Mattamy Cedarview: Environmental Impact Study to Support Zoning Bylaw Ammendment and Draft Plan of Subdivision Applications

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Submitted to :

Conor Sutherland
Mattamy Homes
50 Hines Road
Ottawa, ON
K2K 2M5

KILGOUR & ASSOCIATES LTD.
www.kilgourassociates.com

Project: MATT1676.3

TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

Appendix A Qualifications of Report Authors
Appendix B Confirmation of Field Studies
Appendix C Species at Risk Screening and Assessment
Appendix D Ontario Wetland Evaluation System Re-evaluation
Appendix E Ontario Wetland Evaluation System MNRF coordination
Appendix F Ontario Wetland Evaluation System City of Ottawa confirmation
Appendix G Headwater Drainage Feature Assessment
Appendix H Vascular Plant Species List
Appendix I Butternut Health Assessment Report
Appendix J Breeding Bird Survey Data

List of Acronyms and Abbreviations

cm – centimeter
CRZ – critical root zone
DBH – Diameter at breast height
DFO – Department of Fisheries and Oceans (Fisheries and Oceans Canada)
ECCC – Environment and Climate Change Canada
e.g. – *exempli gratia*
EIS – Environmental Impact Study
ELC – Ecological Land Classification
ESC – erosion and sediment control
ESA – *Endangered Species Act*
FWCA – *Fish and Wildlife Conservation Act*
ha – hectare
i.e. – id est
KAL – Kilgour & Associates Ltd.
km – kilometre
m – metre
MBCA – *Migratory Birds Convention Act*
MECP – Ministry of Environment, Conservation, and Parks
MNRF – Ministry of Natural Resources and Forestry
NHIC – Natural Heritage Information Centre
PPS – Provincial Policy Statement
SAR – species at risk
SARA – *Species at Risk Act*
SWH – Significant Wildlife Habitat
SWM – stormwater management
TCR – Tree Conservation Report

1.0 INTRODUCTION

This report is an Environmental Impact Study (EIS) prepared by Kilgour & Associates Ltd. (KAL; Appendix A) on behalf of 2436091 Ontario Ltd. (herein "Mattamy)". In the City of Ottawa (the "City"), an EIS is required when development or site alteration is proposed in or adjacent to natural heritage features, as outlined in Section 4.8 of the Official Plan (City of Ottawa, 2021). The purposes of an EIS are to:

- Identify natural heritage features on or adjacent to the Site;
- Assess potential impacts of the proposed development to existing features; and
- Recommend mitigation measures to minimize or eliminate identified impacts.

This EIS is intended to support two development applications to be filed with the City of Ottawa supporting Mattamy's proposed redevelopment of two properties – located at 4497 A and 4497 B O'Keefe Court, Ottawa, Ontario (the "Site"; Figure 1) – as a new residential community. The development applications supported address a Zoning Bylaw Amendment (ZBA) and a Draft Plan of Subdivision (DPS). The EIS has not been formally scoped in consultation with the City. It is based primarily on the findings of field studies from a previous EIS (KAL, 2024) addressing an Official Plan Amendment (OPA) for the Site.

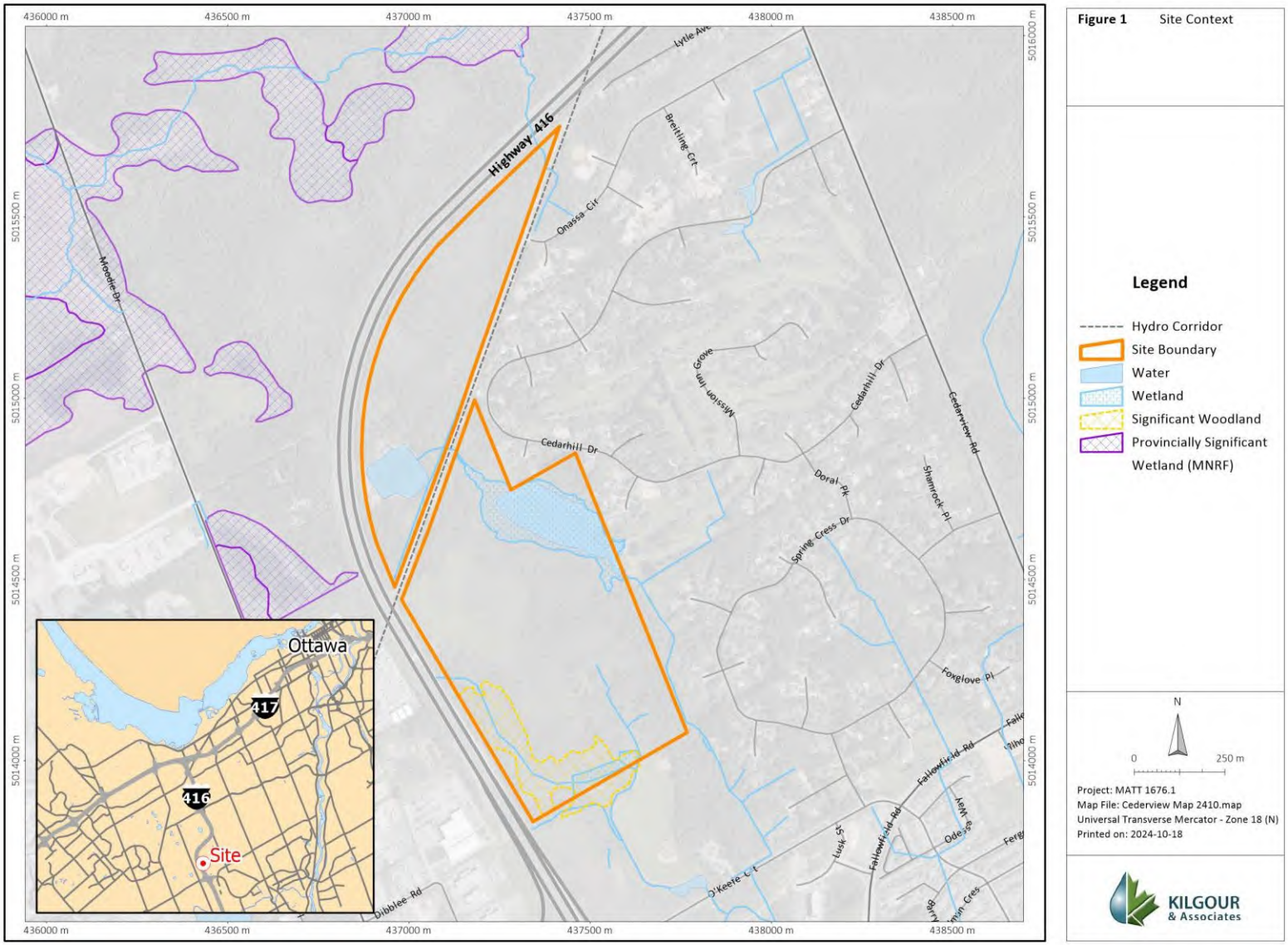

Figure 1 Site Context

2.0 ENVIRONMENTAL POLICY CONTEXT

Natural heritage policies and legislation relevant to this EIS are outlined below.

2.1 The Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) was issued under Section 3 of the *Planning Act* (Government of Ontario, 1990b). The current PPS came into effect May 1, 2020 (Government of Ontario, 2020). Natural features are afforded protections under Section 2.1 of the PPS. Protections may include maintenance, restoration, and improved function of diversity, connectivity, ecological function, and biodiversity of natural heritage systems. These protections restrict development and site alteration in significant natural areas (e.g., woodlands, wetlands, wildlife habitat) unless it can be demonstrated that there will be no negative effects on the features and ecological functions of those natural areas. Technical guidance for implementing the natural heritage policies of the PPS is found within the second edition of the *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement*, 2005 (NHRM; MNR, 2010). Importantly, while the 2020 PPS is the version in effect as of the date of this current report, it must be noted that the Province has already (i.e. as of April 6, 2024) released the proposed Provincial Planning Statement 2024 (MMAH, 2024), which is intended to simplify and integrate existing policies to achieve housing objectives while providing tools for municipalities to deliver on housing objectives, and that the public comment period for that version has concluded. With respect to its consideration of natural heritage in comparison to the 2020 version, the 2024 PPS revises the numbering of relevant policies but does not otherwise include any consequential changes to their wording or objectives. Thus, while the PPS 2024 was not in force as the primary planning document at the time of this EIS, and so the 2020 is referenced here, the assessments within the EIS under either version would be fully congruent.

2.2 City of Ottawa Official Plan

The City of Ottawa Official Plan (OP; City of Ottawa, 2021) was updated and recently approved by the Ministry of Municipal Affairs and Housing as part of a comprehensive review. Pursuant to subsections 17(36.5) and (38.1) of the *Planning Act*, the decision of the Minister of Municipal Affairs and Housing regarding an official plan adopted in accordance with section 26 of the *Planning Act* is final and not subject to appeal. Accordingly, the new OP, as approved with modifications by the Minister, came into effect on November 4, 2022. The OP provides a vision for the future growth of the city and a policy framework to guide the city's physical development. With respect to natural heritage considerations addressed under an EIS, the OP provides a framework through which species at risk and other wildlife (and their habitats), forested areas, wetlands and surface water features must be reviewed. Key portions of the OP to be considered include:

> **The Environmental Impact Study Guidelines** (City of Ottawa, 2023a) - which outlines study requirements of the EIS;
>
> **OP Schedule C11** – which identifies Natural Heritage Features and Natural Heritage System Core Areas and Linkages as an overlay;
>
> **OP Section 4.8.1** - under which the City recognizes the following natural heritage features, as defined in Ottawa's Environmental Impact Study Guidelines:

a) Significant wetlands;
b) Habitat for endangered and threatened species;
c) Significant woodlands;
d) Significant valleylands;
e) Significant wildlife habitat;
f) Areas of Natural and Scientific Interest;
g) Urban Natural Features;
h) Natural Environment Areas;
i) Natural linkage features and corridors;
j) Groundwater features;
k) Surface water features, including fish habitat; and
l) Landform features.

Significant Woodlands: Guidelines for Identification, Evaluation, and Impact Assessment (City of Ottawa, 2022b) - which identifies wooded areas within the urban boundary that are > 0.8 hectares (ha) and have been continuously forested for > 60 years as "Significant Woodland'';

OP Section 4.9.3 – which provides policies for development and site alteration near surface water features through the provision of minimum setbacks and directives to retain wetland areas and the requirement to complete headwater drainage feature assessments (HDFA) to provide management recommendations for headwater features; and

The Protocol for Wildlife Protection during Construction (City of Ottawa, 2022a) – which identifies best management practices to be employed through construction to reduce the direct impacts of development on wildlife.

2.3 *Species at Risk Act*, 2002

The federal *Species at Risk Act* (SARA; Government of Canada, 2002) is administered by Environment and Climate Change Canada (ECCC) and provides direction to protect and ensure the survival of wildlife species in Canada. The purpose of the SARA is to prevent populations of wildlife from becoming Extirpated, Endangered, or Threatened, provide recovery Endangered or Threatened species, and to manage other species to prevent them from becoming Endangered or Threatened.

All species listed on Schedule 1 of SARA are afforded protection on federal lands. Aquatic species and species of migratory birds protected by the *Migratory Birds Convention Act* (MBCA; (Government of Canada, 1994) and listed as Endangered, Threatened, or Extirpated under Schedule 1 of SARA are protected wherever they occur in Canada, regardless of land ownership. SARA protections do not typically apply for other species groups on non-federal properties. However, the Federal Minister of ECCC can impose SARA protections on private projects where habitat is deemed "…necessary for the survival or recovery of the species… " in the area of concern.

2.4 *Endangered Species Act*, 2007

The provincial *Endangered Species Act* (ESA; Government of Ontario, 2007) is administered by the Ministry of Environment, Conservation, and Parks (MECP) and provides protection for species at risk (SAR) and

their habitat. The ESA states that it is illegal to harm the habitat of species listed as Extirpated, Endangered, and Threatened. It is also illegal to kill, harm, harass, possess, transport, buy, or sell Extirpated, Endangered, and Threatened species, whether it is living or dead. Species listed as Endangered, Threatened, or Extirpated and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation, and migration) are automatically afforded legal protection under the ESA.

2.5 *Fisheries Act*, 1985

The federal *Fisheries Act* (Government of Canada, 1985) is administered by Fisheries and Oceans Canada (DFO) and provides protections to fish, fish habitat, and fisheries. Specifically, the *Fisheries Act* in its current version provides: 1) Protection for all fish and fish habitat; 2) Prohibition against the "harmful alteration, disruption or destruction of fish habitat"; and 3) Prohibition against causing "the death of fish by means other than fishing".

Projects with a scope that does not fall within DFO's defined standards and codes of practice require submission of a request for review to DFO.

2.6 *Migratory Birds Convention Act*, 1994

Nesting migratory birds are protected under the MBCA (Government of Canada, 1994). No work is permitted that would result in the destruction of active nests or the wounding or killing of bird species protected under the MBCA and/or associated regulations (e.g., SARA). The "incidental take" of migratory birds and the disturbance, destruction, or taking of the nest of a migratory bird is prohibited. "Incidental take" is the killing or harming of migratory birds due to actions that are not primarily focused on taking migratory birds (e.g., economic development) and no permits exist for the incidental take of migratory birds or their nest/eggs as a result of activities that are not focused on taking migratory birds. These prohibitions apply throughout the year. The Government of Canada has compiled nesting calendars that apply across Canada that can be used to greatly reduce the risk of harming/destroying active nests by ensuring works that may impact nests are performed outside of the nesting period.

2.7 *Fish and Wildlife Conservation Act*, 1997

The provincial *Fish and Wildlife Conservation Act* (FWCA; Government of Ontario, 1997) governs the hunting and trapping of a variety of wildlife including mammals, birds, reptiles, amphibians, and fish in Ontario, thereby facilitating the protection of wildlife and their habitat. The FWCA outlines the prohibition of hunting or trapping specially protected species and the requirement for provincially issued licenses for the hunting or trapping of "furbearing" or "game" animals. Examples of specifically protected animals include, for example, Southern Flying Squirrel (*Glaucomys volans*), Northern Harrier (*Circus cyaneus*), American Kestrel (*Falco sparverius*), Blue Jay (*Cyanocitta cristata*), Midland Painted Turtle (*Chrysemys picta marginata*), Northern Watersnake (*Nerodia sipedon*), and Gray Treefrog (*Hyla versicolor*). In particular, raptors that are not protected under the MBCA (including Peregrine Falcon) are protected under the FWCA.

2.8 *Conservation Authorities Act*, 1990

Conservation Authorities were created to address erosion, flooding, and drought concerns regionally by managing at the watershed level. Conservation Authorities were given the ability to regulate under Section 28 of the *Conservation Authorities Act* (Government of Ontario, 1990a). The Act obliges Conservation Authorities to implement Ontario Regulations 42/06 and 146/06 to 182/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under Section 28 of the *Conservation Authorities Act* for relevant works. This project falls under the jurisdiction of the Rideau Valley Conservation Authority (RVCA).

Bill 23, which was passed on November 28th, 2022, and received Royal Assent the same day, introduced a series of legislative and proposed regulatory changes affecting conservation authorities. It is now in effect. Among the changes under Bill 23, the definition of "watercourse" was updated from an identifiable depression to a defined channel having a bed, and banks or sides.

3.0 PROPERTY IDENTIFICATION

The Site (Figure 1) currently includes two parcels (4497 A and 4497 B O'Keefe Court), a hydro corridor, and an unpaved access road that diagonally bisects the site from north to south. Combined, these parcels encompass approximately 72 ha in the west end of Ottawa. The hydro corridor supports a cultural meadow; however, it is subject to occasional mowing (every ~3-5 years). Much of the Site is covered by forested area, with thickets, meadows, marsh and swamp wetlands, including one evaluated marsh wetland (currently listed within the City's geoOttawa system as Provincially Significant Wetland - "PSW"; herein referred to as the Marsh) and a decommissioned quarry that now functions as a pond. The Site is bordered by:

- An estate community and golf course to the east;
- Highway 416 to the west and north; and,
- Lytle Park, O'Keefe Court, an undeveloped naturalized site, and the Strandherd Drive interchange at Highway 416 to the south.

The review of the Site in this EIS assumes the development of a road connection between the south property boundary and O'Keefe Court along the eastern edge of the land parcel between Lytle Park and Highway 416, listed as 4497 O'Keefe Court (but with the "A" or "B" designation). The development of that road, and other future residential development on that parcel, however, are not directly reviewed as part of this EIS. The realignment of watercourses directly on the Site, necessitated by the assumption of the future road however, is considered within this EIS.

The Site has multiple zoning designations per zoning by-law 2008-250, as amended. The majority of the Site is zoned as Rural Residential (RR4). The purpose of the RR4 zone is to recognize lands intended for future residential development areas, limit the range of permitted uses to those which will not preclude future development options, and impose regulations which ensure a low scale and intensity of development to reflect the characteristics of existing land use (City of Ottawa, 2023b). The Marsh is zoned

as Environmental Protection (EP3), and a small collar around the wetland is zoned as Parks and Open Space (O1 and O1A). The hydro corridor is zoned as Hydro Corridor Subzone (O1P).

4.0 METHODOLOGY

4.1 Desktop and Background Data Review

4.1.1 Agency Oversight and Consultation

The Site is located within the jurisdictions of the City Ottawa and Rideau Valley Conservation Authority (RVCA). Nick Moore (KAL Biologist) engaged the City of Ottawa in a meeting to confirm the field studies required to support the EIS for an OPA on April 9, 2024 (Appendix B). The City's Environmental Planner identified during the pre-consultation that an EIS is required due to the direct presence of Significant Woodlands and the quarry pond feature on the Site, the potential for species at risk and/or their habitat to occur on the Site, the O'Keefe Drain adjacent to the east side of the Site, and the presence of the Marsh (which is still listed in City records as a PSW but has been re-evaluated as "not-significant" – see Section 5.8 below).

4.1.2 Site Overview

Aerial imagery from Google Earth and the City of Ottawa's geoOttawa system (City of Ottawa, 2024) was used to develop preliminary mapping of existing site features and landcover and to inform how the Site may be divided into vegetation communities.

Existing data on soils in the vicinity of the Site were obtained from the Ontario Ministry of Agriculture, Food and Rural Affairs' AgMaps (OMAFRA, 2023) and the Ontario Geotechnical Boreholes Data collected in 2001 (Ontario Ministry of Mines, 2012). These data were supplemented by soil cores taken in the field using a 120 cm soil augur at select locations within the Site.

4.1.3 Preliminary SAR Review

The review of existing information included a preliminary SAR screening for species listed under the federal SARA and provincial ESA. The screening functions to identify SAR having some potential to be in the broader vicinity of the Site. The screening was completed following the *Draft Client's Guide to Preliminary Screening for Species at Risk* ((MECP, 2019) (Appendix C). The MECP previously conducted reviews of Preliminary Screenings, but no longer offers this service. The Preliminary Screening considered data sources including:

- Species at Risk in Ontario (SARO; Ministry of Environment, Conservation, and Parks (MECP, 2024);
- Species at Risk Public Registry (Government of Canada, 2024);
- Natural Heritage Information Centre (NHIC; Ministry of Natural Resources, and Forestry (MNRF, 2024c);
- Land Information Ontario (MNRF, 2024b);
- Aquatic Species at Risk Map (DFO, 2023);

- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019);
- Ontario Breeding Birds Atlas (Birds Canada, Canadian Wildlife Service (Environment and Climate Change Canada), et al., 2009);
- Ontario Butterfly Atlas (Toronto Entomologists' Association, 2024);
- eBird (The Cornell Lab of Ornithology, 2024);
- iNaturalist (California Academy of Sciences and National Geographic Society, 2024);
- Bumble Bee Watch (Wildlife Preservation Canada et al., 2024);
- Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Ontario (Humphrey & Fotherby, 2019);
- Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario (Humphrey, 2017);
- Fish ON-Line (MNRF, 2024a);
- O'Keefe Drain Environmental and Stormwater Management Plan (CH2MHill, 2013).

4.2 Field Surveys

4.2.1 Site Work Summary

KAL undertook an extensive field program to document existing ecological conditions on the Site and to confirm the results of the background review. KAL biologists completed field studies throughout 2024. Table 1 provides a summary of all field visits. Specific details of each program are further described under each study type (e.g., breeding bird surveys) in the relevant sub-sections following through the remainder of Section 4.2. Specific survey stations are shown in Figure 2.

Table 1: Field Study Dates

Date	Purpose	Conditions	Personnel
Friday, April 05, 2024	Surface Water Feature Characterization	• 3°C • Cloudy, no precipitation • Light breeze	Nicholas Schulz and Kurtis Westbury
Monday, April 08, 2024	Turtle Basking Survey #1	• 16°C • Sunny, no precipitation • Light breeze	Nicholas Schulz
Tuesday, April 09, 2024	Frogs #1	• 18°C • Cloudy, no precipitation • Light breeze	Nick Moore and Rob Hallett
Tuesday, April 16, 2024	Turtle Basking Survey #2	• 11°C • Sunny, no precipitation • Light breeze	Nick Moore and Nicholas Schulz
Friday, April 26, 2024	Turtle Basking Survey #3	• 15°C • Sunny, no precipitation	Jenni Velichka and Nicholas Schulz

Date	Purpose	Conditions	Personnel
		• Light breeze	
Friday, May 3, 2024	Turtle Basking Survey #4	• 14°C • Sunny, no precipitation • Moderate breeze	Jenni Velichka and Maren Neilson
Monday, May 6, 2024	Turtle Basking Survey #5	• 20°C • Sunny, no precipitation • Light breeze	Kurtis Westbury and Maren Neilson
Thursday, May 23, 2024	Frog Survey #2 and Eastern Whip-poor-will #1	• 22°C • No cloud cover, no precipitation • Light breeze	Rob Hallett and Nick Moore
Friday, May 31, 2024	Breeding Bird #1	• 19°C • Sunny, no precipitation • No wind	Nick Moore
Tuesday, June 18, 2024	Breeding Bird #2; Install Bat Detectors	• 28°C • Partially cloudy, no precipitation • Light breeze	Nick Moore
Tuesday, June 18, 2024	Eastern Whip-poor-will #2	• 28°C • Partially cloudy, no precipitation • Light breeze	Rob Hallett and Derek Irwin
Wednesday, June 19, 2024	Frog Survey #3 and Eastern Whip-poor-will #3	• 29°C • Partially cloudy, no precipitation • Moderate breeze	Rob Hallett and Veronique Landriault
Friday, July 05, 2024	Breeding Bird #3; Bat detector take down	• 20°C • Cloudy, no precipitation • No wind	Nicholas Schulz and Matt Whall
Monday, July 08, 2024	Ecological Land Classification	• 25°C • Cloudy, no precipitation • Light breeze	Kesia Miyashita and Nicholas Schulz
Tuesday, July 09, 2024	Ecological Land Classification	• 26°C • Partially cloudy, no precipitation • Moderate breeze	Kesia Miyashita and Nicholas Schulz
Thursday, July 11, 2024	Ecological Land Classification	• 26°C • Partially cloudy, light rain • Moderate breeze	Kesia Miyashita and Jenni Velichka
Friday, July 12, 2024	Ecological Land Classification	• 26°C • Partially cloudy, no precipitation • Moderate breeze	Kesia Miyashita and Jenni Velichka
Tuesday, July 16, 2024	Wetland Evaluation	• 24°C	

Date	Purpose	Conditions	Personnel
		• Partially cloudy, no precipitation • Moderate breeze	Kesia Miyashita and Maren Neilson
Monday, July 22, 2024	Butternut Health Assessment, Black Ash Assessment	• 28°C • Partially cloudy, no precipitation • Light breeze	Kesia Miyashita and Veronique Landriault
Thursday, July 25, 2024	Fish Community Assessment	• 29°C • Partially cloudy, no precipitation • Moderate breeze	Nick Moore and Veronique Landriault
Friday, July 26, 2024	Fish Community Assessment	• 28°C • Sunny, no precipitation • Light breeze	Nick Moore and Rob Hallett
Friday, August 02, 2024	Wetland Evaluation	• 31°C • Sunny, no precipitation • Light breeze	Maren Nielsen and Veronique Landriault

4.2.2 Surface Water Characterization

Aerial imagery and public databases were reviewed to determine wetland areas, watercourses, and waterbodies on and adjacent to the Site (MNRF, 2024c; Rideau Valley Conservation Authority, 2023). Unevaluated wetlands on the Site were delineated and characterized in the field as part of the Ecological Land Classification (ELC) exercise (see Section 4.2.3 below). The Marsh (Figure 1) is a large marsh wetland on the east side of the Site. It had previously been evaluated under the Ontario Wetland Classification System as part of the Stony Swamp Wetland Complex, the other parts of which are all located >400 m to the west on the other side of Highway 416. As a wetland complex, each wetland subunit is currently listed by the City as Provincially Significant. However, following updates to the Ontario Wetland Evaluation System (OWES) in 2022, KAL undertook a re-evaluation of the wetland as part of the current scope of work. The current OWES protocol removes “complexing”. As such, the Marsh was evaluated following OWES as a distinct wetland feature (i.e., not including other wetland (sub)units to the west). The OWES field studies were completed mostly on July 16, 2024, with additional aquatic plant surveys completed on August 2, 2024. OWES surveys were completed by KAL Biologist Maren Neilsen, who is OWES certified. The OWES report (Appendix D) has been duly submitted to the MNRF (Appendix E), reviewed by the city, and is no longer classified as a PSW (Appendix F).

Watercourses on Site were assessed through a Headwater Drainage Feature Assessment (HDFA) following the methods per the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority & Credit Valley Conservation, 2013). A HDFA was completed for this Site by KAL in 2017 and identified five Headwater Drainage Features (HDFs) on Site. As an update to that HDFA, a site visit was completed in the spring of 2024 to (re)characterize the watercourse that flows into the Marsh to better comment on the quality, quantity, and connectivity to the wetland. The full, updated HDFA is provided in Appendix G.

Aquatic studies also included the full characterization of the fish community within the Quarry Pond (Figure 2). Fish community sampling was conducted over a two-day period on July 25 and July 26, 2024.

Fishing effort covered the entirety of the quarry, using three different methods of capture (described below) to ensure that the complete fish community was documented through this assessment. Sampling effort was recorded to allow for estimation of catch per unit effort (CPUE). All fish were identified to species and enumerated to characterize the fish community. Captured fish were held in aerated tanks prior to being processed. Once processed, fish were released back to their captured sampling locations. For each sampling method and set employed during the program, sampling location, date and general observations were recorded. Supporting environmental variables documented included a description of the habitat including vegetation cover (%) and species composition, water depth, location (i.e., latitude and longitude), and any other pertinent observations. During each sampling event, as well as when gear was retrieved, (i.e., minnow traps), a calibrated handheld electronic water quality meter was used to measure water temperature, dissolved oxygen, specific conductivity, and pH.

4.2.2.1 Minnow Traps

Gee style minnow traps were baited with dry cat food and deployed as overnight bottom-sets individually. One night of minnow trapping was completed by deploying five minnow traps throughout the Quary Pond.

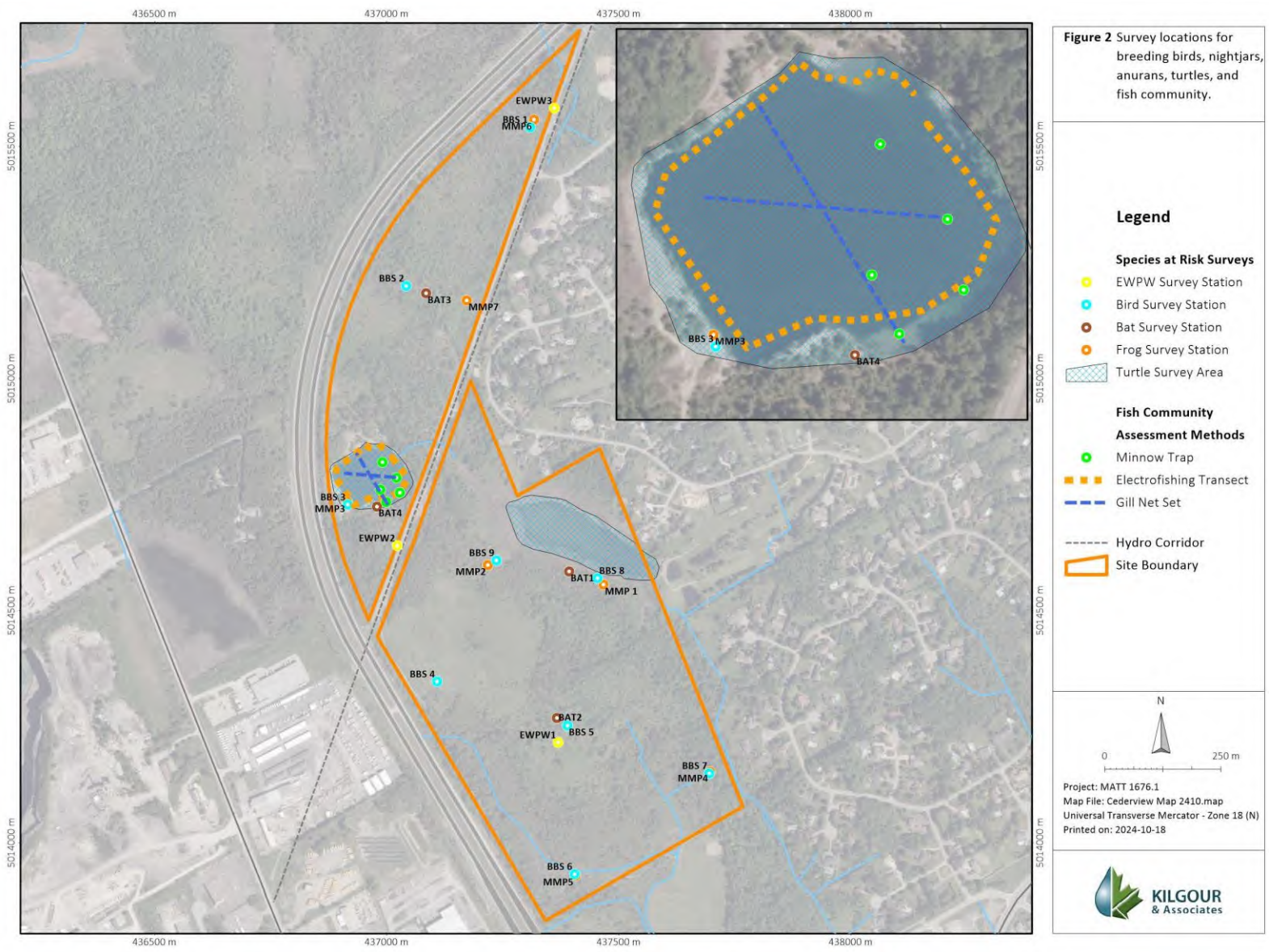

Figure 2 Survey locations for breeding birds, nightjars, anurans, turtles, and fish community

4.2.2.2 Boat Electrofishing

Boat electrofishing was conducted in the Quarry Pond using a Midwest Lake Electrofishing Systems (MLES) boat electrofishing system mounted on a 14' inflatable boat in water depths ranging from 1 to 3 m (maximum effective sampling depth for boat electrofisher).

4.2.2.3 Gill Nets

Large mesh index nets were set across the Quarry Pond in variable depths for approximately 4-hour sets. Nets were deployed upon arrival and retrieved before leaving the site each day.

4.2.3 Ecological Land Classification

Vegetation communities on the Site were identified and mapped in the field on July 8, 9, 11, and 12, 2024, using standard Ecological Land Classification (ELC) methods for Ontario (Lee et al., 1998). This method provides a consistent approach to identify, describe, and map vegetation communities or physiographic features on the landscape based on dominant plant species and soil composition. This method results in a standardized description of each vegetation community to capture the natural diversity and variability of communities within a site and to provide insight into available habitat and the type of species that may be present. More specifically, the classifications from ELC provide a basis for determining whether potential habitat for a given SAR or other ecological value may be present.

A desktop review of available aerial imagery and preliminary field visits informed how the Site generally divides into vegetation communities based on variation in land cover, topography, and vegetation structure. The dominant plant species were recorded within each proposed ecosite in the field to further divide ecosites into vegetation types (the finest resolution in ELC), where possible (Appendix H). Soil samples were taken using a 120 centimeter (cm) long soil auger to characterize community substrates. Representative photos of each ELC unit on the Site were taken and are included with the community descriptions in this report.

Smaller wetland pockets in the southwest corner of the Site were identified and described as part of the ELC. A re-evaluation of the Marsh on Site was conducted on July 16 and August 2, 2024, following the Ontario Wetland Evaluation System protocol. The Marsh is characterized in Section 5.2.4 and described in greater detail in Section 5.8.

4.2.4 Butternut and Black Ash Health Assessment

A formal Black Ash (*Fraxinus nigra*) Assessment (BAA) and Butternut (*Juglans cinerea*) Assessment was conducted by KAL Biologists Kesia Miyashita and Veronique Landriault on July 22, 2024, to map and assess Black Ash and Butternut on the Site (Appendix I). While general tree surveys can be completed at any time of year, Butternut Health Assessments (BHAs) must be completed between May 15 and August 31, and Black Ash Assessments must be completed between June 1 and October 1

As part of the survey process, Butternut and Black Ash trees (both Endangered under the ESA) were identified and assessed as required for the purpose of compliance with the ESA. The BHA inventoried all Butternut trees, regardless of size, while the BAA inventoried all trees with a diameter at breast height (DBH) greater than 8 cm and height greater than 1.37 m. A count of Black Ash individuals with a height less than 1.37 m or a DBH less than 8 cm was recorded.

The BHA and BAA provide an ultimate health determination for each tree assessed. ESA clause 9 (1) (a), prohibits the killing, harm, harassment, possession, transportation, trade and/or removal of a living, healthy Black Ash or Butternut tree.

4.2.5 Breeding Birds

Morning breeding bird surveys were performed using point counts following the Ontario Breeding Bird Atlas Guide for Participants (Ontario Breeding Bird Atlas, 2001). Breeding bird surveys are to be completed from survey stations that, combined, provide suitable viewing of all habitats on a site on calm weather days with light wind (less than 3 on the Beaufort Scale[1]) and no precipitation. As per the Ontario Breeding Bird Atlas, three rounds of surveys must take place between sunrise and five hours after sunrise between May 24 and July 10. Surveys took place during the mornings of May 31, June 18, and July 5, 2024.

A total of nine breeding bird survey stations were established in representative habitats on the Site (Figure 2). All incidental observations were recorded while moving between survey points as well as during other visits to the Site. Birds were identified by song and/or direct visual observation (Appendix J).

Bird species were classed as regionally rare based on an analysis of data from the Atlas of Breeding Birds of Ontario (2009) based on Hill's Site Regions, now Ecoregions. The federal and provincial significance of bird species were classed based on species' listings under Schedule 1 of SARA and the ESA, and species tracked by NHIC (MNRF, 2023c; for non-SAR species considered provincially significant).

4.2.6 Nightjars

Night-time bird surveys to confirm the presence/absence of at-risk nightjars, specifically Eastern Whip-poor-will (*Antrostomus vociferus*), and their potential breeding territories were conducted following the Survey Protocol for Eastern Whip-poor-will in Ontario (MNRF, 2014; Ontario Breeding Bird Atlas, 2021). This protocol calls for three separate night-time surveys between May 18 and June 30 that are timed based on moon conditions. Eastern Whip-poor-will usually forage in the semi-darkness of early morning and dusk, but on nights when the moon is more than half full, they are likely to forage all night long under the brighter conditions. Their broods are timed such that the young hatch approximately 10 days before the full moon when the parents have more time (and moonlight) to catch food for them (Kaufman, 2019; The Cornell Lab of Ornithology, 2023). As such, this species is more detectable during a full moon period.

As per the protocol, surveys were completed within a week of the full moon while the moon was visible above the horizon (greater than 50% illuminated) and started at least 30 minutes after sunset and ended while the moon was still visible. Surveys were conducted under field conditions with no precipitation, little or no wind, clear skies, temperature of 10°C or above, and good visibility (low cloud cover). The timing of Eastern Whip-poor-will surveys is also optimal for observing Common Nighthawk (*Chordeiles minor*), as that species is generally best heard calling in the late evening. MNRF (2014) recommends a minimum of three surveys to be completed during the breeding season, with two ideally occurring in late May or the first week of June during a week preceding or just after a full moon, and a third survey in the next available

[1] The Beaufort Wind Force Scale is an empirical measure that relates wind speed to observed conditions at sea or land. The scale is as follows: **0**: calm, smoke rises vertically, wind speed <1km/hr; **1**: light air, smoke drift indicates wind direction, leaves and wind vanes are stationary, wind speed = 1.1-5.5km/hr; **2**: light breeze, wind felt on exposed skin, leaves rustle, wind vanes begin to move, wind speed = 5.6-11km/hr, **3**: gentle breeze, leaves and small twigs constantly moving, light flags extended, wind speed = 12-19km/hr.

full moon period (middle/end of June). Nightjar surveys took place on the evenings of May 23, June 18, and June 19, 2024.

Survey points are to be established at approximately 500 m intervals (the aim is to have one survey point for every 30 ha of typical habitat). Three survey stations were used for nightjar surveys (Figure 2), and these stations covered habitats that were considered most likely to support nightjars (i.e., they were close to edge habitats along wooded areas that would provide feeding opportunity near potential nesting areas). As per MNRF (2014), each point count station had a fixed radius of 300 m so that the absolute number of birds could be counted within a reasonable hearing range (note that calling Eastern Whip-poor-will can be heard up to 1 km away under ideal conditions). Surveyors were careful not to walk directly through suitable nightjar habitat in between survey stations to avoid stepping on any potential Eastern Whip-poor-will eggs, which are cryptically coloured and laid on the forest floor.

4.2.7 Anurans

Anuran (frog and toad) surveys were performed following the Marsh Monitoring Program (Birds Canada, Environmental Canada, et al., 2009). This protocol calls for multiple survey stations across a site to capture spatial and habitat variability. Accordingly, seven anuran survey stations were established across the Site (Figure 2). The Marsh Monitoring Program advises that each station be visited three times at night, no less than 15 days apart, during the spring and early summer. Following this protocol, the timing of the three anuran surveys is based on nighttime air temperature:

- Early breeders (Wood Frog, Western Chorus Frog, Spring Peeper): above 5°C;
- Mid-season breeders (Mink Frog, American Toad, Gray Treefrog): above 10°C; and
- Late breeders (Green Frog, Bullfrog): above 17°C.

