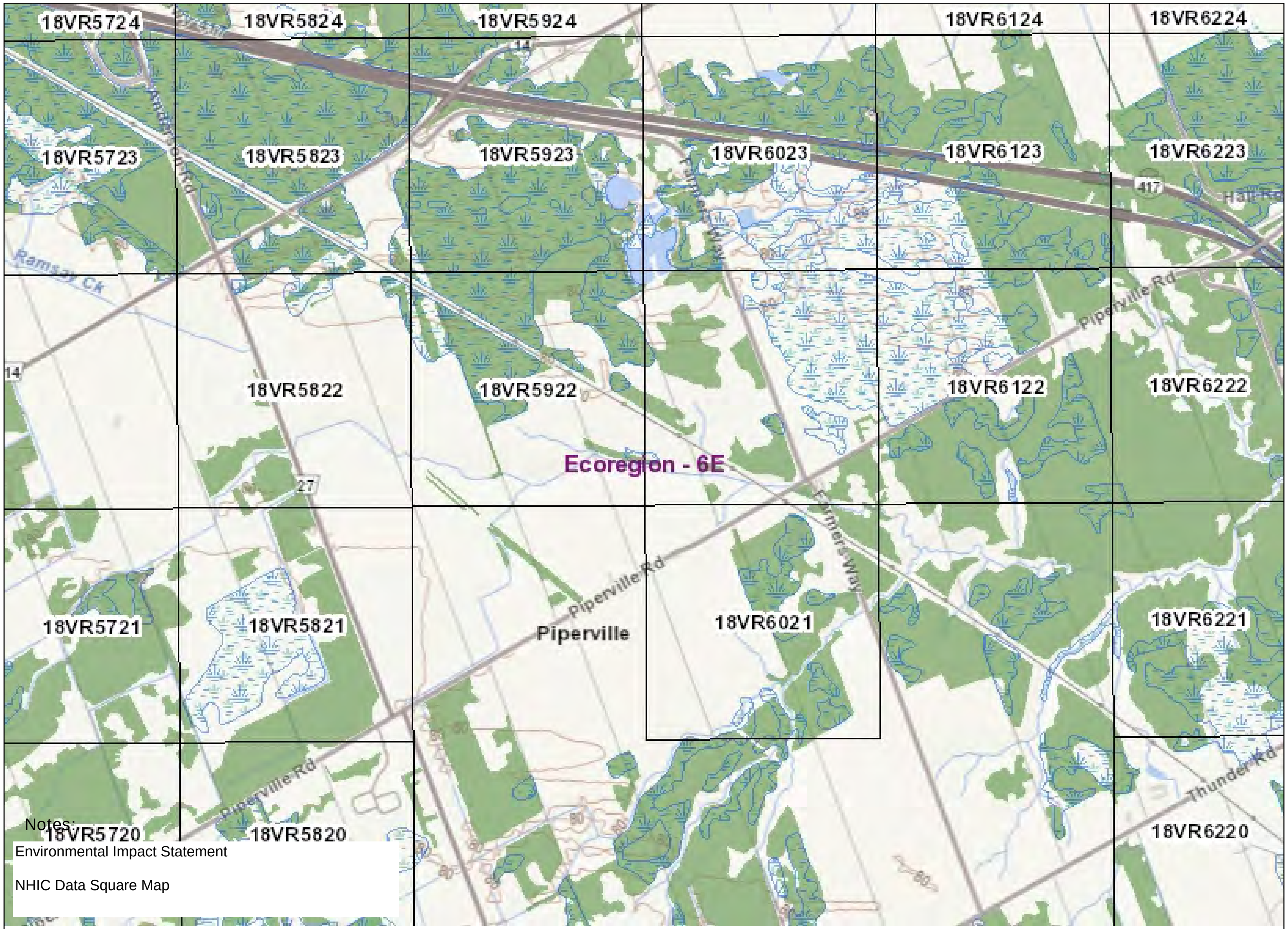
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

Hydro One - L24A Corridor

Map created:12/21/2022



Notes:

Environmental Impact Statement

NHIC Data Square Map

Legend

- NHIC 1 Km Grid
- Ecoregion
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Natural Heritage System

1.3 0 0.64 1.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

NHIC Data

To work further with this data select the content and copy it into your own word or excel documents.

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
1109049	NATURAL AREA	LEITRIM ROAD, NORTH OF HWY 417					18VR5823	
1109049	NATURAL AREA	RAMSAYVILLE HEMLOCK FOREST					18VR5823	
1109049	SPECIES	Red Spruce	Picea rubens				18VR5823	
1109049	SPECIES	Black Ash	Fraxinus nigra			THR	18VR5823	
1109049	SPECIES	Blood Milkwort	Polygala sanguinea				18VR5823	
1109049	SPECIES	Northern Long Sedge	Carex folliculata				18VR5823	
1109048	SPECIES	Red Spruce	Picea rubens				18VR5822	
1109059	SPECIES	Red Spruce	Picea rubens				18VR5923	
1109059	SPECIES	Snapping Turtle	Chelydra serpentina		SC	SC	18VR5923	
1109059	SPECIES	Black Ash	Fraxinus nigra			THR	18VR5923	
1109058	SPECIES	Red Spruce	Picea rubens				18VR5922	
1109039	NATURAL AREA	ANDERSON ROAD					18VR5723	
1109039	SPECIES	Red Spruce	Picea rubens				18VR5723	

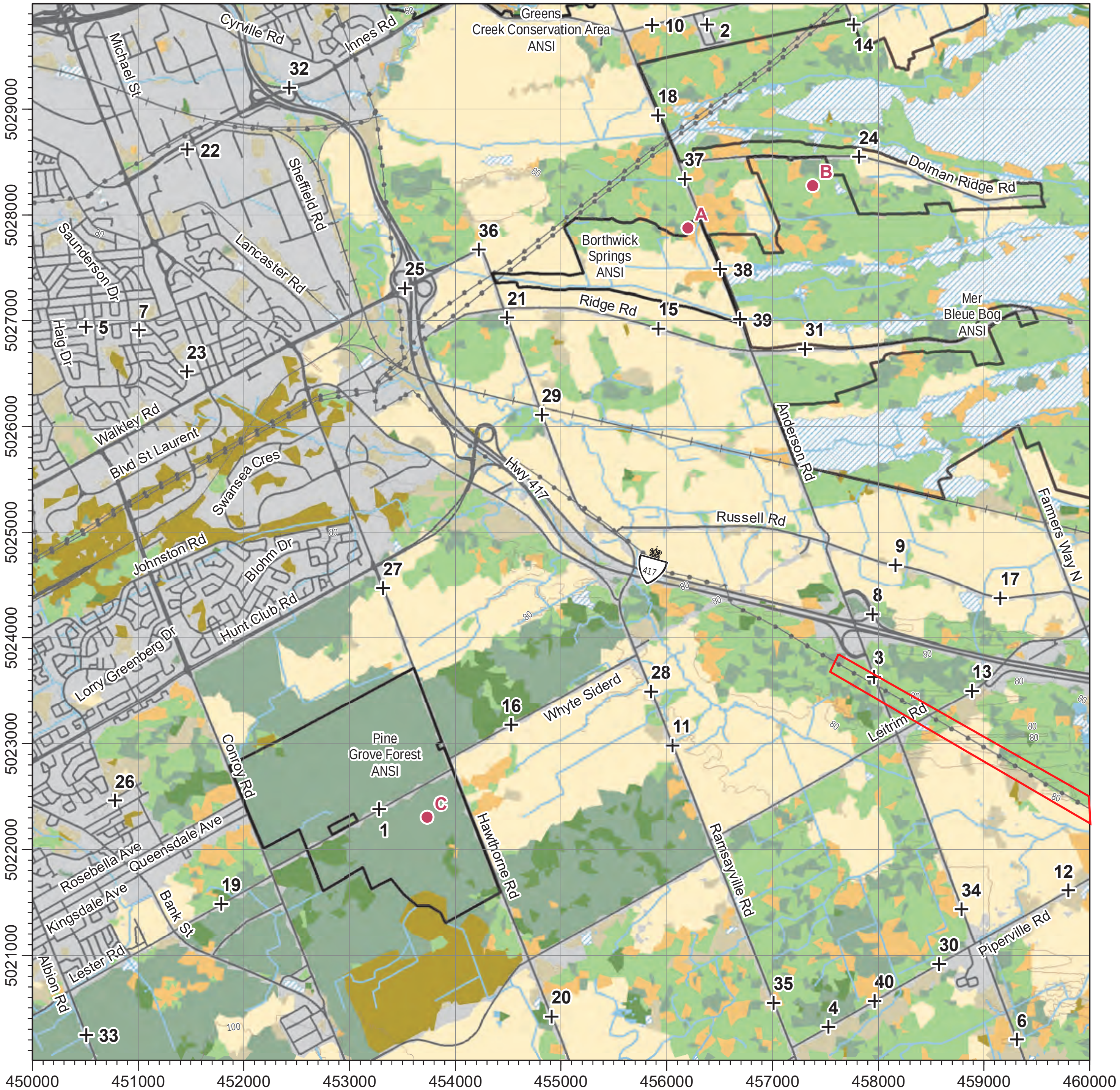
NHIC Data

To work further with this data select the content and copy it into your own word or excel documents.

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
1109867	SPECIES	Red Spruce	Picea rubens				18VR6021	
1109887	WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony		SNR			18VR6221	
1109887	SPECIES	Wood Thrush	Hylocichla mustelina		SC	THR	18VR6221	
1109887	SPECIES	Butternut	Juglans cinerea		END	END	18VR6221	
1109886	SPECIES	Butternut	Juglans cinerea		END	END	18VR6220	

Region / Région: 24

Square / Parcelle: 18TVR52



Predefined point count coordinates
Coordonnées des points d'écoute prédéterminés

POINT +	EASTING UTM Est	NORTHING UTM Nord
1	453282	5022378
2	456381	5029800
3	457960	5023629
4	457529	5020321
5	450504	5026943
6	459309	5020200
7	451005	5026908
8	457948	5024222
9	458164	5024687
10	455860	5029794
11	456056	5022982
12	459800	5021610
13	458888	5023496
14	457767	5029800
15	455921	5026923
16	454529	5023178
17	459157	5024374
18	455917	5028941
19	451786	5021482
20	454911	5020419
21	454490	5027026
22	451465	5028616
23	451460	5026517
24	457817	5028547
25	453524	5027304
26	450781	5022460
27	453316	5024468
28	455854	5023491
29	454820	5026108
30	458578	5020916
31	457309	5026730
32	452428	5029201
33	450510	5020245
34	458789	5021431
35	457009	5020547
36	454221	5027671
37	456170	5028338
38	456505	5027486
39	456691	5027013
40	457963	5020566

Number of off-road point counts
Nombre de points d'écoute hors route

Broadleaf forest:	2	Grassland:	0
Coniferous forest:	0	Wetland:	1
Mixed forest:	2	Shrubland:	0

Predefined / Prédéterminés: 20
Off-road / Hors route: 5

Atlas-2 off-road point ● **Point hors route Atlas-2**

0 — 1 km

Atlas des oiseaux nicheurs Ontario Breeding Bird Atlas

Legend		Légende
Expressway or highway		Autoroute ou route nationale (asphaltée)
Regional or local road		Route régionale ou locale (asphaltée ou non)
Resource / Recreation		Ressource / route récréative
Rail line		Chemin de fer
Utility corridor		Ligne de transport d'énergie
Watercourse		Rivière ou ruisseau
Protected or conserved area		Zone protégée ou conservée
Fire disturbance since 2000		Incendie perturbé depuis 2000
Broadleaf forest	19	Forêt de feuillus
Coniferous forest	2	Forêt de conifères
Mixed forest	13	Forêt mixte
Shrubland	4	Milieu arbustif
Grassland	3	Prairie
Barren	4	Dénudé
Wetland	5	Milieu humide
Agriculture	26	Milieu agricole
Water		Eau
Developed area	24	Zone développée
Unclassified		Non classifié

The approximate percent coverage of each habitat type is indicated by the numbered box in the legend.

La couverture approximative est indiquée en pourcentage dans le rectangle coloré de la légende.

Cartographic production by Birds Canada
Production cartographique par oiseaux Canada

Note: The project partners are in no way responsible for any inaccuracies, mistakes or omissions in the information that appears on this map.

Avis : Les responsables du projet d'atlas ne peuvent être tenus responsables de toute inexactitude, erreur ou omission concernant les informations apparaissant sur cette carte.

6° Universal Transverse Mercator (UTM) Projection; Zone 18, Central Meridian -75°; North American Datum 1983 (NAD 83)

Projection universelle transverse de Mercator (UTM) 6° Zone 18, méridien central -75°; Système de référence géodésique nord-américain 1983 (NAD 83)

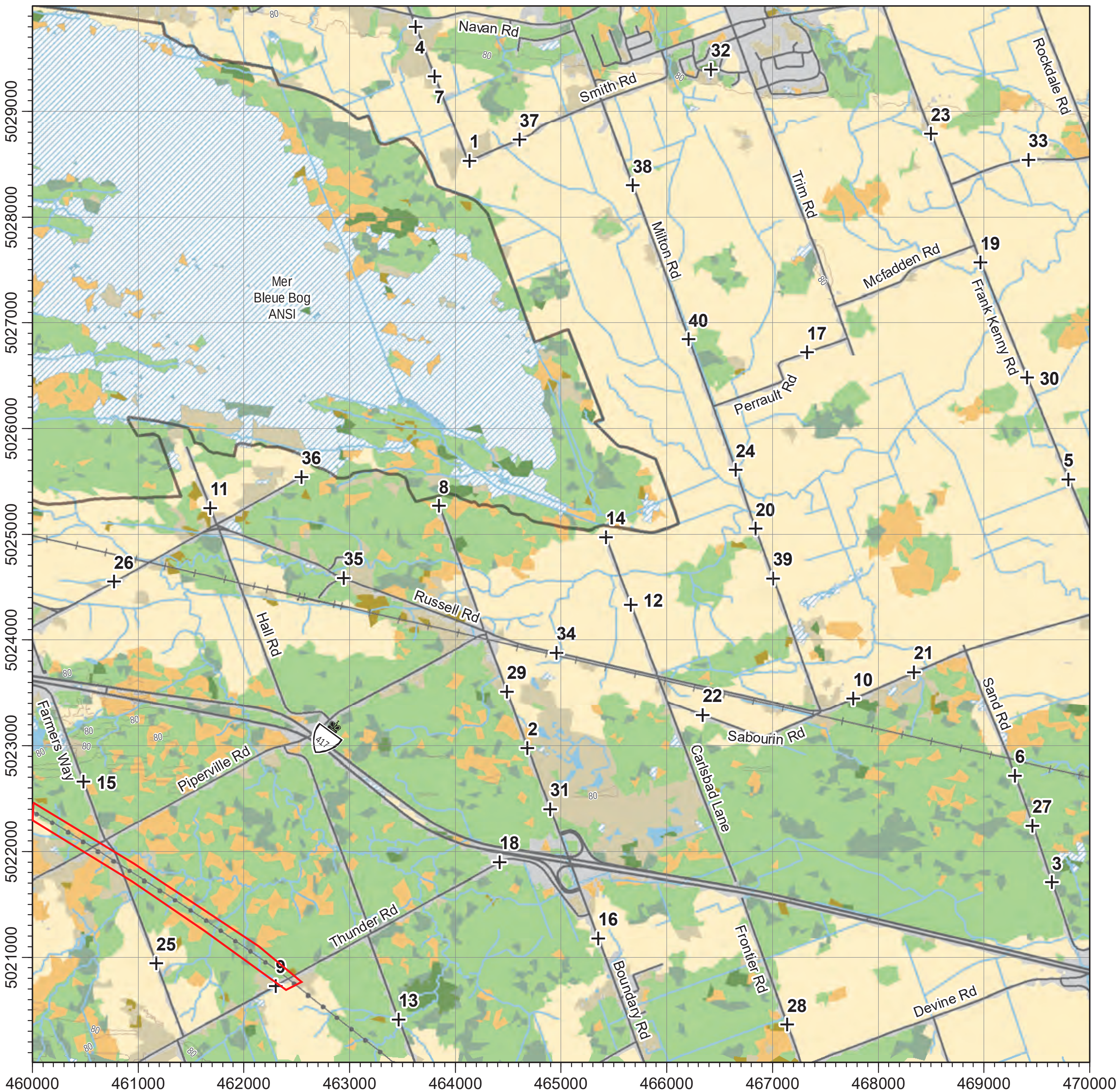
BIRDS CANADA OISEAUX CANADA

March 2021 / mars 2021

https://www.birdsontario.org/

Region / Région: 24

Square / Parcelle: 18TVR62



Predefined point count coordinates
Coordonnées des points d'écoute prédéterminés

POINT +	EASTING UTM Est	NORTHING UTM Nord
1	464135	5028531
2	464683	5022975
3	469640	5021708
4	463622	5029800
5	469800	5025517
6	469292	5022715
7	463804	5029330
8	463846	5025267
9	462303	5020728
10	467765	5023445
11	461679	5025248
12	465658	5024331
13	463465	5020409
14	465423	5024971
15	460483	5022658
16	465350	5021177
17	467325	5026719
18	464421	5021899
19	468969	5027568
20	466839	5025051
21	468337	5023695
22	466340	5023289
23	468496	5028786
24	466649	5025607
25	461171	5020940
26	460773	5024551
27	469458	5022243
28	467137	5020361
29	464487	5023510
30	469407	5026480
31	464898	5022400
32	466418	5029394
33	469421	5028541
34	464955	5023879
35	462944	5024585
36	462543	5025542
37	464605	5028730
38	465677	5028300
39	467006	5024580
40	466208	5026844

Number of off-road point counts
Nombre de points d'écoute hors route

Broadleaf forest:	3	Grassland:	0
Coniferous forest:	0	Wetland:	1
Mixed forest:	0	Shrubland:	1

Predefined / Prédéterminés: 20
Off-road / Hors route: 5

Atlas-2 off-road point ● **Point hors route Atlas-2**

0 1 km

Atlas des oiseaux nicheurs Ontario Breeding Bird Atlas

Legend / Légende

Legend		Légende
Expressway or highway		Autoroute ou route nationale (asphaltée)
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Rail line		Chemin de fer
Utility corridor		Ligne de transport d'énergie
Watercourse		Rivière ou ruisseau
Protected or conserved area		Zone protégée ou conservée
Fire disturbance since 2000		Incendie perturbé depuis 2000
Broadleaf forest	29	Forêt de feuillus
Coniferous forest	1	Forêt de conifères
Mixed forest	4	Forêt mixte
Shrubland	5	Milieu arbustif
Grassland		Prairie
Barren	4	Dénudé
Wetland	12	Milieu humide
Agriculture	40	Milieu agricole
Water		Eau
Developed area	5	Zone développée
Unclassified		Non classifié

The approximate percent coverage of each habitat type is indicated by the numbered box in the legend.

La couverture approximative est indiquée en pourcentage dans le rectangle coloré de la légende.

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Production cartographique par oiseaux Canada

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BIRDS CANADA OISEAUX CANADA

March 2021 / mars 2021

https://www.birdsontario.org/

18TVR62

Ottawa

Region / Région: 24

Atlas Data Summary

Select what type of data summary you would like to display and click the appropriate *view* button. You can use the square resource page to find out where your atlas squares or regions are located.