Anuran surveys are to begin one half hour after sunset and end before midnight on evenings with appropriate temperatures and light winds (≤3 on the Beaufort Scale). Anuran surveys took place on the evenings of April 9, May 23, and June 19, 2024. Additional observations of amphibians were made throughout the spring and summer during other field visits.

4.2.8 Turtles

Visual encounter surveys were completed following MNRF's *Survey Protocol for Blanding's Turtle in Ontario* (MNRF, 2015a), with a particular focus on the Marsh and Quarry Pond (Figure 2). During turtle surveys, surveyors stopped and scanned areas of interest with binoculars from a distance of approximately 50 m to prevent any turtles from being startled before being observed. Areas of potential overwintering and nesting were also investigated to assess suitability (Figure 2). The protocol calls for five rounds of visual encounter surveys starting immediately after ice-off (approximately mid-April) until June 15, with surveys spanning a minimum of three weeks. Although this protocol is intended primarily for Blanding's Turtle (*Emydoidea blandingii*), most turtle species generally occurring in the area would be detectable under this protocol.

This protocol requires that potential habitat for turtles be visited under the following conditions:

- After ice off, and no later than June 15;

- If air temperature is between 5 and 15˚C, surveys are to take place during sunny periods, between 10:00am and 5:00pm, when basking sites are receiving full sunlight;

- If air temperature is between 15 and 25˚C, surveys are to take place during sunny periods between 8:00am and 12:00pm, when basking sites are receiving full sunlight or during overcast periods from 9:00am until 4:00pm if air temperature is higher than water temperature; and

- Five surveys must be spread over a period of at least three weeks, at sites with no previous documentation of the species.

KAL conducted formal turtle surveys on April 8, 16, 26, May 3, and May 6, 2024. In addition to formal surveys, all incidental turtle observations were documented throughout the field season.

4.2.9 Bats and Other Mammals

Bat monitoring was completed following acoustic surveys under the MNRF's Survey Protocol for Species at Risk Bats within Treed Habitats (2017). This is currently the recommended protocol for confirming the presence/absence of Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-coloured Bat (*Perimyotis subflavus*), where it is determined that potentially suitable habitat for the establishment of maternity roosts is present. Wooded areas on the Site were deemed potentially suitable habitat for the establishment of maternity roosts during KAL's preliminary desktop review and initial field visits. Trees with characteristics suitable for bat roosting were observed in the area.

All species of bats in a given area are detectable under this protocol if ultrasonic acoustic monitors are used and the recodings can be analyzed from sonogram displays to identify bat calls to species level. Under the protocol, acoustic monitors are to be installed for a minimum of 10 nights between June 1 and June 30, with recordings commencing after dusk and continuing for five hours. KAL installed four acoustic monitors on the Site (Figure 2): one at the northern portion of the site, one on the south side of the Quarry Pond, one on the south side of the Marsh and one in the southern forested area. The acoustic monitors were placed in these locations to capture the best potential bat habitat on the Site (potential roosting habitat in wooded areas and potential foraging habitat over adjacent open areas) and to increase the likelihood of detecting bats based on their echolocating behaviour. Bats use echolocation more frequently in cluttered environments (Falk et al., 2014), so installing monitors along the edges of wooded areas rather than in the middle of open foraging areas likely increases bat detectability. The monitors were placed just outside of the cluttered environment (forested area) as the distinguishability of calls among species diminishes within such locations (National Park Service, 2020). All four monitors were installed on June 18, 2024, and removed on July 5, 2024 (13 nights of data collection).

Incidental observations of other mammals present on-Site were collected during all field visits. Mammal observations were limited to sightings of scat, tracks, and in some cases, direct observations.

5.0 RESULTS

5.1 Landforms, Soils, and Geology

The topography of the broader area is generally flat, with thin mineral soils overlaying bedrock. The majority of the Site is indicated in regional soils maps as Nepean, with undifferentiated drift material overlaying sandstone or quartzite bedrock (Schut & Wilson, 1987). The site also contains Grenville soils, characterized by moderately coarse to medium textured, stony, glacial till; and, Farmington, with moderately coarse textured thin veneer (10-50cm) of stony undifferentiated drift material overlying limestone and dolomite bedrock. Based on our assessment of soils associated with the ELC survey, soil cores taken on site were found to be generally consistent with adjacent mapped soils.

5.2 Surface Water Features and Fish Habitat

The majority of the Site is located within the Jock River-Barrhaven Watershed with a small finger of the northeastern corner of the Site located within the Graham Creek Watershed (RVCA, 2024). The Site contains headwater tributaries to the O'Keefe Drain, the decommissioned Quarry Pond, small pockets of unevaluated wetland in the southwest corner of the Site, and the Marsh.

5.2.1 Headwater Drainage Feature Assessment

The HDFA completed by KAL in 2017 identified 14 HDFs/ tributaries located on or adjacent to the Site (Figure 3; Appendix G). Five of the HDFs are located on Site, with four that drain into O'Keefe Drain (Reach 1, 8, 9, 12), and the fifth HDF (Reach 13) drains into the roadside swale along Highway 416. Of the 14 HDFs addressed within the 2017 HDFA, seven are characterized below and discussed further in this EIS due to their potential to be impacted. The 2024 field survey efforts were focused on Reach 12, to better comment on its connection between the Quarry Pond and the evaluated marsh wetland on Site.

5.2.1.1 Headwater Drainage Features Associated with the Project

Reach 1

Reach 1 is a 930 m perennial drainage feature that is the main headwater to the O'Keefe Drain (Figure 3). It flows south-east beyond the eastern border of the property, conveying flow from the wetland to the roadside ditch along O'Keefe Court. Outflow from the feature jogs southwest along the O'Keefe Court roadside ditch to the main line of the O'Keefe Drain.

The feature has forest on the west side and a mixture of forest and lawn, with a very small amount of meadow downstream, on the east side. Instream vegetation is limited to the section adjacent to the meadow and consists of grasses. Both banks are dominated by trees.

The substrate in Reach 1 consists of clay and silt, with some gravel, cobble, and boulders. Submergent vegetation is not present, except for the section of the reach adjacent to the meadow where it is plentiful. Woody debris is common in this reach. This reach was characterized by surface flow in April, May, and July, 2017 (KAL, 2017). A total of twelve fish – nine Banded Killifish and three Creek Chub (*Semotilus atromaculatus*) – were observed in this reach. No frogs or turtles were observed specifically in this reach,

yet American Toads, Gray Treefrogs, Green Frogs, and Spring Peepers were heard calling from, and Painted Turtles and Snapping Turtles were observed in, the wetland to the north.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of “Protection” for this reach. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

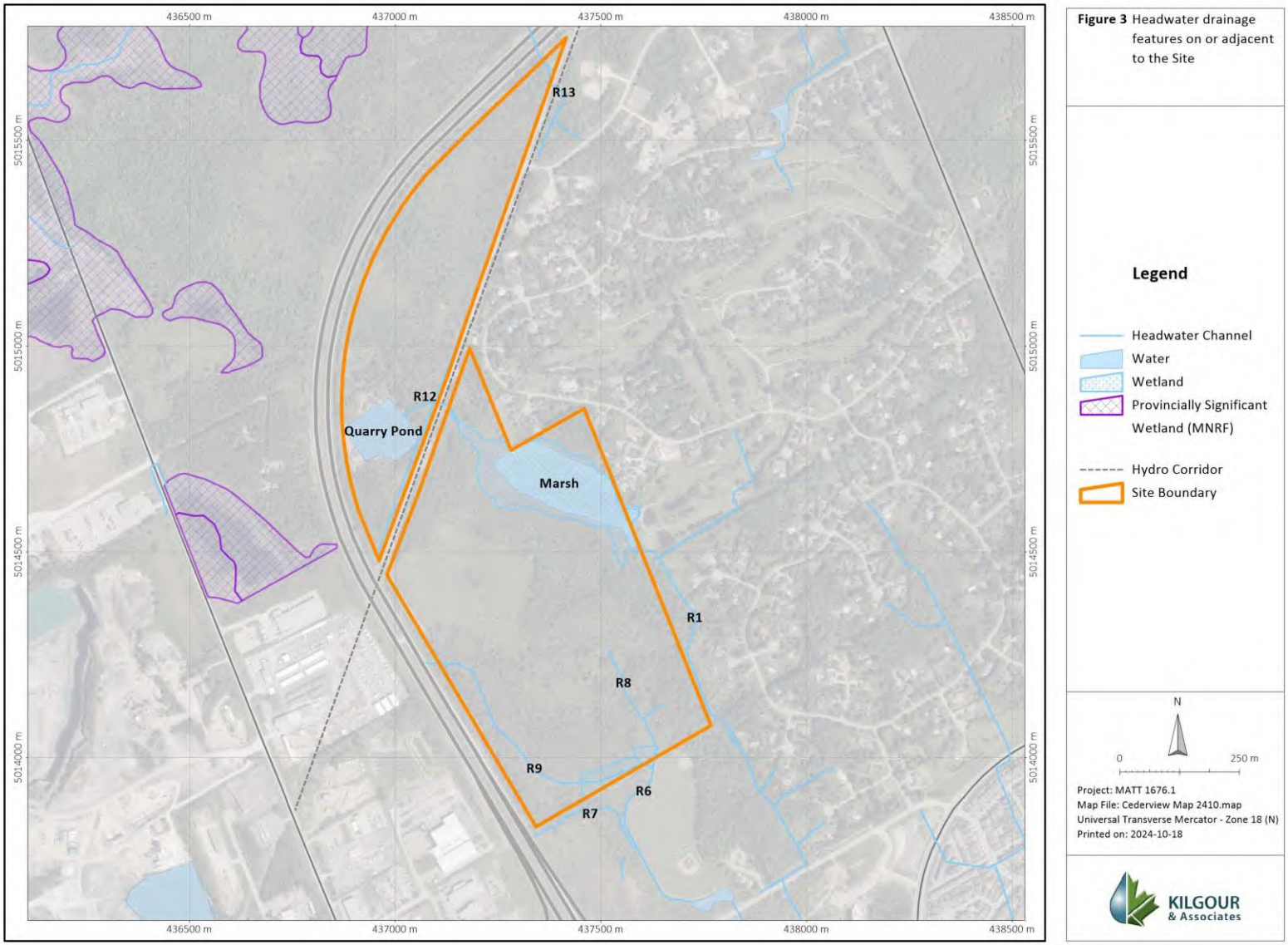

Figure 3 Headwater drainage features on or adjacent to the Site

Reach 8

Reach 8 is a 330 m linear channel running generally south through the woodland to the south of the property, turning west to flow along the northern border of Lytle Park before turning south again to flow along the Park's western border until its confluence with Reach 9 to form Reach 6 (Figure 3). Historical air photos from 1965 show most of this feature as a former agricultural drainage ditch between farm fields. Both sides, however, are now entirely forested. Instream vegetation is dense at the south end, consisting of grasses and sedges, but is absent through most of the feature. Both banks are covered with a mixture of grasses, shrubs, and trees, with the southern portion of the east bank being dominated by grasses.

The HDFA completed by KAL in 2017 observed significant flows in April with broad adjacent flooded areas, especially downstream. In May and July, the channel was still wet though flow was negligible. The majority of spring flow in the feature is runoff from the surrounding forest. The top end of the reach however, begins abruptly and is fed by a small ground water input there sufficient to maintain some water within the feature in the early summer. A second small groundwater input adds more groundwater 200 m downstream from the top end of the feature.

The substrate consists of a mixture of clay and silt, and woody debris was highly abundant in the upstream portion, but less so downstream. Submergent vegetation was scarce. Twenty-eight fish were observed in this reach, consisting of 25 Banded Killifish, and one each of Brook Stickleback, Central Mudminnow, and Northern Redbelly Dace. No frogs or turtles were observed in this reach.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of "Conservation" for this reach. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

Reach 9

Reach 9 originates on the southwestern corner of the Site and conveys surface flows south of the Site through the mapped Significant Woodland (Figure 3). Tributary A begins at a very small culvert under Highway 416. It is a 715 m long mix of defined channels, swales and flooded areas running generally southwest through the western side of the woodland to the south of the property, turning east to flow along the northern border of Lytle Park to meet with Tributary C. Both the east and west banks run along forest. Instream vegetation is infrequent, consisting of grasses and sedges when present. Both banks are covered with a mixture of grasses, shrubs, and trees.

The substrate consisted of a mixture of clay and silt. Woody debris was highly abundant. Submergent vegetation was not present. Reach 9 had some surface flow during the April 2017 survey period, but the majority of the reach was dry during the fish survey in May; only a small, pooled area at the upstream section remained. Pooled areas in July had increased following substantial rains but were still disconnected and much of the reach was still dry. Accordingly, no fish, frogs, or turtles were observed along the reach.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of "Protection" for this reach. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

Reach 12

Reach 12 is a 150 m channel/swale located in the north-western portion of the property that conveys flow from the Quarry Pond to the wetland through a culvert under the hydro corridor and ultimately into Reach 1 to the east of the property (Figure 3). The reach runs along forest on both banks upstream, while further downstream it runs along a mixture of adjacent scrubland with forested areas beyond. Instream vegetation is not present upstream, while downstream the instream vegetation is abundant and consists of Broadleaf Cattail and sedges. Both banks are covered with trees with some grasses upstream and scrubland vegetation downstream.

The substrate consisted of a mixture of clay and silt. Woody debris was minimal in the upstream section and not present downstream. Submergent vegetation was minimal. Reach 12 was shallow and had obvious flow during the April 2017 survey period. In May and July, the reach was lower, and the flow was less obvious. The presence of a perched culvert (~ 0.5 m perched height) under the walking trail creates a barrier to fish movement upstream. Downstream of this culvert, ten fish were observed; four of each Central Mudminnow (*Umbra limi*) and Banded Killifish (*Fundulus diaphanous*), and one of each Brook Stickleback (*Culaea inconstans*) and Northern Redbelly Dace (*Chrosomus eos*). No frogs or turtles were observed specifically in this reach, yet many frogs and turtles were observed just downstream. American Toad (*Anaxyrus americanus*), Gray Treefrog (*Hyla versicolor*), Green Frog (*Rana clamitans*), and Spring Peeper (*Pseudacris crucifer*) were heard in the adjacent downstream forest and the wetland to the south in both the 2017 and 2024 nighttime anuran surveys. Painted Turtles (*Chrysemys picta*) and Snapping Turtles (*Chelydra serpentina*) were observed in the wetland area downstream in both 2017 and 2024 daytime basking surveys.

The field visit from April 5, 2024 assessed the quantity and quality of connectivity between the Quarry Pond and the evaluated marsh wetland on Site. The culvert under the hydro corridor access road was perched and appeared to be a barrier to fish migration, similar to the 2017 findings. Minimal surface flow was observed during this Site visit on July 26, 2024. The tributary was inundated with dense Broadleaf Cattail (*Typha latifolia*) emergent vegetation during the Site visit.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of “Protection” for this reach. The management direction of Protection for this feature is a result of the permanent connection this feature provides from the Quarry Pond to the Marsh. Beyond the hydrological function of this feature, the portion of this HDF upstream of the perched culvert has no ecological function (i.e., no fish captured or species observed within the reach), and as such the portion of the reach upstream of the culvert does not need to be protected, but the hydrological function between the Quarry Pond and Marsh must be maintained. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

Reach 13

Reach 13 is a 294 m channel flowing north-east located in the north-eastern portion of the property (Figure 3).

The reach conveys surface water runoff from upland forest there northward under Highway 417 via a culvert. The reach runs along scrub forest/thicket on the east bank and the cultural meadow associated

with the walking path on the west bank. Instream vegetation upstream is not present, while downstream it consists of grasses. Both banks upstream are bare rock with a minimal amount of moss and lichen. Further downstream, both banks are covered in grasses and some shrubs.

The substrate consisted of bedrock upstream transferring to silt downstream. Woody debris and submergent vegetation were minimal. Tributary D was narrow and shallow with obvious flow in April. In May, the reach was nearly dry and was too low to fish. In July it was dry. No fish, frogs, or turtles were observed specifically in this reach, yet a few frogs, American Toads, Gray Treefrogs, and Spring Peepers, were heard calling from the forest to the north.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of "Conservation" for this reach. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

5.2.1.2 Headwater Drainage Features South of the Site

Reach 6

Reach 6 extends 431 m from the confluence of Reaches 8 and 9, southwards into the pond to the south of Lytle Park, along O'Keefe Court (Figure 3). The feature picks up additional inputs from Reach 7. The feature was wet during all three site visits in 2017, though there was no detectable flow in May and July 2017. The feature has been observed to be dry by June in 2024. The east bank runs along lawn with the occasional shrub downstream. The west bank runs along forest. This reach is inundated with instream vegetation, consisting of grasses and sedges. The east bank is covered with lawn (soccer and baseball fields) with the occasional shrub downstream. The west bank is covered by grass and trees.

The substrate consists of a mixture of clay and silt, and woody debris was not present. Submergent vegetation was not present. No frogs or turtles were observed in this reach; however, a Painted Turtle was observed basking in the downstream pond.

Temperatures within this reach were generally ~1°C warmer than in Reaches 8 and 9 (as measured in May and July). The pond however, at the downstream end is almost completely unshaded, resulting in significant solar warming there. In July, the outflow of the pond was 4°C warmer than that of Reach 6 (i.e. 18°C in; 22°C out). This warmed outflow enters the O'Keefe Drain 150 m south of O'Keefe Court.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of "Maintain Recharge" for this reach. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

Reach 7

The 325 m Reach 7 is a 318 m constructed channelized feature that originates in a Cultural Meadow community directly adjacent to Highway 416 (Figure 3). The original water source for the feature had been a headwall outlet providing drainage outflows from the adjacent highway corridor. That outlet structure, however, was sealed in 2015. It is currently sourced only by springtime overland flow.

The HDF conveys spring melt through a young deciduous forest and connects to a southeastern flowing drain that runs along the western boundary of Lytle Park. Reach 7 was observed to have minimal flow during spring freshet. The upstream portion of Reach 7 contains narrow-leaved emergent vegetation while the downstream forested section lacks in-stream vegetation. Within the upstream section, Reach 7 has a well-defined channel with a mean bankfull width of approximately 1.23 m over silty organic substrate within the upstream portion, and cobble substrate within the downstream portion. A perched culvert is located centrally within the upstream portion of Reach 7.

The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of "Maintain Recharge" for this reach. This feature provides ephemeral flow and water storage functions during and after spring freshet. This feature contains no fish habitat, and no amphibians were heard calling during MMP surveys. There is no requirement to retain the feature per se, but overall water balance for the area must be maintained by providing mitigation measures to infiltrate clean stormwater. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below.

5.2.2 The Quarry Pond

The Quarry Pond is a 16,425 m^2 hydrologic feature that gathers snowmelt water during the spring freshet and precipitation throughout the year. The quarry itself was decommissioned sometime between 1965 and 1976 and has infilled with groundwater, is conveyed down Reach 12 to the Marsh (Figure 3). It is most hydrologically active during the spring freshet, receiving freshwater inputs from precipitation and groundwater after the snowmelt period. As the snowmelt subsides and the water levels in the Quarry Pond drop, it disconnects from reach 12, becoming hydrologically isolated from the wetland. The Quarry Pond is occasionally used for irrigation of the Cedarview Golf Course under a Permit to Take Water (PTTW).

The water depth within the Quarry Pond varies between 7 m and 12 m, with the deepest point of 12 m located in the northern corner. The Quarry Pond spans 171 m from east to west and 113 m from north to south.

5.2.2.1 Fish Community Assessment

A total of 53 fish belonging to three species, Largemouth Bass (*Micropterus nigricans*), Pumpkinseed (*Lepomis gibbosus*), and Rock Bass (*Ambloplites rupestris),* were captured during the fish assessment (Table 2). The most common species was the Largemouth Bass (N=23), followed by Pumpkinseed (N=24), and Rock Bass (N=6). Of the methods employed, boat electrofishing was the most effective (CPUE= 0.61 fish/min), followed by overnight minnow traps (CPUE = 0.005 fish/min), and short set (4hrs) gill nets, which did not capture any fish. Supporting environmental variables were documented for each sampling day (Table 3). The water quality appears to be normal, with slightly high conductivity measurements captured.

Table 2 Summary of species documented during the summer Fish Community Assessment, 2024

Date	Fishing Method	Species		
		Largemouth Bass	Pumpkinseed	Rock Bass
2024-07-25	Electrofishing	X	X	X
	Gill Net			
2024-07-26	Minnow Trap	X	X	X
	Electrofishing	X	X	X
	Gill Net			

Table 3 Water quality documented during summer Fish Community Assessment, 2024

Date	Temperature (°C)	Dissolved Oxygen (mg/L)	pH	Conductivity (µS/cm)
2024-07-25	24	12.1	8.26	1.07
2024-07-26	23.66	6.76	8.23	1220

5.2.3 The Marsh

The Marsh historically included within the Stony Swamp Wetland Complex PSW. The 2024 field studies following the current OWES protocol reevaluated the feature separately from the complex. The OWES score for the features led to a determination of non-significance for the Marsh (Appendix D). The City of Ottawa has reviewed the re-evaluation of the wetland and confirmed the OWES report as having been correctly completed (Appendix F) and has now formally removed the PSW status (City of Ottawa, 2024).

The Marsh is situated along the east edge of the Site, south of the hydro line and access road (Figure 3). It is characterized by a central open water marsh, surrounded by shallow marsh and swamp zones. Surface water input is conveyed from the Quarry Pond through Reach 12 on the northwest corner through the marsh and ultimately into Reach 1. Dominant vegetation within the open water portion comprises Common Duckweed (*Lemna minor*), Horned Pondweed (*Zannichellia palustris*), Fennel-leaved Pondweed (*Stuckenia pectinata*), and Hornwort *(Ceratophyllum demersum*). At the time of survey, the water was approximately 50 to 75 cm deep. The shallow marsh component is characterized by Common Cattail and Narrow-leaved Cattail (*Typha angustifolia*). The swamp component is dominated by deciduous shrubs, including Swamp Willow (*Salix myrtilloides*), Pussy Willow (*Salix discolor*), and Common Buckthorn, with Sensitive Fern (*Onoclea sensibilis*) and Spotted Joe-pye Weed (*Eutrochium maculatum*). The swamp transitions to adjacent moist cedar forest (FOCM4-1).

Figure 4 Central, open water portion of the evaluated wetland, surrounded by a shallow marsh community of cattails (photo taken August 2, 2024)

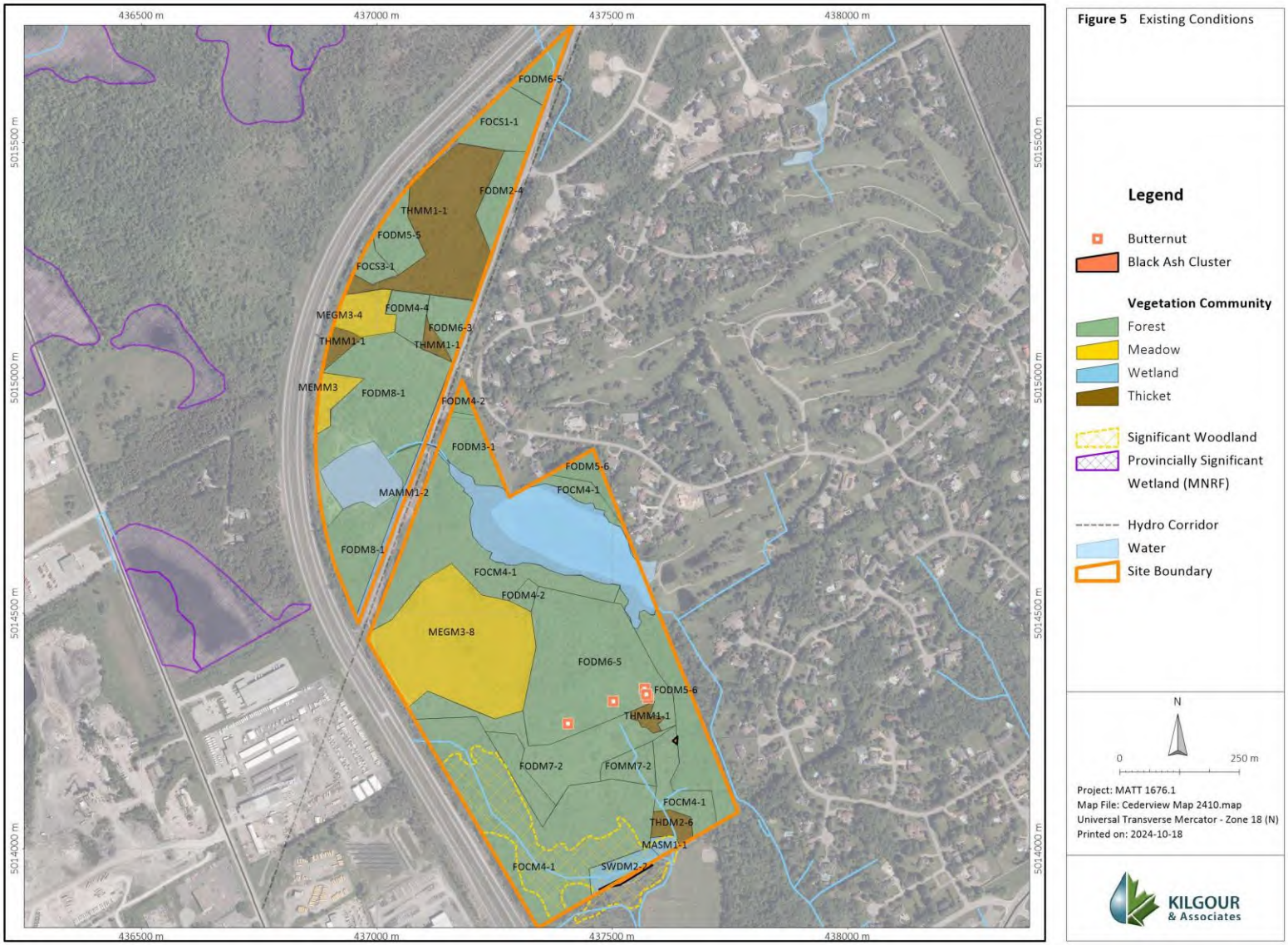

Figure 5 Existing Conditions

5.2.4 Other Wetland Communities

Three relatively small, unevaluated wetland features on Site are described in Section 5.3.1.2. The features described below have no standing water to support fish and their vegetation communities are described under the Ecological Land Classification Section.

5.3 Vegetation

5.3.1 Ecological Land Classification

A total of 23 distinct landcovers or ELC units, comprising 19 terrestrial units and 3 wetland units, were delineated on the Site (Figure 5). Much of the Site is characterized as forest, with a mosaic of both coniferous-dominated and deciduous-dominated forest stands. Deciduous and mixed thickets and meadows also occurred on the Site. Wetland communities included a deciduous treed swamp and marshes.

Dominant species in each community are included in the descriptions below; additional species detected are provided in Appendix H.

5.3.1.1 Terrestrial Communities

5.3.1.1.1 Fresh - Moist White Cedar Coniferous Forest Type (FOCM4-1)

A Fresh – Moist White Cedar Coniferous Forest (FOCM) is widespread on the Site south of the hydro corridor (Figure 5). The canopy comprises Eastern White Cedar (*Thuja occidentalis*) exclusively, and understorey layers are sparse, with no shrubs and little vascular plant groundcover (Figure 6). Occasional groundcover species include Broad-leaved Helleborine (*Epipactis helleborine*), Long-stalked Sedge (*Carex pedunculata*), Jack-in-the-pulpit (*Arisaema triphyllym*), Great White Trillium (*Trillium grandiflorum*), and Ghost Pipe (*Monotropa uniflora*). Groundcover comprises predominantly organic litter. Soils within this unit comprise thin, silty loam, with bedrock encountered at depths of approximately 20 to 30 cm.

Figure 6 Fresh – Moist White Cedar Coniferous Forest Type (FOCM4-1; photo taken July 8, 2024)

5.3.1.1.2 Dry Jack Pine Calcareous Bedrock Coniferous Forest Type (FOCS1-1)

A Dry Jack Pine Calcareous Bedrock Coniferous Forest (FOCS1-1) is situated in the northeast corner of the Site, north of the hydro corridor (Figure 5). The canopy comprises Jack Pine (*Pinus banksiana*), with a subcanopy of White Ash (*Fraxinus americana*) (Figure 7). The dense shrub layer is characterized by Common Buckthorn (*Rhamnus cathartica*), Dwarf Honeysuckle (*Lonicera xylosteum*), and Common Juniper (*Juniperus communis*). Dominant groundcover species include Wild Strawberry (*Fragaria virginiana*), Common Yarrow (*Achillea millefolium*), Kentucky Bluegrass (*Poa pratensis*) and White Wood Aster (*Eurybia divaricata*). Soils within the unit are characterized by sandy loam over sand. Bedrock occurs at depths of approximately 15 cm.

Figure 7 Dry Jack Pine Calcareous Bedrock Coniferous Forest Type (FOCS1-1; photo taken July 12, 2024)

5.3.1.1.3 Dry White Cedar Calcareous Bedrock Coniferous Forest Type (FOCS3-1)

A Dry White Cedar Calcareous Bedrock Coniferous Forest (FOCS3-1) is situated in a small patch on the north edge of the Site, adjacent to the property boundary along Highway 416 (Figure 5). The canopy comprises White Spruce (*Picea glauca*) and Eastern White Cedar, with a subcanopy of Green Ash (*Fraxinus pennsylvanica*; Figure 8). Common Buckthorn forms the dominant species in the shrub layer. Dominant groundcover species include Poison Ivy *(Toxicodendron radicans*) and Canada Mayflower (*Maianthemum canadense*). Soils within this unit comprise dry, sandy loam. Bedrock occurs at a depth of approximately 40 cm.

Figure 8 Dry White Cedar Calcareous Bedrock Coniferous Forest Type (FOCS3-1; photo taken July 8, 2024)

5.3.1.1.4 Dry – Fresh Oak – Hardwood Deciduous Forest Type (FODM2-4)

A Dry – Fresh Oak – Hardwood Deciduous Forest (FODM2-4) is situated on the north side of the Site, adjacent to the hydro corridor and access road (Figure 5). Dominant canopy species comprise Red Oak (*Quercus rubra*) and Basswood (*Tilia americana*), with a subcanopy of White Ash (Figure 9). The shrub layer is characterized by Common Buckthorn and White Ash saplings. Dominant groundcover species include Canada Goldenrod (*Solidago canadensis*), Long-stalked Sedge, Common St. John's Wort (*Hypericum perforatum*), and Canada Bluegrass (*Poa compressa*). Soils within the unit comprise coarse sandy loam. Bedrock is shallow and occurs at depths of approximately 10 cm.

Figure 9 Dry – Fresh Oak Hardwood Deciduous Forest Type (FODM2-4; photo taken July 8, 2024)

5.3.1.1.5 Dry – Fresh Poplar Deciduous Forest Type (FODM3-1)

A Dry – Fresh Poplar Deciduous Forest (FODM3-1) is situated immediately south of the hydro corridor and access road in the north portion of the Site (Figure 5). Dominant canopy species comprise Trembling Aspen (*Populus tremuloides*) and Large-tooth Aspen (*Populus grandidentata*; Figure 10). The shrub layer is characterized by Common Juniper (*Juniperus communis*), European Mountain Ash (*Sorbus aucuparia*) and Common Buckthorn. Groundcover was patchy and dominated by Poison Ivy, Common St. John's Wort, Common Yarrow and White Sweet-clover (*Melilotus albus*). Exposed rock is present, especially within the southern portion of the unit. Soil cores were not taken, due to the shallow and exposed bedrock.

Figure 10 Dry – Fresh Poplar Deciduous Forest Type (FODM3-1; photo taken July 9, 2024)

5.3.1.1.6 Dry – Fresh White Ash – Hardwood Deciduous Forest Type (FODM4-2)

A Dry – Fresh White Ash – Hardwood Deciduous Forest (FODM4-2) occurs as two small patches on the Site; one located immediately south of the existing hydro corridor and access road, and the other in the interior of the parcel south of the hydro corridor, immediately east of the large, central meadow (MEGM3-8; Figure 5). Dominant canopy species comprise White Ash, Trembling Aspen, White Willow (*Salix alba*) and Basswood; Figure 11). The shrub layer includes Common Buckthorn, White Ash saplings, Staghorn Sumac (*Rhus typhina*) and Dwarf Honeysuckle. Dominant groundcover species include Canada Goldenrod, White Snakeroot (*Ageratina altissima*), Poison Ivy, and Eastern Enchanter's Nightshade (*Circaea canadensis*). Soils in this unit are characterized as dry, sandy clay. Bedrock occurred at variable depths, ranging from 10 cm to 40 cm.

Figure 11 Dry – Fresh White Ash – Hardwood Deciduous Forest Type (FODM4-2; photo taken July 9, 2024)

5.3.1.1.7 Dry – Fresh Ironwood Deciduous Forest Type (FODM4-4)

A Dry – Fresh Ironwood Deciduous Forest (FODM4-4) is situated in a single patch north of the existing hydro corridor and access road (Figure 5). Dominant canopy species comprise Ironwood (*Ostrya virginiana*) and Red Oak (Figure 12). The shrub layer comprises Common Buckthorn, Dwarf Honeysuckle and Ironwood saplings. Groundcover is characterized as Wild Strawberry, Long-stalked Sedge, interspersed with organic litter and areas of exposed soil. Soils within this unit are characterized as dry, coarse, rocky sand. Bedrock occurred at depths of approximately 30 cm.

Figure 12 Dry – Fresh Ironwood Deciduous Forest Type (FODM4-4; photo taken July 12, 2024)

5.3.1.1.8 Dry – Fresh Sugar Maple – Hickory Deciduous Forest Type (FODM5-5)

A Dry – Fresh Sugar Maple – Hickory Deciduous Forest (FODM5-5) is located on the northwest edge of the Site, adjacent to the Site boundary along Highway 416; Figure 5). Dominant canopy species comprise Sugar Maple (*Acer saccharum*), Bitternut Hickory (*Carya cordiformis*) and Ironwood, with a subcanopy of White Ash (Figure 13). Dominant shrubs include Common Buckthorn, Dwarf Honeysuckle and Eastern Gooseberry (*Ribes cynosbati*), with White Ash and Sugar Maple saplings. Goundcover is characterized as abundant organic litter, with Oak Sedge (*Carex pensylvanica*) and Sugar Maple seedlings. Soils within this unit are characterized as sandy loam. Bedrock occurrs at depths of approximately 30 cm.

Figure 13 Dry – Fresh Sugar Maple – Hickory Deciduous Forest Type (FODM5-5; photo taken July 8, 2024)

5.3.1.1.9 Dry – Fresh Sugar Maple – Basswood Deciduous Forest Type (FODM5-6)

A Dry – Fresh Sugar Maple – Basswood Deciduous Forest (FODM5-6) occurs as two distinct patches on the Site; one is located along the southeast edge of the Site, adjacent to Lytle Park and the east property boundary, and the other adjacent to Cedarhill Drive in the northeast corner of the Site, northeast of the large evaluated marsh wetland (Figure 5). Dominant canopy species comprise Sugar Maple and Basswood, with some Red Oak and White Ash (Figure 14). The shrub layer is characterized by Purple Flowering Raspberry (*Rubus odoratus*), Common Buckthorn and Alternate-leaved Dogwood (*Cornus alternifolia*). Dominant groundcover species include Blue Cohosh (*Caulophyllum thalictroides*), Broadleaved Helleborine, Virginia Creeper (*Parthenocissus quinquefolia*) and Eastern Enchanter's Nightshade. Live groundcover isrelatively sparse, with considerable organic litter cover. Soils in this unit are variable, with the southeast patch characterized by silty clay soils overlying bedrock at approximately 20 cm, while the Cedarhill Drive patch was characterized by sandy loam to depths of at least 100 cm.

Figure 14 Dry – Fresh Sugar Maple Basswood Deciduous Forest Type (FODM5-6; photo taken July 9, 2024)

5.3.1.1.10 Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest Type (FODM6-1)

A Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest (FODM6-1) is situated in the southwest corner of the parcel south of the existing hydro corridor (Figure 5). The canopy is dominated by Sugar Maple exclusively, with a subcanopy of Green Ash (Figure 15). The shrub layer is characterized by Green Ash and Sugar Maple saplings. Dominant groundcover comprises Tall Thimbleweed (*Anemone virginiana*), Wild Basil (*Clinopodium vulgare*), and Eastern Enchanter's Nightshade. Soils in this unit are characterized as sandy clay loam. Bedrock occurs at depths of approximately 10 cm.

Figure 15 Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest Type (FODM6-1; photo taken July 8, 2024)

5.3.1.1.11 Fresh – Moist Sugar Maple – Yellow Birch Deciduous Forest Type (FODM6-3)

A Fresh – Moist Sugar Maple – Yellow Birch Deciduous Forest (FODM6-3) is situated in the north part of the Site, immediately adjacent to the hydro corridor and access road (Figure 5). The canopy is characterized by Sugar Maple, with some White Spruce (Figure 16). Dominant shrub species comprise Alder Buckthorn (*Frangula alnus*), Common Buckthorn, and Common Juniper. Groundcover species include Poison Ivy, with Sugar Maple and White Ash seedlings. Soils in this unit are characterized as sandy clay loam. Bedrock occurs at depths of approximately 30 to 40 cm.

Figure 16 Fresh – Moist Sugar Maple – Yellow Birch Deciduous Forest Type (FODM6-3; photo taken July 12, 2024)

5.3.1.1.12 Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FODM6-5)

A Fresh – Moist Sugar Maple – Hardwood Deciduous Forest (FODM6-5) is situated in two patches on the Site, one in the central portion of the parcel to the south of the hydro corridor, and the other along the north edge of the north parcel, adjacent to the property boundary along Highway 416 (Figure 5). Dominant canopy species comprise Sugar Maple, Trembling Aspen, and Basswood with a subcanopy of White Ash and Basswood (Figure 17). The shrub layer is characterized by Alder Buckthorn, Common Juniper, and Purple Flowering Raspberry. Dominant groundcover species include Tall Thimbleweed, Canada Goldenrod, Blue Wood-aster (*Symphyotrichum cordifolium*), Common Selfheal (*Prunella vulgaris*), and Wild Strawberry. Five Butternut (*Juglans cinerea*) trees occur within this community. Soils in this unit are characterized as coarse, sandy loam. Bedrock occurs at depths of approximately 10 cm.

Figure 17 Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FODM6-5; photo taken July 9, 2024)

5.3.1.1.13 Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest Type (FODM7-2)

A Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest (FODM7-2) is situated in the central portion of the parcel to the south of the hydro corridor (Figure 5). Dominant canopy species comprise Green Ash and Black Cherry (*Prunus serotina*; Figure 18). The shrub layer is characterized by Alder Buckthorn and Green Ash saplings. Dominant groundcover species include False Solomon's-seal (*Maianthemum racemosum*), Wild Strawberry, and Long-stalked Sedge. Soils within this unit are characterized as sandy clay. Bedrock occurs at depths of approximately 10 cm.

Figure 18 Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest Type (FODM7-2; photo taken July 8, 2024)

5.3.1.1.14 Fresh – Moist Poplar Deciduous Forest Type (FODM8-1)

A Fresh – Moist Poplar Deciduous Forest (FODM8-1) is situated in the northwest corner of the Site, surrounding the Quarry Pond (Figure 5). Dominant canopy species comprise Large-tooth Aspen and Trembling Aspen, with a subcanopy of American Elm (*Ulmus americana*) and Manitoba Maple. Occasional Scots Pine (*Pinus sylvestris*) and Eastern White Cedar are present along the forest edges near the Quarry Pond (Figure 19). The shrub layer is characterized by Common Buckthorn and Common Juniper. Dominant groundcover species include Canada Goldenrod, Wild Strawberry, Meadow Foxtail (*Alopecurus pratensis*) and Kentucky Bluegrass (*Poa pratensis*). Soils in this unit are characterized as coarse, rocky, sandy loam. Bedrock occurs at depths of approximately 15 cm.

Figure 19 Fresh – Moist Poplar Deciduous Forest Type (FODM8-1; photo taken July 12, 2024)

5.3.1.1.15 Fresh – Moist White Cedar – Hardwood Mixed Forest Type (FOMM7-2)

A Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7-2) is situated in the south-central portion of the Site, surrounded almost entirely by Eastern White Cedar Forest (FOCM4-1; Figure 5). Dominant canopy species comprise Basswood and Eastern White Cedar, with a subcanopy of White Ash and Basswood saplings (Figure 20). The shrub layer is characterized by Alder Buckthorn and Common Buckthorn. Dominant groundcover species comprise Woodland Horsetail (*Equisetum sylvaticum*), Long-stalked Sedge, and Common Buckthorn saplings. Soils within this unit are characterized as sandy clay. Bedrock occurs at depths of approximately 40 cm.

Figure 20 Fresh – Moist White Cedar – Hardwood Mixed Forest Type (FOMM7-2; photo taken July 11, 2024)

5.3.1.1.16 Buckthorn Deciduous Shrub Thicket Type (THDM2-6)

A Buckthorn Deciduous Shrub Thicket (THDM2-6) is situated on the south edge of the Site, adjacent to Lytle Park (Figure 5). The canopy is open, and the shrub layer is characterized by a dense population of Common Buckthorn (Figure 21). Dominant groundcover species comprise Elecampane (*Inula helenium*), Woodland Horsetail, Eastern Enchanter's Nightshade, Virginia Creeper, Canada Goldenrod and Wild Basil. Soils within this unit are characterized as moist silty clay. Groundwater was encountered at 50 cm. Signs of mottles and gley were apparent at depths of 30 cm. Despite indications of hydric influence on soils, vegetation within this unit indicates a terrestrial community.

Figure 21 Buckthorn Deciduous Shrub Thicket (THDM2-6; photo taken July 7, 2024)

5.3.1.1.17 Dry – Fresh Mixed Regeneration Thicket Type (THMM1-1)

A Dry – Fresh Mixed Regeneration Thicket (THMM1-1) is situated in two discrete patches on the Site: one large unit comprising a large portion of the lands north of the existing hydro corridor and access road, and a smaller unit near the east edge of the large parcel south of the hydro corridor (Figure 5). The thicket supports scattered tree cover; widespread species include Eastern White Cedar, Sugar Maple, White Ash, and a variety of Apple (*Malu*s sp.; Figure 22). Dominant shrub species comprise Common Juniper, Common Buckthorn, Staghorn Sumac, and species of Hawthorn (*Crataegus* sp.). Groundcover is characterized by Grass-leaved Goldenrod (*Euthamia graminifolia*), Canada Goldenrod, Queen Anne's Lace (*Daucus carota*), Meadow Foxtail and Canada Bluegrass. Soils within this unit are characterized as coarse sandy loam.

Figure 22 Dry – Fresh Mixed Regeneration Thicket Type (THMM1-1; photo taken July 8, 2024)

5.3.1.1.18 Kentucky Bluegrass Graminoid Meadow Type (MEGM3-4)

A Kentucky Bluegrass Graminoid Meadow (MEGM3-4) is situated in the north-central portion of the Site, adjacent to the property boundary along Highway 416 (Figure 5). The meadow supports scattered tree and shrub cover, predominantly Manitoba Maple and Alder Buckthorn. Dominant groundcover species comprise Kentucky Bluegrass, Meadow Foxtail, Common St. John's Wort, Cow Vetch (*Vicia cracca*) and Prairie Fleabane (*Erigeron strigosus*; Figure 23). Soils in this unit are characterized as coarse, sandy loam. Bedrock occurred at depths of approximately 15 cm.

Figure 23 Kentucky Bluegrass – Graminoid Meadow Type (MEGM3-4; photo taken July 12, 2024)

5.3.1.1.19 Reed Canary Grass Graminoid Meadow Type (MEGM3-8)

A Reed Canary Grass Graminoid Meadow (MEGM3-8) comprises a large portion of the parcel south of the hydro corridor and site access road (Figure 5). The meadow supports relatively small trees scattered along the east side of the unit. Trees include Largetooth Aspen, Eastern Cottonwood (*Populus deltoides*), and Manitoba Maple. Occasional shrubs include Red-osier Dogwood (*Cornus sericea*) and Common Buckthorn. Dominant groundcover species comprise Reed Canary Grass (*Phalaris arundinacea*), Cow Vetch, and Common Milkweed (*Asclepias syriaca;* Figure 24). Soils in this unit are characterized as stiff clay overlying bedrock at depths of approximately 20 cm.

Figure 24 Reed Canary Grass Graminoid Meadow Type (MEGM3-8; photo taken July 9, 2024)

5.3.1.1.20 Dry – Fresh Mixed Meadow (MEMM3)

A Dry – Fresh Mixed Meadow (MEMM3) is situated northeast of the Quarry Pond, adjacent to the property boundary along Highway 416 (Figure 5). The meadow supports relatively small trees in low abundance scattered throughout the unit. Trees include Largetooth Aspen, White Spruce, and White Ash. Occasional shrubs include Staghorn Sumac, Alder Buckthorn, and Tartarian Honeysuckle (*Lonicera tatarica*). Dominant groundcover species comprise Queen Anne's Lace, White Sweet-clover, Meadow Foxtail, Perennial Ryegrass (*Lolium perenne*) and Kentucky Bluegrass (Figure 25). Soils in this unit are characterized as dry sandy loam overlying sand.

Figure 25 Dry – Fresh Mixed Meadow (MEMM3; photo taken July 12, 2024)

5.3.1.2 Wetland Communities

5.3.1.2.1 Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2)

A Cattail Graminoid Mineral Meadow Marsh (MAMM1-2) is situated immediately adjacent to the hydro corridor near the Quarry Pond (Figure 5). A fringe of shrubs along the margins comprises Sandbar Willow (*Salix exigua*), Staghorn Sumac and Common Buckthorn. Within the marsh area, dominant species include Broadleaf Cattail (*Typha latifolia*), Purple Loosestrife (*Lythrum salicaria*), and Reed Canary Grass Figure 26.

Figure 26 Cattail Graminoid Mineral Meadow Marsh Type (MAMM1-2; photo taken July 12, 2024)

5.3.1.2.2 Cattail Mineral Shallow Marsh Type (MASM1-1)

A Cattail Mineral Shallow Marsh (MASM1-1) is situated on the south edge of the Site, adjacent to a multiuse trail along the north edge of Lytle Park (Figure 5). The lower portion of Reach 8 functions to capture water during spring freshet and large rainfall events stored in this ecosite. A fringe of shrubs along the margins comprises predominantly Alder Buckthorn. Within the marsh area, dominant species include Broadleaf Cattail, Purple Loosestrife, Hardstem Bulrush (*Schoenoplectus acutus*), and Small-fruited Bulrush (*Scirpus microcarpus;* Figure 27). At the time of survey, standing water was observed in the marsh, extending into the mowed fringe along the multiuse path.

Figure 27 Cattail Mineral Shallow Marsh Type (MASM1-1; photo taken July 8, 2024)

5.3.1.2.3 Green Ash Mineral Deciduous Swamp Type (SWDM2-2)

A Green Ash Mineral Deciduous Swamp (SWDM2-2) is situated on the south edge of the Site adjacent to a multiuse trail along the north edge of Fallowfield Park and immediately east of the shallow marsh wetland (MASM1-1; Figure 5). The canopy comprises small trees, including predominantly Green Ash with Eastern White Cedar. Occasional relatively small Black Ash (*Fraxinus nigra*) trees (DBH <8 cm) are present within this unit (Figure 28) The shrub layer is relatively dense and is dominated by Alder Buckthorn. Dominant groundcover species include Woodland Horsetail, Coltsfoot (*Tussilago farfara*), Golden Dock (*Rumex maritimus*), and Alder Buckthorn seedlings. At the time of survey, pockets of standing water were observed throughout the unit.

The lower portion of Reach 8 and 9 functions to capture water during spring freshet and large rainfall events stored in this ecosite. Development occurring adjacent to the conservation lands on the southern portion of the property is likely to alter shallow overburden and subsurface flows, removing overburden groundwater supply to the swamp wetland feature and therefore negating any potential impact to Reach 8 and 9.

Figure 28 Black Ash tree within the Green Ash Mineral Deciduous Swamp (SWDM2-2; photo taken July 8, 2024)

5.3.2 SAR Trees

Five Butternut trees were observed on the Site (Figure 5). Four of the five were relatively small (DBH of 1 to 2 cm), while one tree was a large, mature individual (DBH OF 43 cm). The four small trees were determined to be Category 2, while the larger tree was determined to be Category 1. All five Butternuts were situated centrally on the Site, within the Fresh – Moist Sugar Maple – Hardwood Deciduous Forest (FODM6-5) community, with most individuals situated along informal paths or cutlines.

Approximately 72 Black Ash trees were observed on the Site, all of which had DBH measurements of less than 8 cm (Table 4). The majority of the Black Ash individuals were documented in the Green Ash Mineral Deciduous Swamp (SWDM2-2). Although all live trees were small, numerous larger standing dead ash trees were observed in that community. The small individuals appeared healthy, with no observed indications of Emerald Ash Borer.

Table 4 Summary of Black Ash observations onsite

ELC Unit	Number of Black Ash
Green Ash Mineral Deciduous Swamp (SWDM2-2)	52
Dry – Fresh Sugar Maple – Basswood Deciduous Forest (FODM5-6)	10
Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest (FODM6-1)	6
Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest (FODM7-2)	4

5.4 Wildlife Surveys

5.4.1 Breeding Birds

A total of nine Breeding Bird Stations were established in representative habitats throughout the site (Figure 2). Three morning breeding bird surveys were conducted at each station in 2024. A summary of the weather conditions and dates of Breeding Bird surveys is provided in Table 5.

Table 5 Summary of dates and weather conditions of morning breeding bird surveys, 2024

Date	Cloud Cover (%)	Air Temperature (°C)	Wind (Beaufort)
May 31, 2024	20	18	0
June 18, 2024	40	28	0
July 5, 2024	55	21	1

A total of 40 bird species were observed on Site via morning breeding bird surveys and incidental observations. A list of all bird species observed and their respective observation dates and stations, and highest breeding evidence is included in Appendix J. The most commonly observed species on the Site were American Goldfinch (*Spinus tristis*), followed by American Robin (*Turdus migratorius*), and Song Sparrow (*Melospiza melodia*).

Two listed Species at Risk (SAR) were observed during morning breeding bird surveys. These SAR observations are summarized in Table 6 below.

Table 6 Summary of Species at Risk observed during morning breeding bird surveys, 2024

Species (Taxonomic name)	SARA Status	ESA Status	Dates and Locations Observed
Eastern Meadowlark (*Sturnella magna*)	Threatened	Threatened	May 31, 2024: BBS #4
Eastern Wood-Pewee (*Contopus virens*)	Special Concern	Special Concern	June 18 and July 5, 2024: BBS #7 and BBS#1

5.4.2 Nightjars

KAL surveyors completed nightjar surveys on May 23 and June 18 and 19, 2024 (Table 7), one during the first moon cycle and two in the next moon cycle, per MNRF (2014) protocols. No Eastern Whip-poor-will were heard calling at either station during any of the three surveys. No Common Nighthawks were observed on the Site.

Table 7 Summary of dates and weather conditions of nightjar surveys, 2024

Date	Cloud Cover (%)	Air Temperature (°C)	Wind (Beaufort)	Moon Illumination (%)	Moon Visibility (%)
2024-05-23	0-25	22	1	98	98
2023-06-18	0-25	28	2	90	90
2023-06-19	0-25	29	2	95	95

5.4.3 Anurans

Anuran surveys were performed on April 9, May 23, and June 19, 2024, at seven stations distributed across the Site to capture spatial and habitat variability (Figure 2). A summary of the weather conditions during the anuran survey is provided in Table 8. A total of six species were observed on the Site via evening anuran surveys and incidental observations (Table 9).

Table 8 Dates and weather conditions of anuran surveys

Date/Time	Wind (Beaufort Scale)	Air Temperature (°C)	Cloud Cover (%)	Precipitation
2024-04-09	1	17	100	Light
2024-05-23	0	22	10	None
2024-06-19	0	29	20	None

Table 9 Summary of anurans detected during anuran surveys

Common Name	Scientific Name	Station(s) Observed	Survey Date(s) Observed	Highest Calling Code[1]
American toad	*Anaxyrus americanus*	MMP1	2024-06-19	1
Gray Tree Frog	*Dryophytes versicolor*	MMP7	2024-05-23	1
Green frog	*Rana clamitans*	MMP1, MMP5	2024, 04-09, 2024-05-23	1
Northern Pickerel Frog	*Lithobates palustris*	MMP 1	2024-05-23	1
Spring peeper	*Pseudacris crucifer*	MMP 1, MMP 2, MMP 3, MMP4, MMP5, MMP6, MMP7	2024-04-09	2
Wood frog	*Lithobates sylvaticus*	MMP5	2023-04-09	2

Table Notes: [1]Calling codes are defined as follows (Birds Canada et al., 2008): **1** – Calls not simultaneous, individuals can be accurately counted; **2** – Some calling simultaneous, individuals reliably estimated; **3** – Full chorus, continuous and overlapping, individuals not reliably estimated.

5.4.4 Turtles

Turtle surveys took place on April 9, 16, 26 and May 3, and 6, 2024 at the Quarry Pond and evaluated wetland (Table 10). A total of 410 turtles were observed over the five rounds of visual encounter turtle surveys conducted in 2024. Of the 410 turtles observed, the most common observed species was Painted Turtle (*Chrysemys picta*), followed by Snapping Turtle (*Chelydra serpentina*).

Painted Turtle (listed as Special Concern under the SARA but not currently listed under the ESA) were observed on multiple occasions in both the evaluated wetland and Quarry Pond. A Snapping Turtle (listed as Special Concern under the SARA and ESA) was observed along the south-side of the PSW, subsurface basking in shallow water.

Table 10 Summarized results of weather conditions during turtle surveys, 2024

Date	Cloud Cover (%)		Air Temperature (°C)		Wind (Beaufort)		Water Temperature (°C)
	Start	End	Start	End	Start	End	
2024-04-09	25	40	16	18	1	2	7 to 8
2022-04-16	0	10	11	13	1	1	8 to 8
2024-04-26	0	0	14	15	2	2	9 to 12
2024-05-03	0	20	15	17	2	3	10 to 12
2022-05-06	0	0	20	21	1	2	16 to 17

Blanding's Turtle (*Emydoidea blandingii*; listed as Threatened under the SARA and ESA) was not observed on the Site. The evaluated wetland, however, is suitable for the species, and records exist for the species within the Stony Swamp Provincially Significant Wetland within 1 km of the Site (approximately 700 m northeast of the Site). Per provincial regulations, all areas within 30 m of the Stony Swamp Provincially

Significant Wetland and its riparian wetland features will likely need to be protected as a Category 2 habitat. All areas between 30 m and 250 m of Category 2 habitat constitute Category 3 habitat. Protections associated with Category 3 habitat focus on maintaining existing usage of the area as a travel corridor to other nearby wetlands.

5.4.5 Bats and Other Mammals

Four acoustic bat monitors were installed for 13 nights and were placed along the edges of dense vegetation where the greatest likelihood for bat activity would occur on the Site. Conditions were ideal with mainly clear or cloudy nights and warm temperatures (≥7°C). Bat species identified within the Site include Big Brown Bat, Eastern Red Bat, Hoary Bat, Silver-haired Bat, Little Brown Myotis, Northern Myotis and Tri-colored Bat (Table 11).

Table 11 Number of bat recordings from acoustic monitoring

Survey Station	Survey Dates	Habitat Description	Big Brown Bat	Eastern Red Bat	Hoary Bat	Silver-haired Bat	Little Brown Myotis	Northern Myotis	Tri-colored Bat
1	June 18 – July 5	Adjacent to swamp wetland communities and Significant Woodland on southern portion of site	0	0	0	0	0	0	0
2	June 18 – July 5	Adjacent to evaluated marsh wetland alongside tree line	161	18	385	132	3	0	8
3	June 18 – July 5	Located in the northern portion of the site amongst forest and meadow communities.	295	7	498	182	0	2	17
4	June 18 – July 5	Adjacent to Quarry Pond alongside forest communities.	284	18	426	147	1	0	64

5.5 Species at Risk

An assessment of species listed under SARA and ESA was completed to identify species having some potential to occur on or near the Site, including Extirpated, Endangered, Threatened, and Special Concern species. Species listed as Extirpated, Endangered, and Threatened are afforded species and habitat protection under the ESA. Federal protections under SARA are always in force for listed species of fish and migratory birds. For species of other groups, SARA normally only applies on federal lands or on projects having some level of participation with or oversight by the federal government. However, SARA-based protections can be imposed by ministerial order on a case-by-case basis in situations where provincial-level protections are deemed inadequate to otherwise protect a species. Such protections are not expected to apply to the Site.

A list of 31 SAR (Appendix C) with some evidence of occurrence, or potential occurrence within the vicinity of the Site was assembled based on a review of existing information (occurrence records, range maps and field studies). The list includes species from all major taxonomic groups (e.g. birds, mammals, vascular plants, etc.). Species on the list were then assessed for their potential to interact with possible future Site development based their habitat requirements (e.g. use open fields, buildings, forests, etc.), ELC communities on the Site (to estimate potential habitat availability) and direct observations of usage of the Site. From the 31 SAR with some evidence of occurrence within the vicinity of the Site, 17 species species subject to protections as SAR under the ESA and/or SARA were initially considered to have a moderate to high potential to occur on the Site and/or interact with the project (Table 12). Of those 17 species, eight were directly observed to occur on the Site, though one (Eastern Meadowlark) was found to have negligible likelihood of residence there. A ninth species, Blanding's Turtle, is considered to have some protected habitat on the Site despite not being observed. Those species are discussed below.

Table 12 Species considered initially as having potential to interact with the project

Common Name	Taxonomic Name	Status under Endangered Species Act	Status under Species at Risk Act (Schedule 1)	Potential to Interact with Development of the Site
Birds				
Bobolink	*Dolichonyx oryzivorus*	Threatened	Threatened	Not detected on the Site. The site does not provide habitat. Interaction with individuals is not anticipated.
Eastern Meadowlark	*Sturnella magna*	Threatened	Threatened	Observed on the Site during morning breeding bird surveys; however, only during first survey. Suggests a transient occurrence. The site is not considered to provide habitat. Interaction with individuals is very unlikely; standard wildlife mitigations would be anticipated to prevent interaction with individuals.
Eastern Whip-poor-will	*Antrostomus vociferus*	Threatened	Threatened	Not detected on the Site. The site does not provide habitat. Interaction with individuals is not anticipated.
Golden-winged Warbler	*Vermivora chrysoptera*	Special Concern	Threatened	Not detected on the Site. The site does not provide habitat. Interaction with individuals is not anticipated.
Olive-sided Flycatcher	*Contopus cooperi*	Special Concern	Threatened	Not detected on the Site. The site does not provide habitat. Interaction with individuals is not anticipated.
Wood Thrush	*Hylocichla mustelina*	Special Concern	Threatened	Not detected on the Site. The site does not provide habitat. Interaction with individuals is not anticipated.
Mammals				
Eastern Red Bat	*Lasiurus borealis*	Endangered (January 2025)	Not Listed	Detected on the Site – transient observation, low probability of negative interactions if tree clearing occurs outside of the active season
Eastern Small-footed Myotis	*Myotis leibii*	Endangered	Not Listed	Not detected on the Site. The site does not provide habitat. Interaction with individuals is not anticipated.
Hoary Bat	*Lasiurus cinereus*	Endangered (January 2025)	Not Listed	Detected on the Site – transient observation, low probability of negative interactions if tree clearing occurs outside of the active season
Little Brown Myotis	*Myotis lucifugus*	Endangered	Endangered	Limited/Transient presence only - low probability of negative interactions if tree clearing occurs outside of the active season
Northern Myotis	*Myotis septentrionalis*	Endangered	Endangered	Not detected on the Site. The site is not considered to provide habitat. Interaction

Common Name	Taxonomic Name	Status under Endangered Species Act	Status under Species at Risk Act (Schedule 1)	Potential to Interact with Development of the Site
				with individuals is very unlikely; standard wildlife mitigations would be anticipated to prevent interaction with individuals.
Silver-haired Bat	*Lasionycteris noctivagans*	Endangered (January 2025)	Not Listed	Limited/Transient presence only - low probability of negative interactions if tree clearing occurs outside of the active season
Tri-colored Bat	*Perimyotis subflavus*	Endangered	Endangered	Limited/Transient presence only - low probability of negative interactions if tree clearing occurs outside of the active season
Amphibians				
Western Chorus Frog	*Pseudacris triseriata*	Not Listed	Great Lakes/ St. Lawrence population: Threatened	Not detected on the Site. The site is not considered to provide habitat. Interaction with individuals is very unlikely; standard wildlife mitigations would be anticipated to prevent interaction with individuals.
Reptiles				
Blanding's Turtle	*Emydoidea blandingii*	Threatened	Endangered	Not detected on site despite targeted surveys. The Marsh, however, is considered to provide suitable aquatic habitat. Given the proximity of existing records off the site, the Marsh plus a 30 m buffer and 250 m buffer are defined as Category 2 and Category 3 habitats respectively, regardless.
Vascular Plants				
Butternut	*Juglans cinerea*	Endangered	Endangered	Present on site in areas likely to be developed. Areas within up to 25 m of healthy individuals constitute protected habitat.
Black Ash	*Fraxinus nigra*	Endangered	Endangered	Present on site in areas likely to be developed. Areas within up to 30 m of healthy, mature individuals constitute protected habitat.

SAR presented in Table 12 do not include listed species that are not directly protected as SAR on the Site under the ESA or SARA (e.g., listed only as Special Concern, or are protected only federally and are not birds or fish). However, individuals of these species are protected under other regulations addressing wildlife conservation generally, such as the FWCA, the MBCA, and the PPS. In addition, species listed as Special Concern under the ESA may receive habitat protection if they are observed in habitats that meet the criteria for designation as SWH for Special Concern Species (MNRF, 2015). Species of Species Concern will be discussed with SWH in Section 5.7.

Where it is determined through the EIS process that there is an anticipated impact of the development on SAR, an Information Gathering Form (IGF) is typically submitted to MECP for further review. The IGF process, however, is not generally necessary where the SAR management process may be handled through a Notice of Activity process associated with the Ontario Conservation Fund under O.Reg. 829/21.

5.5.1 SAR Bats

The Committee on the Status of Species at Risk in Ontario (COSSARO) has updated the provincial status for the Hoary Bat, Silver-haired Bat, and Eastern Red Bat to Endangered. These species will receive general habitat protection on or prior to January 31, 2025. Although these species are not officially listed at the time of this EIS, it is anticipated that protections will apply throughout the development application timeline, and during community build-out. As such, these species are considered and assessed as Endangered species in this EIS.

The Hoary Bat and Silver-haired Bat were detected in high numbers at the monitoring stations on the Site, indicating potential roosting habitat. The Eastern Red Bat, Little Brown Myotis and Tri-colored Bat were detected at the monitoring stations on the Site and therefore likely forage and/or roost in proximity to the Site. The numbers of detections, however, were very low, suggesting only a limited transient presence over most of the Site, with little evidence of maternal roosting activity or habitat. As Endangered species, Hoary Bat, Silver-haired Bat, Eastern Red Bat, Little Brown Myotis and Tri-colored Bat receive "general habitat protection" under the ESA. However, vegetation removal on the Site would not result in a loss of maternal roosting habitat for the Hoary Bat, Little Brown Myotis and Tri-colored Bat.

5.5.2 Blanding's Turtle

Blanding's Turtle inhabit shallow water usually in large wetlands or shallow lakes. They can be found far from water bodies if searching for mates or nesting sites, which usually contain gravel, cobble, and/or sand. The review of data from the preliminary SAR screening includes a record for Blanding's Turtle approximately 700m west of the Site in the Stony Swamp Provincially Significant Wetland (California Academy of Sciences and National Geographic Society, 2024).

Blanding's Turtle habitat is defined based on three habitat categories (MNRF, 2021a). Category 1 Habitat includes nesting and overwintering areas. Category 2 includes suitable aquatic/ wetland areas and a 30m buffer around them. These areas are protected under the ESA as places in which Blanding's Turtles will spend most of their active time (i.e., general summer habitat). Category 3 Habitat extends 220 m beyond the Category 2 areas to identify potential travel corridors.

The Category 2 designation is intended to protect features upon which Blanding's Turtles depends for life process including feeding, mating, thermoregulation, movement, and protection from predators (MECP, 2021). Category 2 habitat is captured within the 30 m buffer around the wetland despite the lack of Blanding's Turtle observations during daytime turtle basking surveys. The 220 m Category 3 habitat that extends beyond the 30 m buffer ends before the edge of the Site and abuts Highway 416. As such, the Category 3 habitat on Site, intended to provide a travel corridor, does not provide such functionality.

5.5.3 Butternut

Butternut, listed as *Endangered* under the ESA and SARA, are often found along stream banks as they prefer to grow in moist, well-drained loams; however, the species can tolerate a broad range of soil types. Butternut are intolerant of shade and competition, as they require ample sunlight to grow (Poisson & Ursic, 2013).

A total of five Butternuts were observed on the Site (Figure 5). Four trees were determined to be Category 2, and one tree (the largest) was determined to be Category 1 (Appendix I). These trees were located predominantly within the central Fresh – Moist Sugar Maple – Hardwood Deciduous Forest (FODM6-5) ecosite, which comprises the most mature forested area on the property.

5.5.4 Black Ash

Black Ash (*Fraxinus nigra*), listed as *Endangered* under the ESA and with no status under the SARA, are a medium-sized shade-intolerant hardwood tree primarily found in wetland environments like swamps, floodplains and fens. Black Ash can also occur in moist upland forests (COSEWIC, 2018). Black Ash received protection under the ESA on January 24, 2024. O.Reg 6/24 and O.Reg 7/24 set out individual and habitat protection. Black Ash habitat is defined as a radial distance of 30 m from the stem of every Black Ash that are over 8 cm at 1.37 m.

Approximately 72 Black Ash were detected on the Site, all of which had DBH measurements less than 8 cm. All trees occurred in the southern forested communities. The majority (n=52) of the Black Ash individuals were documented in the Green Ash Mineral Deciduous Swamp (SWDM2-2). Additional individuals were noted in the Dry – Fresh Sugar Maple – Basswood Deciduous Forest (FODM5-6; n=10), the Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest (n=6), and the Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest (FODM7-2).

5.6 Significant Woodlands and Canopy Cover

While the Site is situated immediately outside of the current urban boundary, it has existing draft plan approval to developed as a Country Lot Estate subdivision around a planned extension of the neighbouring Cedarview Golf Course. Under the existing approval, tree cover on the Site would be significantly fractured and reduced. The current OPA proposal would bring the Site into urban boundary, conveying protection to Significant Woodland features as defined per the City of Ottawa's (2022b) Significant Woodland Policy with respect urban forest features. Significant Woodlands within the urban boundary are any forested area 0.8 hectares in size or larger, supporting woodland 60 years of age and older at the time of evaluation.

Significant Woodland on the Site was thus demarcated by delineating the boundaries of wooded areas on and adjacent to the property based on aerial imagery from 1965 (City of Ottawa, 2024). Portions of the demarcated areas that were noted as subsequently deforested in historical aerial imagery between 1965 and 2024 within the geoOttawa system were removed. Remaining areas greater than 0.8 ha in size were deemed to constitute Significant Woodland. The 5.3 ha wooded area in the southwest portion of the Site thus constitutes Significant Woodland (Figure 1). Significant Woodland features on the Site are characterized according to screening criteria per the City's Significant Woodlands policy (2022; Table 13).

Table 13 Characterization of Significant Woodland Areas

Social Values	
Unusual recreational, educational or cultural opportunities	None. The Site consists of private property with no public use supported.
Qualifying Cultural, Heritage, or Historical Features	None. There are no existing designations within the OP.
Indigenous values established through consultation	None. There are no existing designations within the OP.

Hazard lands	
Constrained areas	None. Subject area has no hazards (e.g., floodplain, meander belts, steep or unstable slopes, restrictive soils or karst).
Habitat and Landscape Connectivity	
Adjacency and connectivity	None. Not part of Natural Heritage System Core Area or identified greenspace. Forested areas on the Site extend to abut areas of residential development to the east and Highway 416 to the west. As such, they cannot serve as connection corridors between other natural areas.
Specialized habitat	Limited. There are no uncommon community types or rare species within the wooded areas. The current forest mix consists of trees neither especially large nor uncharacteristically old for the broader area. The Significant Woodlands do contain some small clusters of Black Ash, which is listed as SAR.

An iTree Canopy assessment of the Site compares the canopy services across the Site generally and within the areas constituting significant woodlands (City of Ottawa, 2022b). Assessments were each based on distributions of 100 random sample points across the entire Site and Significant Woodlands, respectively.

Table 14 Assessment of canopy benefits of the trees across the Site generally and within the areas of Significant Woodland

Land Cover Distribution						
Land Cover Type	General Site			Significant Woodlands Only		
	Area (ha)	Area (%)		Area (ha)	Area (%)	
Trees	52.62 ± 3.20	73.00 ± 4.44		6.16 ± 0.09	98.00 ± 1.40	
No Trees	19.46 ± 3.20	27.00 ± 4.44		0.13 ± 0.09	2.00 ± 1.41	
Total	72.08	100		6.28	100.00	
Tree Benefit Estimates: Carbon						
	General Site			**Significant Woodlands Only**		
	Carbon (t) ± SE	**CO_2 Equiv. (t) ± SE**	**Value (CAD) ± SE**	**Carbon (t) ± SE**	**CO_2 Equiv. (t) ± SE**	**Value (CAD) ± SE**
Sequestered annually in trees	161.02 ± 9.79	590.41 ± 35.91	$41,113 ± $2,500	18.84 ± 0.27	69.08 ± 0.99	4,810 ± 69
Total stored in trees	4,043.86 ± 245.93	14,827.49 ± 901.75	$1,032,497 ± $62,793	473.14 ± 6.76	1,734.86 ± 24.78	120,805 ± 1,726
Tree Benefit Estimates: Air Pollution						
Pollutant Removed Annually	**General Site**			**Significant Woodlands Only**		
	Amount (kg) ± SE	**Value (CAD) ± SE**		**Amount (kg) ± SE**	**Value (CAD) ± SE**	
CO - Carbon Monoxide	33.33 ± 4.08	$4 ±$1		9.99 ± 0.10	$1 ± $0	
NO_2 - Nitrogen Dioxide	166.98 ± 22.26	$7 ± $1		54.47 ± 0.55	$2 ± $0	
O_3 - Ozone	1,775.64 ± 221.65	$383 ± $47		542.53 ± 5.45	$115 ± $1	
SO_2 – Sulfur Dioxide	166.77 ± 14.02	$1 ± $0		34.33 ± 0.35	$0 ± $0	
PM2.5 - Particulate Matter <2.5 µm	87.74 ± 10.77	$791 ± $97		26.36 ± 0.26	$237 ± $2	
PM10 - Particulate Matter 2.5 – 10 µm	606.21 ± 74.25	$278 ±34		181.73 ± 1.83	$83 ± $1	
Tree Benefit Estimates: Hydrological						
Benefit	**General Site**			**Significant Woodlands Only**		
	Amount (l) ±SE	**Value (CAD)**		**Amount (l) ±SE**	**Value (CAD)**	
Avoided Runoff	441.95 ± 26.88	$1,417 ± 86		51.71 ± 0.74	$166 ± 2	
Evaporation	36,464.65 ± 2,217.65	N/A		4,266.48 ± 60.95	N/A	

Interception	36,646.63 ± 2,228.71	N/A	4,287.77 ± 61.25	N/A
Transpiration	56,504.96 ± 3,436.43	N/A	6,611.26 ± 94.45	N/A
Potential Evaporation	277,254.30 ± 16,861.60	N/A	32,439.62 ± 463.42	N/A
Potential Evapotranspiration	277,254.30 ± 16,861.60	N/A	32,439.62 ± 463.42	N/A

Trees within Significant Woodlands (and other forested portions of the Site) generally furnish areas with near-100% canopy cover. However, land cover types such as the meadow community, quarry, and open water within the evaluated wetland provide near-0% canopy. This uneven distribution results in the iTree calculation of 73% existing canopy cover for the Site as a whole. The iTree tree review then provides a metric of the services currently provided by the site trees (located directly within Significant Woodland features or across the site generally).

Removal of any trees on Site will require a Permit to cut trees and must be supported by a Tree Conservation Report. A Planting Plan or Forest Management Plan may be required to show that the proposed development will work towards the City of Ottawa's overall canopy cover goal of 40% (i.e. for the City as a whole, not specially for to individual sites), per Section 4.8.2.2 of the City of Ottawa's OP.

5.7 Significant Wildlife Habitat

The Significant Wildlife Habitat (SWH) Criteria Schedule for Ecoregion 6E (MNRF, 2015) identifies four main types of significant wildlife habitat: seasonal concentration areas, rare vegetation communities, specialized habitat for wildlife and habitats of Species of Conservation Concern.

5.7.1 Seasonal Concentration Areas

Seasonal concentration areas include stopover and staging areas for waterfowl, shorebirds, landbirds and butterflies, wintering areas for raptors, bat hibernacula, bat maternity colonies, wintering areas for turtles, reptile hibernacula, breeding habitats for colonially-nesting birds, and deer yarding and congregation areas.

The Site meets the criteria of confirmed SWH for Turtle Wintering Area within the evaluated marsh wetland on Site. The SWH is met with the following criteria: water depths within the wetland deep enough to not freeze with soft mud substrates and observation of >5 overwintering Midland Painted Turtles (Section 5.4.4) observed in early spring 2024 during daytime turtle basking surveys. The Marsh will be retained with 30m buffers around it and as such there are no impacts to the Turtle Wintering Area on Site.

5.7.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

Rare Vegetation Communities

Rare vegetation communities typically include those that have developed on cliff and talus slopes, sand barrens, shallow soils over limestone bedrock (alvar), old growth forests, savannahs, and tallgrass prairies.

No rare vegetation communities were observed on the Site.

Specialized Wildlife Habitat

Specialized Wildlife Habitat includes waterfowl nesting areas, Bald Eagle and Osprey nesting, foraging and perching habitat, woodland raptor nesting habitat, turtle nesting areas, seeps and springs, woodland amphibian breeding habitat, wetland breeding habitat, and woodland area-sensitive bird breeding habitat.

No Specialized Wildlife Habitats were identified or observed on the Site.

Habitats of Species of Conservation Concern

Habitats of Species of Conservation Concern include special concern and rare wildlife species. Habitats of Species of Conservation Concern do not include habitats of Endangered or Threatened species as identified by the ESA. Our background review did not identify the presence of any of the Habitats of Species of Conservation Concern for marsh bird breeding habitat, open country bird habitat, shrub/early successional bird breeding habitat, or terrestrial crayfish. The Site meets the criteria of Confirmed SWH for special concern and rare wildlife species, as the Eastern Wood-Pewee (listed as Special Concern) was observed on two occasions (BBS 1 and BBS 7) during breeding bird surveys (Figure 2; Appendix J). The low frequency of observations on Site (N= 2) suggests nesting doesn't occur on Site.

5.8 Other Natural Heritage Features

No Areas of Natural and Scientific Interest (ANSI) are located on or adjacent to the Site. The Site does not contain significant valleylands or greenspace linkages.

No other significant natural heritage features are located within 120 m of the Site.

6.0 DESCRIPTION OF THE PROPOSED PROJECT

The proposed residential subdivision will comprise a mix of single detached homes, townhomes, medium density residential areas, and condo blocks, as well as two stormwater ponds, park spaces, mixed-use areas, a retained hydro corridor, and conservation lands, comprising significant woodlands, wetlands and their associated buffers (Figure 29, Appendix J).