What years do you want to display : : all years combined Which version of the atlas Second (2001-2005)

How do you want to view the results: Tabular results

Show me statistics on the number of species reported, the effort, etc.

1. View summary statistics:: Province View
2. View summary statistics: By Square within region 1. Essex View
3. View list of completed Point Counts in **square** :: View

Show me the list of species, the highest breeding evidence and abundance

4. View species list for : : Province View
5. View species list for **square** or **block no.** : : 18VR52 View

Show me the list of regions or squares reporting a species

6. View list of Regions reporting View

Species list for square 18VR52 (number of entries returned: 131)

Region	Square	Species	Breeding Evidence				Point Counts			
			Max BE	Categ	#Sq	Atlasser Name	#PC	%PC	Abun	#Sq
24	18VR52	Canada Goose	NY	CONF	1	Langis Sirois				
24	18VR52	Wood Duck	FY	CONF	1	Langis Sirois				
24	18VR52	American Black Duck	FY	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Mallard	NE	CONF	1		3	9.38	0.375	1
24	18VR52	Blue-winged Teal	FY	CONF	1	Langis Sirois				
24	18VR52	Northern Pintail	FY	CONF	1	Langis Sirois				
24	18VR52	Green-winged Teal	FY	CONF	1	Langis Sirois				
24	18VR52	Gray Partridge	P	PROB	1	Langis Sirois				
24	18VR52	Ruffed Grouse	FY	CONF	1	Langis Sirois				
24	18VR52	Wild Turkey	FY	CONF	1	Langis Sirois				
24	18VR52	Pied-billed Grebe	FY	CONF	1	Langis Sirois				
24	18VR52	American Bittern	D	PROB	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Least Bittern	S	POSS	1	Langis Sirois				
24	18VR52	Great Blue Heron	H	POSS	1	Langis Sirois				
24	18VR52	Green Heron	T	PROB	1	Langis Sirois				
24	18VR52	Turkey Vulture	H	POSS	1	Langis Sirois				
24	18VR52	Northern Harrier	CF	CONF	1	Langis Sirois				
24	18VR52	Sharp-shinned Hawk	H	POSS	1	Langis Sirois				
24	18VR52	Cooper's Hawk	FY	CONF	1	2 atlassers				
24	18VR52	Red-shouldered Hawk	H	POSS	1	Langis Sirois				
24	18VR52	Broad-winged Hawk	AE	CONF	1	2 atlassers				
24	18VR52	Red-tailed Hawk	NY	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	American Kestrel	FY	CONF	1	Langis Sirois				
24	18VR52	Merlin	NY	CONF	1	Langis Sirois				
24	18VR52	Virginia Rail	FY	CONF	1	Langis Sirois				
24	18VR52	Sandhill Crane	T	PROB	1	Langis Sirois				
24	18VR52	Killdeer	FY	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Rock Pigeon	NY	CONF	1	Langis Sirois	2	6.25	0.375	1
24	18VR52	Spotted Sandpiper	FY	CONF	1	Langis Sirois				
24	18VR52	Upland Sandpiper	T	PROB	1	Langis Sirois				
24	18VR52	Common Snipe	NE	CONF	1	Langis Sirois				
24	18VR52	American Woodcock	T	PROB	1	Langis Sirois				
24	18VR52	Ring-billed Gull	H	POSS	1		2	6.25	0.0938	1
24	18VR52	Mourning Dove	NY	CONF	1	Langis Sirois	10	31.25	0.5625	1
24	18VR52	Black/Yellow-billed Cuckoo	S	POSS	1	Langis Sirois				
24	18VR52	Black-billed Cuckoo	T	PROB	1	Langis Sirois				

24	18VR52	Great Horned Owl	P	PROB	1	Langis Sirois				
24	18VR52	Barred Owl	H	POSS	1	Langis Sirois				
24	18VR52	Northern Saw-whet Owl	T	PROB	1	Langis Sirois				
24	18VR52	Common Nighthawk	T	PROB	1	Marcel Gahbauer				
24	18VR52	Whip-poor-will	T	PROB	1	Langis Sirois				
24	18VR52	Chimney Swift	S	POSS	1	Langis Sirois				
24	18VR52	Ruby-throated Hummingbird	T	PROB	1	Langis Sirois				
24	18VR52	Belted Kingfisher	CF	CONF	1	Langis Sirois				
24	18VR52	Yellow-bellied Sapsucker	CF	CONF	1	Langis Sirois	2	6.25	0.0625	1
24	18VR52	Downy Woodpecker	NY	CONF	1	Langis Sirois				
24	18VR52	Hairy Woodpecker	FY	CONF	1	Langis Sirois				
24	18VR52	Northern Flicker	NY	CONF	1	Langis Sirois	6	18.75	0.2188	1
24	18VR52	Pileated Woodpecker	FY	CONF	1	Langis Sirois				
24	18VR52	Eastern Wood-Pewee	CF	CONF	1	Langis Sirois	4	12.5	0.1563	1
24	18VR52	Alder Flycatcher	NE	CONF	1	Langis Sirois	5	15.63	0.1875	1
24	18VR52	Willow Flycatcher	NY	CONF	1					
24	18VR52	Least Flycatcher	CF	CONF	1	Langis Sirois	3	9.38	0.0938	1
24	18VR52	Eastern Phoebe	NY	CONF	1	Langis Sirois	3	9.38	0.0938	1
24	18VR52	Great Crested Flycatcher	FY	CONF	1	Langis Sirois	7	21.88	0.2813	1
24	18VR52	Eastern Kingbird	NY	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Blue-headed Vireo	S	POSS	1	Langis Sirois				
24	18VR52	Warbling Vireo	NU	CONF	1	Langis Sirois	7	21.88	0.2813	1
24	18VR52	Red-eyed Vireo	FY	CONF	1	Langis Sirois	9	28.13	0.3438	1
24	18VR52	Blue Jay	FY	CONF	1	Langis Sirois	5	15.63	0.1563	1
24	18VR52	American Crow	NY	CONF	1	Langis Sirois	13	40.63	0.9375	1
24	18VR52	Common Raven	NY	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Horned Lark	H	POSS	1	Langis Sirois				
24	18VR52	Purple Martin	NY	CONF	1	Langis Sirois				
24	18VR52	Tree Swallow	NY	CONF	1	Langis Sirois	3	9.38	0.1875	1
24	18VR52	Northern Rough-winged Swallow	NY	CONF	1	Langis Sirois				
24	18VR52	Bank Swallow	NY	CONF	1	Langis Sirois				
24	18VR52	Cliff Swallow	NY	CONF	1	Langis Sirois	1	3.13	0.0938	1
24	18VR52	Barn Swallow	NY	CONF	1	Langis Sirois	2	6.25	0.0625	1
24	18VR52	Black-capped Chickadee	CF	CONF	1	Langis Sirois	11	34.38	0.5	1
24	18VR52	Red-breasted Nuthatch	CF	CONF	1	Langis Sirois	2	6.25	0.0625	1
24	18VR52	White-breasted Nuthatch	CF	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Brown Creeper	CF	CONF	1	Langis Sirois				
24	18VR52	House Wren	CF	CONF	1	Langis Sirois	4	12.5	0.1875	1
24	18VR52	Winter Wren	T	PROB	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Sedge Wren	T	PROB	1	Langis Sirois				
24	18VR52	Marsh Wren	FY	CONF	1	Langis Sirois				
24	18VR52	Golden-crowned Kinglet	CF	CONF	1	Langis Sirois				
24	18VR52	Eastern Bluebird	NY	CONF	1	Langis Sirois				
24	18VR52	Veery	FY	CONF	1	Langis Sirois	6	18.75	0.2813	1
24	18VR52	Hermit Thrush	CF	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Wood Thrush	NY	CONF	1	Judith Phillips	3	9.38	0.125	1
24	18VR52	American Robin	NY	CONF	1	Langis Sirois	16	50.0	0.8125	1
24	18VR52	Gray Catbird	NY	CONF	1		2	6.25	0.0625	1
24	18VR52	Northern Mockingbird	NB	CONF	1					
24	18VR52	Brown Thrasher	NY	CONF	1	Langis Sirois				
24	18VR52	European Starling	NY	CONF	1	Langis Sirois	11	34.38	1.4688	1
24	18VR52	Cedar Waxwing	NY	CONF	1		5	15.63	0.4375	1
24	18VR52	Nashville Warbler	FY	CONF	1	Langis Sirois	2	6.25	0.0625	1
24	18VR52	Yellow Warbler	NY	CONF	1		12	37.5	0.5	1
24	18VR52	Chestnut-sided Warbler	CF	CONF	1	Langis Sirois	7	21.88	0.3125	1
24	18VR52	Magnolia Warbler	A	PROB	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Black-throated Blue Warbler	T	PROB	1	Langis Sirois				
24	18VR52	Yellow-rumped Warbler	S	POSS	1	Langis Sirois				
24	18VR52	Black-throated Green Warbler	CF	CONF	1	Langis Sirois	2	6.25	0.125	1
24	18VR52	Blackburnian Warbler	S	POSS	1	2 atlassers				
24	18VR52	Pine Warbler	CF	CONF	1	Langis Sirois				
24	18VR52	Palm Warbler	FY	CONF	1	Langis Sirois				
24	18VR52	Black-and-white Warbler	A	PROB	1	Langis Sirois	4	12.5	0.125	1
24	18VR52	American Redstart	CF	CONF	1	Langis Sirois	1	3.13	0.0625	1
24	18VR52	Ovenbird	NY	CONF	1		8	25.0	0.4375	1
24	18VR52	Northern Waterthrush	A	PROB	1					
24	18VR52	Mourning Warbler	FY	CONF	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Common Yellowthroat	NE	CONF	1	Langis Sirois	18	56.25	0.8438	1
24	18VR52	Canada Warbler	S	POSS	1					
24	18VR52	Eastern Towhee	S	POSS	1	Langis Sirois				
24	18VR52	Chipping Sparrow	CF	CONF	1	Langis Sirois	8	25.0	0.25	1
24	18VR52	Clay-colored Sparrow	CF	CONF	1	Langis Sirois				
24	18VR52	Vesper Sparrow	S	POSS	1	Langis Sirois				
24	18VR52	Savannah Sparrow	NY	CONF	1	Langis Sirois				
24	18VR52	Song Sparrow	CF	CONF	1	Langis Sirois	21	65.63	1.0625	1
24	18VR52	Lincoln's Sparrow	CF	CONF	1	Langis Sirois				
24	18VR52	Swamp Sparrow	CF	CONF	1	Langis Sirois	8	25.0	0.375	1
24	18VR52	White-throated Sparrow	FY	CONF	1	Langis Sirois	7	21.88	0.2813	1

24	18VR52	Scarlet Tanager	D	PROB	1	Langis Sirois	1	3.13	0.0313	1
24	18VR52	Northern Cardinal	FY	CONF	1	Langis Sirois	2	6.25	0.0938	1
24	18VR52	Rose-breasted Grosbeak	AE	CONF	1	Langis Sirois	4	12.5	0.125	1
24	18VR52	Indigo Bunting	NY	CONF	1		1	3.13	0.0313	1
24	18VR52	Bobolink	NY	CONF	1	Langis Sirois	3	9.38	0.0938	1
24	18VR52	Red-winged Blackbird	NY	CONF	1		15	46.88	1.5	1
24	18VR52	Eastern Meadowlark	CF	CONF	1	Langis Sirois				
24	18VR52	Common Grackle	CF	CONF	1	Langis Sirois	17	53.13	1.125	1
24	18VR52	Brown-headed Cowbird	NY	CONF	1	Langis Sirois	5	15.63	0.2813	1
24	18VR52	Baltimore Oriole	FS	CONF	1	Langis Sirois	8	25.0	0.2813	1
24	18VR52	Purple Finch	FY	CONF	1	Langis Sirois				
24	18VR52	House Finch	CF	CONF	1	Langis Sirois	3	9.38	0.2813	1
24	18VR52	White-winged Crossbill	T	PROB	1	Langis Sirois				
24	18VR52	Pine Siskin	H	POSS	1	Langis Sirois				
24	18VR52	American Goldfinch	AE	CONF	1	Langis Sirois	15	46.88	0.8125	1
24	18VR52	Evening Grosbeak	FY	CONF	1					
24	18VR52	House Sparrow	CF	CONF	1	Langis Sirois	2	6.25	0.125	1

New data summary | Download results

LEGEND

Breeding Evidence	Point Counts
Max BE: Highest Breeding Evidence recorded **Categ:** Highest Breeding Category recorded (OBS=observed, POSS=possible, PROB=probable, CONF=confirmed) **#Sq:** Number of squares with species (Breeding Evidence) **Atlasser name:** Name of atlasser who reported the highest breeding evidence (if they accepted that their name be displayed). If more than one person provided the same breeding evidence code, then only the number of atlassers is listed.	**#PC:** Number of Point Counts with species **%PC:** Percent of Point Counts with species **Abun:** Average number of birds per Point Count **#Sq:** Number of squares with species (Point Counts)

Ontario Breeding Bird Atlas, Birds Canada, 115 Front Street, P.O. Box 160 Port Rowan, ON, N0E 1M0 Canada
Phone: 1-519-586-3531 E-mail: atlas@birdsontario.org **Banner photo:** John Reaume

Atlas Data Summary

Select what type of data summary you would like to display and click the appropriate *view* button. You can use the square resource page to find out where your atlas squares or regions are located.

What years do you want to display : : all years combined Which version of the atlas Second (2001-2005)

How do you want to view the results: Tabular results

Show me statistics on the number of species reported, the effort, etc.

1. View summary statistics:: Province View
2. View summary statistics: By Square within region 1. Essex View
3. View list of completed Point Counts in **square** :: View

Show me the list of species, the highest breeding evidence and abundance

4. View species list for : : Province View
5. View species list for **square** or **block no.** : : 18VR62 View

Show me the list of regions or squares reporting a species

6. View list of Regions reporting View

Species list for square 18VR62 (number of entries returned: 107)

Region	Square	Species	Breeding Evidence				Point Counts			
			Max BE	Categ	#Sq	Atlasser Name	#PC	%PC	Abun	#Sq
24	18VR62	Canada Goose	P	PROB	1	Marcel Gahbauer	1	4.0	0.2	1
24	18VR62	Wood Duck	FY	CONF	1	Marcel Gahbauer				
24	18VR62	American Wigeon	H	POSS	1	Marcel Gahbauer				
24	18VR62	American Black Duck	P	PROB	1	Marcel Gahbauer				
24	18VR62	Mallard	FY	CONF	1	Marcel Gahbauer	2	8.0	0.12	1
24	18VR62	Blue-winged Teal	H	POSS	1	Marcel Gahbauer				
24	18VR62	Wild Turkey	T	PROB	1					
24	18VR62	Pied-billed Grebe	FY	CONF	1	Marcel Gahbauer				
24	18VR62	American Bittern	T	PROB	1	Marcel Gahbauer				
24	18VR62	Least Bittern	T	PROB	1	Marcel Gahbauer				
24	18VR62	Great Blue Heron	H	POSS	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Green Heron	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Turkey Vulture	H	POSS	1	Stew Hamill				
24	18VR62	Northern Harrier	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Sharp-shinned Hawk	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Cooper's Hawk	H	POSS	1	Marcel Gahbauer				
24	18VR62	Broad-winged Hawk	CF	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Red-tailed Hawk	AE	CONF	1	Langis Sirois				
24	18VR62	American Kestrel	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Merlin	NY	CONF	1	Marcel Gahbauer				
24	18VR62	Virginia Rail	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Sandhill Crane	FY	CONF	1	2 atlassers				
24	18VR62	Killdeer	P	PROB	1	Marcel Gahbauer	4	16.0	0.28	1
24	18VR62	Rock Pigeon	FY	CONF	1	Marcel Gahbauer	3	12.0	0.36	1
24	18VR62	Spotted Sandpiper	A	PROB	1	Marcel Gahbauer				
24	18VR62	Common Snipe	D	PROB	1	Marcel Gahbauer	4	16.0	0.16	1
24	18VR62	American Woodcock	D	PROB	1	Marcel Gahbauer				
24	18VR62	Mourning Dove	FY	CONF	1	Marcel Gahbauer	11	44.0	0.64	1
24	18VR62	Black-billed Cuckoo	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Chimney Swift	H	POSS	1	Marcel Gahbauer				
24	18VR62	Ruby-throated Hummingbird	H	POSS	1	Marcel Gahbauer				
24	18VR62	Belted Kingfisher	CF	CONF	1	Langis Sirois	1	4.0	0.04	1
24	18VR62	Yellow-bellied Sapsucker	FY	CONF	1	Marcel Gahbauer	1	4.0	0.12	1
24	18VR62	Downy Woodpecker	FY	CONF	1	Marcel Gahbauer	3	12.0	0.12	1
24	18VR62	Hairy Woodpecker	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Northern Flicker	FY	CONF	1	Marcel Gahbauer	3	12.0	0.12	1