Access to the new community will extend from Onassa Circle to the north, and from O'Keefe Court to the south along the western edge of Lytle Park. Site development will commence from the south end, proceeding northward. As such, site work will not commence until the southern road access is established. Detailed plans for, and development of, that road, however, will be completed as part of a separate approvals process associated with the land parcel between Lytle Park and Highway 416 (i.e. 4497 O'Keefe Court). That parcel is being considered as a potential extension to the new proposed community, but it is not currently owned by Mattamy. Details of the southern access road design will be established either as part of Mattamy's planning process for the parcel as a residential community or in collaboration with the current site owner as part of their planning process for the site as an industrial property. Either way, development of the Site will commence only once the southern access road has been established to allow construction access. This is currently estimated to occur by mid to late 2026. Community build-out would then occur over the following five years.

Despite its recent delisting, the Marsh will be mostly retained within a 30 m natural buffer, though a small finger of wetland area in the southwest corner of the feature will be cut back several meters where it crosses through the retained "buffer". The Significant Woodland will also be retained, with slight adjustments to the boundary to accommodate proposed development and a road corridor from southern access to the Site via O'Keefe Ct. These areas are currently fully forested and will retain their canopy cover accordingly. The small park on Block 73 in the northeast corner of the Marsh is currently forested and forms part of the treed buffer around the wetland. As such, it would be established as a woodland park retaining its full existing canopy cover. Similar, existing canopy cover along the outer edge of the community within the MTO buffer would be retained.

Existing canopy cover in all other areas will be fully removed to permit site grading and construction. Urban streetscape forest cover in all residential blocks will be established to develop 20% canopy cover at maturity (Appendix L). Park blocks (other than on Block 73), as well as other open areas (e.g. the portions of SWM Pond blocks not directly covered by active ponds) will support 40% canopy cover at maturity. Canopy cover within the community will thus average 95% in areas of retained forest cover and 19% across redeveloped portions, leading to a net canopy coverage for the community of 31%.

The Quarry Pond will be repurposed as a Stormwater Management (SWM) facility. Pond outflow will be conveyed by pipe under the main roads of the community outletting to the O'Keefe Drain on the north side of O'Keefe Court (Appendix M). The Quarry Pond will also include piped outlet to the Marsh with an outlet control to allow for contributions to the Marsh required to maintain the current hydrology of that wetland feature (per Section 7.1).

A second SWM facility will be constructed in the southeastern portion of the Site. That feature will similarly convey flows via the pipe system under the southern access road to outlet to the O'Keefe Drain. The O'Keefe Drain (i.e. Reach 1) will otherwise be fully maintained.

Reach 8, 9, and 13 will be retained/ realigned. Reach 6 and 7 to the south of the Site will be removed to support realignment of Reach 8 and 9. Permit approvals from the relevant regulatory agencies will be required for the impact to these surface water features.

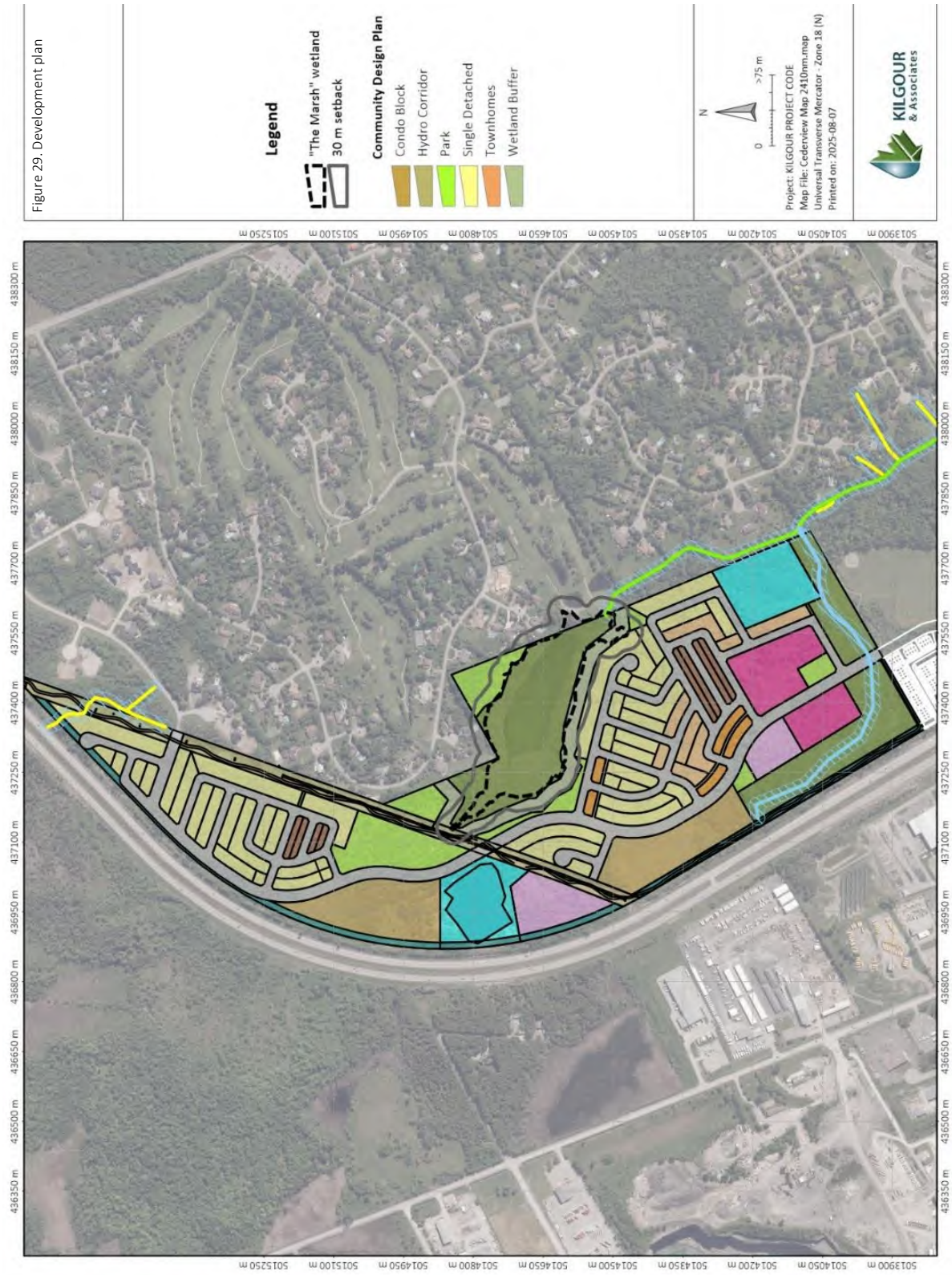

Figure 29. Development plan

7.0 IMPACT ASSESSMENT AND MITIGATION

The potential area of impact associated with the proposed development includes the reworking of the Quarry Pond as a SWM pond plus the removal of (young) forested and naturalized lands through the central and northern portions of the Site. The Significant Woodland area along the south side of the Site would subject to minor reshaping around the edges to fit the community. It will also require a road corridor to pass through a narrow portion as this would be the only feasible community access point anywhere in the southern half of the Site. Changes to channelized surface water features would include the alteration and/ or removal of four HDFs (Reach 8, 9, 12, and 13) on Site and two HDFs off Site (Reach 6 and 7). Setback requirements for the Marsh wetland and all retained headwater channels will are mostly respected Site Plan. The assessment of impacts is based on the Site concept (Figure 29) compared to the existing conditions observed in 2024.

7.1 Surface Water

7.1.1 Quarry Pond

The Quarry Pond will be repurposed as a stormwater management pond (SMP) to capture and treat stormwater runoff from the northern portion of the site. Given its current depth of >7 m, work will consist primarily of partially filing the bottom to cap the water table and reduce the overall depth. The pond will include a piped outlet leading southward through the community towards O'Keefe Court under the new southern access road (Appendix N). The drainage route with its underground conveyance would effectively allow for the cooling site runoff before its convergence with the cool-water O'Keefe Drain, also by passing the existing pond in Lytle Park (i.e. further avoid undue warming).

A second, flow-regulated pipe will lead from the southeastern corner of the feature to the northwestern corner of the Marsh. The purpose of this system would be to convey treated water (as managed through an Environmental Compliance Approval from the MECP) to the Marsh as required to ensure the continued hydrological functioning of that feature. This work will be supported by a Hydrological Impact Assessment or a Water Balance Analysis to be undertaken to support the final, detailed SWM planning process.

Repurposing the Quarry Pond will require an authorization from the RVCA. A *Request for Review* (RFR) and for this work will also be submitted to Fisheries and Oceans Canada (DFO). It is anticipated that the RFR will lead to a Letter of Advice (LoA) confirming whether a *Fisheries Act Authorization* (FAA) would be required (not expected).

Following all requirements and stipulations from the MECP's ECA, DFO's LoA (and/or FAA), and RVCA's Permit to Alter a Waterway will ensure no net negative impact from the conversion of the Quarry Pond to a SWM pond.

7.1.2 Stormwater Management Facility

The proposed construction of a second SWM Pond in the southeastern corner of the Site will require permits from RVCA, MNRF, and Ministry of the Environment (i.e., Environmental Compliance Approval) to confirm that treated water from the future stormwater pond maintains background input quality and quantity of water conveyed into the receiving body of water. The outlet channel will connect with the same piped outlet as for drainage from the Quarry Pond-SWM Pond, under the southern access road.

7.1.3 Headwater Drainage Features

7.1.3.1 Reaches 6, 7, 8 and 9

Reach 6 currently functions to convey water from the forested south end of the Site (i.e. for Reaches 7 and 8) along the western edge of Lytle Park and to the pond feature in the park's southwest corner. Solar heating in the pond then significantly increases water temperatures within this system (per Section 5.2.1.2). This conveyance route is thus likely to impose thermal stress on the O'Keefe Drain, being a cold water system, at the confluence at O'Keefe Court via the roadside ditch.

The construction of the future southern access road would see the removal of Reach 6 as an open headwater feature, to be replaced by the piped SWM system conveying flows from Quarry Pond SWM feature. Water flows from naturally forested areas via Reaches 8 and 9 would be conveyed eastward – directly to the O'Keefe Drain through the retained woodland so as to better limit solar heating as discussed below – thereby removing the need for Reach 6. The loss of Reach 6 would effectively be offset by the improved conveyance and thermal protection provided by the realigned reaches 8 and 9.

The majority of the upper portions of Reach 9 within the Significant Woodland will be preserved, providing a 30 to 60 m of setback to the channel (610 m in length). The lower portion of Reach 9 (i.e. east of the proposed road crossing) will be realigned via a naturalized watercourse extending eastward and connecting directly to Reach 1.

Development occurring generally on the southern half of the Site adjacent to the Conservation Lands would alter shallow overburden and subsurface flows, removing groundwater supply to Reach 8 and thus reducing its input. With proposed development there is no opportunity to maintain hydration to the upper portion of Reach 8, even with the full retention of all otherwise-required setbacks. However, the enhancement along the proposed constructed channel connecting Reach 9 to Reach 1 through extensive planting efforts providing shading, allochthonous inputs, improved filtration, and through engineered drainage and stormwater controls can be implemented to replicate the function of the removed HDF's, swamp wetland, and loss of fish habitat on the Site.

The upper portion of Reach 8 would be removed north of the conservation lands, but the lower portion within the conservation lands will remain. Reach 8 will thus be reduced from 330 m to ~50 m. It could receive some managed flows as well from a naturalized outlet channel form the SWM pond in the southeast corner of the Site. The majority of flows from the SE SWM Pond, however, would likely be piped to the same system from the Quarry Pond SWM feature replacing Reach 6. Reaches 8 and 9 will convey water east, via the Reach 9 Extension to Reach 1. The new natural channel would be fully situated within retained forest area, thereby providing a shaded, natural stream route preventing solar warming associated with online pond in Reach 6.

The proposed street crossing over Reach 9, and alterations to Reaches 6, 8, and 9 are currently being designed; they will require a *Request for Review* (RFR) to be submitted to Fisheries and Oceans Canada (DFO), as well as permit approvals with the RVCA for the *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* under O. Reg. 174/06 and approval from the City of Ottawa through the development application process.

7.1.3.2 Reach 13

Reach 13 is a small swale that conveys water from house lots on Onassa Circle. If the feature is proposed to be removed, permit approvals will be required through the RVCA for the *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* under O. Reg. 174/06, and consideration must be made to how this water is captured and conveyed on Site.

7.1.4 Wetland Communities

The Site Plans mostly respects the required 30 m setback associated with the updated wetland boundaries for the evaluated non-PSW Marsh on Site. A 3 m wide, 17 m long sliver of south east corner of the feature, however will be removed, with deep southwestern tip of the feature, however, will be removed where it extends into planned back yards. This portion of the feature would thus also have less than a 30 m setback. The wetland modifications and setback reductions will require a permit from the RVCA.

Development occurring generally on the southern half Site would alter shallow overburden and subsurface flows, removing groundwater supply to Reach 8 and adjacent swamp wetland (SWDM2-2 and MASM1-1 ecosites; Figure 29). With proposed development there is no opportunity to maintain hydration to these wetland ecosites or the upper portion of Reach 8, even with the full retention of all otherwise-required setbacks. However, the enhancement along the proposed constructed channel connecting Reach 9 to Reach 1 through extensive planting efforts providing shading, allochthonous inputs, improved filtration, and through engineered drainage and stormwater controls can be implemented to replicate the function of the removed HDF's, swamp wetland, and loss of fish habitat on the Site. There is a small section of the swamp wetland (SWDM2-2) that will be bisected to support the construction of the proposed road from O'Keefe Court. Given the retention of swamp on either side of the road, and conveyance of surface water through the proposed constructed channel to Reach 1, no significant impact is anticipated to the ecological function of the swamp. Future water balance analysis must be completed to confirm that overland surface water from spring freshet and large rainfall events can be captured within the constructed channel, and accepted by Reach 1.

7.1.5 Surface Water Feature Mitigation Measures

The potential for construction-related impacts to surface water features can be managed with the implementation of appropriate mitigation measures, such as:

- The outlet channels for SWM ponds are recommended to be designed following principals of natural channel design and with increased levels of hydration that would support improved habitat for local biota beyond the limited capacity afforded by the current Tributaries; and,

- The landscape plan for the SWMP pond is recommended to generally include a variety of native tree, shrub, grass, and forb species to provide allochthonous inputs, maximize shading, limit solar heating, provide erosion and sediment control, and contaminant filtration.

- Implementation of natural channel design principals in the design process;

- Design and implement erosion and sediment controls to contain/isolate the construction zone, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment;

- An Erosion and Sediment Control Plan outlining mitigation measures to limit the potential for sediment and erosion to enter these watercourses. The ESC Plan must be developed to the satisfaction of RVCA. The ESC Plan should include:
    - A multi-faceted approach to provide ESC;
    - Regularly inspecting and maintaining the ESC measures during all phases of the project;
    - Retention of existing vegetation and stabilization of exposed soils with native vegetation where possible;
    - Keeping the ESC measures in place until all disturbed ground has been permanently stabilized;
    - Using biodegradable ESC materials where possible and removing all exposed non-biodegradable ESC materials once the Site is stabilized;
    - Limiting the duration of soil exposure and phasing project works;
    - Limiting the size of disturbed areas by minimizing nonessential clearing and grading;
    - Minimizing the total slope length and the gradient of disturbed areas;
    - Refueling of machinery should occur >30 m from surface water features and all machinery will remain on the project-side of silt and construction fence;
    - Maintaining overland sheet flow and avoiding concentrated flows;
    - Storing/stockpiling materials >30 m away from the Marsh, SWM pond, and other surface water features;
    - Fencing or tarping all stockpiled material (<150-millimeter gravel) during the turtle nesting period (late May to early July) (MECP, 2021b) to prevent turtles from nesting in stockpiles. If the stockpile is within a properly fenced area (i.e., the project footprint) additional fencing is not necessary for turtle management, but is recommended for ESC if piles will be left unused for extended periods;
    - Regularly inspecting the Site for signs of sedimentation during all phases of work and taking corrective action if required;
    - Developing a response plan to be implemented immediately in the event of a spill of a deleterious substance;
    - Keeping an emergency spill kit on the Site;
    - Stopping work and containing deleterious substances to prevent dispersal; and

- Reporting any spills of sewage, oil, fuel, or other deleterious material whether near or directly into a surface water feature.

7.2 Vegetation, Significant Woodland and Canopy Cover

The Significant Woodland Policy (City of Ottawa, 2022b) provides that the forest attributes of woodland features qualified as "significant" can be replaced, substituted, or otherwise (adequately) mitigated. The policy acknowledges that negative impacts on the functions and services of significant woodlands within the urban area may be necessary in order to achieve the policies and objectives of the Official Plan and PPS. In evaluating potential tradeoffs associated with how the proposed development can be expected to impact Significant Woodland on the Site, this EIS considers changes in:

- Total canopy cover and tree "benefits" as measured using iTree Canopy; and
- Social value, Accessibility and Equity considering the percentage of the community with easy access to greenspace (i.e. considering the portion of the community within 250 m of wooded features).

Estimated canopy cover for the community at maturity is 31%. The assessment of existing conditions (Section 5.6) considered tree functions both within Significant Woodland areas and across the site generally. Given the redistribution of canopy cover across the entire Site, the iTree Canopy assessment of the Site post-development (Table 12) employs the same 100 sample points used for the initial "whole-site" assessment.

The majority of forested areas and trees on the Site outside of the Significant Woodland will require removal to accommodate the proposed development (Figure 29). The proposed development, therefore, results in a loss of 30.27 ha of forested lands, 1.03 ha of which constitute Significant Woodlands. Edge habitat along the Significant Woodland, and a 25m road corridor will be removed to accommodate proposed development. The proposed development will decrease the Significant Woodland from 6.16 to 5.2 hectares; however, the forested community (portions of THDM2-6, MASM1-1, FOCM4-1, SWDM2-2 ecosites) east of the Significant Woodland along the southern border (within the Conservation Lands) will be retained, preserving an additional 1.1 ha of forested cover contiguous with the mapped Significant Woodland. The preservation of additional forested areas on site will maintain >95% canopy cover on the southern portion of the Site and increase the total Significant Woodland by 0.14 ha to 6.3 ha from 6.16 ha.

Removal of any trees on the Site will require a Permit to cut trees and must be supported by a detailed TCR to be completed for each phase of development, beginning with the southern portion of the Site, once development details related to the southern access road are available. This EIS provides a general TCR overview for the site plan (Appendix O); the formal TCR(s) will address specific trees to be removed.

Generally, tree planting will be undertaken across the Site associated with the SWM ponds, park blocks, and lots to provide 40% canopy cover at maturity and 19% canopy cover in residential areas. This, however, may be further increased with the use of above-average levels of tree planting along residential streets, SWM blocks and City parks, as well as the use of rear yard tree planting where feasible.

The detailed grading approach for rear yards and other facilities abutting the Conservation Land blocks at the south end of the Site is to be designed to match existing grades outside of the retained forest edges to maximize tree retention potential within those blocks (Appendix M). The retained wooded area along the southern property boundary within the Conservation Lands will include a new pathway to provide

recreational access to the residents of the new community, and those of the adjacent community, to the mature forest there and the adjacent watercourse. While Site landscaping plans will require new trees generally within SWM blocks, planting along the sides of each SWM block will augment urban forest with a focus on establishing areas of denser tree coverage, maximized in width to the highest extent possible. Pathways associated with these concentrated areas of tree planting are intended to provide recreational walkways under a nearly full canopy at maturity near the pond features within the blocks.

Table 15 Post Development Assessment of Canopy Benefits

Land Cover Distribution		
Land Cover Type	**General Site (post-development)**	
	Area (ha)	**Area (%)**
Tree/Shrub	22.35 ± 3.33	31.00 ± 4.62
Not Treed (grass/herbaceous, impervious, water, bare ground)	47.74 ± 3.33	69.00 ± 4.62
Total	72.08	100%

Tree Benefit Estimates: Carbon			
	General Site (post-development)		
	Carbon (t) ± SE	**CO2 Equiv. (t) ± SE**	**Value (CAD) ± SE**
Sequestered annually in trees	68.38 ± 10.20	250.72 ± 37.41	$44,889 ± 6,697
Total stored in trees	1,426.02 ± 241.00	6,296.60 ± 939.40	$1,127,342 ± 1618,190

Tree Benefit Estimates: Air Pollution		
Pollutant Removed Annually	**General Site (post-development)**	
	Amount (kg) ± SE	**Value (CAD) ± SE**
CO - Carbon Monoxide	22.62 ± 3.37	$13 ± 2
NO_2 - Nitrogen Dioxide	113.16 ± 16.88	$4 ± 1
O_3 - Ozone	1,203.15 ± 179.50	$212 ± 32
SO_2 – Sulfur Dioxide	113.02 ± 16.86	$1 ± 0
PM2.5 - Particulate Matter <2.5 µm	59.46 ± 8.87	$443 ± 66
PM10 - Particulate Matter 2.5 – 10 µm	427.54 ± 63.79	$1,271 ± 190

Tree Benefit Estimates: Hydrological		
Benefit	**General Site (post-development)**	
	Amount (kl) ±SE	**Value (CAD) ± SE**
Avoided Runoff	187.68 ± 28.00	$610 ± 91
Evaporation	15,484.99 ± 2,310.23	N/A
Interception	15,562.27 ± 2,321.76	N/A
Transpiration	23,995.26 ± 3,579.89	N/A
Potential Evaporation	117,738.13 ± 17,565.51	N/A
Potential Evapotranspiration	117,738.13 ± 17,565.51	N/A

Similarly, areas of tree planting at higher density in park blocks will establish further expressions of urban forest canopy. Extensive planting within SWM blocks and park blocks will result in 86% of the new community being located within 250 m of the recreational walkways, with the retained forest and/or new areas enhanced with new canopy cover. Including the consideration of other open-space areas, 92% of the community is located within 250 m accessible green space, with opportunities for additional canopy coverage to be confirmed as the planning process progresses for the Site. Overall changes in forest function and canopy cover are indicated in Table 16.

Table 16 Summary of Changes in Canopy and Forest Function

Ecosystem Service	Change			
Social Value	Existing - Private land, no public access Proposed - New community with 26% urban canopy cover			
Accessible Greenspace	Existing - Private land, no public access Proposed -8.2 ha of retained mature forest with recreational access, and 5.0 ha of new urban forest features with recreational access			
Percent of the community within 250 m of accessible greenspace	Existing - Private land, no public access Proposed – 92%. – The entire community is situated within 250 m of other accessible green space such the (re-greened) hydro corridor			
	Existing Site Total	Existing Significant Woodland	Proposed Site Total	Proposed Significant Woodland
Canopy Cover (Total for site)	73%	7.3%	31%	7.6 % (i.e. considering the retained Conservation Lands at the south end of the Site)

The following general protection measures are recommended during Site preparation and construction to limit impacts to vegetation:

- Limit tree removal onsite to the highest extent possible and only remove trees necessary to accommodate construction and development; and
- Ensure equipment is clean prior to vegetation removal to avoid introducing invasive species to the Site, and clean equipment prior to leaving the Site to avoid spreading the aforementioned invasive species elsewhere.

The following mitigation measures are recommended to minimize impacts on trees and forested areas being retained (e.g., Significant Woodland) on the Site:

- Erect a fence beyond the critical root zone (CRZ; i.e., 10 x the trunk diameter) of trees being retained. The fence is recommended to be highly visible (e.g., orange construction fence) and paired with erosion control fencing. Pruning of branches is recommended in areas of potential conflict with construction equipment;
- Signage attached to the CRZ fence every 6.0 m indicating:

a) the fencing is to protect the tree's CRZ; and

b) that the fence must not be moved.

- Do not place any material or equipment within the CRZ of the tree;
- Do not attach any signs, notices, or posters to any tree;
- Do not raise or lower the existing grade within the CRZ without approval;
- Tunnel or bore when digging within the CRZ of a tree;
- Do not damage the root system, trunk or branches of any tree; and
- Ensure that exhaust fumes from all equipment are NOT directed toward any tree's canopy.

Tree planting plans will be created as part of the landscape plan for the development. The tree planting plan for the retained forest areas, riparian areas, and residential areas of the Site are to include directives that will lead to 40% canopy cover at maturity. Trees and other plants identified in landscape plans are recommended to be non-invasive and locally appropriate native species. The following tree and shrub species are recommended for planting and should be used to direct the development of the landscape plan for the Site. The following species are appropriate given Site conditions and are native and non-invasive: Alternate-leaf Dogwood (*Cornus alternifolia*), Balsam Fir (*Abies balsamea*), Balsam Poplar (*Populus balsamifera*), Basswood (*Tilia americana*), Bitternut Hickory (*Carya cordiformis*), Black Cherry (*Prunus serotina*), Black Walnut (*Juglans nigra*), Bur Oak (*Quercus macrocarpa*), Chokecherry (*Prunus virginiana*), Honey Locust (*Gleditsia triacanthos*), Horse-chestnut (*Aesculus hippocastanum*), Ironwood (*Ostrya virginiana*), Largetooth Aspen (*Populus grandidentata*), Maple-leaf Viburnum (*Viburnum acerifolium*), Nannyberry (*Viburnum lentago*), Northern Bush-honeysuckle (*Diervilla lonicera*), Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), Red Pine (*Pinus resinosa*), Serviceberries (*Amelanchier spp.*), Tamarack (*Larix laricina*), Trembling Aspen (*Populus tremuloides*), White Birch (*Betula papyrifera*), White Cedar (*Thuja occidentalis*), White Oak (*Quercus alba*), White Pine (*Pinus strobus*), and White Spruce (*Picea glauca*).

7.3 Species at Risk

Following the full review of species occurrences associated with the Site (Section 5.5), a total of eight species subject to protections as SAR under the ESA and/or SARA (Table 12) were considered to have habitat and/or presence on the Site that could potentially interact with the proposed community and/or its development. Those species are discussed in detail below.

Along with general wildlife mitigations provided in Section 9.4, the following species-specific mitigative approaches can be anticipated to protect the SAR that do, or may potentially, occur on the Site, and /or ensure no-net negative impacts to them. Mitigations and permitting requirements indicated in the Section below are based on current MECP policies, which were developed in accordance with the ESA prior to significant changes in that act following passage of Ontario's Bill 5. Most current SAR polices (e.g. Ontario Regulations associated with the ESA) are anticipated to be subject to significant changes and/or full removal to reflect recent (and further upcoming) changes to that act. Accordingly, mitigation measures will ultimately be adjusted to align with permitting processes in place at the time permit applications are filed.

7.3.1 Butternut

Butternut and their associated root-harm prevention zone are regulated under the ESA (Government of Ontario, 2007). The proposed development requires the removal of all five Butternuts identified on the Site during the BHA completed on July 22, 2024. The BHA (Appendix I) may be used to support a project registration through the Ontario Conservation Fund in accordance with O. Reg. 829/21. Completion of the registration through this process would permit the removal of trees as required to proceed with site development while ensuring an overall net benefit for the species.

7.3.2 Black Ash

Black Ash over 8 cm at 1.37 m and their habitat are regulated under the ESA (Government of Ontario, 2007). The proposed development requires the removal of the majority of Black Ash individuals on Site to support the construction of the road into the South end of the Site; however, protections under the ESA do not apply to trees with DBH measurements less than 8 cm. As such, associated permits and approvals are not required.

If Site development does not occur within 2 years, and trees on Site have grown into the protected size of greater than 8cm DBH at 1.37 m, a *Black Ash Health Assessment Report Worksheet* is required for submission to the MECP alongside an *Information Gathering Form* (IGF). Completion of the Net Benefit Permit would permit the removal of trees as required to proceed with site development. Offsetting for Black Ash losses would most likely be accomplished through the (re)planting of Black Ash saplings around SWM blocks, as part riparian enhancements along the realigned lower portion of Reach 9, and, if required, at other offsite locations in the broader vicinity of the Site.

7.3.3 Blanding's Turtle

Blanding's Turtle is known to occur within the Stony Swamp PSW, approximately 0.2 km from the Site west of Highway 416, though transit between that feature and the Site is considered to be severely constrained by the presence of the highway. The Quarry Pond, with its steep, rocky drop off to significant depths and with a hard, inorganic substrate is considered to have limited suitability for the species. However, while no Blanding's Turtles were detected on the Site, the Marsh does provide habitat potential for the Species. Due to the proximity to Stony Swamp occurrences, the Marsh must be considered as providing Blanding's Turtle habitat.

Under MECP habitat guidelines for Blanding's Turtle, "Category 2 Habitat" extends 30 m beyond the water's edge; disturbance from development work is highly restricted here. As such, no community development work would be permitted within 30 m of the Marsh. The installation of exclusion fencing around all work areas will be a requirement for the duration of construction. This can be achieved simultaneously with erosion and sediment control using silt fencing. The new community plan would see blocks of single residential units and park space abutting the Marsh. As such, rear yard fencing would form a continuous permanent exclusion fence around the feature to prevent turtle access to the neighbourhood and its roadways.

Category 3 habitat extends 250 m beyond the water's edge; proposed development will take place within this area. The Category 3 designation is only intended, however, to protect movement corridors (MECP 2019b). The proposed development zone directly abuts existing areas of development on the east (residential), north (Highway 416), west (Highway 416), and south (commercial) sides of the Site. Additionally,

there are no existing wetlands adjacent to the Site on the east, west, north, or south sides of the Site. Therefore, future Site development within the nominal Category 3 habitat areas of the Site are not expected to impact travel corridor functionality and would thus be in compliance with the ESA.

7.3.4 SAR Bats

Potential impacts to individual at-risk bats directly will be mitigated by clearing trees outside of the roosting season (April 1 to September 30 inclusive; MECP, 2024b). Following this tree-clearing window would also avoid potential interactions with birds and bird nests protected under the Migratory Birds Convention Act (MBCA; Government of Canada, 1994). As such, the Hoary Bat, Silver-haired Bat, Eastern Red Bat, Little Brown Myotis and Tri-colored Bat are generally considered unlikely to be impacted by future site development.

The general wildlife mitigations provided in Section 7.6, respectively, are anticipated to protect the SAR that may potentially occur on the Site.

7.4 Significant Natural Heritage Features

7.4.1 Significant Wildlife Habitat

No demonstrated, direct threats to Eastern Wood-pewee population sizes are known, and loss of habitat is not documented as a significant impact to this species (COSSARO, 2013). The Eastern Wood-pewee is a small flycatcher that feeds on small insects from a perch in the subcanopy of the forest. The retention of the 30 m wide forested corridor adjacent to the wetland on Site, retention of the forested area in the southern portion of the Site, and SWM pond is anticipated to continue to support this species, and no significant impact is anticipated.

7.5 Wildlife

A total of six frog and toad species were observed on the Site via evening anuran surveys and incidental observations, predominantly associated with the existing marsh wetland on the Site. This wetland is being retained, and therefore, no impact to species utilizing this feature is anticipated. Green Frog, Wood Frog, and Spring Peeper were observed in association with Reach 9 and the Significant Woodland on the southwest corner of the Site. Reach 9 and the majority of the surrounding unevaluated wetlands (SWDM2-2 and MASM1-1 ecosites; Figure 1) are being retained, and therefore no impact to species utilizing this feature is anticipated.

The following mitigation measures are recommended to be implemented during future construction to generally protect nesting migratory birds, and wildlife common to the Ottawa area:

- Areas are not recommended to be altered or cleared during sensitive times of year for wildlife unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist;
    - Clearing of trees and/or vegetation should not take place April 1 to September 30 inclusive unless a qualified Biologist has determined that no birds are nesting or suitable bat roosting trees are present. The bird nest sweep would be valid for five days:

        - The MBCA protects the nests and young of migratory breeding birds in Canada. The timing of nesting for birds in the area spans April 1 to August 31 (Government of Canada, 1994);

- Ensure that a qualified biologist develops a wildlife management plan for the construction process and delivers environmental compliance and biodiversity training to all site workers to implement the plan. The plan is recommended include (but not be limited to) requirements to:

    - Utilize silt fence paired with sturdy construction fence along the project perimeter and around soil stockpiles to serve as a wildlife exclusion measure to prevent smaller animals from accessing/utilizing temporary habitats on the Site;

    - Check the entire work site for wildlife prior to beginning work each day;

    - Do not harm, feed, or unnecessarily harass wildlife;

    - Manage waste to prevent attracting wildlife to the work site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the work site, especially during warm weather;

    - A recommended a speed limit of 20 km/h during the active season (April 1 to September 30) to reduce wildlife mortality; and

    - Manage stockpiles and equipment at the work site to prevent wildlife from being attracted to artificial habitat. Cover and contain any piles of soil, fill, brush, rocks, and other loose materials and cap ends of pipes where necessary to keep wildlife out. Ensure that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife.

Once construction is complete and the residences are occupied, KAL recommends that new residents are encouraged through signage and public education to keep pets on leash during the bird breeding season (April 1 to August 31). It is recommended that landowners be provided with educational resources about keeping cats on a leash or indoors, as cats are one of the largest threats to bird populations (Blancher, 2013).

8.0 CONCLUSIONS

This report provides an initial set of mitigation measures and recommendations for employment in the design and construction of the proposed development. The assessment of the potential for impacts to the natural heritage system is based on the implementation of these mitigation measures.

It is the opinion of the undersigned that the future site development following the proposed ZBA, and consistent with the proposed site plan can be implemented - with sufficient mitigation measures and offsetting per the required permits - in a manner that would not be anticipated to have a net-negative impact on significant natural features or ecological functions currently present on and/or provided by the Site.

9.0 CLOSURE

This report was prepared for exclusive use by Mattamy Homes Canada Ltd. and may be distributed only by Mattamy Homes Canada Ltd. Questions relating to the data and interpretation can be addressed to the undersigned.

Respectfully submitted,

KILGOUR & ASSOCIATES LTD.

Kesia Miyashita, MSc
Senior Biologist
E-mail:
16-2285 St. Laurent Blvd, Ottawa, ON, K1G 4Z6
Office: 613-260-5555
Cell:

Nick Moore, BSc
Project Manager, Biologist
E-mail:
16-2285 St. Laurent Blvd, Ottawa, ON, K1G 4Z6
Office: 613-260-5555
Cell:

Anthony Francis, PhD
Project Director
E-mail:
16-2285 St. Laurent Blvd, Ottawa, ON, K1G 4Z6
Office: 613-260-5555
Cell:

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Appendix A Qualifications of Report Authors

Kesia Miyashita, MSc (Senior Biologist)

Ms. Miyashita has over ten years of experience in environmental consulting and more than thirteen seasons of field experience in ecosystems in Ontario, Alberta, and British Columbia. During her career in environmental consulting, Ms. Miyashita has completed environmental assessments for a variety of major infrastructure projects and urban developments. Her expertise is in vascular and non-vascular plant ecology, with experience in both terrestrial and wetland ecosystems; she has performed vegetation community inventories, rare plant surveys, and invasive weed surveys in a variety of natural environments, including native forest, urban nature preserves, grasslands, and wetlands. Ms. Miyashita joined Kilgour & Associates Ltd. in May of 2021 and has since authored Environmental Impact Studies and Tree Conservation Reports and undertaken field surveys for flora and fauna, delineation of natural heritage features, and SAR surveys. Ms. Miyashita is a Professional Biologist with the Alberta Society of Professional Biologists and a Qualified Wetland Science Practitioner in the province of Alberta.

Nick Moore, BSc (Project Manager, Biologist)

Mr. Moore is a Field Ecologist with a background in Aquatic Biology. He graduated from Sir Sandford Fleming in 2018 with two Technical Diplomas for Environmental Technician and Environmental Technologist, as well as completing his Bachelor of Science with Honors in Biology and Environmental and Resource Studies at Trent University. He has worked with Kilgour & Associates Ltd. for three years. With us, he has been involved land-development projects where he has written Environmental Impact Studies and has used his academic training to characterize the flora and fauna of natural environments. Nick is a certified wetland evaluator under Ontario's Wetland Evaluation System (OWES) process.

Anthony Francis, PhD

Dr. Francis is a Senior Ecologist with 20 years' consulting experience to both government agencies and private industry. He has worked on a diversity of projects relating to species at risk (SAR), invasive species, terrestrial and aquatic habitat, environmental effects monitoring and mitigation, and fate/effects of contaminants. Within each of these subject areas, Dr. Francis has completed projects addressing specific site concerns and broader policy initiatives. Dr. Francis' academic background is in spatial ecology with a focus on tree species diversity. As a Senior Ecologist at KAL, he regularly completes TCRs, Environmental Impact Statements, and Integrated Environmental Reviews for land development projects throughout Ottawa and eastern Ontario. He is also a certified Butternut Health Assessor (BHA #104).

Appendix B Confirmation of Field Studies

Nick Moore

From: Elliott, Mark <mark.elliott@ottawa.ca>
Sent: April 16, 2024 1:09 PM
To: Nick Moore
Subject: RE: Confirmation of EIS Field Work at 4497 A and B O' Keefe Court

Hi Nick,

The noted studies should be sufficient to furnish a complete EIS review of the proposal.

Thanks,

Mark

From: Nick Moore <nmoore@kilgourassociates.com>
Sent: April 10, 2024 2:11 PM
To: Elliott, Mark <mark.elliott@ottawa.ca>
Subject: Confirmation of EIS Field Work at 4497 A and B O' Keefe Court

Hi Mark,

Thank you again for taking some time yesterday to chat about our scope of work for the EIS at 4497 A and B O' Keefe Court.

As discussed in the meeting we are planning to complete the following field studies for our EIS to support an OPA:

- **Vegetation Studies** will include:
    - **Ecological Land Classification** (ELC) to delineate terrestrial and wetland vegetation communities. ELC delineates ecosite units through describing the types of terrestrial and wetland habitat available on and/or adjacent to the Site. Ecosites allow for the identification/characterization/delineation/confirmation of significant natural heritage feature classes including Provincially Significant Wetlands (PSW). ELC is also used as the basis for the delineation and characterization of habitat potential SAR and/or other wildlife.
- Detailed surveys of SAR and other wildlife including:
    - **Acoustic Bat Surveys**. At-risk bat species are known to occur in the region, and specific surveys are required to determine woodland and wildlife habitat significance based on the presence of certain bat species per definitions under the Provincial Policy Statement (PPS). Bat surveys for this project would be conducted via acoustic monitoring throughout the month of June. "Bat monitors" can be set up and retrieved while completing other field efforts.