24	18VR62	Pileated Woodpecker	T	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Eastern Wood-Pewee	CF	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Alder Flycatcher	T	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Willow Flycatcher	S	POSS	1	Marcel Gahbauer				
24	18VR62	Least Flycatcher	P	PROB	1	Marcel Gahbauer	2	8.0	0.16	1
24	18VR62	Eastern Phoebe	T	PROB	1	Marcel Gahbauer	4	16.0	0.16	1
24	18VR62	Great Crested Flycatcher	CF	CONF	1	Marcel Gahbauer	4	16.0	0.16	1
24	18VR62	Eastern Kingbird	FY	CONF	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	Warbling Vireo	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Red-eyed Vireo	FY	CONF	1	Marcel Gahbauer	8	32.0	0.44	1
24	18VR62	Blue Jay	FY	CONF	1	Marcel Gahbauer	9	36.0	0.56	1
24	18VR62	American Crow	AE	CONF	1	Langis Sirois	13	52.0	1.12	1
24	18VR62	Common Raven	P	PROB	1	Langis Sirois				
24	18VR62	Horned Lark	S	POSS	1	Langis Sirois				
24	18VR62	Purple Martin	S	POSS	1	Marcel Gahbauer				
24	18VR62	Tree Swallow	NY	CONF	1		6	24.0	0.44	1
24	18VR62	Northern Rough-winged Swallow	H	POSS	1	Charles M Francis	1	4.0	0.04	1
24	18VR62	Bank Swallow	FS	CONF	1	Langis Sirois	1	4.0	0.08	1
24	18VR62	Cliff Swallow	FY	CONF	1	Marcel Gahbauer	1	4.0	0.2	1
24	18VR62	Barn Swallow	FY	CONF	1	Marcel Gahbauer	8	32.0	0.84	1
24	18VR62	Black-capped Chickadee	FY	CONF	1	Marcel Gahbauer	6	24.0	0.52	1
24	18VR62	Red-breasted Nuthatch	FY	CONF	1	Marcel Gahbauer				
24	18VR62	White-breasted Nuthatch	P	PROB	1	Marcel Gahbauer				
24	18VR62	House Wren	T	PROB	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	Sedge Wren	S	POSS	1	Marcel Gahbauer				
24	18VR62	Marsh Wren	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Eastern Bluebird	AE	CONF	1	Langis Sirois	2	8.0	0.12	1
24	18VR62	Veery	FY	CONF	1	Marcel Gahbauer	8	32.0	0.32	1
24	18VR62	Hermit Thrush	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Wood Thrush	T	PROB	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	American Robin	FY	CONF	1	Marcel Gahbauer	20	80.0	1.56	1
24	18VR62	Gray Catbird	P	PROB	1	Marcel Gahbauer				
24	18VR62	Brown Thrasher	CF	CONF	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	European Starling	FY	CONF	1	Marcel Gahbauer	16	64.0	2.52	1
24	18VR62	Cedar Waxwing	FY	CONF	1	Marcel Gahbauer	10	40.0	0.72	1
24	18VR62	Nashville Warbler	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Yellow Warbler	FY	CONF	1	Marcel Gahbauer	7	28.0	0.48	1
24	18VR62	Chestnut-sided Warbler	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Magnolia Warbler	S	POSS	1	Langis Sirois	1	4.0	0.04	1
24	18VR62	Yellow-rumped Warbler	FY	CONF	1	Langis Sirois	1	4.0	0.04	1
24	18VR62	Black-throated Green Warbler	S	POSS	1	Marcel Gahbauer				
24	18VR62	Palm Warbler	CF	CONF	1	Langis Sirois				
24	18VR62	Black-and-white Warbler	CF	CONF	1	Marcel Gahbauer	3	12.0	0.12	1
24	18VR62	American Redstart	S	POSS	1	Marcel Gahbauer				
24	18VR62	Ovenbird	T	PROB	1	Marcel Gahbauer	2	8.0	0.12	1
24	18VR62	Northern Waterthrush	S	POSS	1	Marcel Gahbauer				
24	18VR62	Mourning Warbler	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Common Yellowthroat	FY	CONF	1	Marcel Gahbauer	10	40.0	0.48	1
24	18VR62	Chipping Sparrow	FY	CONF	1	Marcel Gahbauer	9	36.0	0.56	1
24	18VR62	Clay-colored Sparrow	T	PROB	1	Marcel Gahbauer				
24	18VR62	Field Sparrow	S	POSS	1	Marc Gravel				
24	18VR62	Vesper Sparrow	S	POSS	1	Marcel Gahbauer				
24	18VR62	Savannah Sparrow	FY	CONF	1	Marcel Gahbauer	9	36.0	1.24	1
24	18VR62	Song Sparrow	FY	CONF	1	Marcel Gahbauer	21	84.0	1.68	1
24	18VR62	Lincoln's Sparrow	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Swamp Sparrow	CF	CONF	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	White-throated Sparrow	NY	CONF	1	Marcel Gahbauer	6	24.0	0.4	1
24	18VR62	Scarlet Tanager	H	POSS	1	Charles M Francis	1	4.0	0.04	1
24	18VR62	Northern Cardinal	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Rose-breasted Grosbeak	FY	CONF	1	Marcel Gahbauer	4	16.0	0.2	1
24	18VR62	Indigo Bunting	P	PROB	1	Marcel Gahbauer				
24	18VR62	Bobolink	CF	CONF	1	Marcel Gahbauer	8	32.0	0.76	1
24	18VR62	Red-winged Blackbird	FY	CONF	1	Marcel Gahbauer	16	64.0	2.2	1
24	18VR62	Eastern Meadowlark	FY	CONF	1	Marcel Gahbauer	7	28.0	0.44	1
24	18VR62	Common Grackle	FY	CONF	1	Marcel Gahbauer	12	48.0	0.76	1
24	18VR62	Brown-headed Cowbird	FY	CONF	1	Marcel Gahbauer	5	20.0	0.24	1
24	18VR62	Baltimore Oriole	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Purple Finch	S	POSS	1	Marcel Gahbauer	3	12.0	0.16	1
24	18VR62	House Finch	NY	CONF	1	Marcel Gahbauer	4	16.0	0.44	1
24	18VR62	American Goldfinch	D	PROB	1	Marcel Gahbauer	17	68.0	1.32	1
24	18VR62	House Sparrow	FY	CONF	1	Marcel Gahbauer	5	20.0	0.64	1

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LEGEND

Breeding Evidence	Point Counts
Max BE: Highest Breeding Evidence recorded **Categ:** Highest Breeding Category recorded (OBS=observed, POSS=possible, PROB=probable, CONF=confirmed) **#Sq:** Number of squares with species (Breeding Evidence) **Atlasser name:** Name of atlasser who reported the highest breeding evidence (if they accepted that their name be displayed). If more than one person provided the same breeding evidence code, then only the number of atlassers is listed.	**#PC:** Number of Point Counts with species **%PC:** Percent of Point Counts with species **Abun:** Average number of birds per Point Count **#Sq:** Number of squares with species (Point Counts)

Ontario Breeding Bird Atlas, Birds Canada, 115 Front Street, P.O. Box 160 Port Rowan, ON, N0E 1M0 Canada
Phone: 1-519-586-3531 E-mail: atlas@birdsontario.org **Banner photo:** John Reaume

Ontario Breeding Bird Atlas

Atlas Coding Sheets

Select the reference sheet you would like to display: Breeding Evidence Codes

OBSERVED

X	Species observed in its breeding season (no breeding evidence)

POSSIBLE

H	Species observed in its breeding season in suitable nesting habitat
S	Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season

PROBABLE

M	At least 7 individuals singing or producing other sounds associated with breeding (e.g., calls or drumming), heard during the same visit to a single square and in suitable nesting habitat during the species' breeding season.
P	Pair observed in suitable nesting habitat in nesting season
T	Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during its breeding season. Use discretion when using this code. "T" is not to be used for colonial birds, or species that might forage or loaf a long distance from their nesting site e.g. Kingfisher, Turkey Vulture, and male waterfowl
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation
V	Visiting probable nest site
A	Agitated behaviour or anxiety calls of an adult
B	Brood Patch on adult female or cloacal protuberance on adult male
N	Nest-building or excavation of nest hole, by a wren or a woopecker

CONFIRMED

NB	Nest-building or excavation of nest hole by a species other than a wren or a woopecker
DD	Distraction display or injury feigning
NU	Used nest or egg shells found (occupied or laid within the period of the survey)
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species) incapable of sustained flight
AE	Adult leaving or entering nest sites in circumstances indicating occupied nest
FS	Adult carying fecal sac
CF	Adult carying food for young
NE	Nest containing eggs
NY	Nest with young seen or heard

Ontario Breeding Bird Atlas, Birds Canada, 115 Front Street, P.O. Box 160 Port Rowan, ON, N0E 1M0 Canada
Phone: 1-519-586-3531 E-mail: atlas@birdsontario.org **Banner photo:** John Reaume

Species list in taxonomic order for square 18VR52

All species

Number of rows of data displayed below: 74.

Species #	Common Name	Scientific Name	# of Records	Earliest in Yr (adults)	Latest in Yr (adults)	Earliest Yr	Latest Yr
1	Silver-spotted Skipper	Epargyreus clarus	4	May 23	Jul 23	1981	2020
5	Northern Cloudywing	Thorybes pylades	11	May 24	Jun 21	1992	2021
7	Dreamy Duskywing	Erynnis icelus	11	May 4	Jun 18	1979	2018
9	Juvenal's Duskywing	Erynnis juvenalis	8	May 23	Jun 25	1986	2018
15	Wild Indigo Duskywing	Erynnis baptisiae	3	Aug 4	Sep 3	2016	2020
21	Arctic Skipper	Carterocephalus palaemon	35	May 26	Jun 20	1975	2021
23	Least Skipper	Ancyloxypha numitor	6	Jun 18	Aug 30	1995	2012
25	European Skipper	Thymelicus lineola	23	Jun 18	Jul 23	1974	2019
28	Leonard's Skipper	Hesperia leonardus	14	Aug 6	Sep 6	1982	2021
29	Indian Skipper	Hesperia sassacus	5	Jun 8	Jun 20	1977	2017
30	Peck's Skipper	Polites peckius	3	Jun 20	Jul 17	1982	2017
31	Tawny-edged Skipper	Polites themistocles	6	Jun 17	Jul 17	1976	2021
32	Crossline Skipper	Polites origenes	2	Jul 10	Jul 13	1995	1995
33	Long Dash Skipper	Polites mystic	18	Jun 5	Jul 17	1978	2019
35	Northern Broken-Dash	Wallengrenia egeremet	4	Jul 8	Jul 23	1979	2019
38	Delaware Skipper	Anatrytone logan	1	Aug 10	Aug 10	2002	2002
40	Hobomok Skipper	Poanes hobomok	31	May 24	Jun 23	1975	2021
47	Dun Skipper	Euphyes vestris	16	Jul 10	Aug 2	1965	2021
49	Pepper and Salt Skipper	Amblyscirtes hegon	2	Jun 1	Jun 18	1995	2003
50	Common Roadside Skipper	Amblyscirtes vialis	1	Jun 20	Jun 20	2017	2017
55	Black Swallowtail	Papilio polyxenes	35	May 15	Sep 9	1965	2021
57	Eastern Giant Swallowtail	Papilio cresphontes	1			2021	2021
59	Canadian Tiger Swallowtail	Papilio canadensis	57	May 18	Jun 29	1975	2021
63	Mustard White	Pieris oleracea	22	Apr 28	Jul 17	1978	2015
65	Cabbage White	Pieris rapae	97	Apr 17	Oct 11	1970	2021
69	Clouded Sulphur	Colias philodice	90	May 11	Nov 3	1970	2021
70	Orange Sulphur	Colias eurytheme	17	May 26	Nov 1	1985	2021
73	Pink-edged Sulphur	Colias interior	2	Jun 24	Jul 9	1978	1979
81	Harvester	Feniseca tarquinius	38	May 9	Sep 16	1970	2020
82	American Copper	Lycaena phlaeas	16	May 27	Sep 4	1973	2014
84	Bronze Copper	Lycaena hyllus	3	May 26	Sep 18	1985	2012
85	Bog Copper	Lycaena epixanthe	9	Jun 23	Jul 9	1979	2020
88	Acadian Hairstreak	Satyrium acadica	3	Jul 12	Jul 22	1982	2014
91	Banded Hairstreak	Satyrium calanus	7	Jul 8	Jul 23	1981	2013
92	Hickory Hairstreak	Satyrium caryaevorus	1	Jul 12	Jul 12	2014	2014
93	Striped Hairstreak	Satyrium liparops	4	Jul 8	Jul 10	1965	1996
96	Brown Elfin	Callophrys augustinus	36	Apr 26	Jun 12	1974	2021
99	Henry's Elfin	Callophrys henrici	66	Apr 10	May 27	1981	2021
101	Eastern Pine Elfin	Callophrys niphon	3	May 3	May 23	1995	2011
107	Eastern Tailed Blue	Cupido comyntas	34	May 16	Oct 1	1995	2021
109	Northern Azure	Celastrina lucia	273	Apr 10	Sep 29	1970	2021
112	Silvery Blue	Glaucopsyche lygdamus	69	May 3	Jul 2	1974	2021
119	Great Spangled Fritillary	Speyeria cybele	32	Jun 7	Sep 8	1970	2021
120	Aphrodite Fritillary	Speyeria aphrodite	2	Aug 6	Aug 16	1982	1983
122	Atlantis Fritillary	Speyeria atlantis	1	Jul 17	Jul 17	1982	1982
124	Silver-bordered Fritillary	Boloria selene	18	May 19	Aug 16	1970	2010
125	Meadow Fritillary	Boloria bellona	5	May 26	Jul 19	1970	2020
130	Silvery Checkerspot	Chlosyne nycteis	1	Jun 18	Jun 18	1996	1996
131	Harris's Checkerspot	Chlosyne harrisii	11	May 28	Jun 27	1979	2015

132	Pearl Crescent	Phyciodes tharos	7	Jun 13	Sep 19	1995	2020
133	Northern Crescent	Phyciodes cocyta	66	May 25	Sep 18	1970	2021
135	Baltimore Checkerspot	Euphydryas phaeton	21	Jun 7	Jul 15	1996	2021
136	Question Mark	Polygonia interrogationis	22	May 26	Aug 12	1970	2012
137	Eastern Comma	Polygonia comma	38	Mar 19	Sep 5	1979	2021
138	Satyr Comma	Polygonia satyrus	1	May 17	May 17	1979	1979
139	Green Comma	Polygonia faunus	3	May 9	May 21	1995	2020
141	Gray Comma	Polygonia progne	13	Apr 7	Jul 12	1979	2021
142	Compton Tortoiseshell	Nymphalis l-album	25	Apr 6	Oct 8	1978	2021
143	Mourning Cloak	Nymphalis antiopa	136	Mar 19	Nov 2	1951	2021
144	Milbert's Tortoiseshell	Aglais milberti	14	Apr 8	Sep 19	1974	2021
145	American Lady	Vanessa virginiensis	15	May 17	Sep 24	1970	2019
146	Painted Lady	Vanessa cardui	24	May 27	Oct 13	1979	2019
147	Red Admiral	Vanessa atalanta	68	Apr 15	Sep 17	1970	2020
148	Common Buckeye	Junonia coenia	2	Aug 12	Aug 13	2012	2012
149	White Admiral	Limenitis arthemis arthemis	55	May 19	Sep 6	1977	2021
151	Viceroy	Limenitis archippus	54	May 25	Sep 18	1973	2021
154	Northern Pearly-Eye	Lethe anthedon	24	Jun 10	Aug 16	1970	2021
155	Eyed Brown	Lethe eurydice	12	Jun 29	Jul 26	1970	2021
156	Appalachian Brown	Lethe appalachia	10	Jun 25	Aug 2	1984	2020
157	Little Wood-Satyr	Megisto cymela	40	May 25	Jul 15	1975	2021
158	Common Ringlet	Coenonympha tullia	80	May 25	Sep 19	1974	2021
159	Common Wood-Nymph	Cercyonis pegala	26	Jul 2	Aug 21	1970	2017
164	Jutta Arctic	Oeneis jutta	25	May 21	Jun 17	1974	2019
167	Monarch	Danaus plexippus	84	Jun 4	Oct 11	1973	2021

Species list in taxonomic order for square 18VR62

All species

Number of rows of data displayed below: 74.

Species #	Common Name	Scientific Name	# of Records	Earliest in Yr (adults)	Latest in Yr (adults)	Earliest Yr	Latest Yr
5	Northern Cloudywing	Thorybes pylades	13	Jun 4	Jul 21	1922	2018
7	Dreamy Duskywing	Erynnis icelus	17	May 7	Jun 30	1908	2016
9	Juvenal's Duskywing	Erynnis juvenalis	3	Jun 1	Jun 7	1923	2011
14	Columbine Duskywing	Erynnis lucilius	1	Jun 9	Jun 9	1982	1982
21	Arctic Skipper	Carterocephalus palaemon	20	May 27	Jun 30	1907	2011
23	Least Skipper	Ancyloxypha numitor	4	Jun 9	Aug 25	1982	2017
25	European Skipper	Thymelicus lineola	30	Jun 16	Jul 23	1973	2014
28	Leonard's Skipper	Hesperia leonardus	16	Aug 2	Sep 16	1982	2020
29	Indian Skipper	Hesperia sassacus	1	Jun 11	Jun 11	2008	2008
30	Peck's Skipper	Polites peckius	1	Jun 27	Jun 27	1995	1995
31	Tawny-edged Skipper	Polites themistocles	16	Jun 2	Aug 25	1908	2016
32	Crossline Skipper	Polites origenes	3	Jun 21	Jul 13	1976	2010
33	Long Dash Skipper	Polites mystic	18	Jun 6	Jul 7	1922	2011
35	Northern Broken-Dash	Wallengrenia egeremet	5	Jun 27	Jul 28	1923	2014
38	Delaware Skipper	Anatrytone logan	1	Jul 15	Jul 15	2016	2016
39	Mulberry Wing	Poanes massasoit	2	Jul 6	Jul 10	2017	2021
40	Hobomok Skipper	Poanes hobomok	19	May 26	Jul 5	1922	2019
42	Broad-winged Skipper	Poanes viator	2	Jul 6	Jul 7	1986	2017
46	Two-spotted Skipper	Euphyes bimacula	2	Jun 30	Jul 5	1980	1980
47	Dun Skipper	Euphyes vestris	9	Jul 4	Aug 15	1922	2021
49	Pepper and Salt Skipper	Amblyscirtes hegon	2	Jun 2	Jun 7	1923	1937
55	Black Swallowtail	Papilio polyxenes	16	May 26	Aug 27	1941	2009
59	Canadian Tiger Swallowtail	Papilio canadensis	30	May 14	Jun 23	1976	2016
63	Mustard White	Pieris oleracea	12	May 7	Aug 25	1923	2008
65	Cabbage White	Pieris rapae	34	May 14	Oct 1	1973	2020
69	Clouded Sulphur	Colias philodice	56	May 5	Oct 17	1931	2020
70	Orange Sulphur	Colias eurytheme	10	Jul 21	Sep 26	1976	2020
73	Pink-edged Sulphur	Colias interior	3	Jul 9	Aug 1	1929	1973
81	Harvester	Feniseca tarquinius	17	May 15	Sep 6	1924	2021
82	American Copper	Lycaena phlaeas	45	May 26	Oct 1	1939	2012
84	Bronze Copper	Lycaena hyllus	6	May 14	Aug 25	1901	2009
85	Bog Copper	Lycaena epixanthe	43	Jun 16	Aug 5	1907	2021
88	Acadian Hairstreak	Satyrium acadica	5	Jul 9	Jul 23	1908	1983
89	Coral Hairstreak	Satyrium titus	2	Jul 23	Jul 25	1983	1984
91	Banded Hairstreak	Satyrium calanus	1	Jul 10	Jul 10	2021	2021
93	Striped Hairstreak	Satyrium liparops	8	Jun 27	Jul 11	1908	1982
96	Brown Elfin	Callophrys augustinus	75	May 5	Jul 1	1898	2021
99	Henry's Elfin	Callophrys henrici	5	May 10	Jun 1	1938	2021
101	Eastern Pine Elfin	Callophrys niphon	1	May 7	May 7	1923	1923
107	Eastern Tailed Blue	Cupido comyntas	7	Aug 12	Sep 16	1998	2018
109	Northern Azure	Celastrina lucia	91	Apr 15	Sep 24	1908	2021
112	Silvery Blue	Glaucopsyche lygdamus	38	May 15	Jul 2	1973	2021
119	Great Spangled Fritillary	Speyeria cybele	16	Jun 16	Sep 1	1941	2020
120	Aphrodite Fritillary	Speyeria aphrodite	1	Jul 23	Jul 23	1983	1983
122	Atlantis Fritillary	Speyeria atlantis	3	Jun 24	Jul 6	1908	1978
123	Bog Fritillary	Boloria eunomia	3	Jun 9	Jun 11	1908	1908
124	Silver-bordered Fritillary	Boloria selene	19	May 29	Aug 4	1901	2016
125	Meadow Fritillary	Boloria bellona	3	May 27	Jul 23	1901	1983
127	Freija Fritillary	Boloria freija	1	Jun 11	Jun 11	1911	1911

131	Harris's Checkerspot	Chlosyne harrisii	28	Jun 6	Jul 4	1911	2011
132	Pearl Crescent	Phyciodes tharos	4	May 24	Sep 16	1996	2020
133	Northern Crescent	Phyciodes cocyta	51	May 27	Sep 29	1973	2019
135	Baltimore Checkerspot	Euphydryas phaeton	19	May 21	Jul 7	1902	2012
136	Question Mark	Polygonia interrogationis	4	Apr 16	Aug 2	1978	2012
137	Eastern Comma	Polygonia comma	1	Apr 18	Apr 18	2020	2020
139	Green Comma	Polygonia faunus	1	May 24	May 24	1996	1996
141	Gray Comma	Polygonia progne	1	Jul 7	Jul 7	1986	1986
142	Compton Tortoiseshell	Nymphalis l-album	2	Apr 7	Jul 18	1980	2021
143	Mourning Cloak	Nymphalis antiopa	26	Apr 4	Oct 19	1950	2021
144	Milbert's Tortoiseshell	Aglais milberti	9	Apr 25	Oct 1	1925	1998
145	American Lady	Vanessa virginiensis	5	May 17	Sep 29	1975	2012
146	Painted Lady	Vanessa cardui	7	Jun 20	Sep 26	1979	2019
147	Red Admiral	Vanessa atalanta	14	Apr 16	Aug 25	1977	2016
148	Common Buckeye	Junonia coenia	1	Jun 22	Jun 22	1981	1981
149	White Admiral	Limenitis arthemis arthemis	30	Jun 9	Sep 1	1937	2020
151	Viceroy	Limenitis archippus	31	Jun 1	Sep 29	1911	2021
154	Northern Pearly-Eye	Lethe anthedon	5	Jun 21	Jul 23	1975	2017
155	Eyed Brown	Lethe eurydice	14	Jun 21	Aug 18	1923	2012
156	Appalachian Brown	Lethe appalachia	1	Jun 27	Jun 27	2021	2021
157	Little Wood-Satyr	Megisto cymela	27	May 27	Jul 23	1922	2021
158	Common Ringlet	Coenonympha tullia	61	May 27	Sep 16	1939	2021
159	Common Wood-Nymph	Cercyonis pegala	17	Jun 27	Aug 28	1973	2017
164	Jutta Arctic	Oeneis jutta	79	May 13	Jul 7	1900	2021
167	Monarch	Danaus plexippus	45	Jun 6	Sep 29	1970	2020

Species list in taxonomic order for square 18VR52

All species

Number of rows of data displayed below: 15.