- **Nightjar surveys** for Eastern Whip-poor-will as this SAR is known to occur in the region. Specific surveys will be conducted to confirm their presence/absence. The timing of nightjar surveys is based on the moon cycle, with three night-time surveys occurring within late May through late June.
- **Anuran surveys** will be conducted to determine the potential presence/absence of Significant Wildlife Habitat for breeding amphibians. Three rounds of evening surveys would be conducted starting in the early spring (late March to mid-April) and ending in the summer (late June to early July).
- **Turtle surveys**. Several at-risk turtle species are known to occur in waterbodies adjacent to the project site, including Snapping Turtle, Blanding's Turtle, Eastern Musk Turtle, and Northern Map Turtle. Five rounds of spring visual encounter surveys from after ice-off through June will be conducted to confirm the presence/absence of these species on the project site as well as areas of potential Significant Wildlife Habitat for turtles. An assessment of turtle nesting potential should be conducted by searching for signs of nesting (e.g., preyed upon eggs) from late May through early July; these searches could be conducted while on the site for other targeted surveys.
- **Breeding Bird Surveys**. Various migratory bird species are listed as Special Concern while others are listed as Threatened under the Ontario *Endangered Species Act*. Other migratory bird species are protected under the *Migratory Birds Convention Act.* Morning breeding bird surveys are the method to confirm the presence/absence of at-risk and migratory breeding bird species. The presence of these species is another determinant of woodland and wildlife habitat significance under the PPS. Morning breeding bird surveys will be conducted such that they fall within conditions suitable for surveying listed forest bird species known to occur in the region. Morning breeding bird surveys would be conducted via two rounds of surveys, more than one week apart, starting in late May and ending in early July.

- **Surface Water Feature Characterization** to classify the hydrological, aquatic, and terrestrial functions of one of the surface water features present on Site. The previous EIS report that was prepared for this property conducted a thorough assessment of headwater drainage features on Site; however, the surface water feature that connects the PSW to the quarry is included in this scope of work to re-evaluate its characteristics to better comment on its quality, quantity, and connectivity between the quarry and PSW for future management directives of the feature. A single site visit in the spring (late March to early April) should suffice to (re)characterize the feature.

  Aquatic studies also include the full **characterization of the fish community** within the quarry pond.

Once you have reviewed, please confirm that these studies (from the perspective of field work) will satisfy the city to complete an EIS to support an OPA.

Thanks again for your time!

Nick

Nick Moore, BSc
Biologist
KILGOUR & ASSOCIATES LTD.
Mobile: 226-387-0572
Direct: 613-367-5539
Ottawa: 613-260-5555
nmoore@kilgourassociates.com
www.kilgourassociates.com

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Appendix C Initial Species at Risk Screening and Assessment

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Closest Species Occurrence Record to the Site	General Habitat Requirements	Site Suitability	Potential for Protected Elements[1]		Potential for Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Birds								
American White Pelican (*Pelecanus erythrorhynchos*)	**Threatened**	**Not at Risk**	~5km	Nests in groups on barren or sparsely treed remote islands located in lakes, reservoirs, or on large rivers. Migration only; within Ontario breeding is limited a few sites in the west and north (MECP, 2022a).	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Bank Swallow (*Riparia riparia*)	**Threatened**	**Threatened**	<1km	Colonial nester; burrows in eroding silt or sand banks, sand pit walls, and human-made sand piles. Often found on banks of rivers and lakes.	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Barn Swallow (*Hirundo rustica*)	**Special Concern**	**Threatened**	<1km	Nests on barns and other structures. Forages in open areas for flying insects. Lives in close association with humans and prefers to nest on structures such as open barns, under bridges, and in culverts.	The Site may provide suitable foraging habitat but does not contain suitable nesting habitat.	Low	Low	Low
Black Tern (*Chlidonias niger*)	**Special Concern**	**Not at Risk**	~5km	Build floating nests in loose colonies in shallow marshes with abundant emergent vegetation, especially in cattails.	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Bobolink (*Dolichonyx oryzivorus*)	**Threatened**	**Threatened**	**<1km**	Breeds in hayfields, pastures, agricultural fields, and abandoned fields with tall grass that are ≥5 ha, and preferably >30 ha.	The meadow in the center of the Site could provide suitable habitat.	Moderate	Moderate	Moderate
Canada Warbler (*Cardellina canadensis*)	**Special Concern**	**Threatened**	~5km	Prefers moist forests with dense shrub layers. Nests located on or near the ground on mossy logs or roots, along stream banks or on hummocks. Area-sensitive species that usually require a minimum of 30 ha of continuous forest for breeding habitat (OMNR, 2000).	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Chimney Swift (*Chaetura pelagica*)	**Threatened**	**Threatened**	<1km	Nests in traditional-style open brick chimneys (and rarely in hollow trees). Tends to stay close to water.	Although Chimney Swift prefer chimneys, they can nest and roost in hollow trees and tree cavities. Hollow trees (living or dead) within the forested areas on the Site could provide nesting/roosting habitat.	Low	Low	Low

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Closest Species Occurrence Record to the Site	General Habitat Requirements	Site Suitability	Potential for Protected Elements[1]		Potential for Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Common Nighthawk (*Chordeiles minor*)	**Special Concern**	**Threatened**	~5km	Nests in a wide variety of open sites, including beaches, fields, and gravel rooftops with little to no ground vegetation. They also nest in cultivated fields, orchards, urban parks, mine tailings and along gravel roads/railways but tend to occupy more natural sites.	Open areas with very little ground cover on-site may provide suitable nesting and foraging habitat.	Low	Low	Low
Eastern Meadowlark (*Sturnella magna*)	**Threatened**	**Threatened**	On Site	Breeds in hayfields, pastures, agricultural fields, and abandoned fields with tall grass that are ≥5 ha, and preferably >30 ha.	The meadow in the center of the Site could provide suitable habitat.	High	High	Low. Observed during morning breeding bird surveys; however, observation occurred only on first visit, suggesting a transient occurrence and suitable habitat was not found for the individual on Site.
Eastern Whip-poor-will (*Antrostomus vociferus*)	**Special Concern**	**Threatened**	<1km	Suitable breeding habitats generally include open and half treed areas and often exhibit a scattered distribution of treed and open space. Lays eggs directly on the forest floor. Roosts are typically located in forest habitat on a low branch or directly on the ground. Home range size varies from 20 to 500 ha (mean 136 ha) (ECCC, 2018a).	The forested area on the Site could provide suitable nesting/foraging habitat due to a smaller size than the average 136 ha.	Moderate	Moderate	Low. Not detected on Site during nighttime nightjar surveys.
Eastern Wood-Pewee (*Contopus virens*)	**Special Concern**	**Special Concern**	~5km	Woodland species often found in the mid-canopy layer near clearings and edges of intermediate age and mature deciduous and mixed forests with little understory.	The forested area on the Site could provide suitable habitat.	High	High	High. Observed on Site during morning breeding bird surveys.
Evening Grosbeak (*Coccothraustes vespertinus*)	**Special Concern**	**Special Concern**	<1km	Nests in trees or large shrubs. Prefers mature coniferous forests (fir and/or spruce dominated), but will also use deciduous forests, parklands, and orchards. Its abundance is strongly linked to the cycle of Spruce Budworm.	The Site may provide marginally suitable habitat, as it does not contain many conifers.	Moderate	Low	Low. Not detected on site during morning breeding bird surveys.
Golden Eagle (*Aquila chrysaetos*)	**Endangered**	**Not at Risk**	~5km	Nests in remote, undisturbed areas, usually building their nests on ledges on a steep cliff/riverbank or large trees if needed. Most hunting is done near open areas such as large bogs or tundra. Migration only; no reported nests in Ottawa.	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Golden-winged Warbler	**Special Concern**	**Threatened**	<1km	Ground-nests in areas of young shrubs surrounded by mature forest. Often found in areas that have recently	The hydro corridor could provide suitable habitat.	Moderate	Low	Low. Not detected on site during morning breeding bird surveys.

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Closest Species Occurrence Record to the Site	General Habitat Requirements	Site Suitability	Potential for Protected Elements[1]		Potential for Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
(*Vermivora chrysoptera*)				been disturbed such as field edges, hydro or utility right-of-ways, or logged areas. Requires >10 ha of habitat (OMNR, 2000).			Transient occurrence near the project area is possible.	
Grasshopper Sparrow (*Ammodramus savannarum*)	**Special Concern**	**Special Concern**	~5km	Lives in open grassland areas with well-drained sandy soil. Will also nest in hayfields and pastures, as well as alvars, prairies, and occasionally grain crops such as barley. It prefers areas that are sparsely vegetated, and its nests are well hidden in the field, woven from grasses in a small cup-like shape.	The meadow on Site could provide suitable habitat.	Moderate	Low Transient occurrence near the project area is possible.	Low. Not detected on site during morning breeding bird surveys.
Hudsonian Godwit (*Limosa haemastica*)	**Threatened**	**No Status**	~5km	They use a wide variety of habitats during migration, such as freshwater marshes, saline lakes, flooded fields, shallow ponds, coastal wetlands, and mudflats. Migrant only; breeds in far north.	The pond could provide habitat for a transient occurrence.	Low	Moderate Transient occurrence near the project area is possible.	Low. Transient occurrences could occur for individuals migrating; however, the suitable marsh habitat on site will not be impacted by development.
Least Bittern (*Ixobrychus exilis*)	**Threatened**	**Threatened**	<1km	Found in a variety of wetland habitats, but strongly prefers cattail marshes with a mix of open pools and channels. They prefer larger marshes >5 ha in size and are intolerant of loss of habitat and human disturbance (OMNR, 2000).	The marsh and wetland on site could provide suitable habitat.	Moderate	Moderate Transient occurrence near the project area is possible.	Low. The suitable marsh and wetland habitat on site could be used by Least Bittern; however, the proposed development will not impact the wetland on site.
Lesser Yellowlegs (*Tringa flavipes*)	**Threatened**	**No Status**	<1km	Breeds in boreal wetlands. Nests on dry ground or forest openings near peatlands, marshes, and ponds in the boreal forest and taiga (Government of Canada, 2021). Migrant only; nests in far north.	The Site does not appear to contain suitable habitat.	Negligible	Negligible	Negligible
Olive-sided Flycatcher (*Contopus cooperi*)	**Special Concern**	**Threatened**	<1km	Found along coniferous or mixed forest edges and openings. Will use forests that have been logged or burned if there are ample tall snags and trees to use for foraging perches.	The coniferous and mixed forest edges on Site could provide suitable habitat.	Moderate	Low Transient occurrence near the project area is possible.	Low. Not detected on site during morning breeding bird surveys.
Peregrine Falcon (*Falco peregrinus*)	**Special Concern**	**Special Concern**	<1km	Nests on tall, steep cliff ledges close to large bodies of water. Urban peregrines raise their young on ledges of tall buildings, even in busy downtown areas.	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Negligible
Rusty Blackbird (*Euphagus carolinus*)	**Special Concern**	**Special Concern**	<1km	Prefers wet wooded or shrubby areas. Nests at edges of boreal wetlands and coniferous forests. These areas	The shrub area surrounding ponds and wetland on the	Moderate	Moderate	Moderate

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Closest Species Occurrence Record to the Site	General Habitat Requirements	Site Suitability	Potential for Protected Elements[1]		Potential for Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
				include bogs, marshes, and beaver ponds.	Site could provide suitable habitat.			
Short-eared Owl (*Asio flammeus*)	**Threatened**	**Special Concern**	~5km	Prefer a mosaic of grasslands and wetlands. Lives in open areas such as grasslands, marshes, and tundra where it nests on the ground and hunts for small mammals (Environment Canada, 2016c).	The Site does not appear to contain suitable habitat.	Negligible	Low Transient occurrence near the project area is possible.	Low
Wood Thrush (*Hylocichla mustelina*)	**Special Concern**	**Threatened**	<1km	Lives in mature deciduous and mixed forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing and perching. Prefers nesting in large forest mosaics, but will also use fragmented forests. Usually build nests in Sugar Maple or American Beech.	The forested areas on Site could provide suitable habitat.	Moderate	Low Transient occurrence near the project area is possible.	Low. Not detected on site during morning breeding bird surveys.
Mammals								
Eastern Small-footed Myotis (*Myotis leibii*)	**Endangered**	**Not Listed**	In Region	In the spring and summer, Eastern Small-footed Myotis will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. Overwinters in caves and abandoned mines.	The forest on-site may provide suitable roosting habitat, while the forest and open areas may provide suitable foraging habitat.	Moderate	Moderate	Moderate
Little Brown Myotis (*Myotis lucifugus*)	**Endangered**	**Endangered**	In Region	During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. They can squeeze through very tiny spaces (as small as six millimetres across) allowing them access to many different roosting areas.	The forest on-site may provide suitable roosting habitat, while the forest edges and open areas may provide suitable foraging habitat.	Moderate	Moderate	Moderate
Northern Myotis / Northern Long-eared Bat (*Myotis septentrionalis*)	**Endangered**	**Endangered**	In Region	Associated with deciduous and mixed forests, choosing to roost under loose bark and in the cavities of trees. They forage along and within forests as well as in hayfields and pastures adjacent to mixed forests.	The forest on-site may provide suitable roosting habitat, while the forest and open areas may provide suitable foraging habitat.	Moderate	Moderate	Moderate
Tri-colored Bat / Eastern Pipistrelle (*Perimyotis subflavus*)	**Endangered**	**Endangered**	In Region	Roosts mainly in trees during summer; overwinters in caves and mines along with other species, but often uses deeper parts of the hibernaculum. Foraging occurs in forested riparian areas, over water, and within gaps in forest canopies.	The forest on-site may provide suitable roosting and foraging habitat.	Moderate	Moderate	Moderate

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Closest Species Occurrence Record to the Site	General Habitat Requirements	Site Suitability	Potential for Protected Elements[1]		Potential for Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Amphibians								
Western Chorus Frog (*Pseudacris triseriata*)	**Not Listed**	Great Lakes/ St. Lawrence population: **Threatened**	~5km	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas.	The open, moist meadow may contain vernal pools that that could provide suitable breeding habitat.	Moderate	Moderate	Moderate
Reptiles								
Blanding's Turtle (*Emydoidea blandingii*)	**Threatened**	**Endangered**	~5km	Quiet lakes, streams, and wetlands with abundant emergent vegetation. Also frequently occurs in adjacent upland forests.	The Site may provide marginal nesting and movement habitat.	Moderate	Moderate	Moderate
Eastern Milksnake (*Lampropeltis triangulum*)	**Not Listed**	**Special Concern**	~5km	Found in a variety of open and edge habitats, including meadows, rocky outcrops, and forest edges. They can also inhabit forests. Further, they are often associated with human-made structures such as barns (Environment Canada, 2015b).	The meadow and forest communities on Site could provide suitable habitat.	Moderate	Moderate	Moderate
Eastern Musk Turtle / Stinkpot (*Sternotherus odoratus*)	**Special Concern**	**Special Concern**	~5km	Found in lakes, ponds, marshes, and rivers that are generally slow-moving, have abundant emergent vegetation, and muddy bottoms that they burrow into for winter hibernation.	The small pond could potentially provide suitable habitat	Moderate	Moderate	Moderate
Midland Painted Turtle (*Chrysemys picta marginata*)	**Not Listed**	**Special Concern**	~5km	Inhabits waterbodies, such as ponds, marshes, lakes, and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation. Often bask on shorelines or on logs and rocks that protrude from the water.	The small pond could potentially provide suitable habitat	Moderate	Moderate	High. Observed on Site during turtle basking surveys.
Northern Map Turtle (*Graptemys geographica*)	**Special Concern**	**Special Concern**	~5km	Lives in rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, they hibernate on the bottom of deep, slow-moving sections of river.	The Site does not contain suitable habitat.	Negligible	Negligible	Negligible
Snapping Turtle (*Chelydra serpentina*)	**Special Concern**	**Special Concern**	~5km	Spend most of their lives in the water. Prefer shallow waters so they can hide under the soft mud and leaf litter with only their noses exposed to the surface to breathe.	The small pond could potentially provide suitable habitat	Moderate	Moderate	High. Observed during turtle basking surveys.
Arthropods								
Monarch (*Danaus plexippus*)	**Special Concern**	**Special Concern**	~5km	Milkweeds are the sole food plant for Monarch caterpillars. These plants predominantly grow in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests.	The meadow and trail edge may support milkweed	Moderate	Low	Moderate

Species Name (*Taxonomic Name*)	Status under *Endangered Species Act* (ESA)	Status under Schedule 1 of the *Species at Risk Act* (SARA)	Closest Species Occurrence Record to the Site	General Habitat Requirements	Site Suitability	Potential for Protected Elements[1]		Potential for Negative Interactions with Protected Elements[2]
						Habitat	Individuals	
Nine-spotted Lady Beetle (*Coccinella novemnotata*)	**Endangered**	**No Status**	~5km	Occurs within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas, and isolated natural areas.	There have been no records of this species in Ontario since the mid-1990s (MECP, 2019c).	None	None	None
Transverse Lady Beetle (*Coccinella transversoguttata*)	**Endangered**	**Special Concern**	~5km	Able to live in a wide range of habitats, including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, and riparian areas.	There have been no records of the species in Ontario since 1990 (MECP, 2020b).	None	None	None
Vascular Plants								
Black Ash (*Fraxinus nigra*)	**Endangered**	**No Status**	~5km	Predominantly a wetland species found in swamps, floodplains, and fens.	The Site contains suitable habitat.	High	High	High. Observed on Site during SAR vegetation surveys.
Butternut (*Juglans cinerea*)	**Endangered**	**Endangered**	~5km	Commonly found in riparian habitats but is also found on rich, moist, well-drained loams and well-drained gravels, especially those of limestone origin.	The Site contains suitable habitat.	High	High	High. Observed on Site during SAR vegetation surveys.

Appendix D Ontario Wetland Evaluation System Re-evaluation

WETLAND EVALUATION DATA AND SCORING RECORD

Wetland Name: Cedarview - subunit at 4497 O'Keefe Court (formerly part of Stony Swamp Wetland Complex)

Geographic Location (municipality, lot/concession, etc):

City of Ottawa, Concession 4, Lot 23

Map / Photo Locational Reference (e.g., latitude/longitude, NTS map, UTM):

UTM: 437411.88 E 5014663.97 N

Eco-District: 6E-12

Wetland Size (hectares): 5.94

Vegetation Form	FA
h	
c	0.03
dh	
dc	
ts	0.17
ls	
ds	
gc	
m	
ne	
be	
re	0.46
ff	
f	
su	0.34
u	

1.0 BIOLOGICAL COMPONENT

1.1 PRODUCTIVITY

1.1.1 Growing Degree-Days/Soils *(max: 30 pts)*

Refer to page 36 of manual for further explanation.

1. Determine the correct GDD value for your wetland (use Figure 5).
2. Circle the appropriate GDD value from the evaluation table below.
3. Determine the Fractional Area (FA) of the wetland for each soil type.
4. Multiply the fractional area of each soil type by the applicable score-factor in the evaluation table.
5. Sum the scores for each soil type to obtain the final score (maximum score is 30 points).

Growing Degree-Days	Clay-Loam	Silt-Marl	Lime-stone	Sand	Humic-Mesic	Fibric	Granite
<2800	15	13	11	9	8	7	5
2800-3200	18	15	13	11	9	8	7
3200-3600	22	18	15	13	11	9	7
3600-4000	26	21	18	15	13	10	8
>4000	30	25	20	18	15	12	8

Soil Type	FA of wetland in soil type		Enter appropriate score-factor from above table		
Clay/Loam	0.66	X	22	=	14.59
Silt/Marl:		X		=	
Limestone:		X		=	
Sand:		X		=	
Humic/Mesic:	0.34	X	11	=	3.70
Fibric:		X		=	
Granite:		X		=	
Total					18

GDD/Soils Score *(maximum 30 points)* 18

1.1.2 Wetland Type

(Fractional Areas = area of wetland type/total wetland area)

	Fractional Area		Score
Bog		x 3 =	
Fen		x 6 =	
Swamp		x 8 =	
Marsh		x 15 =	
Total		=	

Wetland Type Score *(maximum 15 points)* _____

1.1.3 Site Type

(Fractional Area = area of site type/total wetland area)

	Fractional Area		Score
Isolated		x 1 =	
Palustrine (permanent or intermittent flow)		x 2 =	
Riverine		x 4 =	
Riverine (at rivermouth)		x 5 =	
Lacustrine (at rivermouth)		x 5 =	
Lacustrine (with barrier beach)		x 3 =	
Lacustrine (exposed to lake)		x 2 =	
Total		=	

Site Type Score *(maximum 5 points)* _____

1.2 BIODIVERSITY

1.2.1 Number of Wetland Types

(Check only one)

	One	=	9 points
✔	Two	=	13
	Three	=	20
	Four	=	30

Number of Wetland Types Score
(maximum 30 points) _____

1.2.2. Vegetation Communities

Use the data sheet provided in Appendix 4 to record and score vegetation communities (the completed form must be attached to this data record)

Scoring *(circle only one option for each of the columns below):*

Total # of communities with **1-3 forms**	
1 =	1.5 pts
2 =	2.5
3 =	3.5
4 =	4.5
5 =	5
6 =	5.5
7 =	6
8 =	6.5
9 =	7
10 =	7.5
11 =	8
+ 0.5 *for each additional community*	
=	

Total # of communities with **4-5 forms**	
1 =	2 pts
2 =	3.5
3 =	5
4 =	6.5
5 =	7.5
6 =	8.5
7 =	9.5
8 =	10.5
9 =	11.5
10 =	12.5
11 =	13
+ 0.5 *for each additional community*	
=	

Total # of communities with **6 or more forms**	
1 =	3 pts
2 =	5
3 =	7
4 =	9
5 =	10.5
6 =	12
7 =	13.5
8 =	15
9 =	16.5
10 =	18
11 =	19
+ 1.0 *for each additional community*	
=	

Vegetation Communities Score
(maximum 45 points) _____

1.2.3 Diversity of Surrounding Habitat

Check all appropriate items. Only habitat within 1.5 km of the wetland boundary and at least 0.5 ha in size are to be scored.

	row crop
	pasture
	abandoned agricultural land
	deciduous forest
	coniferous forest
	mixed forest*
	abandoned pits and quarries
	open lake or deep river
	fence rows with deep cover, or shelterbelts
	terrain appreciably undulating, hilly or with ravines
	creek flood plain

* *"Mixed forest" is defined as either 25% coniferous trees distributed singly or in clumps in deciduous forest, or 25% deciduous trees distributed singly or in clumps in coniferous forest. Note that Forest Resource Inventory (FRI) maps can be misleading since 25% conifer within a unit could be entirely concentrated around a lake.*

Score 1 point for each feature checked, up to a maximum of 7 points.

Diversity of Surrounding Habitat Score
(maximum 7 points) _____

1.2.4 Proximity to Other Wetlands

Check highest appropriate category. (Note: if the wetland is lacustrine, score option #1 at 8 points).

✓		Points
✔	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river within 1.5 km	8
	Hydrologically connected by surface water to other wetlands (same dominant wetland type) within 0.5 km	8
	Hydrologically connected by surface water to other wetlands (different dominant wetland type), or to open lake or deep river from 1.5 to 4 km away	5
	Hydrologically connected by surface water to other wetlands (same dominant wetland type) from 0.5 to 1.5 km away	5
	Within 0.75 km of other wetlands (different dominant wetland type) or open water body, but not hydrologically connected by surface water	5
	Within 1 km of other wetlands, but not hydrologically connected by surface water	2
	No wetland within 1 km	0

Name and distance (from wetland) of wetlands/waterbodies scored above:

_____

_____

Proximity to other Wetlands Score
(maximum 8 points) _____

1.2.5 Interspersion

Number of Intersections = _____

✓	Number of Intersections *(Check one only)*	Points
	26 or less	= 3
	27 to 40	= 6
	41 to 60	= 9
	61 to 80	= 12
	81 to 100	= 15
	101 to 125	= 18
	126 to 150	= 21
	151 to 175	= 24
	176 to 200	= 27
	>200	= 30

Interspersion Score *(maximum 30 points)* _____

1.2.6 Open Water Types

NOTE: *this attribute is only to be scored for permanently flooded open water within the wetland (adjacent lakes do not count). Check one option only.*

✓	Open Water Type	Characteristic	Points
	Type 1	Open water occupies < 5 % of wetland area	= 8
	Type 2	Open water occupies 5-25% of wetland (occurring in central area)	= 8
	Type 3	Open water occupies 5-25% (occurring in various-sized ponds, dense patches of vegetation or vegetation in diffuse stands)	= 14
✔	Type 4	Open water occupies 26-75% of wetland (occurring in a central area)	= 20
	Type 5	Open water occupies 26-75% of wetlands (small ponds and embayments are common)	= 30
	Type 6	Open water occupies 76%-95% of wetland (occurring in large central area; vegetation is peripheral)	= 8
	Type 7	Open water occupies 76-95% of wetland (vegetation in patches or diffuse open stands)	= 14
	Type 8	Open water occupies more than 95% of wetland area	= 3
	No open water		= 0

Open Water Type Score *(maximum 30 points)* _____

1.3 SIZE (BIOLOGICAL COMPONENT)

Total Size of Wetland = _____ ha

Sum of scores from Biodiversity Subcomponent

1.2.1
+ 1.2.2
+ 1.2.3
+ 1.2.4
+ 1.2.5
+ 1.2.6

66

Circle the appropriate score from the table below.

Wetland size (ha)	Total Score for Biodiversity Subcomponent									
	<37	37-47	48-60	61-72	73-84	85-96	97-108	109-120	121-132	>132
<20 ha	1	5	7	8	9	17	25	34	43	50
20-40	5	7	8	9	10	19	28	37	46	50
41-60	6	8	9	10	11	21	31	40	49	50
61-80	7	9	10	11	13	23	34	43	50	50
81-100	8	10	11	13	15	25	37	46	50	50
101-120	9	11	13	15	18	28	40	49	50	50
121-140	10	13	15	17	21	31	43	50	50	50
141-160	11	15	17	19	23	34	46	50	50	50
161-180	13	17	19	21	25	37	49	50	50	50
181-200	15	19	21	23	28	40	50	50	50	50
201-400	17	21	23	25	31	43	50	50	50	50
401-600	19	23	25	28	34	46	50	50	50	50
601-800	21	25	28	31	37	49	50	50	50	50
801-1000	23	28	31	34	40	50	50	50	50	50
1001-1200	25	31	34	37	43	50	50	50	50	50
1201-1400	28	34	37	40	46	50	50	50	50	50
1401-1600	31	37	40	43	49	50	50	50	50	50
1601-1800	34	40	43	46	50	50	50	50	50	50
1801-2000	37	43	47	49	50	50	50	50	50	50
>2000	40	46	50	50	50	50	50	50	50	50

Size Score (Biological Component)
(maximum 50 points) _____

2.0 SOCIAL COMPONENT

2.1 ECONOMICALLY VALUABLE PRODUCTS

2.1.1 Wood Products

Check the option that best reflects the total area (ha) of forested wetland (i.e., areas where the dominant vegetation form is h or c). Note that this is the area of all the forested vegetation communities, not total wetland size. Do not include areas where harvest is not permitted. Check only one option.

Area of wetland used for scoring 2.1.1: _____

✔	< 5 ha	=	0 pts
	5 - 25 ha	=	3
	26 – 50 ha	=	6
	51 – 100 ha	=	9
	101 – 200 ha	=	12
	> 200 ha	=	18

Source of information:
Google earth, field surveys

Wood Products Score *(maximum 18 points)* _____

2.1.2 Wild Rice

Check only one.

	Present (min. size 0.5 ha)	=	6 pts
✔	Absent	=	0
	Harvest not permitted	=	0

Source of information:

Wild Rice Score *(maximum 6 points)* _____

2.1.3 Commercial Baitfish

Check only one.

	Present	=	12 pts
✔	Absent	=	0
	Fishing not permitted	=	0

Source of information:
Private property

Commercial Fish Score *(maximum 12 points)* _____

2.1.4 Furbearers

Only species recognized as furbearers under the Fish & Wildlife Conservation Act may be scored here. Score 3 *points for each furbearer species listed, up to a maximum of 12 points. Score 0 points if trapping is prohibited.*

	Name of furbearer	Source of information
1.		
2.		
3.		
4.		
5.		
6.		

Furbearer Score *(maximum 12 points)* _____

2.2 RECREATIONAL ACTIVITIES

Sources of information and reasons for scoring a wetland under high or moderate use below, must be included below.

Circle one score for each of the activities listed. Score is cumulative – add score for hunting, nature enjoyment and fishing together for final score.

Intensity of Use	Type of Wetland-Associated Use: Hunting	Nature Enjoyment/ Ecosystem Study	Fishing
High	40 points	40 points	40 points
Moderate	20	20	20
Low	8	8	8
Not Possible/ No evidence	(0)	(0)	(0)

Sources of information (include evidence/criteria forming basis for score and any relevant reference used to obtain that information):

Hunting: _____

Nature: _____

Fishing: _____

Recreational Activities Score
(maximum 80 points) _____

2.3 LANDSCAPE AESTHETICS

2.3.1 Distinctness

Check only one.

✔	Clearly Distinct	=	3 pts
	Indistinct	=	0

Landscape Distinctness Score
(maximum 3 points) _____

2.3.2 Absence of Human Disturbance

Check only one.

	Human disturbances absent or nearly so	=	7 pts
	One or several localized disturbances	=	4
✔	Moderate disturbance; localized water pollution	=	2
	Wetland intact but impairment of ecosystem quality intense in some areas	=	1
	Extreme ecological degradation, or water pollution severe and widespread	=	0

Details regarding type, extent and location of disturbance scored:

_____

_____

_____

Source of information:

_____

_____

Absence of Human Disturbance Score
(maximum 7 points) _____

2.4 EDUCATION AND PUBLIC AWARENESS

2.4.1 Educational Uses

Check highest appropriate category.

	Frequent	=	20 pts
	Infrequent	=	12
✔	No visits	=	0

Details regarding the type and frequency of education uses scored above:

_____

_____

_____

Source of information:

_____

_____

Educational Uses Score *(maximum 20 points)* _____

2.4.2 Facilities and Programs

Check all appropriate options, score highest category checked.

	Staffed interpretation centre	=	8 pts
	No interpretation centre or staff, but a system of self-guiding trails or brochures available	=	4
	Facilities such as maintained paths (e.g., woodchips), boardwalks, boat launches or observation towers, but no brochures or other interpretation	=	2
✔	No facilities or programs	=	0

Additional Notes/Comments:

_____

_____

_____

Source of information:

_____

_____

Facilities and Programs Score
(maximum 8 points) _____

2.4.3 Research and Studies

Check all that apply; score highest category checked.

	Long term research has been done	=	12 pts
	Research papers published in refereed scientific journal or as a thesis	=	10
	One or more (non-research) reports have been written on some aspect of the wetland's flora, fauna, hydrology, etc.	=	5
✔	No research or reports	=	0

List of reports, publications, research studies etc. scored above:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Research and Studies Score
(maximum 12 points) _____

2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

Name of Settlement: _____

Distance of wetland from settlement: _____

Population of settlement: _____ (Source: _____)

Circle only the highest score applicable

Distance of wetland to settlement	population >10,000	population 2,500-10,000	population <2,500 or cottage community
within or adjoining settlement	40 points	(26 points)	16 points
0.5 to 10 km from settlement	26	16	10
10 to 60 km from settlement	12	8	4
>60 km from nearest settlement	5	2	0

Proximity to Human Settlement Score
(maximum 40 points) _____

2.6 OWNERSHIP

FA of wetland held by or held under a legal contract by a conservation body (as defined by the *Conservation Land Act*) for wetland protection	_____ x 10 = _____
FA of wetland occurring in provincially or nationally protected areas (e.g., parks and conservation reserves)	_____ x 10 = _____
FA of wetland area in Crown/public ownership, not as above	_____ x 8 = _____
FA of wetland area in private ownership, not as above	_____ x 4 = _____

Source of information:

_____

Ownership Score *(maximum 10 points)* _____

2.7 SIZE (SOCIAL COMPONENT)

Total Size of Wetland = _____ ha Sum of scores from Subcomponents 2.1, 2.2, and 2.5 = _____

Circle the appropriate score from the table below.

	Total for Size Dependent Social Features									
	<31	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	>150
<2 ha	1	2	4	8	10	12	14	14	14	15
2-4	1	2	4	8	12	13	14	14	15	16
5-8	2	2	5	9	13	14	15	15	16	16
9-12	3	3	6	10	14	15	15	16	17	17
13-17	3	4	7	10	14	15	16	16	17	17
18-28	4	5	8	11	15	16	16	17	17	18
29-37	5	7	10	13	16	17	18	18	19	19
38-49	5	7	10	13	16	17	18	18	19	20
50-62	5	8	11	14	17	17	18	19	20	20
63-81	5	8	11	15	17	18	19	20	20	20
82-105	6	9	11	15	18	18	19	20	20	20
106-137	6	9	12	16	18	19	20	20	20	20
138-178	6	9	13	16	18	19	20	20	20	20
179-233	6	9	13	16	18	20	20	20	20	20
234-302	7	9	13	16	18	20	20	20	20	20
303-393	7	9	14	17	18	20	20	20	20	20
394-511	7	10	14	17	18	20	20	20	20	20
512-665	7	10	14	17	18	20	20	20	20	20
666-863	7	10	14	17	19	20	20	20	20	20
864-1123	8	12	15	17	19	20	20	20	20	20
1124-1460	8	12	15	17	19	20	20	20	20	20
1461-1898	8	13	15	18	19	20	20	20	20	20
1899-2467	8	14	16	18	20	20	20	20	20	20
>2467	8	14	16	18	20	20	20	20	20	20

Total Size Score (Social Component) _____

2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE

Either or both Aboriginal or Cultural Values may be scored. However, the maximum score permitted for 2.8 is 30 points.

Full documentation of sources must be attached to the data record.

2.8.1 Aboriginal Values

Significant	=	30 pts
Not Significant	=	0
Unknown	=	[0]

Additional Comments/Notes:

2.8.2 Cultural Heritage

Significant	=	30 pts
Not Significant	=	0
Unknown	=	[0]

Additional Comments/Notes:

Aboriginal Values/Cultural Heritage Score
(maximum 30 points) _____

3.0 HYDROLOGICAL COMPONENT

3.1 FLOOD ATTENUATION

Check one of the following options.

☐	If wetland is a coastal wetland, ➡ score 0 points for this section.
☐	If wetland is entirely isolated in site type, ➡ score 100 points automatically.
☐	Wetland not as above – proceed through 'steps' A through F below.

(A) Total wetland area = _____ ha

(B) Size of wetland's catchment = _____ ha

(C) Size of other detention areas in catchment = _____ ha

(D) Total area of upstream detention areas = {A + C } = _____ha

(E) Upstream Detention Factor = {(A/D) x 2} = _____ (maximum 1.0)

(F) Attenuation Factor = {(A/B) x 10} = _____ (maximum 1.0)

Flood Attenuation Final Score = {(E + F) /2) x 100 = _____

Flood Attenuation Score *(maximum 100 points)* _____

3.2 WATER QUALITY IMPROVEMENT

3.2.1 Short Term Water Quality Improvement

Step 1: Determination of maximum initial score

	Wetland on one of the 5 defined large lakes or 5 major rivers (Go to Step 5A)
	All other wetlands (Go through Steps 2, 3, 4, and 5B)

Step 2: Determination of Watershed Improvement Factor (WIF)

Calculation of WIF is based on the fractional area (FA) of each site type that makes up the total area of the wetland.

(FA = area of site type/total area of wetland)

FA of isolated wetland	=	x 0.5 =	
FA of riverine wetland	=	x 1.0 =	
FA of palustrine wetland with no inflow	=	x 0.7 =	
FA of palustrine wetland with inflows	= 1.00	x 1.0 =	
FA of lacustrine on lake shoreline	=	x 0.2 =	
FA of lacustrine at lake inflow or outflow	=	x 1.0 =	

Sum (*WIF cannot exceed 1.0*) _____

Step 3: Determination of Catchment Land Use Factor (LUF)

(Choose the first category that fits upstream land use in the catchment.)

	Over 50% agricultural and/or urban	=	1.0
	Between 30 and 50% agricultural and/or urban	=	0.8
	Over 50% forested or other natural vegetation	=	0.6

LUF *(maximum 1.0)* _____

Step 4: Determination of Pollutant Uptake Factor (PUF)

Calculation of PUF is based on the fractional area (FA) of each vegetation type that makes up the total area of the wetland. Base assessment on the dominant vegetation form for each community except where dead trees or shrubs dominate. In that case base assessment on the dominant live vegetation type.

(FA = area of vegetation type/total area of wetland)

FA of wetland with live trees, shrubs, herbs or mosses (c, h, ts, ls, gc, m)	=	x	0.75 =	0.15
FA of wetland with emergent, submergent or floating vegetation (re, be, ne, su, f, ff)	=	x	1.0 =	
FA of wetland with little or no vegetation (u)	=	x	0.5 =	

Sum *(PUF cannot exceed 1.0)* _____

Step 5: Calculation of final score

☐	Wetland on defined 5 major lakes or 5 major rivers	0
☐	All other wetlands – calculate as follows	
	Initial score	60
	Watershed Improvement Factor (WIF)	_____
	Land Use Factor (LUF)	_____
	Pollutant Uptake Factor (PUF)	_____
	Final score: 60 x WIF x LUF x PUF =	_____

Short Term Water Quality Improvement Score
(maximum 60 points) _____

3.2.2 Long Term Nutrient Trap

Step 1:

☐ Wetland on defined 5 major lakes or 5 major rivers = 0 points
☐ All other wetlands (Proceed to Step 2)

Step 2: Choose only one of the following settings that best describes the wetland being evaluated

	Wetland located in a river mouth	=	10 pts
	Wetland is a bog, fen, or swamp with more than 50% of the wetland being covered with organic soil	=	10
	Wetland is a bog, fen, or swamp with less than 50% of the wetland being covered with organic soil	=	3
	Wetland is a marsh with more than 50% of the wetland covered with organic soil	=	3
	None of the above	=	0

Long Term Nutrient Trap Score
(maximum 10 points) _____

3.2.3 Groundwater Discharge

Circle the characteristics that best describe the wetland being evaluated and then sum the scores. If the sum exceeds 30 points, assign the maximum score of 30). Note: for wetland type, wetland type scored does not have to the dominant type in the wetland.

Wetland Characteristics	Potential for Discharge		
	None to Little	Some	High
Wetland type	Bog = 0	(Swamp/Marsh = 2)	Fen = 5
Topography	(Flat/rolling = 0)	Hilly = 2	Steep = 5
Wetland area: Upslope catchment area	Large (>50%) = 0	(Moderate (5-50%) = 2)	Small (<5%) = 5
Lagg development	(None found = 0)	Minor = 2	Extensive = 5
Seeps	None = 0	(≤ 3 seeps = 2)	> 3 seeps = 5
Surface marl deposits	(None = 0)	≤ 3 sites = 2	> 3 sites = 5
Iron precipitates	(None = 0)	≤ 3 sites = 2	> 3 sites = 5
Located within 1 km of a major aquifer	(N/A = 0)	N/A = 0	Yes = 10 No = 0

Additional Comments/Notes:

Groundwater Discharge Score
(maximum 30 points) _____

3.3 CARBON SINK

Check only one of the following:

	Bog, fen or swamp with more than 50% coverage by organic soil	=	5 pts
	Bog, fen or swamp with between 10 to 50% coverage by organic soil	=	2
	Marsh with more than 50% coverage by organic soil	=	3
	Wetlands not in one of the above categories	=	0

Source of information:

_____

_____

Carbon Sink Score
(maximum 5 points) _____

3.4 SHORELINE EROSION CONTROL

From the wetland vegetation map determine the dominant vegetatino type within the erosion zone for lacustrine and riverine site type areas only. Score according to the factors listed below.

Step 1:

✔	Wetland entirely isolated or palustrine	=	0 pts
	Any part of the wetland is riverine or lacustrine	=	Go to step 2

Step 2: *Choose the one characteristic that best describes the shoreline vegetation (see page 109 for description of "shoreline".)*

	Trees and shrubs	=	15 pts
	Emergent vegetation	=	8
	Submergent vegetation	=	6
	Other shoreline vegetation	=	3
	No vegetation	=	0

Shoreline Erosion Control Score
(maximum 15 points) _____

3.5 GROUNDWATER RECHARGE

3.5.1 Site Type

Wetland > 50% lacustrine (by area) or located on one of the five major rivers			= 0 pts	
Wetland not as above. Calculate final score as follows:				
■ FA of isolated or palustrine wetland	=	1.00	x 50 =	
■ FA of riverine wetland	=		x 20 =	
■ FA of lacustrine wetland (not dominant site type)	=		x 0 =	

Groundwater Recharge/Wetland Site Type Score
(maximum 50 points) _____

3.5.2 Soil Recharge Potential

*Circle only one choice that **best** describes the soils in **the area surrounding the wetland** being evaluated (the soils within the wetland are not scored here).*

Dominant Wetland Type	Group A, B, C (sands, gravels, loams)	Group D (clays, substrates in high water tables, shallow substrates over impervious materials such as bedrock)
Lacustrine or major river	0	0
Isolated	10	5
Palustrine	7	4
Riverine (not on a major river)	5	2

Groundwater Recharge/Wetland Soil Recharge Potential Score *(maximum 10 points)* _____

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 Wetland Types

Ecodistrict	Rarity within the Landscape (4.1.1.1)	Rarity of Wetland Type (4.1.1.2)			
		Marsh	Swamp	Fen	Bog
6E-1	60	40	0	80	80
6E -2	60	40	0	80	80
6E-4	60	40	0	80	80
6E-5	20	40	0	80	80
6E-6	40	20	0	80	80
6E-7	60	10	0	80	80
6E-8	20	20	0	80	80
6E-9	0	20	0	80	80
6E-10	20	0	20	80	80
6E-11	0	30	0	80	80
6E-12	0	30	0	60	80
6E-13	60	10	0	80	80
6E-14	40	20	0	40	80
6E-15	40	0	0	80	80
6E-16	60	20	0	80	60
6E-17	40	10	0	30	80
7E-1	60	0	60	80	80
7E-2	60	0	0	80	80
7E-3	60	00	0	80	80
7E-4	80	0	0	80	80
7E-5	60	20	0	80	80
7E-6	80	30	0	80	80

4.1.1.1 Rarity within the Landscape

Choose appropriate score from 2nd column above.

Score *(maximum 80 points)* _____

4.1.1.2 Rarity of Wetland Type

Score is cumulative, based on presence/absence. Circle all appropriate scores from above table and sum.

Score *(maximum 80 points)* _____

4.1.2 Species

4.1.2.1 Provincially Significant Animal Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

Additional Notes/Comments:

One species	=	50 pts	9 species	=	140 pts	17 species	=	160 pts
2 species	=	80	10 species	=	143	18 species	=	162
3 species	=	95	11 species	=	146	19 species	=	164
4 species	=	105	12 species	=	149	20 species	=	166
5 species	=	115	13 species	=	152	21 species	=	168
6 species	=	125	14 species	=	154	22 species	=	170
7 species	=	130	15 species	=	156	23 species	=	172
8 species	=	135	16 species	=	158	24 species	=	174
						25 species	=	176

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Animal Species
(no maximum) _____

4.1.2.2 Provincially Significant Plant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

Additional Notes/Comments:

One species	=	50 pts	9 species	=	140 pts	17 species	=	160 pts
2 species	=	80	10 species	=	143	18 species	=	162
3 species	=	95	11 species	=	146	19 species	=	164
4 species	=	105	12 species	=	149	20 species	=	166
5 species	=	115	13 species	=	152	21 species	=	168
6 species	=	125	14 species	=	154	22 species	=	170
7 species	=	130	15 species	=	156	23 species	=	172
8 species	=	135	16 species	=	158	24 species	=	174
						25 species	=	176

Add one point for every species past 25 (for example, 26 species = 177 points, 27 species = 178 points etc.)

Provincially Significant Plant Species
(no maximum) _____

4.1.2.3 Regionally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

One species= 20 pts	4 species = 45 pts	7 species = 58 pts
2 species = 30	5 species = 50	8 species = 61
3 species = 40	6 species = 55	9 species = 64
		10 species = 67

For each significant species over 10 in wetland, add 1 point.

Regionally Significant Species Score
(no maximum score) _____

4.1.2.4 Locally Significant Species

Common Name	Scientific Name	Activity	Dates Observed	Info Source

One species= 10 pts	4 species = 31 pts	7 species = 43 pts
2 species = 17	5 species = 38	8 species = 45
3 species = 24	6 species = 41	9 species = 47
		10 species = 49

For each significant species over 10 in wetland, add 1 point.

Locally Significant Species Score
(no maximum score) _____

4.2 SIGNIFICANT FEATURES AND HABITATS

4.2.1 Colonial Waterbirds

Record all available information. Score the highest applicable category. Include additional information as possible (e.g., nest locations, etc).

Activity	Species	Info Source	Points
Currently nesting			= 50
Known to have nested within the past 5 years			= 25
Active feeding area (great blue heron excluded)			= 15
None known			= 0

Additional Notes/Comments:

Colonial Waterbird Nesting Score
(maximum 50 points) _____

4.2.2 Winter Cover for Wildlife

Score highest appropriate category. Include rationale/sources of information.

	Provincially significant	=	100 pts
	Significant in Ecoregion	=	50
	Significant in Ecodistrict	=	25
	Locally significant	=	10
✔	Little or poor winter cover	=	0

Species/habitat/vegetation community scored *(e.g., winter deer cover in hemlock swamp, S3 and S4b)*:

Source of information:

Winter Cover for Wildlife Score
(maximum 100 points) _____

4.2.3 Waterfowl Staging and/or Moulting Areas

Check highest level of significance for both staging and moulting; add scores for staging and for moulting together for final score. However, maximum score for evaluation under this section is 150 points.

	Staging	Moulting
Nationally/internationally significant	= 150 pts	= 150 pts
Provincially significant	= 100	= 100
Significant in the Ecoregion	= 50	= 50
Significant in Ecodistrict	= 25	= 25
Known to occur	= 10	= 10
Not possible/Unknown	= 0	= 0

Species/habitat/vegetation community scored *(e.g., approx 20 mallards in W3)*:

Source of information:

Waterfowl Staging/Moulting Score
(maximum 150 points) _____

4.2.4 Waterfowl Breeding

Check highest level of significance.

	Nationally/internationally significant	= 150 pts
	Provincially significant	= 100
	Significant in the Ecoregion	= 50
	Significant in Ecodistrict	= 25
	Habitat Suitable	= 10
	Habitat not suitable	= 0

Species/habitat/vegetation community scored *(e.g., mallard in W3)*:

Source of information:

Waterfowl Breeding Score
(maximum 150 points) _____

4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area

Check highest level of significance.

	Nationally / internationally significant	= 150 pts
	Provincially significant	= 100
	Significant in Ecoregion	= 50
	Significant in Ecodistrict	= 25
	Known to occur	= 10
	Not possible / Unknown	= 0

Species/habitat/vegetation community scored:

Source of information:

Passerine, Shorebird or Raptor Stopover Score
(maximum 100 points) _____

4.2.6 Fish Habitat

4.2.6.1 Spawning and Nursery Habitat

Area Factors for Low Marsh, High Marsh and Swamp Communities.

No. of ha of Fish Habitat	Area Factor
< 0.5 ha	0.1
0.5 – 4.9	0.2
5.0 – 9.9	0.4
10.0 – 14.9	0.6
15.0 – 19.9	0.8
20.0 +	1.0

Step 1:

☐	Fish habitat is not present within the wetland	Go to Step 7, Score 0 points
☐	Fish habitat is present within the wetland	Go to Step 2

Step 2: *Choose only one option*

☐	Significance of the spawning and nursery habitat within the wetland is known	Go to Step 3
☐	Significance of the spawning and nursery habitat within the wetland is not known	Go through Steps 4, 5 and 6

Step 3: *Select the highest appropriate category below, attach documentation:*

Significant in Ecoregion	Go to Step 7, Score 100 points
Significant in Ecodistrict	Go to Step 7, Score 50 points
Locally Significant Habitat (5.0+ ha)	Go to Step 7, Score 25 points
Locally Significant Habitat (<5.0 ha)	Go to Step 7, Score 15 points

Source of information:

_____

Step 4: Low Marsh = the '**permanent**' marsh area, from the existing water line out to the outer boundary of the wetland.

☐	Low marsh not present	Go to Step 5
☐	Low marsh present	Continue through Step 4, scoring as noted below

Scoring of Low Marsh:

1. Check the appropriate **Vegetation Group** (see Appendix 7) for each Low Marsh community. (Based on the one most clearly dominant plant species of the dominant form in each Low Marsh vegetation community.)
2. Sum the areas (ha) of the vegetation communities assigned to each **Vegetation Group**.
3. Use these areas to assign an **Area Factor** (from Table 7) for each checked **Vegetation Group**.
4. Multiply the **Area Factor** by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for Low Marsh**.

Scoring for Presence of Key Vegetation Groups – Low Marsh

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (from Table 7)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
5	Duckweed				2	
6	Smartweed-Waterwillow				6	
7	Waterlily-Lotus				11	
8	Waterweed-Watercress				9	
9	Ribbongrass				10	
10	Coontail-Naiad-Watermilfoil				13	
11	Narrowleaf Pondweed				5	
12	Broadleaf Pondweed				8	
	Total Score for Low Marsh (*maximum 75 points*)					

Continue to Step 5

Step 5: High Marsh = the 'seasonal' marsh area, from the water line to the inland boundary of marsh wetland type. This is essentially what is commonly referred to as a wet meadow, in that there is insufficient standing water to provide fisheries habitat except during flood or high water conditions.

☐	High marsh not present	Go to Step 6
☐	High marsh present	Continue through Step 5, scoring as noted below

Scoring of High Marsh:

1. Check the appropriate **Vegetation Group** (see Appendix 7) for each High Marsh community. (Based on the one most clearly dominant plant species of the dominant form in each High Marsh vegetation community.)
2. Sum the areas (ha) of the vegetation communities assigned to each **Vegetation Group**.
3. Use these areas to assign an **Area Factor** (from Table 7) for each checked **Vegetation Group**.
4. Multiply the **Area Factor** by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for High Marsh**.

Scoring for Presence of Key Vegetation Groups – High Marsh

Vegetation Group Number	Vegetation Group Name	Present as a Dominant Form (check)	Total Area (ha)	Area Factor (from Table 7)	Multiplication Factor	Score
1	Tallgrass				6	
2	Shortgrass-Sedge				11	
3	Cattail-Bulrush-Burreed				5	
4	Arrowhead-Pickerelweed				5	
	Total Score for High Marsh (*maximum 25 points*)					

Continue to Step 6

Step 6:

☐	Swamp containing fish habitat not present	Go to Step 7
☐	Swamp containing fish habitat present	Continue through Step 6, scoring as follows

Scoring of Swamp:

1. Determine the total area (ha) of seasonally flooded swamp communities within the wetland containing fish habitat and record below.
2. Determine the total area (ha) of permanently flooded swamp communities within the wetland containing fish habitat and record below.
3. Use these areas to assign an **Area Factor** (from Table 7).
4. Multiply the Area Factor by the **Multiplication Factor** for each row to calculate **Score**.
5. Sum all numbers in Score column to get **Total Score for Swamp**.

Scoring Swamps for Fish Habitat (Seasonally flooded; Permanently flooded)

Swamp Containing Fish Habitat	Present (check)	Total Area (ha)	Area Factor (from Table 7)	Multiplication Factor	Score
Seasonally Flooded Swamp				10	
Permanently Flooded Swamp				10	
			Total Score for Swamp (*maximum 20 points*)		

Continue to Step 7

Step 7: CALCULATION OF FINAL SCORE

NOTE: Scores for Steps 4, 5 and 6 are only recorded if Steps 1 and 3 have not been scored.

A. Score from Step 1 (fish habitat not present) = _____
B. Score from Step 3 (significance known) = _____
C. Score from Step 4 (Low Marsh) = _____
D. Score from Step 5 (High Marsh) = _____
E. Score from Step 6 (Swamp) = _____

Calculation of Final Score for Spawning and Nursery Habitat = A or B or Sum of C, D, and E

Score for Spawning and Nursery Habitat
(maximum 100 points) _____

4.2.6.2 Migration and Staging Habitat

Step 1:

☐	Staging or Migration Habitat is not present in the wetland	Go to Step 4, Score 0 points
☐	Staging or Migration Habitat is present in the wetland, significance of the habitat is known	Go to Step 2
☐	Staging or Migration Habitat is present in the wetland, significance of the habitat is not known	Go to Step 3

Step 2: Select the highest appropriate category below. Ensure that documentation is attached to the data record.

☐	Significant in Ecoregion	Score 25 points in Step 4
☐	Significant in Ecodistrict	Score 15 points in Step 4
☐	Locally Significant	Score 10 points in Step 4
☐	Fish staging and/or migration habitat present, but not as above	Score 5 points in Step 4

Source of information:

_____

_____

Step 3: Select the highest appropriate category below based on presence of the designated site type (i.e. does not have to be the dominant site type). Refer to Site Types recorded earlier (section 1.1.3). Attach documentation.

☐	Wetland is riverine at rivermouth or lacustrine at rivermouth	Score 25 points in Step 4
☐	Wetland is riverine, within 0.75 km of rivermouth	Score 15 points in Step 4
☐	Wetland is lacustrine, within 0.75 km of rivermouth	Score 10 points in Step 4
☐	Fish staging and/or migration habitat present, but not as above	Score 5 points in Step 4

Step 4: Enter a score from only one of the three above Steps.

Score for Staging and Migration Habitat
(maximum 25 points) _____

4.3 ECOSYSTEM AGE

		Fractional Area		Score
Bog	=		x 25 =	
Fen, on deeper soils; floating mats or marl	=		x 20 =	
Fen, on limestone rock	=		x 5 =	
Swamp	=		x 3 =	
Marsh	=		x 0 =	
	Total		=	

Ecosystem Age Score *(maximum 25 points)* _____

4.4 GREAT LAKES COASTAL WETLANDS

Choose one only.

	Wetland < 10 ha	=	10 pts
	Wetland 10-50 ha	=	25
	Wetland 51-100 ha	=	50
	Wetland > 100 ha	=	75

N/A - not coastal

Great Lakes Coastal Wetland Score
(maximum 75 points) _____

GENERAL INFORMATION

Wetland Evaluator(s)

Name: __________ Affiliation: __________

Signature: Maren Nielsen

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Name: __________ Affiliation: __________

Signature: __________

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Name: __________ Affiliation: __________

Signature: __________

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Name: __________ Affiliation: __________

Signature: __________

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Name: __________ Affiliation: __________

Signature: __________

(by signing, I confirm that this evaluation has been undertaken and completed in accordance with the Ontario Wetland Evaluation System Southern Manual 4th Edition / Northern Manual 2nd Edition)

Date(s) wetland visited (in field): __________

Date evaluation completed: __________

Estimated time devoted to completing the field survey in person hours: __________

Weather Conditions

i) at time of field work: _____

ii) summer conditions in general: _____

WETLAND EVALUATION SCORING RECORD

WETLAND NAME: _____

1.0 BIOLOGICAL COMPONENT

_____ 1.1 PRODUCTIVITY
_____ 1.1.1 Growing Degree-Days/Soils
_____ 1.1.2 Wetland Type
_____ 1.1.3 Site Type

_____

_____ 1.2 BIODIVERSITY
_____ 1.2.1 Number of Wetland Types
_____ 1.2.2 Vegetation Communities
_____ 1.2.3 Diversity of Surrounding Habitat
_____ 1.2.4 Proximity to Other Wetlands
_____ 1.2.5 Interspersion
_____ 1.2.6 Open Water Type

_____

_____ 1.3 SIZE (Biological Component)

_____ TOTAL (Biological Component)

2.0 SOCIAL COMPONENT

_____ 2.1 ECONOMICALLY VALUABLE PRODUCTS
_____ 2.1.1 Wood Products
_____ 2.1.2 Wild Rice
_____ 2.1.3 Commerical Baitfish
_____ 2.1.4 Furbearers

_____ Total for Economically Valuable Products

_____ 2.2 RECREATIONAL ACTIVITIES

_____ 2.3 LANDSCAPE AESTHETICS
_____ 2.3.1 Distinctness
_____ 2.3.2 Absence of Human Disturbance

_____ Total for Landscape Aesthetics

_____ 2.4 EDUCATION AND PUBLIC AWARENESS
_____ 2.4.1 Educational Uses
_____ 2.4.2 Facilities and Programs
_____ 2.4.3 Research and Studies

_____ Total for Education and Public Awareness

_____ 2.5 PROXIMITY TO AREAS OF HUMAN SETTLEMENT

_____ 2.6 OWNERSHIP

_____ 2.7 SIZE (Social Component)

_____ 2.8 ABORIGINAL VALUES AND CULTURAL HERITAGE
_____ 2.8.1 Aboriginal Values
_____ 2.8.2 Cultural Heritage

_____ TOTAL (Social Component)

3.0 HYDROLOGICAL COMPONENT

_____ 3.1 FLOOD ATTENUATION

_____ 3.2 WATER QUALITY IMPROVEMENT
_____ 3.2.1 Short Term Water Quality Improvement
_____ 3.2.2 Long Term Nutrient Trap
_____ 3.2.3 Groundwater Discharge

_____ Total for Water Quality Improvement

_____ 3.3 CARBON SINK

_____ 3.4 SHORELINE EROSION CONTROL

_____ 3.5 GROUNDWATER RECHARGE
_____ 3.5.1 Site Type
_____ 3.5.2 Soil Recharge Potential

_____ Total for Groundwater Recharge

_____ TOTAL (Hydrological Component)

4.0 SPECIAL FEATURES COMPONENT

4.1 RARITY

4.1.1 Wetlands

_____ 4.1.1.1 Rarity within the Landscape

_____ 4.1.1.2 Rarity of Wetland Type

_____ Total for Wetland Rarity

4.1.2 Species

_____ 4.1.2.1 Provincially Significant Animals

_____ 4.1.2.2 Provincially Significant Plants

_____ 4.1.2.3 Regionally Significant Species

_____ 4.1.2.4 Locally Significant Species

_____ Total for Species Rarity

4.2 SIGNIFICANT FEATURES AND HABITATS

_____ 4.2.1 Colonial Waterbirds

_____ 4.2.2 Winter Cover for Wildlife

_____ 4.2.3 Waterfowl Staging and/or Moulting Areas

_____ 4.2.4 Waterfowl Breeding

_____ 4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area

_____ 4.2.6 Fish Habitat

_____ 4.2.6.1 Spawning and Nursery Habitat

_____ 4.2.6.2 Migration and Staging Habitat

_____ Total for Significant Features and Habitats

_____ 4.3 ECOSYSTEM AGE

_____ 4.4 GREAT LAKES COASTAL WETLANDS

_____ TOTAL FOR SPECIAL FEATURES COMPONENT (*not to exceed 250*)

SUMMARY OF EVALUATION RESULT

Wetland _____

_____ 1.0 TOTAL FOR BIOLOGICAL COMPONENT

_____ 2.0 TOTAL FOR SOCIAL COMPONENT

_____ 3.0 TOTAL FOR HYDROLOGICAL COMPONENT

_____ 4.0 TOTAL FOR SPECIAL FEATURES COMPONENT

_____ TOTAL WETLAND SCORE

APPENDIX 4 – WETLAND DATA SUMMARY FORM

Complete versions of the data form in this appendix should be attached to the wetland data record and included within the wetland evaluation file.

Wetland Name Cedarview - subunit at 4497 O'Keefe Court (formerly part of Stony Swamp Wetland Complex) Page _____ of _____

Map Code	Field Code	GPS Coordinate	Dominant Form	Forms	# Forms	Dominant Species	Area	% Open Water			Open Water	Soil	Site Type	Fish Habitat			
								Low (ha)	High Est.	Mean Est.		(ha)		% Fish Habitat	Area (ha)	Habitat Type	Key Veg Group
re M1	M1		re	re, ne, gc, ts, ls	5	Typha angustifolia	2.72 ha	0	0	0	n	2.72	M	90	2.44 ha	flooded marsh	3
ts S1	S1		ts	ts, re, ne, f, gc	5	Swamp Willow	1.07 ha	0	0	0	n	1.07	S	0	0	N/A	N/A
c S2	S2		c	c, gc, m	3	Eastern White Cedar	0.15 ha	0	0	0	n	0.15	S	0	0	N/A	N/A
su W1	W1		su	su, ff, u	3	Horned Pondweed	2.0 ha	80	90	85	y	2.0	W	100	2.0 ha	open water marsh - pond	11

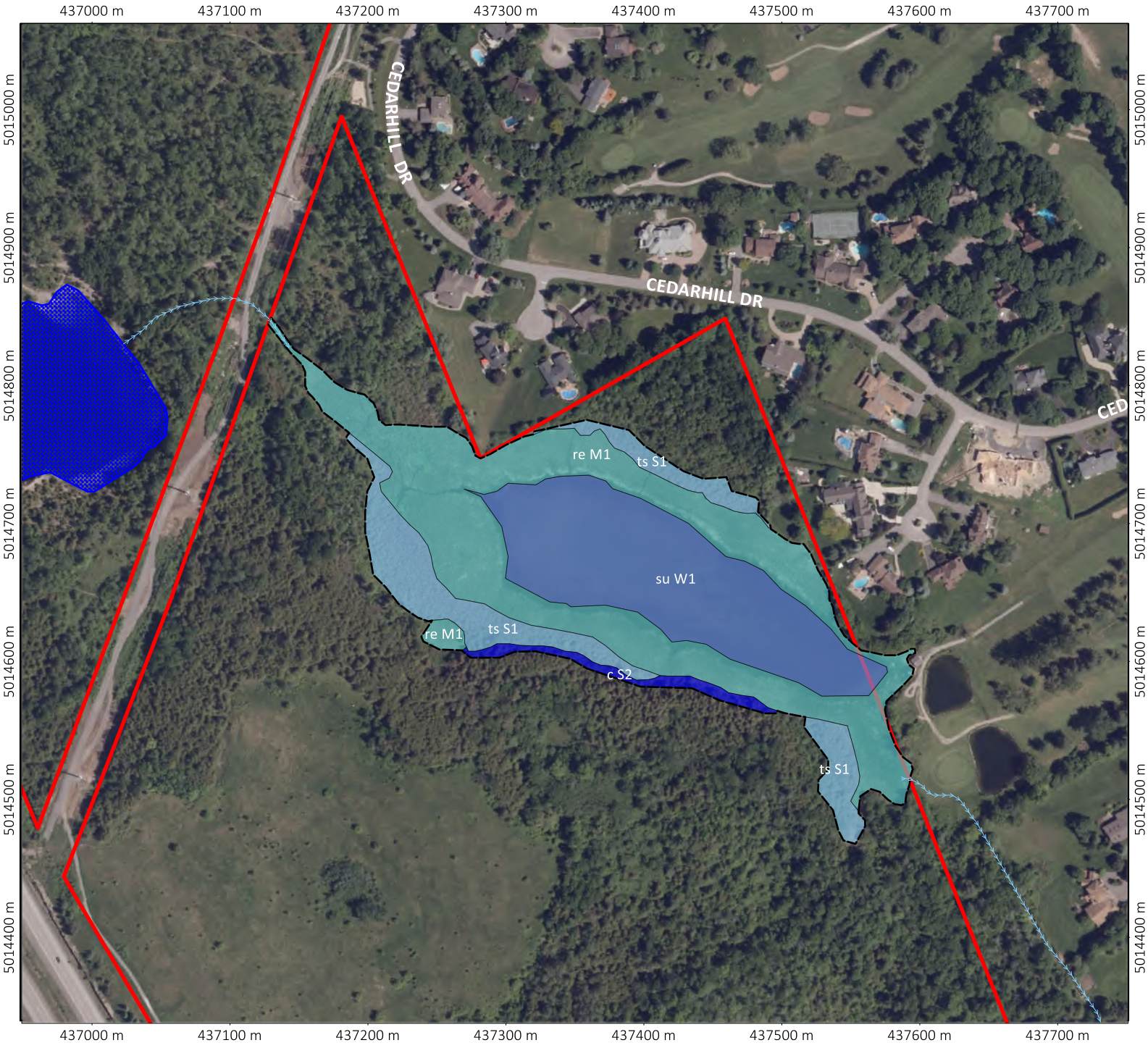


Figure 1 OWES Cedarview Boundary & Vegetation Community Map

Legend

Site Boundary

Wetland Boundary

Vegetation Communities

- c S2
- re M1
- su W1
- ts S1

Vegetation Forms

- c- Coniferous Trees
- re- Robust Emergents
- su- Submerged
- ts- Tall Shrubs

Wetland Types

- M- Marsh
- S- Swamp
- W- Open Water Marsh

Headwater Drainage Features (Protected)

N

0 200 m

Project: MATT 1676.1
Map File: Cederview Map 2407b-AFRANCIS-K
Universal Transverse Mercator - Zone 18 (N)
Printed on: 2024-09-10

KILGOUR & Associates

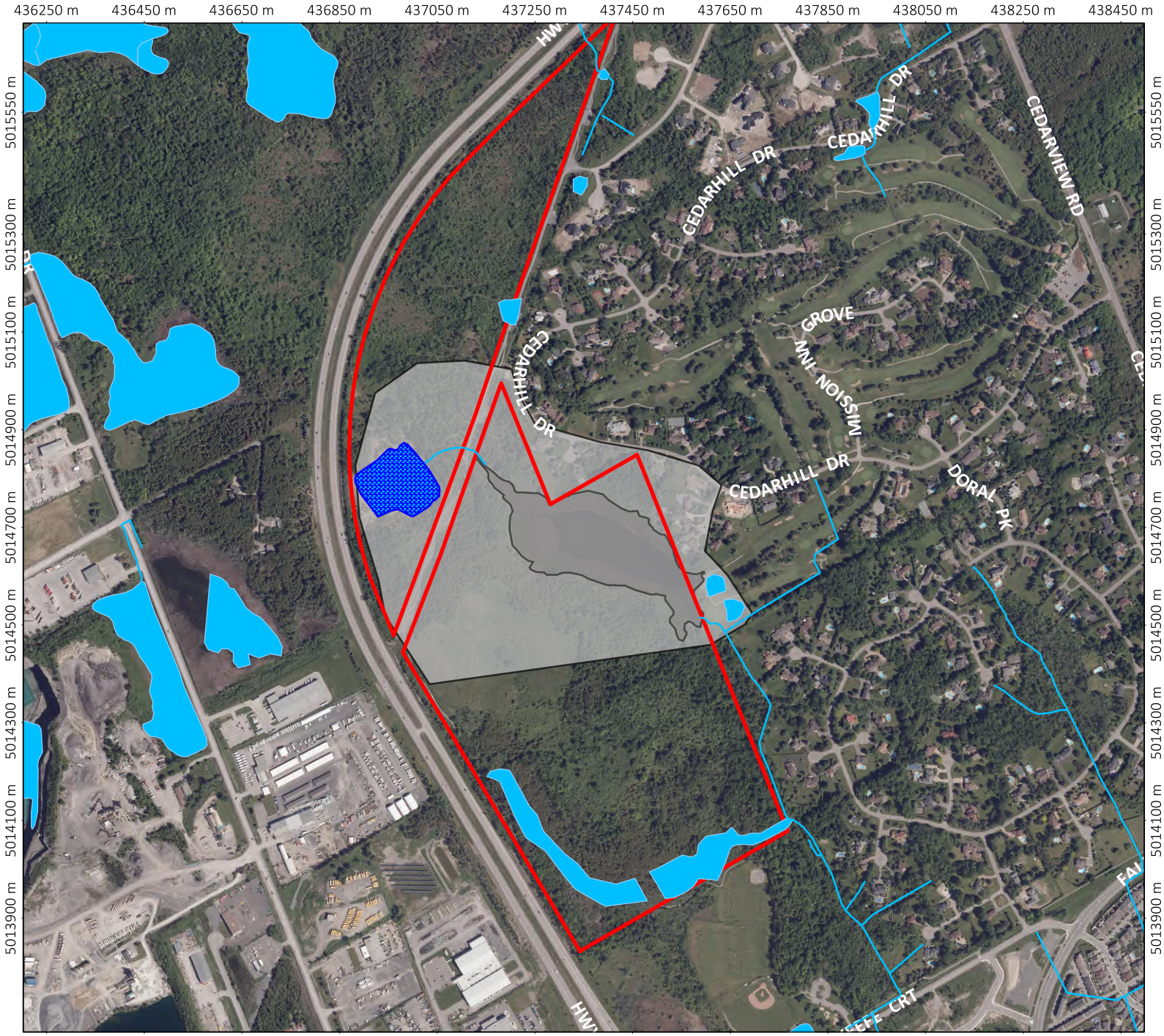


Figure 2 OWES Cedarview Catchment Basin Map

Legend

- Site Boundary
- **Water Features**
  - Waterbody
  - Headwater Channel
- Quarry
- Catchment Area
- Detention Area

N

0 200 m

Project: MATT 1676.1
Map File: Cederview Map 2407b-AFRANCIS-K
Universal Transverse Mercator - Zone 18 (N)
Printed on: 2024-09-10

KILGOUR & Associates

Appendix E Ontario Wetland Evaluation System MNRF Coordination

Outlook

Fw: OWES Re-evaluation for Cedarview Wetland

From Maren Nielsen <mnielsen@kilgourassociates.com>
Date Wed 2024-09-25 9:16 AM
To Anthony Francis <afrancis@kilgourassociates.com>; Nick Moore <nmoore@kilgourassociates.com>

FYI

Maren Nielsen, BES, EMA
Biologist
KILGOUR & ASSOCIATES LTD.
Direct: 613-367-5562
Ottawa: 613-260-5555
mnielsen@kilgourassociates.com
www.kilgourassociates.com

From: Wetlands (MNR) <Wetlands@ontario.ca>
Sent: September 25, 2024 9:15 AM
To: Maren Nielsen <mnielsen@kilgourassociates.com>
Subject: RE: OWES Re-evaluation for Cedarview Wetland

This email is to acknowledge receipt of the wetland information you have forwarded to the Ministry.

If there is an issue, the Ministry will follow-up with you. Otherwise, the information will be included into the provincial wetland data class which can be accessed at https://geohub.lio.gov.on.ca/datasets/mnrf::wetlands/about.

Please Note: As part of providing accessible customer service please let me know if you have any accommodation needs or require communication supports or alternate formats

Ontario

Taking pride in strengthening Ontario, its places and its people

---

From: Maren Nielsen <mnielsen@kilgourassociates.com>
Sent: Wednesday, September 18, 2024 9:43 AM
To: Wetlands (MNR) <Wetlands@ontario.ca>
Cc: Nick Moore <nmoore@kilgourassociates.com>; Anthony Francis <afrancis@kilgourassociates.com>
Subject: OWES Re-evaluation for Cedarview Wetland

Hello,

Please see the linked document package to support the re-evaluation of the Cedarview wetland, a subunit located at 4497 O'Keefe Court (formerly part of Stony Swamp Wetland Complex). The final score for the re-evaluation is 486.

OWES Cedarview Submission Package

Please let me know if you have any questions or have trouble accessing the data.

Thanks,

Maren Nielsen, BES, EMA
Biologist
KILGOUR & ASSOCIATES LTD.
Direct: 613-367-5562
Ottawa: 613-260-5555
mnielsen@kilgourassociates.com
www.kilgourassociates.com

Appendix F Ontario Wetland Evaluation System City of Ottawa Confirmation

Outlook

Re: OWES Re-evaluation for Cedarview Wetland

From Maren Nielsen <mnielsen@kilgourassociates.com>
Date Tue 2024-10-08 8:36 AM
To Redpath, Tara <Tara.Redpath@ottawa.ca>
Cc Anthony Francis <afrancis@kilgourassociates.com>; Nick Moore <nmoore@kilgourassociates.com>; Stow, Nick <Nick.Stow@ottawa.ca>

Hi Tara,

Appreciate your review and feedback on the Cedarview scoring and will submit the mapping to the province for update. We will be sure to reach out to you and your team should Mattamy change their plans to pursue an OPA. Please let me know if there is anything else you need from us moving forward!

Many thanks,

Maren Nielsen, BES, EMA
Biologist, Project Manager
KILGOUR & ASSOCIATES LTD.
Direct: 613-367-5562
Ottawa: 613-260-5555
mnielsen@kilgourassociates.com
www.kilgourassociates.com

From: Redpath, Tara <Tara.Redpath@ottawa.ca>
Sent: October 7, 2024 4:00 PM
To: Maren Nielsen <mnielsen@kilgourassociates.com>
Cc: Anthony Francis <afrancis@kilgourassociates.com>; Nick Moore <nmoore@kilgourassociates.com>; Stow, Nick <Nick.Stow@ottawa.ca>
Subject: RE: OWES Re-evaluation for Cedarview Wetland

Hi Maren,

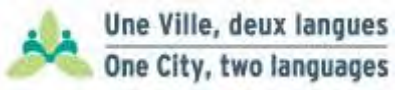
I've had the chance to review the OWES scoring report and mapping that you provided earlier for the Cedarview wetland at 4497 O'Keefe Court. Based on my review of these materials, the wetland evaluation conforms to the methods described in the OWES manual. I didn't notice any errors or omissions.

Your email from September 18th indicates that Mattamy Homes will be pursuing an Official Plan Amendment (OPA) application that will include the removal of the Significant Wetland designation. Based on this, the City of

Ottawa will not need to undertake a City-initiated OPA for these lands (as per Policy 2a in section 7.3 of our Official Plan). If this changes, please let me know so that I can initiate an OPA and Zoning By-law Amendment to reflect the non-provincially significant status of the wetland feature.

Best Regards,
Tara

Tara Redpath (she/her/elle)
Senior Planner (Acting) | Urbaniste principal (par Intérim)
Strategic Initiatives Department | Direction générale des initiatives stratégiques
City of Ottawa | Ville d'Ottawa
613-580-2424, ext. | poste 16822



From: Maren Nielsen <mnielsen@kilgourassociates.com>
Sent: September 23, 2024 10:37 AM
To: Redpath, Tara <Tara.Redpath@ottawa.ca>
Cc: Anthony Francis <afrancis@kilgourassociates.com>; Nick Moore <nmoore@kilgourassociates.com>; Stow, Nick <Nick.Stow@ottawa.ca>
Subject: Re: OWES Re-evaluation for Cedarview Wetland

Hi Tara,

Thank you for the information regarding the updated process! I can be reached anytime at 613-367-5562 should you have any questions.

Kind regards,

Maren Nielsen, BES, EMA
Biologist
KILGOUR & ASSOCIATES LTD.
Direct: 613-367-5562
Ottawa: 613-260-5555
mnielsen@kilgourassociates.com
www.kilgourassociates.com

From: Redpath, Tara <Tara.Redpath@ottawa.ca>
Sent: September 19, 2024 9:38 AM

To: Maren Nielsen <mnielsen@kilgourassociates.com>
Cc: Anthony Francis <afrancis@kilgourassociates.com>; Nick Moore <nmoore@kilgourassociates.com>; Stow, Nick <Nick.Stow@ottawa.ca>
Subject: RE: OWES Re-evaluation for Cedarview Wetland

Hi Maren,

Thank you for sending these wetland evaluation documents to Nick and I. I have accessed the files with no issues.

As you know, under the revised Ontario Wetland Evaluation System (OWES), evaluations are considered complete and final when prepared in accordance with the OWES and signed by a qualified wetland evaluator. However, because wetland evaluations usually trigger an Official Plan Amendment and Zoning By-law Amendment under the City's Official Plan, the City of Ottawa will carry out the due diligence necessary for any *Planning Act* application. We will review the wetland evaluation for conformity with the OWES, looking for any clear omissions or errors. This review will only focus on objective discrepancies with the OWES, not on matters of professional judgement.

We will notify you of the results of our review. If we identify any errors or omissions, then we will notify you and recommend corrections. We cannot compel an evaluator to change an evaluation or mapping, but staff will not initiate an OPA or support a *Planning Act* application that is based on incorrect or incomplete information.