Species #	Common Name	# of Records	Earliest Yr	Latest Yr
1	Blanding's Turtle	4	1984	2018
3	Midland Painted Turtle	25	1976	2018
5	Red-eared Slider	1	2011	2011
6	Snapping Turtle	7	1982	2018
12	Eastern Gartersnake	27	1964	2018
21	Red-bellied Snake	2	2017	2017
25	American Bullfrog	4	1960	1997
27	Gray Treefrog	15	1966	2017
28	Green Frog	33	1937	2018
30	Northern Leopard Frog	14	1960	1986
32	Spring Peeper	52	1956	2018
33	Western Chorus Frog	1	2000	2000
34	Wood Frog	61	1956	2018
35	American Toad	31	1960	2018
41	Eastern Red-backed Salamander	6	1987	2014

Species list in taxonomic order for square 18VR62

All species

Number of rows of data displayed below: 14.

Species #	Common Name	# of Records	Earliest Yr__________	Latest Yr
1	Blanding's Turtle	6	1999	2019
3	Midland Painted Turtle	4	1999	2018
6	Snapping Turtle	6	1982	2013
12	Eastern Gartersnake	8	1985	2018
21	Red-bellied Snake	5	1986	2015
25	American Bullfrog	2	1964	1967
27	Gray Treefrog	10	1985	2014
28	Green Frog	23	1982	2018
30	Northern Leopard Frog	14	1937	2017
32	Spring Peeper	33	1964	2016
33	Western Chorus Frog	1	2000	2000
34	Wood Frog	15	1964	2014
35	American Toad	19	1963	2019
40	Red-spotted Newt	1	2018	2018

5134 Piperville Road

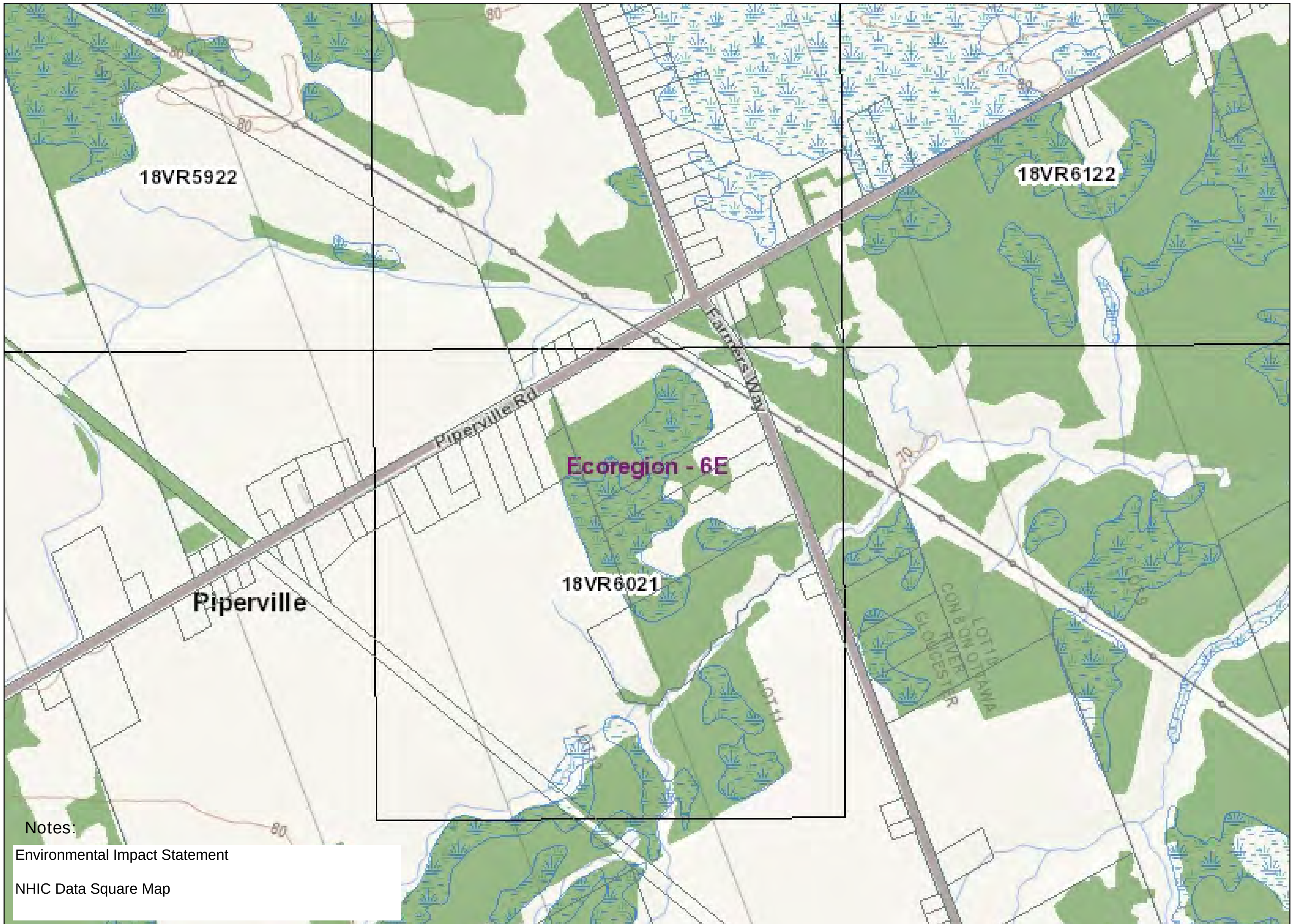
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

5134 Piperville Road

Map created:12/20/2022



Notes:

Environmental Impact Statement

NHIC Data Square Map

Legend

- Assessment Parcel
- NHIC 1 Km Grid
- Ecoregion
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Natural Heritage System

0.6 0 0.32 0.6 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

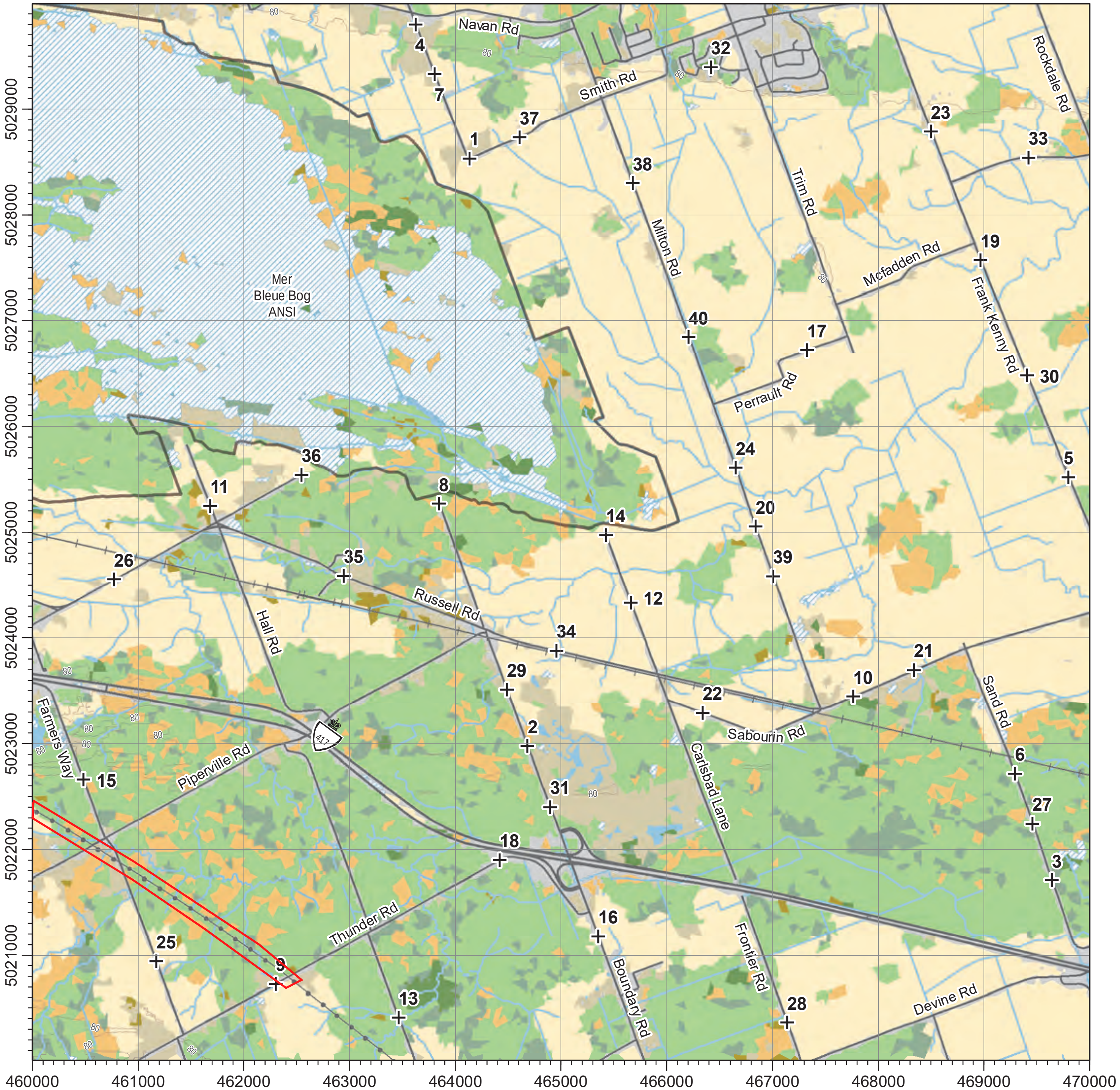
NHIC Data

To work further with this data select the content and copy it into your own word or excel documents.

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
1109867	SPECIES	Red Spruce	Picea rubens				18VR6021	

Region / Région: 24

Square / Parcelle: 18TVR62



Predefined point count coordinates
Coordonnées des points d'écoute prédéterminés

POINT +	EASTING UTM Est	NORTHING UTM Nord
1	464135	5028531
2	464683	5022975
3	469640	5021708
4	463622	5029800
5	469800	5025517
6	469292	5022715
7	463804	5029330
8	463846	5025267
9	462303	5020728
10	467765	5023445
11	461679	5025248
12	465658	5024331
13	463465	5020409
14	465423	5024971
15	460483	5022658
16	465350	5021177
17	467325	5026719
18	464421	5021899
19	468969	5027568
20	466839	5025051
21	468337	5023695
22	466340	5023289
23	468496	5028786
24	466649	5025607
25	461171	5020940
26	460773	5024551
27	469458	5022243
28	467137	5020361
29	464487	5023510
30	469407	5026480
31	464898	5022400
32	466418	5029394
33	469421	5028541
34	464955	5023879
35	462944	5024585
36	462543	5025542
37	464605	5028730
38	465677	5028300
39	467006	5024580
40	466208	5026844

Number of off-road point counts
Nombre de points d'écoute hors route

Broadleaf forest:	3	Grassland:	0
Coniferous forest:	0	Wetland:	1
Mixed forest:	0	Shrubland:	1

Predefined / Prédéterminés: 20
Off-road / Hors route: 5

Atlas-2 off-road point ● **Point hors route Atlas-2**

0 1 km

Atlas des oiseaux nicheurs Ontario Breeding Bird Atlas

Legend / Légende

Legend	%	Légende
Expressway or highway		Autoroute ou route nationale (asphaltée)
Regional or local road		Route régionale ou locale (asphaltée ou non)
Resource / Recreation		Ressource / route récréative
Rail line		Chemin de fer
Utility corridor		Ligne de transport d'énergie
Watercourse		Rivière ou ruisseau
Protected or conserved area		Zone protégée ou conservée
Fire disturbance since 2000		Incendie perturbé depuis 2000
Broadleaf forest	29	Forêt de feuillus
Coniferous forest	1	Forêt de conifères
Mixed forest	4	Forêt mixte
Shrubland	5	Milieu arbustif
Grassland		Prairie
Barren	4	Dénudé
Wetland	12	Milieu humide
Agriculture	40	Milieu agricole
Water		Eau
Developed area	5	Zone développée
Unclassified		Non classifié

The approximate percent coverage of each habitat type is indicated by the numbered box in the legend.

La couverture approximative est indiquée en pourcentage dans le rectangle coloré de la légende.

Cartographic production by Birds Canada
Production cartographique par oiseaux Canada

Note: The project partners are in no way responsible for any inaccuracies, mistakes or omissions in the information that appears on this map.

Avis : Les responsables du projet d'atlas ne peuvent être tenus responsables de toute inexactitude, erreur ou omission concernant les informations apparaissant sur cette carte.

6° Universal Transverse Mercator (UTM) Projection; Zone 18, Central Meridian -75°; North American Datum 1983 (NAD 83)

Projection universelle transverse de Mercator (UTM) 6° Zone 18, méridien central -75°; Système de référence géodésique nord-américain 1983 (NAD 83)

BIRDS CANADA OISEAUX CANADA

March 2021 / mars 2021

https://www.birdsontario.org/

18TVR62

Ottawa

Region / Région: 24

Atlas Data Summary

Select what type of data summary you would like to display and click the appropriate *view* button. You can use the square resource page to find out where your atlas squares or regions are located.

What years do you want to display : : all years combined Which version of the atlas Second (2001-2005)

How do you want to view the results: Tabular results

Show me statistics on the number of species reported, the effort, etc.

1. View summary statistics:: Province View
2. View summary statistics: By Square within region 1. Essex View
3. View list of completed Point Counts in **square** :: View

Show me the list of species, the highest breeding evidence and abundance

4. View species list for : : Province View
5. View species list for **square** or **block no.** : : 18VR62 View

Show me the list of regions or squares reporting a species

6. View list of Regions reporting View

Species list for square 18VR62 (number of entries returned: 107)

Region	Square	Species	Breeding Evidence				Point Counts			
			Max BE	Categ	#Sq	Atlasser Name	#PC	%PC	Abun	#Sq
24	18VR62	Canada Goose	P	PROB	1	Marcel Gahbauer	1	4.0	0.2	1
24	18VR62	Wood Duck	FY	CONF	1	Marcel Gahbauer				
24	18VR62	American Wigeon	H	POSS	1	Marcel Gahbauer				
24	18VR62	American Black Duck	P	PROB	1	Marcel Gahbauer				
24	18VR62	Mallard	FY	CONF	1	Marcel Gahbauer	2	8.0	0.12	1
24	18VR62	Blue-winged Teal	H	POSS	1	Marcel Gahbauer				
24	18VR62	Wild Turkey	T	PROB	1					
24	18VR62	Pied-billed Grebe	FY	CONF	1	Marcel Gahbauer				
24	18VR62	American Bittern	T	PROB	1	Marcel Gahbauer				
24	18VR62	Least Bittern	T	PROB	1	Marcel Gahbauer				
24	18VR62	Great Blue Heron	H	POSS	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Green Heron	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Turkey Vulture	H	POSS	1	Stew Hamill				
24	18VR62	Northern Harrier	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Sharp-shinned Hawk	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Cooper's Hawk	H	POSS	1	Marcel Gahbauer				
24	18VR62	Broad-winged Hawk	CF	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Red-tailed Hawk	AE	CONF	1	Langis Sirois				
24	18VR62	American Kestrel	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Merlin	NY	CONF	1	Marcel Gahbauer				
24	18VR62	Virginia Rail	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Sandhill Crane	FY	CONF	1	2 atlassers				
24	18VR62	Killdeer	P	PROB	1	Marcel Gahbauer	4	16.0	0.28	1
24	18VR62	Rock Pigeon	FY	CONF	1	Marcel Gahbauer	3	12.0	0.36	1
24	18VR62	Spotted Sandpiper	A	PROB	1	Marcel Gahbauer				
24	18VR62	Common Snipe	D	PROB	1	Marcel Gahbauer	4	16.0	0.16	1
24	18VR62	American Woodcock	D	PROB	1	Marcel Gahbauer				
24	18VR62	Mourning Dove	FY	CONF	1	Marcel Gahbauer	11	44.0	0.64	1
24	18VR62	Black-billed Cuckoo	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Chimney Swift	H	POSS	1	Marcel Gahbauer				
24	18VR62	Ruby-throated Hummingbird	H	POSS	1	Marcel Gahbauer				
24	18VR62	Belted Kingfisher	CF	CONF	1	Langis Sirois	1	4.0	0.04	1
24	18VR62	Yellow-bellied Sapsucker	FY	CONF	1	Marcel Gahbauer	1	4.0	0.12	1
24	18VR62	Downy Woodpecker	FY	CONF	1	Marcel Gahbauer	3	12.0	0.12	1
24	18VR62	Hairy Woodpecker	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Northern Flicker	FY	CONF	1	Marcel Gahbauer	3	12.0	0.12	1