Please let me know if you have any questions or concerns.

Best Regards,
Tara

Tara Redpath (she/her/elle)
Senior Planner (Acting) | Urbaniste principal (par Intérim)
Strategic Initiatives Department | Direction générale des initiatives stratégiques
City of Ottawa | Ville d'Ottawa
613-580-2424, ext. | poste 16822

Une Ville, deux langues
One City, two languages

From: Maren Nielsen <mnielsen@kilgourassociates.com>
Sent: September 18, 2024 3:13 PM
To: Stow, Nick <Nick.Stow@ottawa.ca>; Redpath, Tara <Tara.Redpath@ottawa.ca>
Cc: Anthony Francis <afrancis@kilgourassociates.com>; Nick Moore <nmoore@kilgourassociates.com>
Subject: OWES Re-evaluation for Cedarview Wetland

Hi Nick & Tara,

Please see the linked document package to support the re-evaluation of the Cedarview wetland, a subunit located at 4497 O'Keefe Court (formerly part of Stony Swamp Wetland Complex). The final score for the re-evaluation is 486. Mattamy Homes will be pursuing an

Official Plan Amendment application, which will include the removal of the PSW designation. The mapping files have been submitted to the province to update the LIO records.

OWES Cedarview Submission Package

Please let me know if you have any questions or have trouble accessing the data.

Thanks,

Maren Nielsen, BES, EMA
Biologist
KILGOUR & ASSOCIATES LTD.
Direct: 613-367-5562
Ottawa: 613-260-5555
mnielsen@kilgourassociates.com
www.kilgourassociates.com

Appendix G Headwater Drainage Feature Assessment

Headwater Drainage Feature Assessment For Mattamy's Cedarview Property

October 11, 2024

KILGOUR & ASSOCIATES LTD.
16, 2285C St. Laurent Boulevard
Ottawa, Ontario,
K1G 4Z6
Canada
T:613.260.5555
F: 877.260.4420
www.kilgourassociates.com
Project Number: MATT 634

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

This report is an update to the Headwater Drainage Feature Assessment (HDFA) prepared by Kilgour & Associates Ltd. (KAL) in 2017 on behalf of Mattamy Homes (Mattamy) in support of potential future residential development on Mattamy's Cedarview Property, north of O'Keefe Court in Ottawa, Ontario (hereafter referred to as "the Site"). The purpose of this updated report is to incorporate the quarry as a HDF, evaluate whether it qualifies as fish habitat, and examine its hydrological connectivity to the wetland.

This report provides a detailed description of the Headwater Drainage Features (HDFs) on and adjacent to the property following field methodologies identified in the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority & Credit Valley Conservation, 2013)), herein referred to as the HDF Guidelines.

2.0 HEADWATER DRAINAGE FEATURES

2.1 Overview

This study identifies and describes 14 HDFs and one quarry pond located on, or in close proximity to, the Mattamy property.

There are four main groups of channels, that flow across the property at some stage. The Mattamy property consists of a mixture of forest, meadow, and scrubland. Adjacent properties are similar though the Lytel Park block consists almost entirely of mowed lawn.

The first group of HDFs convey water from the quarry pond in the north-west corner to a culvert under O'Keefe Court to the south-east of the property. The second group flowing southwards has two tributaries that convey flow from west of Highway 416 and one tributary that drains the forest in the centre of the property. It also drains an area of flooded forest. After their confluences, these reaches flow into a pond located to the south of Lytle Park. Small HDFs located along O'Keefe Court and in the southwest corner of the area are discussed as the third group. The final HDF group is located at the north end of the site.

A brief visual inspection of the site on August 29, 2016, coupled with the presence of the wetland, quarry pond, and Lytle Park pond, suggested the possibility of fish being present in many of the reaches during of the year, though water levels were found likely to be intermittent. The channel form was clearly well defined within most of the reaches, apparently having been dug as linear drainage channels. During a spring site visit on April 12, 2017, water in most reaches was high with clear surface flow. Accordingly, the HDF Guidelines require a "Standard" level survey type of the area.

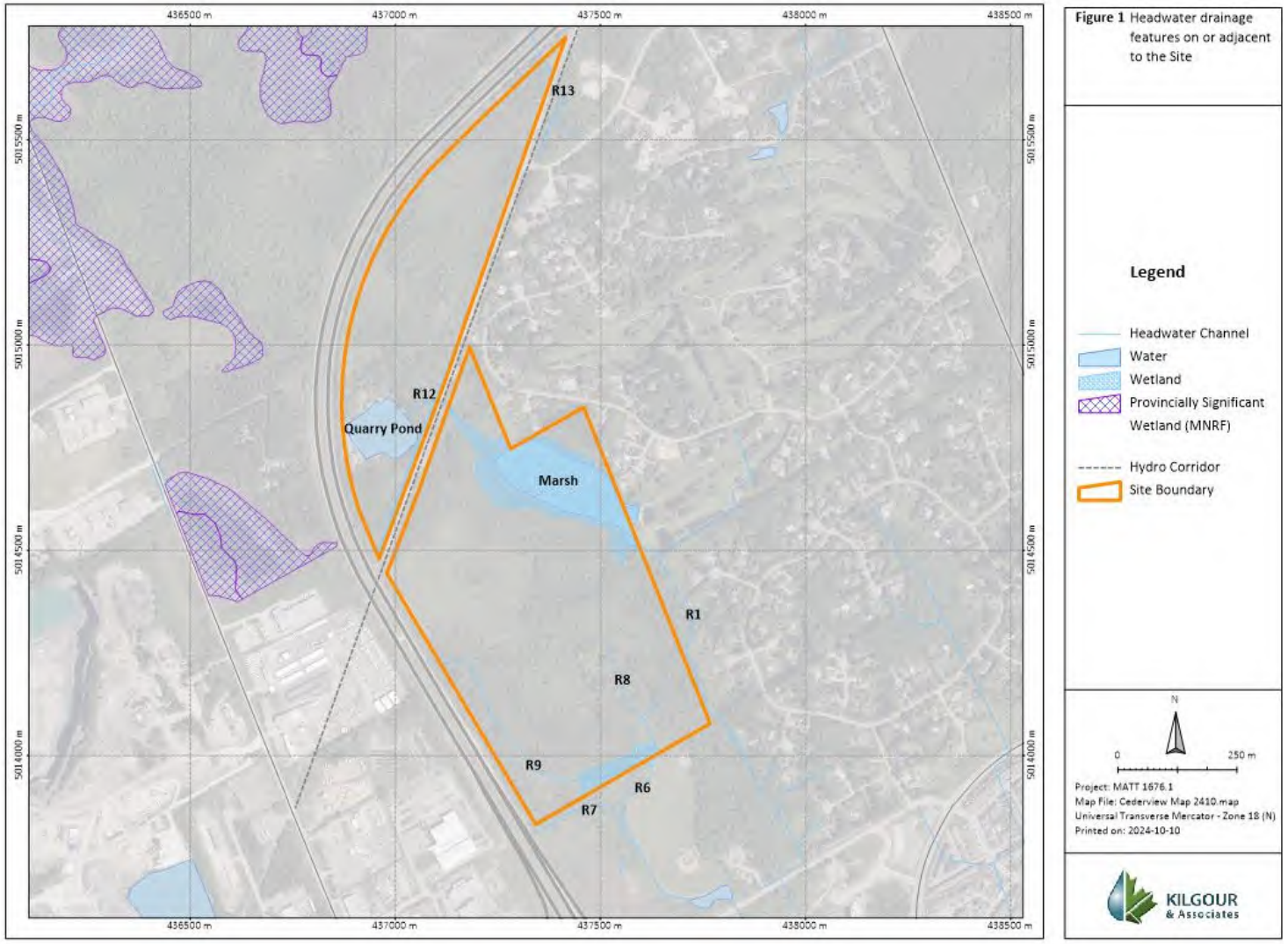


Figure 1 Headwater drainage features on or adjacent to the Site

2.2 Assessment Methodology

The Standard level of assessment follows Ontario Stream Assessment Protocol (OSAP) methodologies for descriptions of flow conditions, riparian vegetation and site features that are important components of habitat (headwater sampling protocol OSAP S4.M10), and includes an electrofishing survey to describe fish and fish habitat (OSAP S4.M10). Additionally, an ecological land classification (ELC) was applied to the riparian zone of each segment as a means of documenting community type and an assessment of amphibian breeding should be conducted following the Marsh Monitoring Protocol (MMP). A turtle survey was also completed according to the Ministry of Natural Resources and Forestry's (MNRF) protocol.

OSAP investigations of HDFs were conducted on April 12, 2017 by KAL biologists Ross Breckels, Liza Hamilton and on April 5, 2024 by Kesia Miyashita and Nick Schulz. Electrofishing surveys were conducted on May 9, 2017 by KAL biologists Liza Hamilton, Catherine Proulx and in the quarry on June 26 and 27, 2024 by Nick More, Rob Hallett, and Veronique Landriault. Summer drainage feature surveys were conducted on July 6, 2017 by KAL Biologists Anthony Francis and Catherine Proulx. The assessments of amphibian breeding, following the MMP, were conducted by KAL biologists Liza Hamilton and Catherine Proulx on April 25, May 23, and June 24, 2017. Turtle surveys were conducted, following MNRF protocols, by KAL biologists Ross Breckels or Rob Hallett on May 10, 18, 24, and June 1.

2.3 General Reach and Quarry Descriptions

Images of the Reaches 1 through 14 and the quarry pond are available in Appendix A.

2.3.1 Quarry Pond

The quarry pond is a 16,425 m^2 hydrologic feature that gathers snowmelt water during the spring freshet and precipitation throughout the year. It is most hydrologically active during the spring freshet, receiving freshwater inputs from precipitation and groundwater after the snowmelt period. During this time, the quarry connects hydrologically to the wetland through reach 12, flowing eastwards and providing an important water source to the wetland. As the snowmelt subsides and the water levels in the quarry drop, it disconnects from reach 12, becoming hydrologically isolated from the wetland.

The water depth within the quarry varies between 7 m and 12 m, with the deepest point of 12 m located in the northern corner of the quarry. The quarry spans 171 m from east to west and 113 m from north to south.

The quarry is surrounded by a deciduous forest, and features steep rock edges. The substrate of the quarry is bedrock, with sections covered with silt. A total of 46 fish - 20 Largemouth Bass (*Micropterus salmoides*), 21 Pumpkinseed (*Lepomis gibbosus*), and 5 Rock bass (*Ambloplites rupestris*) - were observed in the quarry. 42 Midland Painted Turtles (*Chrysemys picta marginata*) and one Spring Peeper (*Pseudacris crucifer*) were observed in the Quarry.

2.3.2 East Side Reaches

Reach 1

Reach 1 is a 930 m perennial drainage feature that is the main headwater to the O'Keefe Drain. It flows south-east beyond the eastern border of the property, conveying flow from the wetland to the roadside ditch (Reach 10) along O'Keefe Court. Outflow from the feature jogs southwest through Reach 10 to the main line of the O'Keefe Drain.

The feature has forest on the west side and a mixture of forest and lawn, with a very small amount of meadow downstream, on the east side. Instream vegetation is limited to the section adjacent to the meadow and consists of grasses. Both banks are dominated by trees.

The substrate in Reach 1 consists of clay and silt, with some gravel, cobble, and boulders. Submergent vegetation is not present, except for the section of the reach adjacent to the meadow where it is plentiful. Woody debris is common in this reach. This reach was characterized by surface flow in April, May, and July. A total of twelve fish – nine Banded Killifish and three Creek Chub (*Semotilus atromaculatus*) – were observed in this reach. No frogs or turtles were observed specifically in this reach, yet American Toads (*Anaxyrus americanus*), Gray Treefrogs (*Hyla versicolor*), Green Frogs (*Rana clamitans*), and Spring Peepers (*Pseudacris crucifer*) were heard calling from, and Painted Turtles (*Chrysemys picta*) and Snapping Turtles (*Chelydra serpentina*) were observed in, the wetland to the north.

Reaches 2, 3, and 4

Reaches 2, 3 and 4 are 90, 170, and 172 m drainage ditches respectively, located south-east of the property that all convey flow from the neighbouring Cedarview Estates south-west into Reach 1. Both banks of Reach 3 run along forest at the upstream and downstream sections, with lawns and residences in the middle section. Both banks of Reach 4 run along forest downstream with lawns and residences in the upstream section. The north bank of Reach 2 runs along a meadow area whereas the south bank runs along lawns and residences. Instream vegetation was absent in Reaches 3 and 4, while Reach 2 was full of grasses. Both banks of Reaches 3 and 4 were dominated by bare earth and trees downstream, with lawn grass becoming more prevalent upstream. The north bank of Reach 2 was dominated by grasses downstream, with some shrubs and trees becoming more prevalent upstream, whereas the south bank was dominated by a mixture of grasses and trees.

The substrate in Reaches 3 and 4 consists of a mixture of clay, silt, gravel, cobble, and boulders. The substrate of Reach 2 was a mixture of silt and clay. Woody debris was scarce in the three reaches. There was no submergent vegetation in Reaches 3 and 4, while in Reach 2 it was present.

These reaches were characterized by surface flow in the spring freshet (April) survey. In May, Reaches 3 and 4 still had surface flow, whereas Reach 4 had interstitial flow. In July, Reaches 2 and 3 were characterized by interstitial flow, whereas Reach 4 still had surface flow. July flows were likely due to heavy rains. Eleven fish were observed in Reach 2 – seven Central Mudminnows (*Umbra limi*) and four Banded Killifish (*Fundulus diaphanus*) – while two fish were observed in Reach 4 (two Banded Killifish), and no fish were observed in Reach 3. No frogs or turtles were observed in these reaches.

Reach 5

Reach 5 is a 45 m wetted depression located on the west side of Reach 1 that drains a portion of the forest. At periods of extreme flow, it would flow into Reach 4, however the reach bed is at its highest elevation just before the confluence with Reach 4, resulting in the standing water observed in April. The reach runs along forest on both sides and both banks are covered in trees and bare earth. There is no instream vegetation present.

The substrate consists of bare earth, and woody debris and submergent vegetation is not present. This reach was characterized by standing water in April and was completely dry by May. Consequently, no fish, frogs, or turtles were observed in this reach.

2.3.3 West and Central Reaches

Reach 6

Reach 6 extends 431 m from the confluence of Reaches 8 and 9, southwards into the pond to the south of Lytle Park, along O'Keefe Court. The feature picks up additional inputs from Reach 7. The feature was wet during all three site visits in 2017, though there was no detectable flow in May and July. In previous years, the feature has been observed to be dry by June. The east bank runs along lawn with the occasional shrub downstream. The west bank runs along forest. This reach is inundated with instream vegetation, consisting of grasses and sedges. The east bank is covered with lawn (soccer and baseball fields) with the occasional shrub downstream. The west bank is covered by grass and trees.

The substrate consists of a mixture of clay and silt, and woody debris was not present. Submergent vegetation was not present. Two Banded Killifish and one Creek Chub were observed in this reach. No frogs or turtles were observed in this reach, however, a Painted Turtle was observed basking in the downstream pond.

Temperatures within this reach were generally ~1°C warmer than in Reaches 8 and 9 (as measured in May and July). The pond however, at the downstream end is almost completely unshaded, resulting in significant solar warming there. In July, the outflow of the pond was 4°C warmer than that of Reach 6 (i.e. 18°C in; 22°C out). This warmed outflow enters the O'Keefe Drain 150 m south of O'Keefe Court.

Reach 7

Reach 7 is a 318 m constructed channelized feature that originates in the Cultural Meadow community at the western Site boundary, directly adjacent to Highway 416. The original water source for the feature had been a headwall outlet providing drainage outflows from the adjacent highway corridor. That outlet structure, however, was sealed in 2015. It is currently sourced only by springtime overland flow.

The HDF conveys spring melt through a young deciduous forest and connects to a southeastern flowing drain that runs along the eastern forest boundary adjacent to Lytle Park. Reach 7 was observed to have minimal flow during spring freshet. The upstream portion of Reach 7 contains narrow-leaved emergent vegetation while the downstream forested section lacks in-stream vegetation. Within the upstream

section, Reach 7 has a well-defined channel with a mean bankfull width of approximately 1.23 m over silty organic substrate within the upstream portion, and cobble substrate within the downstream portion. A perched culvert is located centrally within the upstream portion of Reach 7. The presence of a perched culvert (0.31 m perched height; 0.28 m jumping height) towards the downstream section of the meadow provided a barrier to fish movement upstream. No fish, frogs or turtles were observed along the reach.

Reach 8

Reach 8 is a 330 m linear channel running generally south through the woodland to the south of the property, turning west to flow along the northern border of Lytle Park before turning south again to flow along the Park's western border until its confluence with Reach 9 to form Reach 6. Historical air photos from 1965 show most of this feature as a former agricultural drainage ditch between farm field. Both sides however, are now entirely forested. Instream vegetation is dense at the south end , consisting of grasses and sedges, but is absent through most of the feature. Both banks are covered with a mixture of grasses, shrubs, and trees, with the southern portion of the east bank being dominated by grasses.

The reach channel had significant flows in April with broad adjacent flooded areas, especially downstream. In May and July, the channel was still wet though flow was negligible. The majority of spring flow in the feature is runoff from the surrounding forest. The top end of the reach however, begins abruptly and is fed by a small ground water input there sufficient to maintain some water within the feature in the early summer. A second small ground water input adds more groundwater 200 m downstream from the top end of the feature.

The substrate consists of a mixture of clay and silt, and woody debris was highly abundant in the upstream portion, but less so downstream. Submergent vegetation was scarce. Twenty-eight fish were observed in this reach, consisting of 25 Banded Killifish, and one each of Brook Stickleback (*Culaea inconstans*), Central Mudminnow, and Northern Redbelly Dace (*Chrosomus eos*). No frogs or turtles were observed in this reach.

Reach 9

Reach 9 begins at a very small culvert under Highway 416. It is a 715 long mix of defined channels, swales and flooded areas running generally southwest through the western side of the woodland to the south of the property, turning east to flow along the northern border of Lytle Park to meet with Reach 8. Both the east and west banks run along forest. Instream vegetation is infrequent, consisting of grasses and sedges when present. Both banks are covered with a mixture of grasses, shrubs, and trees.

The substrate consisted of a mixture of clay and silt. Woody debris was highly abundant. Submergent vegetation was not present. Reach 9 had some surface flow during the April survey period, yet the majority of the reach was dry during the fish survey in May; only a small pooled area at the upstream section remained. Pooled areas in July had increased following substantial rains but were still disconnected and much of the reach was still dry. Accordingly, no fish, frogs or turtles were observed along the reach.

2.3.4 South Reaches

Reach 10

Reach 10 is a 127 m roadside ditch located along O'Keefe Court. The eastern half conveys flow south-westwards from Reach 1 before turning south-eastwards under a culvert in O'Keefe Court, while picking up additional contributions from road runoff. The western half collects and adds further road runoff. The north bank runs through a small section of meadow, but mostly along the lawns of Lytel Park, whereas the south bank runs along O'Keefe Court. This reach is inundated with grasses and sedges. Both banks are dominated by grasses.

The substrate consists of a mixture of clay and silt. Woody debris and submergent vegetation are absent. The eastern half, fed by Reach 1, was characterized by surface flow in April, May, and July. The western held standing water in April and July (following heavy rain) and was dry in May. Four Banded Killifish were observed in the eastern half of the reach, yet no frogs or turtles were observed.

Reach 11

Reach 11 is a 52 m remnant drainage ditch located on 4497 O'Keefe Court in the south-western portion of the area. The reach is an abandoned/cut-off feature beginning at the ridge to the east, which runs along the western border of Lytle Park. It leads to an isolated, lower-lying area in the centre of the property, though there are no drainage features leaving that lower area. The eastern side of the reach runs along forest while the west bank appears to run along cultural meadow there. Instream vegetation consisted of grasses and sedges. Both banks are covered with scrubland vegetation; i.e. trees and shrubs interspersed with grasses and forbs.

The substrate consisted of a mixture of clay and silt. Woody debris was not present and submergent vegetation was minimal. Reach 11 had low flow during the April survey period, with limited areas of standing water by the fish survey in May. In July, this reach was completely dry. The low-lying area to the south was flooded in April, but was also mostly dry by May and completely dry by July. No fish, frogs or turtles were observed along the reach or in the downstream wetland.

2.3.5 North Reaches

Reach 12

Reach 12 is a 150 m channel/swale located in the north-western portion of the property. The reach conveys flow during spring freshet from the quarry pond to the wetland to the east of the property, close to Cedarhill Drive. The reach runs along forest on both banks upstream, while further downstream it runs along a mixture of scrubland closer to the reach and forest further away. Instream vegetation is not present upstream, while downstream the instream vegetation is more abundant and consists of grasses and sedges. Both banks are covered with trees with some grasses upstream and scrubland vegetation downstream.

The substrate consisted of a mixture of clay and silt. Woody debris was minimal in the upstream section and not present downstream. Submergent vegetation was minimal. Reach 12 was shallow and had obvious flow during the April survey period. In May and July, the reach was lower and the flow was less obvious. The presence of a perched culvert (~ 0.5 m perched height) under the walking trail a barrier to fish movement upstream. Downstream of this culvert, ten fish were observed; four of both Central Mudminnows and Banded Killifish, and one of both Brook Stickleback and Northern Redbelly Dace. No frogs or turtles were observed specifically in this reach, yet many frogs and turtles were observed just downstream. American Toads, Gray Treefrogs, Green Frogs, and Spring Peepers were heard in the adjacent downstream forest and the wetland to the south. Painted turtles and Snapping Turtles were observed in the wetland area downstream.

Reach 13

Reach 13 is a 294 m channel flowing north-east located in the north-eastern portion of the property.

The reach conveys surface water runoff from upland forest there northward under Highway 417 via a culvert. The reach runs along scrub forest/thicket on the east bank and the cultural meadow associated with the walking path on the west bank. Instream vegetation upstream is not present, while downstream it consists of grasses. Both banks upstream are bare rock with a minimal amount of moss and lichen. Further downstream, both banks are covered in grasses and some shrubs.

The substrate consisted of bedrock upstream transferring to silt downstream. Woody debris and submergent vegetation were minimal. Reach 13 was narrow and shallow with obvious flow in April. In May, the reach was nearly dry and was too low to fish. In July it was dry. No fish, frogs, or turtles were observed specifically in this reach, yet a few frogs, American Toads, Gray Treefrogs, and Spring Peepers, were heard calling from the forest to the north.

Reach 14

Reach 14 is a 75 m long, north-west flowing ditch located in the north-eastern portion of the area. The reach conveys run-off from the residential areas, under Onassa Circle via a culvert, to Reach 13 through a yet-undeveloped house lot. The reach runs through cultural thicket on both banks. Instream vegetation consists of grasses and sedges. Both banks are covered in a mixture of grasses, shrubs, and trees.

The substrate consists of silt. Woody debris and submergent vegetation are minimal. Reach 14 had obvious flow in April. In May, the reach still contained some standing water yet flow was not evident. In July, this reach dry. No fish, frogs, or turtles were observed in the reach. American Toads, Gray Treefrogs, and Spring Peepers were heard calling from the forest to the north.

2.4 Component Classifications

The following tables summarize the functions provided by the 15 reaches.

Table 1. Hydrology Classification, 2017 and 2024

Drainage Feature	Hydrology Classification					
	Assessment Period	Flow Conditions		Flow Classification	Modifiers	Hydrological Function
		Description	(OSAP Code)			
Reach 1	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April, May, and July.	4	Perennial		**Important Functions**
Reach 2	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April. Interstitial flow in May and July.	3	Intermittent	Water remained in this reach for a longer period of time than usual due to the large amounts of rainfall in the spring and early summer of 2017.	**Contributing Functions**
Reach 3	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April and May. Interstitial flow in July.	4	Intermittent	Water remained in this reach for a longer period of time than usual due to the large amounts of rainfall in the spring and early summer of 2017.	**Contributing Functions**
Reach 4	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April, May, and July.	4	Intermittent	Water remained in this reach for a longer period of time than usual due to the large amounts of rainfall in the spring and early summer of 2017.	**Contributing Functions**
Reach 5	April 12, 2017 May 9, 2017 July 6, 2017	Standing water in April. Dry in May and July.	1	Ephemeral	Outflow is subject to significant heating by pond	**Contributing Functions**
Reach 6	April 12, 2017 May 31, 2024 July 6, 2017	Surface flow in April. Dry in May.	1	Ephemeral	Outflow is subject to significant heating by pond. Modifications to improve this should be considered.	**Recharge Functions**
Reach 7	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April. Dry in May.	1	Ephemeral	This feature was constructed to capture surface runoff on lands west of Highway 416 through a headwall outlet. The outlet was grouted in 2015 and currently there is no source other than spring runoff.	**Recharge Functions**
Reach 8	April 12, 2017 May 9, 2017	Surface flow in April.	3	Perennial	Important because of groundwater	**Valued Functions**

Drainage Feature	Hydrology Classification					
	Assessment Period	Flow Conditions		Flow Classification	Modifiers	Hydrological Function
		Description	(OSAP Code)			
	July 6, 2017	Interstitial flow in May and July.			contributions but the channel form is not natural.	
Reach 9	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April. Standing water in May and July.	2	Intermittent	Disparate pools of standing water after April, likely because of rain. Limited bank structure.	**Valued Functions**
Reach 10	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April, May, and July.	4	Perennial	Only serves as a roadside ditch except for the section connecting Reach 1 to the downstream O'Keefe Drain. (a better set-up would be preferable)	**Contributing Functions**
Reach 11	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April. Dry in May and July.	1	Ephemeral	No source other than spring run-off and after heavy rain. No outflow to downstream reaches	**Limited Functions**
Reach 12	April 5, 2024 May 9, 2017 July 6, 2017	Surface flow in April. Interstitial flow in May. Minimal surface flow in July.	3	Perennial	Provides hydrological connection from the quarry to the PSW.	**Important Functions**
Reach 13	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April. Standing water in May. Dry in July.	2	Ephemeral	Water remained in this reach for a longer period of time than usual due to the large amounts of rainfall in the spring and early summer of 2017.	**Contributing Functions**
Reach 14	April 12, 2017 May 9, 2017 July 6, 2017	Surface flow in April. Standing water in May. Dry in July.	2	Ephemeral	Water remained in this reach for a longer period of time than usual due to the large amounts of rainfall in the spring and early summer of 2017.	**Contributing Functions**

Table 2. Riparian Classification

Drainage Feature	Riparian Classification			
	OSAP Descriptions	**OSAP Riparian Codes**	**ELC Codes**	**Riparian Conditions**
Reach 1	RUB – Forest LUB – Forest	RUB – 6 LUB – 6	FOM FOM	**Important Functions**
Reach 2	RUB – Lawn LUB – Meadow	RUB – 2 LUB – 4	- CUM	**Contributing Functions**
Reach 3	RUB – Forest/Lawn LUB – Forest/Lawn	RUB – 6/2 LUB – 6/2	CUF CUF	**Important Functions**
Reach 4	RUB – Forest/Lawn LUB – Forest/Lawn	RUB – 6/2 LUB – 6/2	CUW CUW	**Important Functions**
Reach 5	RUB – Forest LUB – Forest	RUB – 6 LUB – 6	FOM FOM	**Important Functions**
Reach 6	RUB - Lawn LUB - Forest	RUB – 2 LUB – 6	- FOC	**Important Functions**
Reach 7	RUB - Forest LUB – Meadow	RUB – 6 LUB – 4/6	FOC CUM	**Important Functions**
Reach 8	RUB – Forest LUB - Forest	RUB – 6/2 LUB – 6	FOM FOM	**Important Functions**
Reach 9	RUB - Forest LUB - Forest	RUB – 6 LUB – 6	FOC FOC	**Important Functions**
Reach 10	RUB – None (O'Keefe Court) LUB – Lawn	RUB – 1 LUB – 4	- -	**Contributing Functions**
Reach 11	RUB - Forest LUB - Meadow	RUB – 6 LUB – 7	FOC CUM	**Important Functions**
Reach 12	RUB – Forest/Scrubland LUB – Forest/Scrubland	RUB – 6/5 LUB – 6/5	CUT CUT	**Important Functions**
Reach 13	RUB – Meadow LUB – Scrubland	RUB – 5 LUB – 6	CUM CUT	**Important Functions**
Reach 14	RUB - Scrubland LUB - Scrubland	RUB – 6 LUB – 6	CUT CUT	**Important Functions**

RUB – right upstream bank
LUB – left upstream bank

Table 3. Fish and Fish Habitat Classification, May 9, 2017 and July 25-26, 2024

Drainage Feature	Riparian Classification		
	Fish Observation • **Fishing effort**	**Fish & Fish Habitat Designation***	**Modifiers/Notes**
Reach 1	Fish present, no SAR present. • 478 SS = 12.0 s/m^2	Valued Functions	12 fish (9 Banded Killifish and 3 Creek Chub) were observed. These species are very common and highly tolerant.
Reach 2	Fish present, no SAR present. • 285 SS = 7.60 s/m2	Valued Functions	11 fish (7 Central Mudminnows and 4 Banded Killifish) were observed. These species are very common and highly tolerant. A perched culvert located under the walking trail roughly half way along this reach also prevents migration upstream.
Reach 3	No fish present, no SAR present. • 321 SS = 45.9 s/m2	Contributing Functions	
Reach 4	Fish present, no SAR present. • 350 SS = 41.7 s/m^2	Valued Functions	2 Banded Killifish were observed. This species is very common and highly tolerant.
Reach 5	No fish present, no SAR present. • Dry	Contributing Functions	The highest bed elevation of this reach was shortly before the confluence with Reach 4, resulting in a very steep gradient which acted as a fish barrier.
Reach 6	No fish present, no SAR present. Dry	Valued Functions	In previous years (2017), small pockets of standing water have been present, potentially due to heavy rainfall events. Site visit in May 2024 observed dry conditions.
Reach 7	No fish present, no SAR present. • Not enough wet area to shock	Limited Functions	Conductivity in the reach in April was 1823 µS/cm, suggesting high levels of contamination through road run-off and upstream agricultural practices. A perched culvert located roughly halfway along this reach also prevents migration upstream.
Reach 8	Fish present, no SAR present. • 137 SS = 3.00 s/m^2 (mostly spot shocking where possible through dense vegetation)	Valued Functions	28 fish (25 Banded Killifish, 1 Brook Stickleback, 1 Central Mudminnow, and 1 Northern Redbelly Dace) were observed. These species are all very common and highly tolerant.
Reach 9	No fish present, no SAR present. • 210 SS = 4.28 s/m^2	Contributing Functions	By the time of the fish survey this reach was reduced to standing water. Dissolved oxygen in the reach was 4.8 mg/L, suggesting there is not enough oxygen to support fish.
Reach 10	Fish present, no SAR present. • 225 SS = 7.50 s/m^2 (mostly spot shocking where possible through dense vegetation)	Valued Functions	4 Banded Killifish were observed. This species is very common and highly tolerant.
Reach 11	No fish present, no SAR present. • Not enough wet area to shock	Limited Functions	Conductivity in the reach was 1124 µS/cm, suggesting high levels of contamination through road run-off and upstream agricultural practices. No connection to other features
Reach 12	Fish present, no SAR present. • 150 SS = 5.26 s/m^2	Valued Functions	10 fish (4 Banded Killifish, 4 Central Mudminnows, 1 Brook Stickleback, and 1 Northern Redbelly Dace). These species are all very common and highly tolerant. A perched culvert located under the walking trail roughly half way along this reach also prevents migration upstream.
Reach 13	No fish present, no SAR present. • 50 SS = 5.43 s/m^2	Contributing Functions	
Reach 14	No fish present, no SAR present. • 111 SS = 20.2 s/m^2	Contributing Functions	

*Fish and Fish Habitat Designation is constrained by the HDF Guidelines definitions. "Modifiers" provides significant caveats to those designations. SS = shocking seconds

Table 4. Terrestrial habitat classification

Drainage Feature	Description	Amphibians	Terrestrial Classification
Reach 1	This reach provides a forest corridor connection to a large wetland upstream.	No frogs were observed in the feature, yet American Toads, Gray Treefrogs, Green Frogs, and Spring Peepers were observed in the vicinity of the feature.	**Important Functions**
Reach 2	No adjacent wetland areas. Upstream end only connects to residential community.	No frogs were observed in the vicinity of the feature.	**Limited Functions**
Reach 3	No adjacent wetland areas. Upstream end only connects to residential community.	No frogs were observed in the vicinity of the feature.	**Limited Functions**
Reach 4	No adjacent wetland areas. Upstream end only connects to residential community.	No frogs were observed in the vicinity of the feature.	**Limited Functions**
Reach 5	No adjacent wetland areas. The reach flows through forest, thus the riparian zone may provide a potential corridor connection.	No frogs were observed in the vicinity of the feature.	**Contributing Functions**
Reach 6	The limited riparian zone (i.e. narrowly vegetated width) would likely only provide a corridor for very small fauna (e.g. squirrels). Though narrow, the existing vegetated corridor (5 m on either side) still permits the channel within to serve as a corridor for frogs.	No frogs were observed in the vicinity of the feature.	**Contributing Functions**
Reach 7	No adjacent wetland areas. The reach flows through some forest areas, thus the riparian zone may provide a potential corridor connection.	No frogs were observed in the vicinity of the feature.	**Limited Functions**
Reach 8	Adjacent flooded forest. This reach has potential to provide a forest corridor connection.	No frogs were observed in the vicinity of the feature.	**Valued Functions**
Reach 9	Adjacent flooded forest. This reach has potential to provide a forest corridor connection.	No frogs were observed in the vicinity of the feature.	**Valued Functions**
Reach 10	This reach provides a meadow corridor connection to a large wetland ~ 900 m upstream.	No frogs were observed in the vicinity of the feature.	**Valued Functions**
Reach 11	No adjacent wetland areas. Connects to cultural meadow.	No frogs were observed in the vicinity of the feature.	**Limited Functions**
Reach 12	This reach provides a forest/scrubland corridor connection between the quarry pond upstream and the large wetland downstream.	No frogs were observed in the feature, yet American Toads, Gray Treefrogs, Green Frogs, and Spring Peepers were observed in the vicinity of the feature.	**Valued Functions**
Reach 13	This reach provides a forest/scrubland connection to a house lot.	No frogs were observed in the vicinity of the feature, yet American Toads, Gray Treefrogs, and Spring Peepers were observed in the vicinity of the feature.	**Contributing Functions**
Reach 14	This reach provides a forest/scrubland connection to a house lot.	No frogs were observed in the vicinity of the feature, yet American Toads, Gray Treefrogs, and Spring Peepers were observed in the vicinity of the feature.	**Contributing Functions**

2.5 Reach Summary

Dimensions of the HDF reaches and quarry pond are summarized in Table 5.

Table 5. Reach (April 13, 2026) and quarry pond (July 24, 2024) dimensions

Drainage Feature	Length (m)	Mean Bankfull Width (m)	Mean Wetted Width (m)	Mean Depth (m)
Reach 1	930	2.85	2.10	0.19
Reach 2	90	2.90	2.35	0.23
Reach 3	170	1.60	0.86	0.08
Reach 4	72	1.55	0.89	0.06
Reach 5	50	2.75	1.28	0.06
Reach 6	431	3.20	3.20	0.16
Reach 7	325	1.20	0.78	0.28
Reach 8	330	4.20	1.85	0.16
Reach 9	715	1.55	1.09	0.10
Reach 10	127	2.50	1.80	0.20
Reach 11	52	Indeterminate	4.20	0.20
Reach 12	150	4.10	2.85	0.05
Reach 13	294	Indeterminate	0.92	0.09
Reach 14	75	1.50	0.73	0.08

3.0 MANAGEMENT RECOMMENDATIONS

The classification categories identified in Section 2 provide the basis of the management recommendations provided here. The following flow chart (Figure 2) combines and translates the classification results to management recommendations.

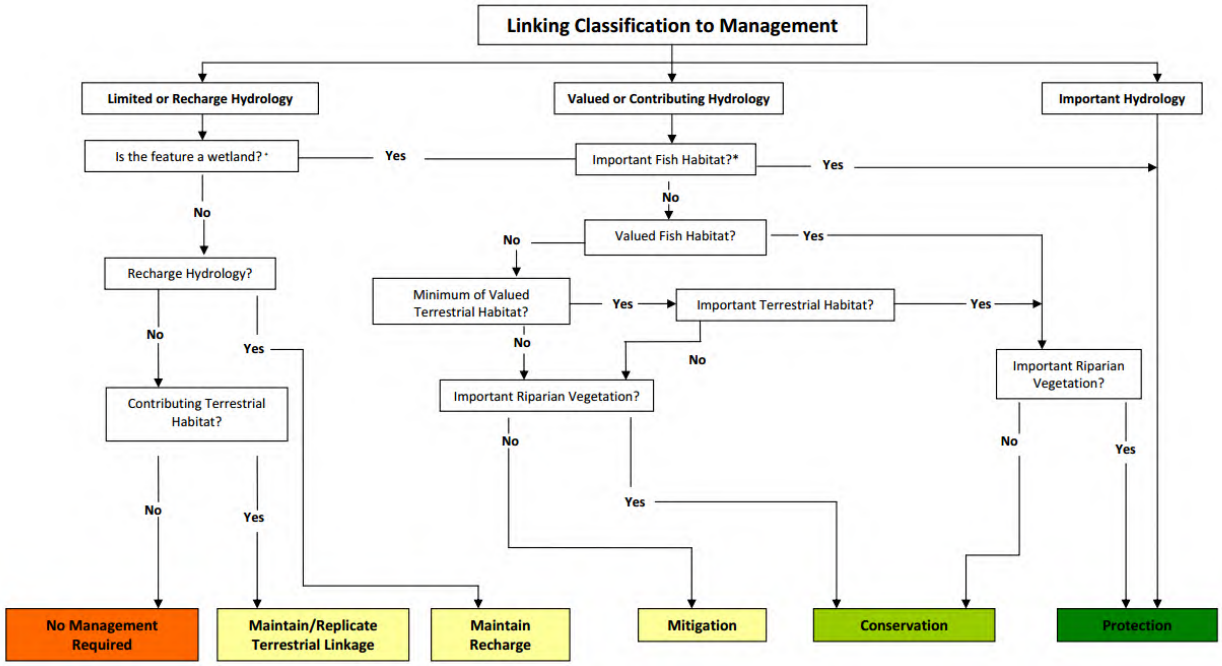


Figure 2. Headwater Drainage Feature Assessment (HDFA) flow chart providing direction on management options

3.1 Management Recommendations for Reaches and Quarry Pond

3.1.1 Quarry Pond

The quarry becomes hydrologically connected to the wetland during spring snowmelt, serving as an important water source for the wetland. Consequently, in the event of a quarry removal, it is recommended that management strategies include provisions for an alternative water source to maintain the wetland's hydrological balance. This recommendation will be further discussed in the Environmental Impact Statement.