24	18VR62	Pileated Woodpecker	T	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Eastern Wood-Pewee	CF	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Alder Flycatcher	T	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Willow Flycatcher	S	POSS	1	Marcel Gahbauer				
24	18VR62	Least Flycatcher	P	PROB	1	Marcel Gahbauer	2	8.0	0.16	1
24	18VR62	Eastern Phoebe	T	PROB	1	Marcel Gahbauer	4	16.0	0.16	1
24	18VR62	Great Crested Flycatcher	CF	CONF	1	Marcel Gahbauer	4	16.0	0.16	1
24	18VR62	Eastern Kingbird	FY	CONF	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	Warbling Vireo	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Red-eyed Vireo	FY	CONF	1	Marcel Gahbauer	8	32.0	0.44	1
24	18VR62	Blue Jay	FY	CONF	1	Marcel Gahbauer	9	36.0	0.56	1
24	18VR62	American Crow	AE	CONF	1	Langis Sirois	13	52.0	1.12	1
24	18VR62	Common Raven	P	PROB	1	Langis Sirois				
24	18VR62	Horned Lark	S	POSS	1	Langis Sirois				
24	18VR62	Purple Martin	S	POSS	1	Marcel Gahbauer				
24	18VR62	Tree Swallow	NY	CONF	1		6	24.0	0.44	1
24	18VR62	Northern Rough-winged Swallow	H	POSS	1	Charles M Francis	1	4.0	0.04	1
24	18VR62	Bank Swallow	FS	CONF	1	Langis Sirois	1	4.0	0.08	1
24	18VR62	Cliff Swallow	FY	CONF	1	Marcel Gahbauer	1	4.0	0.2	1
24	18VR62	Barn Swallow	FY	CONF	1	Marcel Gahbauer	8	32.0	0.84	1
24	18VR62	Black-capped Chickadee	FY	CONF	1	Marcel Gahbauer	6	24.0	0.52	1
24	18VR62	Red-breasted Nuthatch	FY	CONF	1	Marcel Gahbauer				
24	18VR62	White-breasted Nuthatch	P	PROB	1	Marcel Gahbauer				
24	18VR62	House Wren	T	PROB	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	Sedge Wren	S	POSS	1	Marcel Gahbauer				
24	18VR62	Marsh Wren	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Eastern Bluebird	AE	CONF	1	Langis Sirois	2	8.0	0.12	1
24	18VR62	Veery	FY	CONF	1	Marcel Gahbauer	8	32.0	0.32	1
24	18VR62	Hermit Thrush	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Wood Thrush	T	PROB	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	American Robin	FY	CONF	1	Marcel Gahbauer	20	80.0	1.56	1
24	18VR62	Gray Catbird	P	PROB	1	Marcel Gahbauer				
24	18VR62	Brown Thrasher	CF	CONF	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	European Starling	FY	CONF	1	Marcel Gahbauer	16	64.0	2.52	1
24	18VR62	Cedar Waxwing	FY	CONF	1	Marcel Gahbauer	10	40.0	0.72	1
24	18VR62	Nashville Warbler	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Yellow Warbler	FY	CONF	1	Marcel Gahbauer	7	28.0	0.48	1
24	18VR62	Chestnut-sided Warbler	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Magnolia Warbler	S	POSS	1	Langis Sirois	1	4.0	0.04	1
24	18VR62	Yellow-rumped Warbler	FY	CONF	1	Langis Sirois	1	4.0	0.04	1
24	18VR62	Black-throated Green Warbler	S	POSS	1	Marcel Gahbauer				
24	18VR62	Palm Warbler	CF	CONF	1	Langis Sirois				
24	18VR62	Black-and-white Warbler	CF	CONF	1	Marcel Gahbauer	3	12.0	0.12	1
24	18VR62	American Redstart	S	POSS	1	Marcel Gahbauer				
24	18VR62	Ovenbird	T	PROB	1	Marcel Gahbauer	2	8.0	0.12	1
24	18VR62	Northern Waterthrush	S	POSS	1	Marcel Gahbauer				
24	18VR62	Mourning Warbler	P	PROB	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Common Yellowthroat	FY	CONF	1	Marcel Gahbauer	10	40.0	0.48	1
24	18VR62	Chipping Sparrow	FY	CONF	1	Marcel Gahbauer	9	36.0	0.56	1
24	18VR62	Clay-colored Sparrow	T	PROB	1	Marcel Gahbauer				
24	18VR62	Field Sparrow	S	POSS	1	Marc Gravel				
24	18VR62	Vesper Sparrow	S	POSS	1	Marcel Gahbauer				
24	18VR62	Savannah Sparrow	FY	CONF	1	Marcel Gahbauer	9	36.0	1.24	1
24	18VR62	Song Sparrow	FY	CONF	1	Marcel Gahbauer	21	84.0	1.68	1
24	18VR62	Lincoln's Sparrow	FY	CONF	1	Marcel Gahbauer				
24	18VR62	Swamp Sparrow	CF	CONF	1	Marcel Gahbauer	2	8.0	0.08	1
24	18VR62	White-throated Sparrow	NY	CONF	1	Marcel Gahbauer	6	24.0	0.4	1
24	18VR62	Scarlet Tanager	H	POSS	1	Charles M Francis	1	4.0	0.04	1
24	18VR62	Northern Cardinal	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Rose-breasted Grosbeak	FY	CONF	1	Marcel Gahbauer	4	16.0	0.2	1
24	18VR62	Indigo Bunting	P	PROB	1	Marcel Gahbauer				
24	18VR62	Bobolink	CF	CONF	1	Marcel Gahbauer	8	32.0	0.76	1
24	18VR62	Red-winged Blackbird	FY	CONF	1	Marcel Gahbauer	16	64.0	2.2	1
24	18VR62	Eastern Meadowlark	FY	CONF	1	Marcel Gahbauer	7	28.0	0.44	1
24	18VR62	Common Grackle	FY	CONF	1	Marcel Gahbauer	12	48.0	0.76	1
24	18VR62	Brown-headed Cowbird	FY	CONF	1	Marcel Gahbauer	5	20.0	0.24	1
24	18VR62	Baltimore Oriole	FY	CONF	1	Marcel Gahbauer	1	4.0	0.04	1
24	18VR62	Purple Finch	S	POSS	1	Marcel Gahbauer	3	12.0	0.16	1
24	18VR62	House Finch	NY	CONF	1	Marcel Gahbauer	4	16.0	0.44	1
24	18VR62	American Goldfinch	D	PROB	1	Marcel Gahbauer	17	68.0	1.32	1
24	18VR62	House Sparrow	FY	CONF	1	Marcel Gahbauer	5	20.0	0.64	1

New data summary | Download results

Disclaimer: If you wish to use the data in a publication, research or for any purpose, or would like information concerning the accuracy and appropriate uses of these data, read the data use policy and request form. **These data are current as of 21 Dec 2022 .**

LEGEND

Breeding Evidence	Point Counts
Max BE: Highest Breeding Evidence recorded **Categ:** Highest Breeding Category recorded (OBS=observed, POSS=possible, PROB=probable, CONF=confirmed) **#Sq:** Number of squares with species (Breeding Evidence) **Atlasser name:** Name of atlasser who reported the highest breeding evidence (if they accepted that their name be displayed). If more than one person provided the same breeding evidence code, then only the number of atlassers is listed.	**#PC:** Number of Point Counts with species **%PC:** Percent of Point Counts with species **Abun:** Average number of birds per Point Count **#Sq:** Number of squares with species (Point Counts)

Ontario Breeding Bird Atlas, Birds Canada, 115 Front Street, P.O. Box 160 Port Rowan, ON, N0E 1M0 Canada
Phone: 1-519-586-3531 E-mail: atlas@birdsontario.org **Banner photo:** John Reaume

Atlas Coding Sheets

Select the reference sheet you would like to display: Breeding Evidence Codes

OBSERVED

X	Species observed in its breeding season (no breeding evidence)

POSSIBLE

H	Species observed in its breeding season in suitable nesting habitat
S	Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season

PROBABLE

M	At least 7 individuals singing or producing other sounds associated with breeding (e.g., calls or drumming), heard during the same visit to a single square and in suitable nesting habitat during the species' breeding season.
P	Pair observed in suitable nesting habitat in nesting season
T	Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during its breeding season. Use discretion when using this code. "T" is not to be used for colonial birds, or species that might forage or loaf a long distance from their nesting site e.g. Kingfisher, Turkey Vulture, and male waterfowl
D	Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation
V	Visiting probable nest site
A	Agitated behaviour or anxiety calls of an adult
B	Brood Patch on adult female or cloacal protuberance on adult male
N	Nest-building or excavation of nest hole, by a wren or a woopecker

CONFIRMED

NB	Nest-building or excavation of nest hole by a species other than a wren or a woopecker
DD	Distraction display or injury feigning
NU	Used nest or egg shells found (occupied or laid within the period of the survey)
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species) incapable of sustained flight
AE	Adult leaving or entering nest sites in circumstances indicating occupied nest
FS	Adult carying fecal sac
CF	Adult carying food for young
NE	Nest containing eggs
NY	Nest with young seen or heard

Ontario Breeding Bird Atlas, Birds Canada, 115 Front Street, P.O. Box 160 Port Rowan, ON, N0E 1M0 Canada
Phone: 1-519-586-3531 E-mail: atlas@birdsontario.org **Banner photo:** John Reaume

Species list in taxonomic order for square 18VR62

All species

Number of rows of data displayed below: 74.

Species #	Common Name	Scientific Name	# of Records	Earliest in Yr (adults)	Latest in Yr (adults)	Earliest Yr	Latest Yr
5	Northern Cloudywing	Thorybes pylades	13	Jun 4	Jul 21	1922	2018
7	Dreamy Duskywing	Erynnis icelus	17	May 7	Jun 30	1908	2016
9	Juvenal's Duskywing	Erynnis juvenalis	3	Jun 1	Jun 7	1923	2011
14	Columbine Duskywing	Erynnis lucilius	1	Jun 9	Jun 9	1982	1982
21	Arctic Skipper	Carterocephalus palaemon	20	May 27	Jun 30	1907	2011
23	Least Skipper	Ancyloxypha numitor	4	Jun 9	Aug 25	1982	2017
25	European Skipper	Thymelicus lineola	30	Jun 16	Jul 23	1973	2014
28	Leonard's Skipper	Hesperia leonardus	16	Aug 2	Sep 16	1982	2020
29	Indian Skipper	Hesperia sassacus	1	Jun 11	Jun 11	2008	2008
30	Peck's Skipper	Polites peckius	1	Jun 27	Jun 27	1995	1995
31	Tawny-edged Skipper	Polites themistocles	16	Jun 2	Aug 25	1908	2016
32	Crossline Skipper	Polites origenes	3	Jun 21	Jul 13	1976	2010
33	Long Dash Skipper	Polites mystic	18	Jun 6	Jul 7	1922	2011
35	Northern Broken-Dash	Wallengrenia egeremet	5	Jun 27	Jul 28	1923	2014
38	Delaware Skipper	Anatrytone logan	1	Jul 15	Jul 15	2016	2016
39	Mulberry Wing	Poanes massasoit	2	Jul 6	Jul 10	2017	2021
40	Hobomok Skipper	Poanes hobomok	19	May 26	Jul 5	1922	2019
42	Broad-winged Skipper	Poanes viator	2	Jul 6	Jul 7	1986	2017
46	Two-spotted Skipper	Euphyes bimacula	2	Jun 30	Jul 5	1980	1980
47	Dun Skipper	Euphyes vestris	9	Jul 4	Aug 15	1922	2021
49	Pepper and Salt Skipper	Amblyscirtes hegon	2	Jun 2	Jun 7	1923	1937
55	Black Swallowtail	Papilio polyxenes	16	May 26	Aug 27	1941	2009
59	Canadian Tiger Swallowtail	Papilio canadensis	30	May 14	Jun 23	1976	2016
63	Mustard White	Pieris oleracea	12	May 7	Aug 25	1923	2008
65	Cabbage White	Pieris rapae	34	May 14	Oct 1	1973	2020
69	Clouded Sulphur	Colias philodice	56	May 5	Oct 17	1931	2020
70	Orange Sulphur	Colias eurytheme	10	Jul 21	Sep 26	1976	2020
73	Pink-edged Sulphur	Colias interior	3	Jul 9	Aug 1	1929	1973
81	Harvester	Feniseca tarquinius	17	May 15	Sep 6	1924	2021
82	American Copper	Lycaena phlaeas	45	May 26	Oct 1	1939	2012
84	Bronze Copper	Lycaena hyllus	6	May 14	Aug 25	1901	2009
85	Bog Copper	Lycaena epixanthe	43	Jun 16	Aug 5	1907	2021
88	Acadian Hairstreak	Satyrium acadica	5	Jul 9	Jul 23	1908	1983
89	Coral Hairstreak	Satyrium titus	2	Jul 23	Jul 25	1983	1984
91	Banded Hairstreak	Satyrium calanus	1	Jul 10	Jul 10	2021	2021
93	Striped Hairstreak	Satyrium liparops	8	Jun 27	Jul 11	1908	1982
96	Brown Elfin	Callophrys augustinus	75	May 5	Jul 1	1898	2021
99	Henry's Elfin	Callophrys henrici	5	May 10	Jun 1	1938	2021
101	Eastern Pine Elfin	Callophrys niphon	1	May 7	May 7	1923	1923
107	Eastern Tailed Blue	Cupido comyntas	7	Aug 12	Sep 16	1998	2018
109	Northern Azure	Celastrina lucia	91	Apr 15	Sep 24	1908	2021
112	Silvery Blue	Glaucopsyche lygdamus	38	May 15	Jul 2	1973	2021
119	Great Spangled Fritillary	Speyeria cybele	16	Jun 16	Sep 1	1941	2020
120	Aphrodite Fritillary	Speyeria aphrodite	1	Jul 23	Jul 23	1983	1983
122	Atlantis Fritillary	Speyeria atlantis	3	Jun 24	Jul 6	1908	1978
123	Bog Fritillary	Boloria eunomia	3	Jun 9	Jun 11	1908	1908
124	Silver-bordered Fritillary	Boloria selene	19	May 29	Aug 4	1901	2016
125	Meadow Fritillary	Boloria bellona	3	May 27	Jul 23	1901	1983
127	Freija Fritillary	Boloria freija	1	Jun 11	Jun 11	1911	1911

131	Harris's Checkerspot	Chlosyne harrisii	28	Jun 6	Jul 4	1911	2011
132	Pearl Crescent	Phyciodes tharos	4	May 24	Sep 16	1996	2020
133	Northern Crescent	Phyciodes cocyta	51	May 27	Sep 29	1973	2019
135	Baltimore Checkerspot	Euphydryas phaeton	19	May 21	Jul 7	1902	2012
136	Question Mark	Polygonia interrogationis	4	Apr 16	Aug 2	1978	2012
137	Eastern Comma	Polygonia comma	1	Apr 18	Apr 18	2020	2020
139	Green Comma	Polygonia faunus	1	May 24	May 24	1996	1996
141	Gray Comma	Polygonia progne	1	Jul 7	Jul 7	1986	1986
142	Compton Tortoiseshell	Nymphalis l-album	2	Apr 7	Jul 18	1980	2021
143	Mourning Cloak	Nymphalis antiopa	26	Apr 4	Oct 19	1950	2021
144	Milbert's Tortoiseshell	Aglais milberti	9	Apr 25	Oct 1	1925	1998
145	American Lady	Vanessa virginiensis	5	May 17	Sep 29	1975	2012
146	Painted Lady	Vanessa cardui	7	Jun 20	Sep 26	1979	2019
147	Red Admiral	Vanessa atalanta	14	Apr 16	Aug 25	1977	2016
148	Common Buckeye	Junonia coenia	1	Jun 22	Jun 22	1981	1981
149	White Admiral	Limenitis arthemis arthemis	30	Jun 9	Sep 1	1937	2020
151	Viceroy	Limenitis archippus	31	Jun 1	Sep 29	1911	2021
154	Northern Pearly-Eye	Lethe anthedon	5	Jun 21	Jul 23	1975	2017
155	Eyed Brown	Lethe eurydice	14	Jun 21	Aug 18	1923	2012
156	Appalachian Brown	Lethe appalachia	1	Jun 27	Jun 27	2021	2021
157	Little Wood-Satyr	Megisto cymela	27	May 27	Jul 23	1922	2021
158	Common Ringlet	Coenonympha tullia	61	May 27	Sep 16	1939	2021
159	Common Wood-Nymph	Cercyonis pegala	17	Jun 27	Aug 28	1973	2017
164	Jutta Arctic	Oeneis jutta	79	May 13	Jul 7	1900	2021
167	Monarch	Danaus plexippus	45	Jun 6	Sep 29	1970	2020

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Ontario Nature

Species list in taxonomic order for square 18VR62

All species

Number of rows of data displayed below: 14.

Species #	Common Name	# of Records	Earliest Yr__________	Latest Yr
1	Blanding's Turtle	6	1999	2019
3	Midland Painted Turtle	4	1999	2018
6	Snapping Turtle	6	1982	2013
12	Eastern Gartersnake	8	1985	2018
21	Red-bellied Snake	5	1986	2015
25	American Bullfrog	2	1964	1967
27	Gray Treefrog	10	1985	2014
28	Green Frog	23	1982	2018
30	Northern Leopard Frog	14	1937	2017
32	Spring Peeper	33	1964	2016
33	Western Chorus Frog	1	2000	2000
34	Wood Frog	15	1964	2014
35	American Toad	19	1963	2019
40	Red-spotted Newt	1	2018	2018

Bat Acoustical Monitoring Results for the Forest Habitat

INDIR	OUTDIR	FOLDER	IN FILE	CHANNEL	OFFSET	DURATION	OUT FILE F	OUT FILE Z	DATE	TIME	HOUR	DATE-12	TIME-12	HOUR-12	AUTO ID*	PULSES	MATCHING	MATCH RA	MARGIN	ALTERNATI	ALTERNATI	N	Fc	Sc	Dur	Fmax	Fmin	Fmean	TBC	Fk	Tk	S1	Tc	Qual	FILES	MANUAL I	ORGID	USERID	REVIEW OI	REVIEW U	INPATHMD	OUTPATHM	OUTPATHMD5Z
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	11.447			2023-08-12	4:07:40	4	2023-08-11	16:07:40	16	EPTFUS	86	74	0.86	0.281738	LASNOC	LASCIN	86	30.92	91.63	4.597	45.975	29.204	35.201	96.59	33.75	2.649	323.5	4.007	17.53	1						tchYtDFs1MXP0MjliKxTnQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:42:13	20	2023-08-11	8:42:13	8	EPTFUS	79	73	0.924	0.327264	LASNOC	LASCIN	79	30.041	75.92	4.478	47.746	29.308	35.059	187.48	32.454	3.006	363.29	4.205	12.75	1						EoqqXEV4PR36owe4zOIGqw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:34:38	20	2023-08-11	8:34:38	8	EPTFUS	99	68	0.687	0.408203	LASNOC		99	28.526	60.84	5.243	48.09	27.644	32.761	149.278	30.388	3.276	478.74	4.827	18.23	1						zCIUN/YvTlE6IvxQgJymhg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:42:29	20	2023-08-11	8:42:29	8	EPTFUS	72	64	0.889	0.37989	LASNOC	LASCIN	72	29.695	71	5.08	49.88	28.747	35.028	202.009	31.69	3.5	375.86	4.693	10.31	1						QXkICKlvYbPBWh15vTk9Ug==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	21:24:36	21	2023-08-11	9:24:36	9	EPTFUS	61	55	0.902	0.295027			61	32.238	95.06	4.952	56.201	30.925	39.132	193.286	35.622	3.044	400.28	4.521	10.64	1						qMQ+e7lvzZ7YPQfmCM06IQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	14.871			2023-08-11	21:25:19	21	2023-08-11	9:25:19	9	EPTFUS	55	50	0.909	0.319562	LASNOC	LASCIN	55	31.776	81.9	5.416	57.086	30.122	39.038	212.022	34.696	3.516	347.44	4.905	10.31	1						2ynTdG7X7iw0MukkEygLLg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	21:24:51	21	2023-08-11	9:24:51	9	EPTFUS	57	47	0.825	0.36898	LASNOC	LASCIN	57	30.872	72.59	6.005	52.835	29.753	37.072	263.406	33.571	3.941	336.76	5.593	10.09	1						sUFNSAg1SJ/Q5mp60BKo6g==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	12.128			2023-08-11	20:42:44	20	2023-08-11	8:42:44	8	EPTFUS	47	46	0.979	0.441434	LASNOC	LASCIN	47	29.577	61.39	4.51	47.322	29.099	34.591	192.678	31.174	3.319	374.05	4.316	8.36	1						Uim9n/Ls36YLzwhQhRVCfg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-13	20:32:24	20	2023-08-13	8:32:24	8	EPTFUS	72	44	0.611	0.422241	LASNOC	LASCIN	72	27.918	44.22	5.403	46.873	27.47	31.924	199.851	29.422	3.514	489.39	5.138	14.22	1						avH9p4AY0HQv/EnF3XThIA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	22:12:02	22	2023-08-11	10:12:02	10	EPTFUS	71	43	0.606	0.260871	LASNOC	LASCIN	71	28.3	33.56	6.666	36.705	27.597	30.863	195.34	29.372	4.577	181.61	5.942	14.2	1						3WQsuxbCaWklDYgpE9mc0w==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	22:12:17	22	2023-08-11	10:12:17	10	EPTFUS	57	40	0.702	0.375382	LASNOC	LASCIN	57	25.964	25.09	11.168	36.973	25.477	28.965	255.453	26.948	8.173	195.43	10.175	9.88	1						5ztweSwPZuGhvpWYGMXBEw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.451			2023-08-13	22:37:49	22	2023-08-13	10:37:49	10	EPTFUS	35	35	1	0.46367	LASNOC	LASCIN	35	29.737	62.03	5.45	50.184	29.317	35.767	155.729	31.644	3.862	305.28	5.243	6.11	1						4fLUZIEX94d4/VDjnH6ggg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-14	3:01:38	3	2023-08-13	15:01:38	15	EPTFUS	48	29	0.604	0.321522	LASNOC	LASCIN	48	29.874	102.19	4.087	49.027	29.331	35.367	288.87	32.481	2.719	423.27	3.911	8.73	1						1vz693226lToAwoGemfaNA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-14	3:01:53	3	2023-08-13	15:01:53	15	EPTFUS	33	26	0.788	0.387692			33	29.728	73.23	4.78	50.001	29.184	35.377	462.632	31.475	3.408	402.02	4.518	6.63	1						PQzZvPMu3XgWpiminW46CQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	11.504			2023-08-13	22:36:42	22	2023-08-13	10:36:42	10	EPTFUS	33	23	0.697	0.43672	LASNOC	LASCIN	33	29.685	61.24	3.752	39.726	29.419	32.912	261.069	31.334	2.316	234.52	3.563	5.54	1						WRL+dapWrABnNcaxTvTK/w==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.373			2023-08-13	22:11:25	22	2023-08-13	10:11:25	10	EPTFUS	25	21	0.84	0.386729	LASNOC	LASCIN	25	28.865	60.01	4.41	42.351	28.572	32.795	176.143	30.408	3.03	326.84	4.226	5.25	1						Jd5dGZAlDbctDzh+qFTriA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	22:41:02	22	2023-08-11	10:41:02	10	EPTFUS	35	21	0.6	0.404335	LASNOC	LASCIN	35	27.66	28.18	6.498	42.519	27.344	31.048	346.17	28.712	4.508	315.73	6.114	9.51	1						PYTVfrE1ImuxfzsJpFeaVg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.569			2023-08-13	22:33:47	22	2023-08-13	10:33:47	10	EPTFUS	21	20	0.952	0.477956	LASNOC		21	30.409	78.85	5.48	54.655	30.157	37.46	165.817	32.595	3.985	419.2	5.343	4.64	1						eNwPJsH7Nwj5uyIcTe+9oQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.284			2023-08-12	2:36:43	2	2023-08-11	14:36:43	14	EPTFUS	21	17	0.81	0.413096	LASNOC	LASCIN	21	29.21	61.9	5.369	60.998	28.938	38.113	156.577	30.534	4.265	382.35	5.29	5.16	1						0EHflSECHc5ntuguAGK6CA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.643			2023-08-13	22:36:05	22	2023-08-13	10:36:05	10	EPTFUS	18	16	0.889	0.461148			18	30.842	61.05	4.053	45.709	30.693	35.466	255.35	32.186	3.142	279.43	3.986	3.92	1						uDXtAlMuFOI8OQSRTpA7Og==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	11.182			2023-08-13	22:03:45	22	2023-08-13	10:03:45	10	EPTFUS	23	16	0.696	0.374756	LASNOC	LASCIN	23	28.001	43.62	4.005	35.832	27.628	30.415	371.513	29.078	2.714	210.6	3.741	5.32	1						4JADukmdCOXXHm4s2N/3zA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.381			2023-08-13	22:39:06	22	2023-08-13	10:39:06	10	EPTFUS	18	15	0.833	0.455473	LASNOC	LASCIN	18	29.786	60.93	4.375	44.065	29.513	34.282	347.915	31.49	2.949	254.12	4.268	4.54	1						FDFOd/PmNAGH9HN93C8mqQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.288			2023-08-12	20:33:29	20	2023-08-12	8:33:29	8	EPTFUS	19	15	0.789	0.348584	LASNOC	LASCIN	19	28.602	63.54	3.854	37.84	28.511	31.787	175.045	30.473	2.503	259.46	3.787	3.52	1						wvvINMcORd3RAmfoJGOv0Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.367			2023-08-12	20:32:41	20	2023-08-12	8:32:41	8	EPTFUS	20	14	0.7	0.42488	LASNOC	LASCIN	20	28.066	35.7	4.74	36.469	27.793	30.454	275.879	29.451	2.775	237.99	4.502	3.83	1						K6K2KryYLtSIfi/7O3W2DA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.675			2023-08-13	22:03:28	22	2023-08-13	10:03:28	10	EPTFUS	14	13	0.929	0.406548	LASNOC	LASCIN	14	27.564	44.99	6.245	39.107	27.181	30.843	194.315	28.784	4.365	269.65	5.837	3.73	1						FLy0OeMg0zNnPjNkX/hZVA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.329			2023-08-13	20:32:12	20	2023-08-13	8:32:12	8	EPTFUS	21	13	0.619	0.407989	LASNOC		21	28.072	51.53	5.99	51.49	27.6	32.854	164.722	30.013	3.768	541.49	5.801	4.63	1						hxYbZ8+mRIWqRCPUvLgZ+Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.309			2023-08-13	22:19:00	22	2023-08-13	10:19:00	10	EPTFUS	13	9	0.692	0.357095	LASNOC	LASCIN	13	27.406	30.33	5.725	35.19	27.188	29.857	368.167	28.196	4.152	162.07	5.422	2.61	1						JWu/qSAUGFrD2pdCT6CB5Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.641			2023-08-11	23:51:55	23	2023-08-11	11:51:55	11	EPTFUS	7	6	0.857	0.357875	LASNOC	LASCIN	7	29.017	62.93	3.715	35.927	28.545	31.132	459.611	31.028	1.772	205.48	3.352	1.51	1						Fa6QPc1zG11kIrerAMsIPw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.321			2023-08-13	22:12:11	22	2023-08-13	10:12:11	10	EPTFUS	9	6	0.667	0.375893	LASNOC	LASCIN	9	28.132	33.1	3.471	35.173	27.878	30.195	521.724	28.649	2.592	221.63	3.27	2.25	1						WF2uCLHdhePl+tBCiyVAww==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.46			2023-08-13	21:58:10	21	2023-08-13	9:58:10	9	EPTFUS	7	5	0.714	0.363549	LASNOC	LASCIN	7	28.141	20	5.83	39.791	27.998	31.293	241.33	28.763	4.355	270.25	5.727	1.14	1						qbQWbJJmUqSU253US5rLVA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.236			2023-08-12	2:36:16	2	2023-08-11	14:36:16	14	EPTFUS	5	4	0.8	0.415963	LASNOC	LASCIN	5	27.765	55.1	4.901	41.7	27.69	31.975	247.619	29.281	3.372	321.34	4.843	0.69	1						jHHUAKw+fGKuEH23vs3RnA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.154			2023-08-12	20:30:38	20	2023-08-12	8:30:38	8	EPTFUS	5	4	0.8	0.420766	LASNOC	LASCIN	5	30.599	53.35	3.019	39.42	30.599	33.51	633.94	31.817	1.977	237.31	3.019	1.26	1						+TQkW7FeKa3KxEvIXVhKXA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.389			2023-08-13	22:25:05	22	2023-08-13	10:25:05	10	LASBOR	5	4	0.8	0.201761	MYOLUC	PERSUB	5	40.674	41.86	3.42	48.91	40.365	43.182	589.991	42.37	1.69	190.92	3.119	1.18	1						UeBfKBbZsXojuA1uqDmmVQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-13	20:52:50	20	2023-08-13	8:52:50	8	LASCIN	19	19	1	0.478118			19	18.948	7.38	5.402	19.969	18.701	19.203	615.362	19.212	2.704	36.45	4.287	3.63	1						DBw4wPGYBicq2MU39zYZwQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.848			2023-08-11	20:52:10	20	2023-08-11	8:52:10	8	LASCIN	17	13	0.765	0.373895	EPTFUS	LASNOC	17	23.344	9.72	9.511	26.146	22.875	23.98	348.571	23.677	5.869	104.97	7.973	5.04	1						A/+PoZ7UjMYJei4dT9M1LA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	14.623			2023-08-11	21:07:25	21	2023-08-11	9:07:25	9	LASCIN	12	12	1	0.294459			12	16.511	5.44	5.624	16.95	16.409	16.605	1001.711	16.598	3.364	42.25	4.575	3.87	1						VkMk12xdMnLI1ZYyBr+A3A==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	12.572			2023-08-13	21:11:51	21	2023-08-13	9:11:51	9	LASCIN	11	11	1	0.396305			11	17.027	0.8	8.44	17.684	16.819	17.145	808.073	17.085	4.9	32.33	6.334	2.59	1						N2ITyLN2snMUWEUq01fW0Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.292			2023-08-11	22:12:48	22	2023-08-11	10:12:48	10	LASCIN	14	9	0.643	0.243749	LASNOC	EPTFUS	14	25.107	8.48	10.629	28.871	24.172	25.86	307.11	25.608	5.486	107.88	8.043	5.16	1						S7zEpuFJ4PfyT+SmzWRDeg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.594			2023-08-12	2:44:26	2	2023-08-11	14:44:26	14	LASCIN	8	8	1	0.51459			8	18.973	3.81	7.042	20.461	18.693	19.373	510.768	19.155	4.115	57.54	6.165	1.22	1						cbRt4gEvG7W7QRjMQaXzDg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.499			2023-08-13	1:26:42	1	2023-08-12	13:26:42	13	LASCIN	6	6	1	0.469747	LASNOC	EPTFUS	6	27.109	64.37	3.338	35.712	26.485	29.126	253.327	28.931	1.621	335.81	3.009	1.31	1						w8o/lDoyXwQuZGDCaW6oIg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.808			2023-08-13	22:39:17	22	2023-08-13	10:39:17	10	LASCIN	6	6	1	0.426473			6	17.407	7.7	7.24	17.723	17.294	17.509	350.835	17.585	1.709	9.52	3.809	1.86	1						kPnFTPEEJj/xc65tuNVuog==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.489			2023-08-14	6:26:17	6	2023-08-13	18:26:17	18	LASCIN	6	6	1	0.386322			6	19.564	4.17	9.673	19.947	19.038	19.556	109.832	19.637	6.168	-28.71	7.666	1.14	1						U0wllRJCNry905vrxr2KpA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.806			2023-08-14	5:52:40	5	2023-08-13	17:52:40	17	LASCIN	5	5	1	0.407712			5	20.086	-9.9	2.801	20.241	19.817	20.038	106.586	20.009	1.12	-33.83	2.404	1.33	1						OQguVQ+DZ7s0zdX5u52YIQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.089			2023-08-12	4:25:57	4	2023-08-11	16:25:57	16	LASCIN	4	4	1	0.252106			4	17.77	-15.34	4.003	17.99	17.365	17.691	15.2	17.647	1.637	49.06	2.485	1.29	1						rvO7dAuXqz2jcyq5feHihQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.959			2023-08-13	22:39:40	22	2023-08-13	10:39:40	10	LASCIN	4	4	1	0.456278			4	18.059	4.46	6.409	18.409	17.757	18.089	721.888	18.147	2.586	45.86	4.121	0.99	1						SrLqKRzNLwp0Rai6I3SfKg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.856			2023-08-14	1:39:05	1	2023-08-13	13:39:05	13	LASCIN	4	4	1	0.697981	EPTFUS		4	20.991	8.16	7.3	25.619	20.711	22.25	474.85	21.21	5.584	106.53	6.767	0.9	1						MPSmo9hroZvvtuxZW+tcXQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.094			2023-08-13	5:09:43	5	2023-08-12	17:09:43	17	LASCIN	5	4	0.8	0.441732	EPTFUS	LASNOC	5	24.181	8.93	8.132	25.726	23.648	24.538	710.764	24.769	2.956	35.38	5.825	1.11	1						wkkDWFR8sL9nZ1jRD6kjDw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.023			2023-08-11	20:57:38	20	2023-08-11	8:57:38	8	LASCIN	3	3	1	0.494761			3	18.628	9.88	7.438	19.348	18.57	18.911	502.028	18.821	5.241	-27.85	7.152	0.76	1						LLHyHlJx/kU3OlAsR9Zz+Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.928			2023-08-11	23:09:08	23	2023-08-11	11:09:08	11	LASCIN	3	3	1	0.372945			3	20.646	10.35	5.92	22.729	20.373	21.253	448.439	21.166	2.591	94.79	4.883	0.46	1						2eMV57m5ZsrsWRBhaGs0TQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.554			2023-08-12	4:24:21	4	2023-08-11	16:24:21	16	LASCIN	3	3	1	0.487148			3	19.371	3.99	11.447	19.957	19.243	19.51	1264.632	19.562	6.722	32.94	9.214	1.54	1						cmVsBrBr1J6LZs39Hqsvzw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.452			2023-08-13	20:53:06	20	2023-08-13	8:53:06	8	LASCIN	3	3	1	0.509704			3	19.293	5.95	6.091	20.432	18.995	19.522	542.695	19.399	3.657	9.96	4.838	0.7	1						bWH2s6xbBwDRmrsH4q2YZQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.758			2023-08-14	0:20:44	0	2023-08-13	12:20:44	12	LASCIN	3	3	1	0.523569			3	18.554	0.47	6.682	19.202	18.394	18.743	357.541	18.693	2.734	37.06	5.436	0.6	1						YJ+1q7hcMasGpERMWMOfPA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.024			2023-08-14	1:18:00	1	2023-08-13	13:18:00	13	LASCIN	3	3	1	0.320879			3	18.388	-11.96	5.924	18.841	17.988	18.287	482.641	18.194	2.427	83.9	3.737	0.56	1						1f0DEHm73+TLK9erA7fMOQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.595			2023-08-14	2:44:07	2	2023-08-13	14:44:07	14	LASCIN	3	3	1	0.455997			3	19.731	-4.09	4.387	20.231	19.483	19.777	291.674	19.689	1.841	-6.43	2.922	0.91	1						EAxMybk6bpCR1SHx2DhsXA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.694			2023-08-14	3:31:03	3	2023-08-13	15:31:03	15	LASCIN	3	3	1	0.368385			3	19.592	14.31	4.877	20.443	19.409	19.87	653.004	19.775	3.575	-1.19	4.539	1.55	1						Mw/kDOoh3o3JBGwXnt5Onw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:29:50	20	2023-08-11	8:29:50	8	LASNOC	94	75	0.798	0.299783	EPTFUS	LASCIN	94	28.474	43.38	5.205	44.551	27.665	31.568	160.662	29.953	2.964	499.16	4.7	16.89	1						lnGm4FqKMYuG/nqlXSWbRg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:30:06	20	2023-08-11	8:30:06	8	LASNOC	96	70	0.729	0.301486	EPTFUS	LASCIN	96	28.384	49.01	5.288	45.194	27.462	31.735	155.982	29.898	3.154	507.96	4.759	15.43	1						qt1/7wmk2rfLkNAcLdXnTw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:30:52	20	2023-08-11	8:30:52	8	LASNOC	73	67	0.918	0.382273	EPTFUS	LASCIN	73	28.087	34.52	4.845	39.714	27.529	30.533	164.596	29.2	2.93	445.09	4.473	13.51	1						0h+8zWN4PKbV3M3Vq8FeCA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:33:36	20	2023-08-11	8:33:36	8	LASNOC	78	65	0.833	0.289751	EPTFUS	LASCIN	78	28.793	40.3	4.408	40.902	28.207	31.383	194.401	30.036	2.558	445.87	4.022	15.49	1						uBy0iKTGPX43GYtWGZR9hA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	20:30:36	20	2023-08-11	8:30:36	8	LASNOC	88	63	0.716	0.310148	EPTFUS	LASCIN	88	28.291	42.23	4.849	41.012	27.686	30.993	171.073	29.67	2.824	449.96	4.444	16.48	1						e5ljlT3RgxcNSTp3f2dU+w==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-11	22:39:56	22	2023-08-11	10:39:56	10	LASNOC	64	54	0.844	0.338062	EPTFUS	LASCIN	64	28.157	36.85	4.946	38.955	27.81	30.66	232.859	29.245	3.09	329.04	4.652	12.43	1						0TLUqQlMdJO1VShnidBx9A==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	11.589			2023-08-11	20:32:30	20	2023-08-11	8:32:30	8	LASNOC	54	48	0.889	0.339537	EPTFUS	LASCIN	54	28.125	40.37	4.929	39.884	27.503	30.575	161.862	29.617	2.648	427.38	4.505	10.14	1						yJFsKboJf4LjSbRt7bQg5Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	11.717			2023-08-13	20:29:08	20	2023-08-13	8:29:08	8	LASNOC	42	41	0.976	0.504499	EPTFUS	LASCIN	42	27.954	36.92	4.676	44.086	27.625	31.34	158.692	29.054	2.93	423.38	4.442	8.51	1						1T4dvCZGjChdI0nlJG39Jg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-13	23:03:53	23	2023-08-13	11:03:53	11	LASNOC	38	36	0.947	0.383008	EPTFUS	LASCIN	38	27.32	5.98	6.993	29.966	27.063	27.917	399.452	27.644	3.587	92.48	6.118	6.45	1						CPvuBzkyI8NHVosCmh1AyA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	14.824			2023-08-13	22:59:50	22	2023-08-13	10:59:50	10	LASNOC	36	31	0.861	0.223986	EPTFUS	LASCIN	36	28.275	14.13	7.658	34.78	27.817	29.772	303.134	28.762	5.242	176.28	6.792	10.03	1						vpvWWY+G71xzMgof0ijbyQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.399			2023-08-13	20:35:04	20	2023-08-13	8:35:04	8	LASNOC	33	30	0.909	0.410488	EPTFUS	LASCIN	33	27.941	25.18	6.064	42.629	27.382	30.583	256.663	28.716	3.837	441.72	5.494	7.42	1						2KKyGWVhejRUY+2IYgSvKQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.439			2023-08-11	20:47:27	20	2023-08-11	8:47:27	8	LASNOC	37	28	0.757	0.309387	EPTFUS	LASCIN	37	28.282	30.11	5.343	38.394	27.984	30.691	140.576	29.324	3.498	290.83	5.087	6.51	1						pdka37HaYCxMDPiJqC0rfw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-14	0:22:29	0	2023-08-13	12:22:29	12	LASNOC	29	27	0.931	0.424069	EPTFUS	LASCIN	29	28.399	42.33	4.397	38.233	28.069	30.664	432.087	29.641	2.545	325.01	4.108	5.61	1						YkMcSYBkEcg6ohxSJ/FkAw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.877			2023-08-12	5:27:40	5	2023-08-11	17:27:40	17	LASNOC	25	24	0.96	0.370928	EPTFUS	LASCIN	25	28.327	28.42	5.574	41.253	28.044	31.219	161.011	29.254	3.617	436.12	5.278	4.14	1						wEtsnz1euBGZgrugC+dYZw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	12.052			2023-08-13	22:47:14	22	2023-08-13	10:47:14	10	LASNOC	23	23	1	0.477947	LASCIN	EPTFUS	23	27.414	7.01	7.221	31.408	26.925	28.288	415.616	27.836	4.089	157.25	6.129	4.09	1						nbrEbU1hQ9doqMhh2sM6tA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	14.969			2023-08-12	1:20:15	1	2023-08-11	13:20:15	13	LASNOC	28	23	0.821	0.342772	LASCIN	EPTFUS	28	26.952	11.6	7.63	31.054	26.466	27.888	442.905	27.478	4.288	124.88	6.311	5.2	1						O8/95rMa052lMpYLKUbZ+w==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	12.346			2023-08-13	20:41:20	20	2023-08-13	8:41:20	8	LASNOC	29	22	0.759	0.253711	EPTFUS	LASCIN	29	28.407	13.98	5.406	34.021	28.056	29.778	333.396	28.844	3.668	182.84	4.968	7.03	1						oQYWHWrVvIgVM+xLhZmAtg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	15			2023-08-13	23:04:35	23	2023-08-13	11:04:35	11	LASNOC	21	21	1	0.388495	EPTFUS	LASCIN	21	27.261	14.49	7.445	29.42	27.01	27.845	599.031	27.684	3.666	56.69	6.075	3.19	1						gcY69Ocr8IzeqwtBHZWDHA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	12.799			2023-08-12	1:28:04	1	2023-08-11	13:28:04	13	LASNOC	19	19	1	0.395054	LASCIN	EPTFUS	19	26.657	0.98	5.353	27.158	26.242	26.631	539.054	26.724	1.148	24.4	3.724	3.78	1						3dMbYhoGu+d4R2nck8zQ9Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	11.587			2023-08-11	22:13:13	22	2023-08-11	10:13:13	10	LASNOC	20	18	0.9	0.366593	LASCIN	EPTFUS	20	25.675	11	10.319	29.287	25.326	26.487	583.003	26.149	6.127	85.3	8.687	4.97	1						DXH02wWpko9Mfk1RlHadkA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.172			2023-08-13	20:37:54	20	2023-08-13	8:37:54	8	LASNOC	24	18	0.75	0.31794	EPTFUS	LASCIN	24	27.994	41.34	4.808	42.263	27.476	31.191	177.399	29.287	3.061	450.31	4.518	5.3	1						GCEZCaO0z2JYLp2iXCoI8A==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.037			2023-08-13	23:04:55	23	2023-08-13	11:04:55	11	LASNOC	17	17	1	0.383657	LASCIN	EPTFUS	17	27.678	15.57	7.95	30.694	27.287	28.352	313.026	28.137	4.244	93.63	6.663	3.17	1						YxVZe/ZnPWSJU0MYtFTOmQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.893			2023-08-11	23:50:41	23	2023-08-11	11:50:41	11	LASNOC	15	15	1	0.453127	LASCIN	EPTFUS	15	26.563	2.82	6.64	27.701	26.371	26.778	654.317	26.903	2.161	96.2	5.654	2.68	1						u4TeftDWNtZOlXs8ntufRg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.754			2023-08-14	0:15:45	0	2023-08-13	12:15:45	12	LASNOC	16	15	0.938	0.326619	EPTFUS	LASCIN	16	27.614	19.3	6.313	32.012	27.309	28.78	360.55	27.991	4.578	109.92	5.744	3.51	1						Acs9MtZ2j0rdMdNsDfxcTA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.114			2023-08-13	22:22:50	22	2023-08-13	10:22:50	10	LASNOC	11	11	1	0.449676	LASCIN	EPTFUS	11	27.013	1.12	7.924	27.449	26.789	27.052	879.001	27.081	2.363	59.14	6.102	1.99	1						h3U26H4rpX68xCN5tzVSfw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.686			2023-08-11	22:13:00	22	2023-08-11	10:13:00	10	LASNOC	13	11	0.846	0.323831	LASCIN	EPTFUS	13	28.027	17.63	6.814	30.546	27.664	28.602	300.044	28.626	3.453	123.82	5.636	2.89	1						VTjl7WpAYazJGjzoeUwblg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.889			2023-08-12	4:19:07	4	2023-08-11	16:19:07	16	LASNOC	14	11	0.786	0.296834	EPTFUS	LASCIN	14	28.222	50.97	4.636	39.891	27.858	31.308	324.929	29.81	2.768	352.53	4.292	3.26	1						CsPA/gx2oCgx5c1lzI4Zyg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.519			2023-08-11	22:38:29	22	2023-08-11	10:38:29	10	LASNOC	15	10	0.667	0.312129	EPTFUS	LASCIN	15	26.864	19.21	8.28	32.105	26.309	28.111	337.71	27.598	4.971	167.89	6.993	2.84	1						Pd2x0R1KRQEB3f+llbOy9A==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.644			2023-08-14	0:32:58	0	2023-08-13	12:32:58	12	LASNOC	9	9	1	0.425792	EPTFUS	LASCIN	9	27.487	18.66	7.255	31.379	27.079	28.554	328.783	28.133	4.167	112.32	6.165	2.25	1						DNs8BRlMjWaT+2cP0jCAKw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	9.334			2023-08-12	1:03:54	1	2023-08-11	13:03:54	13	LASNOC	10	9	0.9	0.38636	EPTFUS	LASCIN	10	27.324	19.26	4.647	29.4	27.085	27.874	652.889	27.903	1.93	114.07	3.74	2.46	1						btX1lC0pgri/s6scxBky0A==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.364			2023-08-13	2:19:22	2	2023-08-12	14:19:22	14	LASNOC	8	8	1	0.447817	LASCIN	EPTFUS	8	27.055	12.29	5.601	29.255	26.716	27.651	728.748	27.303	3.681	62.59	4.84	1.62	1						9ica6WUkja4gc8DGJ0RGag==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.044			2023-08-12	0:18:10	0	2023-08-11	12:18:10	12	LASNOC	9	8	0.889	0.408731	EPTFUS	LASCIN	9	27.377	-0.6	6.775	32.545	26.755	28.553	614.986	27.722	3.424	164.2	5.356	2.29	1						iIKphskDDtXh8uBR78Fqjw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.294			2023-08-13	23:02:22	23	2023-08-13	11:02:22	11	LASNOC	9	8	0.889	0.427434	LASCIN	EPTFUS	9	26.597	4.96	9.321	28.032	26.106	26.902	705.881	26.856	4.79	84.05	7.319	2.51	1						ElRAQoNDf/MG5KMmp+3aRw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.877			2023-08-14	1:53:35	1	2023-08-13	13:53:35	13	LASNOC	9	8	0.889	0.335102	LASCIN	EPTFUS	9	25.969	7.24	8.304	26.934	25.294	26.049	731.904	26.331	2.055	-35.32	4.836	2.96	1						7tTuLzDHttS9jq+YqMuOXA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.972			2023-08-11	22:09:52	22	2023-08-11	10:09:52	10	LASNOC	7	7	1	0.355918	LASCIN	EPTFUS	7	26.993	8.99	4.418	28.288	26.646	27.302	493.763	27.178	2.357	47.55	3.972	2.34	1						QL2pc3uWe54TLNOpNxbiDQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	8.571			2023-08-11	23:26:13	23	2023-08-11	11:26:13	11	LASNOC	7	7	1	0.417831	LASCIN	EPTFUS	7	25.624	-0.04	8.378	25.953	25.217	25.587	800.862	25.751	1.002	-46.32	4.675	0.94	1						JmlLWrXBQiWprRHRbt0/eg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.372			2023-08-13	22:45:17	22	2023-08-13	10:45:17	10	LASNOC	7	7	1	0.415482	LASCIN	EPTFUS	7	27.03	5.33	7.491	29.35	26.361	27.437	557.891	27.468	3.397	121.39	5.806	1.18	1						7hP2lZlNxZNFjttgNFX0PQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.614			2023-08-12	20:38:12	20	2023-08-12	8:38:12	8	LASNOC	6	6	1	0.376774	EPTFUS	LASCIN	6	27.327	23.42	4.277	30.44	27.002	28.147	320.231	28.311	1.62	89.87	3.688	1.15	1						Xow/bgTmKbb03UyWbbNxqg==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.964			2023-08-13	22:56:53	22	2023-08-13	10:56:53	10	LASNOC	6	6	1	0.443893	LASCIN	EPTFUS	6	27.222	6.08	7.308	28.643	27.026	27.564	494.251	27.493	3.896	126.07	5.822	0.92	1						RdgVERoHOOqAgu6yEOve2Q==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.662			2023-08-14	0:14:28	0	2023-08-13	12:14:28	12	LASNOC	6	6	1	0.426169	LASCIN	EPTFUS	6	27.462	14.33	4.268	28.546	27.226	27.663	326.481	27.784	1.646	68.91	3.27	2.14	1						vYwOxqknJ6Cn44pKpueXyA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	6.729			2023-08-14	0:59:33	0	2023-08-13	12:59:33	12	LASNOC	6	6	1	0.447275	LASCIN	EPTFUS	6	26.999	16.46	6.404	28.796	26.747	27.498	880.508	27.369	3.759	94.07	5.478	1.21	1						p8xOes6WkQtcIj/exj5c6A==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.864			2023-08-11	23:03:27	23	2023-08-11	11:03:27	11	LASNOC	7	6	0.857	0.291068	LASCIN	EPTFUS	7	25.847	3.17	8.654	26.384	25.655	25.976	618.246	25.99	4.259	40.86	7.421	2.62	1						ISxA+r/LBo2gg6b1xHZ1wQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.779			2023-08-13	21:05:49	21	2023-08-13	9:05:49	9	LASNOC	5	5	1	0.410088	EPTFUS	LASCIN	5	27.086	-0.5	4.989	27.56	26.697	27.09	357.148	27.2	1.023	16.19	2.976	1.49	1						n6mumrJFOURIEQxtLi1W0w==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	7.621			2023-08-13	23:57:47	23	2023-08-13	11:57:47	11	LASNOC	5	5	1	0.303479	EPTFUS	LASCIN	5	26.634	6.4	4.802	27.306	26.374	26.75	1151.527	26.779	2.362	63.9	3.682	1.46	1						PgT9z2vLtGKBlMbkmMlqqA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.864			2023-08-11	22:38:38	22	2023-08-11	10:38:38	10	LASNOC	6	5	0.833	0.315639	EPTFUS	LASCIN	6	26.981	26.84	7.128	28.998	26.66	27.606	369.078	27.758	4.224	46.68	5.606	1.91	1						rPL9X/x7hFSa5+wgnOUSow==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.391			2023-08-11	22:30:58	22	2023-08-11	10:30:58	10	LASNOC	4	4	1	0.498267	LASCIN	EPTFUS	4	26.806	11.54	10.215	31.58	26.603	27.749	448.337	27.287	5.998	117.07	8.429	0.68	1						OoKxzhrQO3dH6ZP9EjiA8w==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.662			2023-08-11	22:41:25	22	2023-08-11	10:41:25	10	LASNOC	4	4	1	0.379816	LASCIN	EPTFUS	4	26.406	3.79	5.149	27.031	26.171	26.597	1217.017	26.607	2.55	20.95	4.351	1.19	1						xB/kKNI/DtJf00yA1F21UA==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.362			2023-08-11	23:41:46	23	2023-08-11	11:41:46	11	LASNOC	4	4	1	0.408487	EPTFUS	LASCIN	4	27.642	21.98	3.821	29.805	27.548	28.271	781.474	28.733	0.826	51.98	3.383	0.6	1						Pwsb+7XhIUKQPEwe+tDuRQ==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	5.09			2023-08-13	21:06:27	21	2023-08-13	9:06:27	9	LASNOC	4	4	1	0.411713	LASCIN	EPTFUS	4	26.693	-2.91	9.045	27.053	26.296	26.683	529.961	26.716	2.064	-29.66	5.251	1.16	1						wSCesaWB9JQhkTbkIqzVdw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.453			2023-08-13	22:24:36	22	2023-08-13	10:24:36	10	LASNOC	4	4	1	0.436169	LASCIN	EPTFUS	4	26.514	5.17	7.974	27.354	26.192	26.63	720.287	26.693	3.824	52.54	5.849	0.97	1						2t+k70/ON8xJiCP2UPJmDw==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	3.515			2023-08-11	22:39:35	22	2023-08-11	10:39:35	10	LASNOC	3	3	1	0.317893	EPTFUS	LASCIN	3	27.128	2.63	6.206	32.99	26.747	28.402	245.842	27.304	4.813	244.72	5.607	0.72	1						ahh2m3r3cynX6+KWzSGV8g==		
E:\Data	C:\Users\dvardy\Docu		HE_20230	0	0	4.373			2023-08-13	23:04:10	23	2023-08-13	11:04:10	11	LASNOC	3	3	1	0.416385	LASCIN	EPTFUS	3	27.339	-1.5	3.672	28.401	27.061	27.5	989.549	27.527	0.903	133.18	3.134	0.85	1						QqAYWyZIipOuLCO6RsZWqw==		

Bat Acoustical Monitoring Results for the Meadow Edge Habitat

INDIR	OUTDIR	FOLDER	IN FILE	CHANNEL	OFFSET	DURATION	OUT FILE F	OUT FILE Z	DATE	TIME	HOUR	DATE-12	TIME-12	HOUR-12	AUTO ID*	PULSES	MATCHING	MATCH RA	MARGIN	ALTERNATI	ALTERNATI	N	Fc	Sc	Dur	Fmax	Fmin	Fmean	TBC	Fk	Tk	S1	Tc	Qual	FILES	MANUAL II	ORGID	USERID	REVIEW OI	REVIEW US	INPATHMD	OUTPATHM	OUTPATHMD5ZC
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.98			2023-08-12	20:48:50	20	2023-08-12	8:48:50	8	EPTFUS	4	4	1	0.365156	LASNOC	LASCIN	4	26.764	31.84	3.96	31.003	26.146	27.813	1459.512	27.652	2.034	123.59	3.328	1.3	1						0nSyJmoyoNQI/1QPGwjo+g==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.29			2023-08-12	22:19:31	22	2023-08-12	10:19:31	10	LASCIN	11	11	1	0.414499			11	21.884	12.91	4.645	23.398	21.362	22.097	355.709	22.14	2.694	54.45	3.629	2.39	1						AIOj+EZ6JshD4pabJoj2YA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.23			2023-08-13	20:51:46	20	2023-08-13	8:51:46	8	LASCIN	8	8	1	0.449954			8	17.508	5.88	5.343	18.054	17.263	17.612	947.592	17.605	2.769	41.3	4.259	1.11	1						5c9XJ2Dp/ZW3nuX+C6ngzw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	4.68			2023-08-13	21:52:29	21	2023-08-13	9:52:29	9	LASCIN	6	6	1	0.42261			6	18.945	4.18	7.32	19.508	18.557	18.975	896.047	19.025	3.112	65.3	4.286	1.52	1						7n3Its+QtHk+4Cr1jX42ew==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.308			2023-08-12	21:05:14	21	2023-08-12	9:05:14	9	LASCIN	5	5	1	0.374149			5	20.384	10.65	3.913	21.064	20.122	20.491	1070.759	20.487	2.16	83.07	3.209	1.37	1						cGvQAYXvQjzmpl0PI8H0Qw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	13.346			2023-08-13	0:40:47	0	2023-08-12	12:40:47	12	LASCIN	5	5	1	0.396141			5	19.162	17.7	3.966	20.273	18.847	19.448	1685.027	19.375	2.245	14.71	3.322	1.11	1						O1TCaKBKHH1gjQzuPLJgkQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	6.378			2023-08-13	2:16:16	2	2023-08-12	14:16:16	14	LASCIN	4	4	1	0.492964			4	20.69	20.48	5.78	22.307	20.115	21.024	902.262	21.155	2.462	78.84	4.204	0.79	1						vz4sN2C0U3+AkXZ60BNuVw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	11.052			2023-08-13	20:28:24	20	2023-08-13	8:28:24	8	LASCIN	4	4	1	0.334461			4	16.655	-0.21	5.835	17.368	16.414	16.81	1367.513	16.685	3.117	-6.05	4.497	1.05	1						ba4e+BUZJb4p3Z262ENzUw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	3.64			2023-08-14	0:25:08	0	2023-08-13	12:25:08	12	LASCIN	4	4	1	0.427409			4	18.794	11.37	5.38	19.771	18.643	19.098	200.921	19.122	3.349	41.23	4.499	0.98	1						i8qk2ccmpoMTEwXTRMhQNw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	3.01			2023-08-12	4:11:55	4	2023-08-11	16:11:55	16	LASCIN	3	3	1	0.38883			3	18.663	-3.87	2.437	18.707	18.505	18.606	7.909	18.619	0.286	10.7	1.644	0.35	1						BKn5yKc2SeRU1YX1Mv6svA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	3.914			2023-08-12	5:09:57	5	2023-08-11	17:09:57	17	LASCIN	3	3	1	0.46977			3	20.747	-2.46	3.541	21.129	20.428	20.732	24.536	20.798	0.64	-1.09	2.702	0.77	1						WsRVBdT05E4VID0VyeyFmw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	5.308			2023-08-12	22:52:06	22	2023-08-12	10:52:06	10	LASCIN	3	3	1	0.491522			3	19.579	16.44	4.928	20.911	19.259	19.854	1134.425	19.822	2.962	42.06	4.116	0.68	1						HREoOlcbsibEmvUZ87ntyw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	3.074			2023-08-12	23:58:32	23	2023-08-12	11:58:32	11	LASCIN	3	3	1	0.430522			3	16.844	3.46	9.545	17.024	16.728	16.873	967.566	16.903	3.097	8.19	5.877	1.31	1						om8FRG4qQtFJp8J7W4o1oA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	4.15			2023-08-13	22:17:57	22	2023-08-13	10:17:57	10	LASCIN	3	3	1	0.469433	EPTFUS		3	21.846	9.2	4.961	24.669	21.691	22.73	564.291	21.97	3.489	112.53	4.459	0.8	1						zbBC+Emp1x12hQwCeinPeA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	3.616			2023-08-13	23:04:36	23	2023-08-13	11:04:36	11	LASCIN	3	3	1	0.509704			3	19.164	6.59	5.805	19.918	19.02	19.438	290.759	19.323	3.804	8.03	5.459	0.5	1						KdAqxvGdO1WCLGUm4tkzwg==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.002			2023-08-14	0:06:47	0	2023-08-13	12:06:47	12	LASCIN	5	3	0.6	0.225627	LASNOC	EPTFUS	5	24.646	-0.38	4.662	25.296	24.207	24.626	993.611	24.608	1.124	13.63	2.584	1.16	1						VBPdaj937h9reZUnRkRD6w==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.2			2023-08-13	23:52:56	23	2023-08-13	11:52:56	11	LASCIN	3	2	0.667	0.312576	EPTFUS		3	21.559	19.29	3.667	22.473	21.512	21.836	1032.206	21.89	1.263	63.46	2.649	0.81	1						Z17W44hVjx8ZBILPCjEMDw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	15.082			2023-08-11	22:03:45	22	2023-08-11	10:03:45	10	LASNOC	42	40	0.952	0.335069	EPTFUS	LASCIN	42	27.32	9.35	6.364	28.985	26.854	27.65	325.912	27.56	2.791	60.7	4.604	10.71	1						HqzDG7taXFa+fpV3WpzlMg==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	17.692			2023-08-12	3:22:19	3	2023-08-11	15:22:19	15	LASNOC	35	35	1	0.362838	LASCIN	EPTFUS	35	25.846	1.93	6.099	26.768	25.571	26.008	367.634	25.951	3.022	50.8	4.971	8.08	1						Yd/536de1Svgp6Rr72chkQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	14.114			2023-08-11	21:54:06	21	2023-08-11	9:54:06	9	LASNOC	29	29	1	0.420526	LASCIN	EPTFUS	29	26.528	10.07	7.207	27.307	26.185	26.716	413.651	26.773	2.331	28.7	4.79	4.41	1						TrN0wXYcr3Hx1IwEvmhO7A==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	14.218			2023-08-12	1:26:48	1	2023-08-11	13:26:48	13	LASNOC	27	24	0.889	0.35649	LASCIN	EPTFUS	27	27.308	12.92	6.408	29.984	26.847	27.948	409.444	27.688	3.884	87.47	5.29	6.29	1						cAVy72Qvqn/x+Uj56FZWTg==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	13.984			2023-08-10	21:15:58	21	2023-08-10	9:15:58	9	LASNOC	21	21	1	0.402455	LASCIN	EPTFUS	21	27.363	6.34	5.633	28.301	26.982	27.281	519.923	27.544	2.884	90.29	4.541	4.86	1						Xq8xWmF5v3zTIqF1q8c90w==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	11.594			2023-08-11	22:02:05	22	2023-08-11	10:02:05	10	LASNOC	20	20	1	0.442793	LASCIN	EPTFUS	20	27.461	4.87	6.686	27.843	27.226	27.506	372.225	27.583	1.181	-4.66	4.473	3.26	1						UWQvta3KDsgSCDFCSYgXRw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	14.794			2023-08-12	1:25:08	1	2023-08-11	13:25:08	13	LASNOC	20	20	1	0.426088	LASCIN	EPTFUS	20	26.761	7.81	6.984	29.016	26.301	27.309	524.738	27.111	3.894	69.62	5.718	4.27	1						fKI78gq+OcW62/1dfE37KA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	13.876			2023-08-11	22:19:29	22	2023-08-11	10:19:29	10	LASNOC	25	19	0.76	0.376665	EPTFUS	LASCIN	25	28.532	12.24	4.992	35.951	27.883	29.88	387.832	28.869	3.185	260.8	4.24	5.44	1						MLcQap0xlk92m6WbNyiIIQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	11.36			2023-08-12	0:03:14	0	2023-08-11	12:03:14	12	LASNOC	18	17	0.944	0.372037	EPTFUS	LASCIN	18	27.474	8.95	6.007	30.306	26.967	28.041	476.15	27.836	3.472	134.77	5.045	4.24	1						a2xn40Xa40x/eH8HQdX0vQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	13.8			2023-08-12	1:24:37	1	2023-08-11	13:24:37	13	LASNOC	19	17	0.895	0.335954	LASCIN	EPTFUS	19	27.21	4.73	5.801	29.339	26.528	27.652	437.666	27.35	3.42	12.75	4.57	5.21	1						uy/DJofsHQEoR7vbUJ+tSQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	9.564			2023-08-11	21:55:49	21	2023-08-11	9:55:49	9	LASNOC	16	16	1	0.394418	LASCIN	EPTFUS	16	27.46	10.6	5.531	29.286	27.184	27.97	436.536	27.81	2.484	28.89	4.569	4.39	1						hG+GndWajmsguyZOEpVlFA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	10.726			2023-08-11	22:01:32	22	2023-08-11	10:01:32	10	LASNOC	15	15	1	0.444381	LASCIN	EPTFUS	15	27.395	8.51	6.921	28.051	27.125	27.543	551.344	27.647	2.588	86.51	5.372	3.2	1						au/i5spIkWCXSKbWLhZFlA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	11.602			2023-08-13	23:54:30	23	2023-08-13	11:54:30	11	LASNOC	15	15	1	0.420707	LASCIN	EPTFUS	15	27.311	3.18	4.996	27.985	26.993	27.389	717.476	27.417	1.672	61.23	4.126	3.2	1						9M4txciAlMeYfRFG7DH12Q==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	5.598			2023-08-11	20:48:00	20	2023-08-11	8:48:00	8	LASNOC	12	12	1	0.398994	LASCIN	EPTFUS	12	27.339	13.27	5.329	31.181	27.06	28.246	217.561	27.609	3.676	171.98	4.732	3.2	1						NBG6MAlJSyyfozhsRATsTQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	8.11			2023-08-14	0:06:18	0	2023-08-13	12:06:18	12	LASNOC	12	12	1	0.278233	LASCIN	EPTFUS	12	26.101	0.1	5.591	27.108	25.678	26.238	463.799	26.137	3.107	71.97	4.634	3.4	1						jVLEHvYluWMpROYLenGlZQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	8.55			2023-08-14	0:13:25	0	2023-08-13	12:13:25	12	LASNOC	12	12	1	0.408387	LASCIN	EPTFUS	12	26.562	9.42	5.61	27.091	26.269	26.634	482.531	26.741	1.375	71.32	4.089	3.48	1						gAdePCZWdrMO+/lAqt4s/Q==		
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E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.998			2023-08-11	22:34:32	22	2023-08-11	10:34:32	10	LASNOC	19	12	0.632	0.25807	EPTFUS	LASCIN	19	28.788	17.85	5.682	36.802	28.263	30.351	225.306	29.226	3.597	238.9	4.783	4.86	1						rrNeX40/dJIUkOfQ90MXMQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.19			2023-08-11	20:45:07	20	2023-08-11	8:45:07	8	LASNOC	11	11	1	0.404476	LASCIN	EPTFUS	11	26.288	2.01	6.101	26.908	26.078	26.377	417.504	26.407	2.126	-1.48	4.782	2.08	1						pllMAQoVihhpq4eWJbXo1A==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	8.356			2023-08-11	21:41:08	21	2023-08-11	9:41:08	9	LASNOC	11	11	1	0.348292	LASCIN	EPTFUS	11	25.918	4.32	4.929	26.403	25.556	25.934	534.285	26.01	1.764	2.6	3.246	2.33	1						6AHcb9twvvRjxTlTnRQYRQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	9.504			2023-08-11	22:05:27	22	2023-08-11	10:05:27	10	LASNOC	9	9	1	0.457507	LASCIN	EPTFUS	9	27.11	7.68	6.471	28.025	26.8	27.339	690.395	27.429	1.569	57.75	4.453	1.82	1						M7BSH5kirEIZZSE1Pf6C2g==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	8.89			2023-08-13	23:19:31	23	2023-08-13	11:19:31	11	LASNOC	10	9	0.9	0.385467	EPTFUS	LASCIN	10	27.945	18.4	5.653	29.413	27.287	28.211	509.2	28.157	2.713	110.55	4.089	3.41	1						MMQxNQaI4fje4brxAnKzYw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	13.116			2023-08-12	1:24:20	1	2023-08-11	13:24:20	13	LASNOC	11	9	0.818	0.288021	EPTFUS	LASCIN	11	27.476	11.58	5.161	30.033	27.028	28.068	1113.399	27.715	3.156	154	4.276	3.43	1						oc3ijwj60DrTv6elsL7+eA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	7.994			2023-08-13	0:13:57	0	2023-08-12	12:13:57	12	LASNOC	8	8	1	0.430898	LASCIN	EPTFUS	8	26.989	5.13	5.777	28.141	26.556	27.145	710.769	27.105	2.76	134.02	3.982	1.91	1						Sw2uytVzcZqMyzax4Oa3Mw==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	5.904			2023-08-13	23:55:06	23	2023-08-13	11:55:06	11	LASNOC	8	8	1	0.374134	LASCIN	EPTFUS	8	25.799	-3.11	5.268	26.236	25.47	25.797	611.804	25.81	2.032	54.62	3.968	2.07	1						iJvvv3l2ekLQZGfITdACVQ==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	9.966			2023-08-12	22:05:41	22	2023-08-12	10:05:41	10	LASNOC	8	7	0.875	0.322522	EPTFUS	LASCIN	8	26.739	-1.04	6.206	27.637	25.994	26.704	1047.656	26.754	2.925	-65.04	4.443	1.9	1						kZ0Q7kKB5mOE7vKyUO9XAQ==		
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E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	4.698			2023-08-13	22:47:22	22	2023-08-13	10:47:22	10	LASNOC	5	5	1	0.374687	LASCIN	EPTFUS	5	26.433	2.51	4.344	26.772	26.031	26.394	222.907	26.451	1.676	-30.76	3.645	1.69	1						GzjzRR+JlRRwq3eNrnXAlA==		
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E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	6.496			2023-08-12	21:36:02	21	2023-08-12	9:36:02	9	LASNOC	5	4	0.8	0.335824	LASCIN	EPTFUS	5	26.099	8.09	5.789	27.014	25.927	26.282	440.881	26.162	3.099	89.99	4.108	1.52	1						TvWad3yGT0xZ1YgL84+eWA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	6.81			2023-08-11	21:27:30	21	2023-08-11	9:27:30	9	MYOLUC	24	15	0.625	0.258427	LASBOR	PERSUB	24	38.822	50	3.737	49.374	36.772	41.405	126.37	41.221	1.691	284.22	3.019	5.89	1						idAKnGCl5VE4riF7P8AcFA==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	4.88			2023-08-11	22:23:43	22	2023-08-11	10:23:43	10	MYOLUC	10	9	0.9	0.314524	LASBOR	PERSUB	10	39.064	60.56	3.761	48.538	38.271	42.357	173.103	42.593	1.675	217.59	3.451	2.67	1						MQnH6cKmE+eZDhwo7RvScg==		
E:\Data	C:\Users\dvardy\Docu		HE2_2023(	0	0	3.62			2023-08-12	0:03:53	0	2023-08-11	12:03:53	12	MYOLUC	4	3	0.75	0.364277	LASBOR	PERSUB	4	40.024	29.6	4.003	50.56	38.472	42.967	169.984	41.941	2.188	306.39	3.367	0.92	1						Hrq9Uy57EWpGdqjUdA2zVA==		

Appendix D
Site Photographs

ENGLOBE

Hydro One – L24A Corridor

Site Photograph 1: Hydro One – L24A Corridor view looking north from Leitrim Road.

Site Photograph 2: Hydro One – L24A Corridor view looking south from Leitrim Road.

Site Photograph 3: Hydro One – L24A Corridor view looking north from Piperville Road.

Site Photograph 4: Smith Crowding Municipal Drain intersecting Hydro One – L24A Corridor just north of Piperville Road.

Site Photograph 5: Hydro One – L24A Corridor view looking south from Piperville Road.

Site Photograph 6: Hydro One – L24A Corridor view looking north from Thunder Road.

Site Photograph 7: Hydro One – L24A Corridor view looking south from Thunder Road.

5134 Piperville Road

Site Photograph 8: 5134 Piperville Road view of vegetation community no. 1.

Site Photograph 9: 5134 Piperville Road view of vegetation community no. 2.

Site Photograph 10: 5134 Piperville Road view of vegetation community no. 3.

Site Photograph 11: 5134 Piperville Road view of vegetation community no. 3.

Site Photograph 12: 5134 Piperville Road view of vegetation community no. 3.

Site Photograph 13: View of forested lands south of Piperville Site boundary.

Site Photograph 14: View of forested lands southeast of Piperville Site boundary.

Site Photograph 15: View of forested lands southwest of Piperville Site boundary.

Appendix D - Health Canada – Electric Magnetic Field Fact Sheet

Health Canada Santé Canada

Your health and safety… our priority. *Votre santé et votre sécurité… notre priorité.*

Electric and Magnetic Fields

Updated: November 2012

Original: November 2001

IT'S YOUR HEALTH

Electric and Magnetic Fields from Power Lines and Electrical Appliances

THE ISSUE

Some people are concerned that daily exposure to electric and magnetic fields (EMFs) may cause health problems.

ELECTRICITY AND ELECTRIC AND MAGNETIC FIELDS (EMFS)

Electricity delivered through power lines is important in today's society. It is used to light homes, prepare food, run computers and operate other household appliances, such as TVs and radios. In Canada, appliances that plug into a wall socket use electric power that flows back and forth at a frequency of 60 cycles per second (60 hertz). The frequency used with the distribution of electricity from power lines and electrical appliances is different than the frequencies used for Wi-Fi, cell phones, and smart meters.

Every time you use electricity and electrical appliances, you are exposed to electric and magnetic fields (EMFs) at extremely low frequencies (ELFs). The term "extremely low" is described as any frequency below 300 hertz. EMFs produced by the transmission and use of electricity belong to this category.

EMFs are invisible forces that surround electrical equipment, power cords, and wires that carry electricity, including outdoor power lines.

- *Electric Fields:* These are formed whenever a wire is plugged into an outlet, even when the appliance is not turned on. The higher the voltage, the stronger the electric field.
- *Magnetic Fields:* These are formed when electric current is flowing within a device or wire. The greater the current, the stronger the magnetic field.

EMFs can occur separately or together. For example, when you plug the power cord for a lamp into a wall socket, it creates an electric field along the cord. When you turn the lamp on, the flow of current through the cord creates a magnetic field. Meanwhile, the electric field is still present.

Canada

POWER LINES AND YOUR HOME

EMFs are strongest when close to their source. As you move away from the source, the strength of the fields fades rapidly. This means you are exposed to stronger EMFs when standing close to a source (e.g., right beside a transformer box or under a high voltage power line), and you are exposed to weaker fields as you move away.

When you are inside your home, the magnetic fields from high voltage power lines and transformer boxes are often weaker than those from household electrical appliances.

Electric fields can be shielded using materials such as metal. Things like buildings and trees—and even the ground when power lines are buried—can block electric fields.

CANADIANS EXPOSURE TO EMFS AT EXTREMELY LOW FREQUENCIES (ELFS)

On a daily basis, most Canadians are exposed to EMFs generated by household wiring, lighting, and any electrical appliance that plugs into the wall, including hair dryers, vacuum cleaners and toasters. In the workplace, common sources of EMFs include computers, air purifiers, photocopiers, fax machines, fluorescent lights, electric heaters, and electric tools in machine shops, such as drills, power saws, lathes and welding machines.

EXPOSURE IN CANADIAN HOMES, SCHOOLS AND OFFICES PRESENT NO KNOWN HEALTH RISKS

There have been many studies on the possible health effects from exposure to EMFs at ELFs. While it is known that EMFs can cause weak electric currents to flow through the human body, the

intensity of these currents is too low to cause any known health effects. Some studies have suggested a possible link between exposure to ELF magnetic fields and certain types of childhood cancer, but at present this association is not established.

The International Agency for Research on Cancer (IARC) has classified ELF magnetic fields as “possibly carcinogenic to humans”. The IARC classification of ELF magnetic fields reflects the fact that some limited evidence exists that ELF magnetic fields might be a risk factor for childhood leukemia . However, the vast majority of scientific research to date does not support a link between ELF magnetic field exposure and human cancers. At present, the evidence of a possible link between ELF magnetic field exposure and cancer risk is far from conclusive and more research is needed to clarify this “possible” link.

Health Canada is in agreement with both the World Health Organization and IARC that additional research in this area is warranted.

REDUCE YOUR RISK

Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors.

THE GOVERNMENT OF CANADA’S ROLE

Health Canada, along with the World Health Organization, monitors scientific research on EMFs and human health as part of its mission to help Canadians maintain and improve their health.

International exposure guidelines for exposure to EMFs at ELFs have been established by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). These guidelines are not based on a consideration of risks related to cancer. Rather, the point of the guidelines is to make sure that exposures to EMFs do not cause electric currents or fields in the body that are stronger than the ones produced naturally by the brain, nerves and heart. EMF exposures in Canadian homes, schools and offices are far below these guidelines.

FOR MORE INFORMATION

- Health Canada’s Electric and magnetic fields at: www.hc-sc.gc.ca/ewh-semt/radiation/cons/electri-magnet/index-eng.php
- The World Health Organization – Electromagnetic fields and public health:
  - Exposure to extremely low frequency fields at: www.who.int/mediacentre/factsheets/fs322/en/index.html
  - Extremely low frequency at: www.who.int/docstore/peh-mf/publications/facts_press/efact/efs205.html
  - Extremely low frequency fields and cancer at: www.who.int/docstore/peh-emf/publications/facts_press/efact/efs263.html

IT'S **YOUR** HEALTH

FOR INDUSTRY AND PROFESSIONALS

- The International Agency for Research on Cancer (IARC) Volume 80 – Non-Ionizing Radiation, Part 1: Static and Extremely Low-Frequency (ELF) Electric and Magnetic Fields at: http://monographs.iarc.fr/ENG/Monographs/vol80/volume80.pdf
- IARC Carcinogen classifications at: http://monographs.iarc.fr/ENG/Classification/index.php

RELATED RESOURCES

- Health Canada, *It's Your Health*:
  - Safety of Wi-Fi Equipment at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/wifi-eng.php
  - Safety of Cell Phones and Cell Phone Towers at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/cell-eng.php
- For safety information about food, health and consumer products, visit the Healthy Canadians website at: www.healthycanadians.gc.ca
- For more articles on health and safety issues go to the *It's Your Health* web section at: www.health.gc.ca/iyh

You can also call toll free at 1-866-225-0709 or TTY at 1-800-267-1245*

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