3.1.2 East Side Reaches

Reach 1

This feature is a perennial channel located within an area of mature forest. It provides direct fish habitat and is an integral part of the surrounding forest ecosite. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Important Hydrology.
    a. Provides Valued Fish Habitat;
    b. Provides Important Riparian Vegetation.

The first factor leads to a management directive to **Protection**. Other factors such as its fish habitat and corridor functionality to the PSW upstream further add to this directive. As such, this reach may be maintained and/or enhanced, but cannot be relocated. The feature should be protected and its riparian zone enhanced where feasible. The hydro-period must be maintained. Use natural channel design techniques or wetland design to restore and enhance existing habitat features if and where needed. Stormwater management systems must be designed to avoid impacts (i.e. sediment, temperature) to this headwater channel.

Reaches 2, 3, and 4

These reaches provide drainage from the adjacent community into Reach 1. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), these reaches:

1. Provide Contributing Hydrology;
2. Do not provide Important Fish Habitat;
3. Provide Valued Fish Habitat (except for Reach 3); and
4. Do not provide Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for these reaches. These features may be maintained or, if necessary relocated, using natural channel design techniques to maintain or enhance overall productivity of the reach. In either case, the riparian corridors must be maintained or enhanced. If catchment drainage will be removed due to diversion of stormwater flows, lost functions should be restored through enhanced lot level controls (e.g. restore original catchment using clean roof drainage). External flows must be maintained or replaced and the drainage feature must (re)connect to downstream features.

Reach 5

This reach is a small, ephemeral drainage feature located entirely within a forested area. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Contributing Hydrology;
2. Does not provide Important Fish Habitat;

3. Does provide Valued Fish Habitat;
4. Provides Valued/Important Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for this reach. The feature may be maintained or, if necessary relocated, using natural channel design techniques to maintain or enhance overall productivity of the reach. In either case, the riparian corridors must be maintained or enhanced. If catchment drainage will be removed due to diversion of stormwater flows, lost functions should be restored through enhanced lot level controls (e.g. restore original catchment using clean roof drainage). External flows must be maintained or replaced and the drainage feature must (re)connect to downstream features.

3.1.3 West and Central Reaches

Reach 6

Reach 6 is a 68 m channelized feature that flows southward through the young deciduous forest along the southeastern Site boundary connecting to Reach 7 downstream. Some areas of standing water and small pools were observed in Reach 6 in the early spring. No in-stream aquatic vegetation was observed, and riparian vegetation is primarily forested. The mean bank full width of Reach 6 is approximately 0.93 m over organic substrate. The channel however as been modified and made linear, and its flow passes through an large, mostly-stagnant pond leading to significant temperature increases. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Recharge Hydrology;
2. Provides Limited Fish Habitat;
4. Provides Limited Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Maintain Recharge** for this reach. This feature provides ephemeral flow and water storage functions during and after spring freshet and following large rain events only. This feature contains no fish habitat, and no amphibians were heard calling during MMP surveys. There is no requirement to retain the feature per se, but on-site flow, outlet flows, and overall water balance for the area must be maintained by providing mitigation measures to infiltrate clean stormwater.

Reach 7

Reach 7 is a channelized drainage channel that originates in the cultural meadow community at the western Site boundary, flowing through a young deciduous forest and connects to a southeastern flowing drain that runs along the eastern forest boundary adjacent to Lytle Park. Reach 7 was observed to have minimal flow during spring freshet. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Recharge Hydrology;
2. Does not provide Important or Valued Fish Habitat;
3. Provides only Limited Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Maintain Recharge** for this reach. This feature provides ephemeral flow and water storage functions during and after spring freshet. This feature contains no fish habitat, and no amphibians were heard calling during MMP surveys. There is no requirement to retain the feature per se, but overall water balance for the area must be maintained by providing mitigation measures to infiltrate clean stormwater.

Reach 8

This feature is a perennial channel with ground water inputs, located within an area of mature forest. It provides direct fish habitat and is an integral part of the surrounding forest ecosite. It is however a former linear farm ditch and as such, does not have a natural channel design. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Hydrology is valued to important (i.e. perennial with groundwater, but a non-natural channel form).
2. Provides Valued Fish Habitat; and
3. Provides Important Riparian Vegetation

These factors lead to a management directive of **Protection**. As such, this reach may be maintained and/or enhanced, but should not generally be relocated. Improvements however, could be possible to its overall channel form and thus some minor realignment may be considered within that context. The riparian zone should be protected and enhanced where feasible. The hydro-period must be maintained. Use natural channel design techniques or wetland design to restore and enhance existing habitat features if and where needed. Stormwater management systems must be designed to avoid impacts (i.e. sediment, temperature) to this headwater channel.

Reach 9

This reach provides an intermittent drainage corridor from the forested areas above to the O'Keefe Drain. The channel is generally poorly defined however, frequently existing as string of disparate small patches of standing water maintained this year by heavy rains. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Valued Hydrology;
2. Does not provide Important Fish Habitat;
3. Does not provide Valued Fish Habitat;
4. Provides Valued/Important Terrestrial Habitat; and
4. Provides Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Protection** for this reach. As such, this reach may be maintained and/or enhanced, but should not generally be relocated. Significant improvements however, are possible to its overall channel form and thus some realignment may be considered. The riparian zone should be protected and enhanced where feasible. The hydro-period must be maintained. Use natural channel design techniques or wetland design to restore and enhance existing habitat features if and where needed. Stormwater management systems must be designed to avoid impacts (i.e. sediment, temperature) to this headwater channel.

3.1.4 South Reaches

Reach 10

Reach 10 is a simple roadside ditch. Its primary function is to collect and convey road runoff. Accordingly, the feature has negligible biological functionality and, at least for a portion of it, has limited hydrology. Part of the ditch however, connects Reach 1, i.e. the main headwater tributary of the O'Keefe drain, to the main drain line. As such, the hydrology of that portion of the ditch is very important, though the general form is highly suboptimal. While the hydrological function there must be maintained, management directives provided here should not oppose any opportunity for an improved connection. Similarly, fish presence here is only related to its location as a hydrological connection rather than the quality of the habitat (or lack thereof). The fish corridor function must be maintained but management considerations should permit any options for channel improvement. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), Reach 2:

1. Provides Contributing Hydrology;
2. Does not provide Important Fish Habitat;
3. Provides Valued Fish Habitat; and
4. Does not provide Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for this reach. This feature may be maintained or, if necessary relocated, using natural channel design techniques to maintain or enhance overall productivity of the reach. In its current form as a road side ditch, the channel does not have nor require a setback or riparian corridor per se. Any portion of this channel however, that is realigned away from serving directly as a roadside ditch, would require an enhanced riparian corridor. If catchment drainage will be removed due to diversion of stormwater flows, lost functions should be restored through enhanced lot level controls (e.g. restore original catchment using clean roof drainage). External flows must be maintained or replaced and the drainage feature must (re)connect to downstream features.

Reach 11

Reach 11 temporarily holds water during the spring freshet but has no flow and does not contribute to downstream HDFs as it is an isolated, remnant channel. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Limited Hydrology;

2. Is not a wetland; but
3. May provide recharge hydrology.

This chain of classification descriptors leads to a management directive of **Maintain Recharge.** There is no requirement to retain the feature per se, but overall water balance for the area must be maintain by providing mitigation measures to infiltrate clean stormwater.

3.1.5 North Reaches

Reach 12

This feature is a perennial channel that conveys water from the quarry to the PSW. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), this reach:

1. Provides Important Hydrology.
    a. Does not provide Valued or Important Fish Habitat; but
    b. Provides Important Riparian and Valued Terrestrial Vegetation.

The first factor leads to a management directive to **Protection**. The chain of classification descriptors, as listed in the HDFA report (Appendix G) leads to a standard management directive of "Protection" for this reach. The management direction of Protection for this feature is a result of the permanent connection this feature provides from the Quarry Pond to the Marsh. Beyond the hydrological function of this feature, the portion of this HDF upstream of the perched culvert has no ecological function (i.e., no fish captured or species observed within the reach), and as such the portion of the reach upstream of the culvert does not need to be protected, but the hydrological function between the Quarry Pond and Marsh must be maintained. Further discussion and review of the standard HDFA mitigations for this and the other HDFs occurring directly on the Site are included below. Stormwater management systems must be designed to avoid impacts (i.e. sediment, temperature) to this headwater channel.

Reaches 13 and 14

Reaches 13 and 14 are small swale/ditch features conveying water from house lots on Onassa Circ., located just off of the subject property (the downstream end of Reach 13 just crosses the tip of the site). The house lots there are currently covered in thicket but will likely be cleared shortly with ongoing development. Following the HDFA Guide flow chart linking component classification to management directives (Figure 2), these reaches:

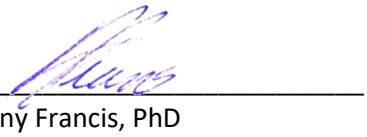
1. Provides Contributing Hydrology;
2. Do not provide Important Fish Habitat;
3. Do not provide Valued Fish Habitat;
4. Do not provide Valued Terrestrial Habitat; and
4. Provide Important Riparian Vegetation.

This chain of classification descriptors leads to a management directive of **Conservation** for these reaches. These feature may be maintained or, if necessary relocated, using natural channel design techniques to

maintain or enhance overall productivity of the reach. Reach 13 however is located almost entirely as a swale adjacent to the recreational pathway, i.e. within a very limited setback. If catchment drainage will be removed due to diversion of stormwater flows, lost functions should be restored through enhanced lot level controls (e.g. restore original catchment using clean roof drainage). External flows must be maintained or replaced and the drainage feature must (re)connect to downstream features.

4.0 CLOSURE

This report provides detailed descriptions of the HDFs and quarry pond on and/or near to Mattamy's property, as well as management recommendations to direct future development near those features. Points of clarification can be addressed to the undersigned.



Anthony Francis, PhD
KILGOUR & ASSOCIATES LTD.

Appendix A: Site Photos

Note: Reach numbers located within the comment lines directly on photos indicate the order in which they were originally photographed and do not necessarily reflect the final assigned reach numbers used throughout this report.

Quarry Pond, 2024

Reach 1, 2017


Apr 12 09:28:32 EDT 2017
Datum: WGS-84
Azimuth/Bearing: 006° N06E 0107mils (True)
Zoom: 1X


Wed Apr 12 09:28:44 EDT 2017
Position: 18 N 437750 5014132
Datum: WGS-84
Azimuth/Bearing: 171° S09E 3040mils (True)

Reach 2, 2017


Date & Time: Wed Apr 12 11:47:42 EDT 2017
Position: 18 N 437986 5013814
Altitude: 370ft
Datum: WGS-84
Azimuth/Bearing: 006° N06E 0107mils (True)
Elevation Angle: -84.8°
Horizon Angle: 88.6°
Zoom: 1X
MATT 549 - 11


Date & Time: Wed Apr 12 11:47:53 EDT 2017
Position: 18 N 437977 5013798
Altitude: 354ft
Datum: WGS-84
Azimuth/Bearing: 200° S20W 3556mils (True)
Elevation Angle: -18.3°
Horizon Angle: 00.7°
Zoom: 1X
MATT 549 - 11

Reach 3, 2017


Date & Time: Wed Apr 12 08:57:09 EDT 2017
Position: 18N 437958 5013985
Altitude: 335ft
Datum: WGS84
Azimuth Bearing: 357° N03W 6347mils (True)
Elevation Angle: -83.7°
Horizon Angle: 88.2°
Zoom: 1X
MATT-549


Date & Time: Wed Apr 12 08:58:03 EDT 2017
Position: 18N 437931 5013982
Altitude: 359ft
Datum: WGS-84
Azimuth Bearing: 231° 551W 4107mils (True)
Elevation Angle: 86.4°
Horizon Angle: 88.5°
Zoom: 1X
MATT-549

Reach 4, 2017


Date & Time: Wed Apr 12 09:09:37 EDT 2017
Position: 18 N 437882 5013929
Altitude: 340ft
Datum: WGS-84
Azimuth Bearing: 013° N13E (231mils True)
Elevation Angle: 86.7°
Horizon Angle: 89.1°
Zoom: 1X
MATT 548 - 2


Date & Time: Wed Apr 12 09:09:47 EDT 2017
Position: 18N 437880 5013925
Altitude: 349ft
Datum: WGS-84
Azimuth Bearing: 244° S64W (438mils True)
Elevation Angle: 87.0°
Horizon Angle: 88.2°
Zoom: 1X
MATT 549 - 2

Reach 5, 2017


Elevation Angle: -85.8
Horizon Angle: -89.1°
Zoom: 1X
MATT 549 - 3


Date & Time: Wed Apr 12 09:20:56 EDT 2017
Position: 18N 437818 5014013
Datum: WGS-84
Azimuth/Bearing: 196° S16W 3484mils (True)
Elevation Angle: -87.8°
Horizon Angle: -89.5°
Zoom: 1X

Reach 6, 2017


Date & Time: Wed Apr 12 11:12:10 EDT 2017
Position: 18 N 437593 5013768
Altitude: 399ft
Datum: WGS-84
Azimuth/Bearing: 008° N05E 0107mils (True)
Elevation Angle: -87.9°
Horizon Angle: -89.6°
Zoom: 1X
MATT 549 - 8


Date & Time: Wed Apr 12 11:12:20 EDT 2017
Position: 18 N 437593 5013768
Altitude: 356ft
Datum: WGS-84
Azimuth/Bearing: 182° S02W 3236mils (True)
Elevation Angle: -88.2°
Horizon Angle: -89.6°
Zoom: 1X
MATT 549 - 8

Reach 7, 2017


Date & Time: Wed Apr 12 10:54:23 EDT 2017
Position: 18N 437401 5010046
Altitude: 436ft
Datum: WGS-84
Azimuth Bearing: 135° 545E 2400mils True
Elevation Angle: 87.3
Horizon Angle: 88.8
Zoom: 1X
MATT-549-7


Date & Time: Wed Apr 12 10:54:37 EDT 2017
Position: 18N 437408 5013866
Altitude: 430ft
Datum: WGS-84
Azimuth Bearing: 062° N62E 1102mils True
Elevation Angle: 87.8
Horizon Angle: 89.2
Zoom: 1X
MATT-549-7

Reach 8, 2017


Datum: WGS-84
Zoom: 1X


Date & Time: Wed Apr 12 10:12:55 EDT 2017
Position: 18 N 437541 5014192
Altitude: 392ft
Datum: WGS-84
Azimuth/Bearing: 176° S04E 3129mils (True)
Elevation Angle: -84.6°
Horizon Angle: 88.6°
Zoom: 1X
MATT 549 - 5

Reach 9, 2017


Date & Time: Wed Apr 12 10:33:06 EDT 2017
Position: 18 N 437201 5014199
Altitude: 402ft
Datum: WGS-84
Azimuth/Bearing: 040° N40E 0711mils (True)
Elevation Angle: -89.1°
Horizon Angle: 89.6°
Zoom: 1X
MATT 549 - 6


Date & Time: Wed Apr 12 10:33:17 EDT 2017
Position: 18 N 437148 5014216
Altitude: 439ft
Datum: WGS-84
Azimuth/Bearing: 213° S33W 3787mils (True)
Elevation Angle: -85.5°
Horizon Angle: 87.4°
Zoom: 1X
MATT 549 - 6

Reach 10, 2017

Reach 11, 2017

Reach 12, 2017

Reach 13, 2017

Reach 14, 2017

Appendix H Vascular Plant Species List

Common Name	Scientific Name	ELC Polygon	Notes
Trees			
American Beech	*Fagus grandifolia*	FODM8-1	
American Elm	*Ulmus americana*	FODM8-1	
Apple sp.	*Malus sp.*	THMM1-1	
Basswood	*Tilia americana*	FODM2-4, FODM4-2, FODM5-6, FODM6-5, FODM8-1. FOMM7-2	
Bitternut Hickory	*Carya cordiformis*	FODM5-5	
Black Ash	*Fraxinus nigra*	FODM5-6, FODM6-1. FODM7-2. FOMM7-2, SWDM2-2	Endangered under the *Endangered Species Act*
Black Cherry	*Prunus serotina*	FODM4-2, FODM7-2	
Butternut	*Juglans cinerea*	FODM6-5	Endangered under the *Endangered Species Act*
Chokecherry	*Prunus virginiana*	THMM1-1	
Eastern Cottonwood	*Populus deltoides*	MEGM3-8	
Eastern White Cedar	*Thuja occidentalis*	FOCM4-1, FOCS3-1, FODM8-1, FOMM7-2, THMM1-1, SWMD2-2	
European Mountain-ash	*Sorbus aucuparia*	FODM3-1	
Green Ash	*Fraxinus pennsylvanica*	FOCM4-1, FOCS3-1,FODM5-6, FODM6-1, FODM7-2, SWDM2-2	
Ironwood	*Ostrya virginiana*	FODM2-4, FODM4-4, FODM5-5	
Jack Pine	*Pinus banksiana*	FOCS1-1, FODM6-5, THMM1-1	
Large-tooth Aspen	*Populus grandidentata*	FODM3-1, FODM4-2, FODM8-1, MEGM3-8, MEMM3	
Manitoba Maple	*Acer negundo*	FODM8-1. MEGM3-4, MEGM3-8	
Northern Red Oak	*Quercus rubra*	FOCS1-1, FODM2-4, FODM4-4, FODM5-5	
Scots Pine	*Pinus sylvestris*	FODM8-1	listed Invasive by the Ontario Invasive Plant Council
Shagbark Hickory	*Carya ovata*	FODM6-5	
Sugar Maple	*Acer saccharum*	FOCM4-1, FODM5-5, FODM5-6, FODM6-1, FODM6-3, THMM1-1	
Trembling Aspen	*Populus tremuloides*	FODM3-1, FODM4-2, FODM6-5, FODM8-1, THMM1-1	
White Ash	*Fraxinus americana*	FOCS1-1, FODM2-4, FODM4-2, FODM5-5, FODM6-5, FOMM7-2, THMM1-1, MEMM3	
White Birch	*Betula papyrifera*	FODM3-1	
White Oak	*Quercus alba*	FODM6-5,	

Common Name	Scientific Name	ELC Polygon	Notes
White Spruce	*Picea glauca*	FOCS3-1, FODM6-3, FODM8-1, MEMM3	
White Willow	*Salix alba*	FODM4-2	
Shrubs			
Alder Buckthorn	*Fragula alnus*	FOCM4-1, FODM6-3, FODM6-5, FODM7-2, FODM8-1, FOMM7-2, MEM3-4, MEMM3, MASM1-1, SWDM2-2	
Alternate-leaved Dogwood	*Cornus alternifolia*	FODM5-6	
Common Buckthorn	*Rhamnus cathartica*	FOCM4-1, FOCS1-1, FOCS3-1, FODM2-4, FODM3-1, FODM4-2, FODM4-4, FODM5-5, FODM6-3, FODM8-1, FOMM7-2, THDM2-6, THMM1-1, MEM3-4, MEM3-8, MAMM1-2	Noxious under the *Weed Control Act*; listed Invasive by the Ontario Invasive Plant Council
Common Juniper	*Juniperus communis*	FOCS1-1, FODM3-1, FODM6-3, FODM6-5, FODM8-1, THMM1-1	
Dwarf Honeysuckle	*Lonicera xylosteum*	FOCS1-1, FODM4-2, FODM4-4, FODM5-5,	
Eastern Gooseberry	*Ribes cynosbati*	FODM5-5, FODM5-6,	
Hawthorn sp	*Crataegus sp.*	FODM6-5,THMM1-1	
Red-osier Dogwood	*Cornus sericea*	MEGM3-8	
Sandbar Willow	*Salix exigua*	MAMM1-2	
Staghorn Sumac	*Rhus typhina*	FODM4-2, THMM1-1, MEMM3, MAMM1-2	
Tatarian Honeysuckle	*Lonicera tatarica*	MEMM3	
Groundcover			
Birds-foot Trefoil	*Lotus corniculatus*	THMM1-1	
Blue Cohosh	*Caulophyllum thalictroides*	FODM5-6	
Blue Wood-aster	*Symphyotrichum cordifolium*	FOCS1-1, FODM6-5	
Broad-leaf Cattail	*Typha latifolia*	MAMM1-2, MASM1-1	
Broad-leaved Helleborine	*Epipactis helleborine*	FOCM4-1, FODM5-6	
Brown-eyed Susan	*Rudbeckia triloba*	THMM1-1	
Canada Bluegrass	*Poa compressa*	FODM2-4, THMM1-1	
Canada Goldenrod	*Solidago canadensis*	FODM2-4, FODM4-2, FODM6-5, FODM8-1, THDM2-6, THMM1-1	
Coltsfoot	*Tussilao farfara*	FOCM4-1, SWDM2-2	Noxious under the *Weed Control Act*
Common Milkweed	*Asclepias syriaca*	MEGM3-8	
Common Selfheal	*Prunella vularis*	FOCS1-1, FODM6-5, FODM8-1	
Common Speedwell	*Veronica officinalis*	FOCM4-1	

Common Name	Scientific Name	ELC Polygon	Notes
Common St. John's-wort	*Hypericum perforatum*	FODM2-4, FODM3-1, THMM1-1, MEM3-4, MEMM3	
Common Yarrow	*Achillea millefolium*	FOCS1-1, FODM3-1, FODM6-5, THMM1-1, MEGM3-8	
Cow Vetch	*Vicia cracca*	MEGM3-4, MEGM3-8	
Downy Yellow Violet	*Viola pubescens*	FOCM4-1	
Eastern Enchanter's-nightshade	*Circaea canadensis*	FODM4-2, FODM6-1, THDM2-6	
Elecampane	*Inula helenium*	THDM2-6	
False Solomon's-seal	*Maianthemum racemosum*	FODM7-2	
Golden Dock	*Rumex maritmus*	SWDM2-2	
Grass-leaved Goldenrod	*Euthamia gramifolia*	THMM1-1, MEGM3-8	
Hard-stem Bulrush	*Schoenoplectus acutus*	MASM1-1	
Jack-in-the-pulpit	*Arisaema triphyllum*	FOCM4-1,	
Kentucky Bluegrass	*Poa pratensis*	FOCS1-1, FODM8-1, MEGM3-4, MEMM3	
Long-stalked Sedge	*Carex pedunculata*	FOCM4-1, FODM2-4, FODM4-4, FODM7-2, FOMM7-2	
Meadow Foxtail	*Alopecurus pratensis*	FODM8-1, THMM1-1, MEGM3-4, MEMM3	
New York Fern	*Amauropelta noveboracensis*	FOCM4-1	
Northern Oak Fern	*Gymnocarpium dryopteris*	FOCM4-1	
Oak Sedge	*Carex pensylvanica*	FODM5-5	
Perennial Ryegrass	*Lolium perenne*	MEMM3	
Poison Ivy	*Toxicodendron radicans*	FOCS3-1, FODM3-1, FODM4-2, FODM6-3	Noxious under the *Weed Control Act*
Prairie Fleabane	*Erigeron strigosus*	MEGM3-4	
Purple Loosestrife	*Lythrum salicaria*	MAMM1-2, MASM1-1	listed Invasive by the Ontario Invasive Plant Council
Queen Anne's Lace	*Daucus carota*	THMM1-1, MEM3-8, MEMM3	
Reed Canary Grass	*Phalaris arundinacea*	MEGM3-8, MAMM1-2	listed Invasive by the Ontario Invasive Plant Council
Riverbank Grape	*Vitus riparia*	FOCM4-1, FOM3-1, FODM4-2, FODM8-1, FOMM7-2	
Small-fruited Bulrush	*Scirpus microcarpus*	MASM1-1	
Tall Thimbleweed	*Anemone virginiana*	FODM6-1, FODM6-5	
Virginia Creeper	*Parthenocissus quinquefolia*	FODM4-2, FODM8-1, THDM2-6	
White Avens	*Geum canadense*	FODM4-2	
White Hawkweed	*Hieracium albiflorum*	FODM3-1	
White Snakeroot	*Ageratina altissima*	FODM4-2	
White Sweet-clover	*Melilotus albus*	FODM3-1, MEGM3-8, MEMM3	listed Invasive by the Ontario Invasive Plant Council

Common Name	Scientific Name	ELC Polygon	Notes
Ghost Pipe	*Monotropa uniflora*	FOCM4-1	
Great White Trillium	*Trillium grandiflorum*	FOCM4-1	
White Wood Aster	*Eurybia divaricata*	FODM8-1	
Wild Basil	*Clinopodium vulgare*	FODM6-1, THDM2-6	
Canada mayflower	*Maianthemum canadense*	FOCS3-1	
Wild Parsnip	*Pastinaca sativa*	MEGM3-8	Noxious under the *Weed Control Act*, listed Invasive by the Ontario Invasive Plant Council
Wild Strawberry	*Fragaria virginiana*	FOCS1-1, FODM4-4, FODM6-5, FODM7-2, FODM8-1, THMM1-1	
Woodland Horsetail	*Equisetum sylvaticum*	FOCM4-1, FOMM7-2, THDM2-6, SWDM2-2	
Yellow Sweet-clover	*Melilotus officinalis*	MEGM3-8	

Appendix I Butternut Health Assessment Report

Ontario

Ministry of the Environment, Conservation and Parks

Butternut Health Expert's Report Template – Version 2022

Instructions to Butternut Health Experts (BHEs):

Please enter the 6-character BHE Report number: MIY002

BHE Report numbering format:
BHE Report numbers are to be assigned by the BHE using the first 3 letters of BHE's last name, followed by BHE's own 3-digit report numbering system. If the BHE's last name has fewer than 3 letters, use the full last name and numbers for the remaining characters.

  Disponible en français

BHE Report Number: MIY002

Cover letter to client:
Insert your cover letter to your client here and include the below list of enclosures.

Enclosures:

1. Information from the Ministry of the Environment, Conservation and Parks about Butternut and the *Endangered Species Act, 2007*
2. Butternut Health Expert's Report, including the completed Butternut Data Collection Form

Ministry of the Environment, Conservation and Parks

Species at Risk Branch
40 St. Clair Avenue West
14th Floor
Toronto ON M4V 1M2

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des espèces en péril
40, avenue St. Clair Ouest
14e étage
Toronto ON M4V 1M2

Information for the Property Owner (or person(s) who requested the enclosed Butternut Health Expert's Report):

The enclosed Butternut Health Expert's Report (BHE Report) documents the results of the Butternut health assessment that was conducted by the Butternut Health Expert (BHE) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be impacted by a proposed activity that are not identified in the enclosed BHE Report, they too must be assessed by a BHE before commencing any actions that may impact those Butternut trees or their habitat.

Butternut (*Juglans cinerea*) is listed as an endangered species in Schedule 2 of Ontario Regulation (O. Reg.) 230/08 "the Species at Risk in Ontario List". As an endangered species, the *Endangered Species Act, 2007* (ESA) prohibits adversely impacting Butternut and its habitat. A permit or agreement under the ESA is required before engaging in an activity that is otherwise prohibited under the ESA. The activity may be eligible for the Butternut conditional exemption in Part V of O. Reg. 830/21, provided the requirements of the regulation are met.

If the proposed activity is eligible for the conditional exemption in Part V of O. Reg. 830/21, the next step is to submit the BHE Report and the Butternut Data Collection Form enclosed in this package to the Ministry of the Environment, Conservation and Parks (MECP).

If the enclosed BHE Report does not identify which Butternut tree(s) are proposed to be killed, harmed or taken and the reasons for doing so (e.g., if "unknown" is indicated in Table 1) or if the information in the last two columns of Table 1 has changed since the date this BHE Report was produced, **do not edit the BHE Report to update this information**. Instead, the report must be submitted together with a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed or taken (by referencing the tree identification numbers) when you submit the BHE Report to MECP.

The BHE Report must be submitted to MECP at least 30 days before registering an activity in respect of the Butternut conditional exemption. MECP may need to examine the Butternut trees subject to the report during this 30-day period. **Adversely impacting Butternut trees during this 30-day period or before registration is completed is prohibited by the ESA**. Further, the conditional exemption for Butternut does not apply unless the requirements of Part V of O. Reg. 830/21 are being followed.

If the proposed activity is eligible for the Butternut conditional exemption, you may register the proposed activity using the "**Notice of Butternut Impact**" form after the 30-day period has elapsed.

If the proposed activity is not eligible for a regulatory exemption, please contact MECP to determine whether the proposed activity would require a permit or agreement under the ESA in order to proceed.

Please retain this information and a copy of the BHE Report for your records, along with any other documentation you may receive from MECP should an examination of the trees occur.

This information should not be relied upon to determine legal obligations. To determine your legal obligations, consult the *Endangered Species Act, 2007* and the relevant regulations made thereunder. These may be found at www.ontario.ca/laws. If legal advice is required, consult a legal professional. In the event of an error on this template or a conflict between this template and any applicable law, the law prevails.

If you have any questions, please contact MECP at SAROntario@ontario.ca.

Butternut Health Expert's Report (BHE Report)

BHE Report Number: MIY002

Butternut Health Expert Contact Information

Name of Butternut Health Expert

Last Name	First Name
Miyashita	Kesia

Mailing Address

Unit Number	Street Number	Street Name	PO Box
16C	2285	St. Laurent Boulevard	

City/Town	Province	Postal Code
Ottawa	ON	K1G 2Z6

Telephone Number	Email Address
613-260-5555	kmiyashita@kilgoursassociates.com

Summary of qualifications as a Butternut Health Expert

a) expertise in relation to butternut

Kesia Miyashita has four years of experience conducting Butternut surveys and health assessments. She has received internal training from colleagues at Kilgour & Associates who are certified Butternut Health Assessors. She has undertaken three Butternut Health Assessments in 2024 as the lead botanist.

b) expertise, education, training and experience necessary to assess the health of butternut trees

Kesia Miyashita has four years of experience conducting surveys for Butternut and Butternut Health Assessments. She has received internal training from colleagues at Kilgour & Associates who are certified Butternut Health Assessors (having completed the MNRF Butternut Health Assessor Course). She has undertaken three Butternut Health Assessments in 2024 as the lead botanist.

Property Owner Contact Information

Name of Property Owner (or representative)

Last Name	First Name
Mattamy Homes Canada Ltd.	

Mailing Address

Unit Number	Street Number	Street Name	PO Box
	50	Hines Road	

Lot Number	Concession	Township	Rural Route

City/Town	Province	Postal Code
Ottawa	ON	K2K 2M5

Telephone Number	Email Address
	connor.gallagher@mattamycorp.com

Site Location

Unit Number	Street Number	Street Name	PO Box
	4497A	O'Keefe Court	

Lot Number	Concession	Township	Rural Route

City/Town	Province	Postal Code
Ottawa	ON	

Additional Site Location Information

The Site is located in west Ottawa, immediately north of O'Keefe Court and Lytle Park, and east of Highway 416.

Date(s) of Butternut health assessment

Start Date (yyyy/mm/dd) 2024/07/22

End Date (yyyy/mm/dd) 2024/07/22

Date BHE Report prepared (yyyy/mm/dd) 2024/08/27

Map datum used: ☑ NAD83 ☐ WGS84

Total number of trees assessed in this BHE Report 5

The assessed trees were numbered on site using white flagging tape

The numbers at the site correspond to the tree identification numbers referenced in this report.

This BHE Report includes the following tables:

- Table 1: Butternut trees assessed by the BHE
- Table 2: Trees determined by the BHE to be Butternut hybrids
- Table 3: Summary of Butternut health assessment results

Table 1: Butternut trees assessed by the BHE

Tree ID #	UTM coordinates	Accuracy (+/-)	Category[1] (1, 2 or 3)	Tree stem diameter[2] (cm)	Is tree stem shorter than 1.37 m? (Yes/No)	Cultivated? (Yes/No)	Proposed to be: (killed, harmed, taken, or unknown[3])	If tree is proposed to be killed, harmed or taken, indicate reason tree is to be killed, harmed or taken, if known
001	18N 437568m E, 5014340m N	5 m	2	1	Yes	No	killed	Site Development
002	18N 437572m E, 5014327m N	5 m	2	2	No	No	killed	Site Development
003	18N 437575m E, 5014320m N	5 m	2	1	No	No	killed	Site Development
004	18N 437405m E, 5014265m N	5 m	1	43	No	No	killed	Site Development
005	18N 437501m E, 5014312m N	5 m	2	1	Yes	No	killed	Site Development

[1] Details regarding the extent to which the tree is affected by Butternut Canker is presented in the Butternut Data Collection Form that accompanies this BHE Report.

[2] Diameter of the tree stem rounded to nearest cm, measured in accordance with the Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007*

[3] In this column, “unknown” indicates that at the time of assessment and reporting, there are no proposals to kill, harm or take this tree that are known to the BHE.

Table 2: Trees determined by the BHE to be Butternut hybrids

Tree ID #	UTM coordinates	Method used (genetic testing or field identification)	Additional Comments on Method Used

Table 3: Summary of Butternut health assessment results

Result	Total number of trees in this category	Information for persons planning activities that may impact Butternut
Category 1	1	• Category 1 Butternut tree — the Butternut tree is affected by Butternut Canker to such an advanced degree that retaining the tree would not support the protection or recovery of Butternut trees in the area in which the tree is located.
		• If the proposed activity will kill, harm or take one or more Butternut trees of any category (including Category 1), the BHE Report must be submitted to MECP at SARontario@ontario.ca.
Category 2	4	• Category 2 Butternut tree — the Butternut tree is not affected by Butternut Canker or the Butternut tree is affected by Butternut Canker but the degree to which it is affected is not as advanced as a Category 1 Butternut tree and retaining the tree could support the protection or recovery of Butternut trees in the area in which the tree is located.
		• Activities that may kill, harm or take up to a **maximum of fifteen (15)** Category 2 trees may be eligible for the conditional exemption in Part V of Ontario Regulation 830/21. Refer to the regulation for eligibility conditions and requirements that must be fulfilled.
		• If the proposed activity will kill, harm or take more than fifteen (15) Category 2 trees, **contact MECP** for information on how to seek an ESA authorization (e.g., a permit).

Result	Total number of trees in this category	Information for persons planning activities that may impact Butternut
Category 3		• Category 3 Butternut tree — the Butternut tree may be useful in determining sources of resistance to Butternut Canker.
		• Activities that may kill, harm or take up to a **maximum of five (5)** Category 3 trees may be eligible for the conditional exemption in Part V of Ontario Regulation 830/21. Refer to the regulation for eligibility conditions and requirements that must be fulfilled.
		• If the proposed activity will kill, harm or take more than five (5) Category 3 trees, contact MECP for information on how to seek an ESA authorization (e.g., a permit).
Cultivated		• An activity that will kill, harm or take a cultivated Butternut tree that was required to be planted to fulfil a condition of an ESA permit or agreement, or a conditional exemption, is **not** eligible for the exemption for cultivated trees that is provided by subsection 25 (5) of O. Reg. 830/21. Refer to the regulation for eligibility conditions.
Hybrid		• Hybrid Butternut trees are not protected under the ESA but impacts to these trees may be subject to local municipal by-laws and other legislation.

Additional Information on Cultivated Tree Determination

Please note:

- A BHE Report that is submitted to MECP must include the completed Butternut Data Collection Form. As appropriate, please also ensure additional relevant documentation to support the assessment (e.g., completed Data Sheets for Field Identification of Butternut Hybrids, evidence that the Butternut was cultivated) and all relevant maps and photographs are provided.
- During the 30-day period that follows the submission of this BHE Report to MECP, no Butternut trees (of any category) may be killed, harmed or taken. MECP may need to examine the Butternut trees subject to the report during this 30-day period.

Butternut Health Expert's Comments

All 5 Butternut Trees are situated centrally on the Site, within a Fresh-Moist Sugar Maple-Hardwood Deciduous Forest (FODM6-5). It is anticipated that all five trees will be removed to accommodate future residential development on the Site.

Butt

Appendix J Breeding Bird Survey Data

Summary of birds detected during breeding bird surveys

Common Name	Scientific Name	Station(s) Observed	Date(s) Observed	Highest Breeding Evidence
Alder Flycatcher	*Empidonax alnorum*	BBS8	2024-06-18	Possible
American Crow	*Corvus brachyrhynchos*	BBS1, BBS7, BBS8, BBS9	2024-06-18, 2024-07-05	Possible
American Goldfinch	*Spinus tristis*	BBS2, BBS4, BBS5, BBS5, BBS8, BBS9	2024-05-31, 2024-06-18, 2024-07-05	Confirmed
American Redstart	*Setophaga ruticilla*	BBS9	2024-06-18	Possible
American Robin	*Turdus migratorius*	BBS1, BBS2, BBS3, BBS4, BBS5, BBS6, BBS7, BBS8, BBS9	2024-05-31, 2024-06-18, 2024-07-05	Possible
Black-and-white Warbler	*Mniotilta varia*	BBS2, BBS5	2024-05-31	Possible
Blackburnian Warbler	*Setophaga fusca*	BBS2	2024-05-31	Possible
Black-capped Chickadee	*Poecile atricapillus*	BBS1, BBS2, BBS3, BBS7, BBS9	2024-05-31, 2024-06-18, 2024-07-05	Possible
Blue Jay	*Cyanocitta cristata*	BBS1, BBS5, BBS6, BBS7, BBS8	2024-05-31, 2024-06-18	Observed
Brown Creeper	*Certhia americana*	BBS7	2024-05-31	Possible
Carolina Wren	*Thryothorus ludovicianus*	BBS7	2024-05-31	Possible
Cedar Waxwing	*Bombycilla cedrorum*	BBS1, BBS2, BBS9	2024-05-31, 2024-07-05	Possible
Common Yellowthroat	*Geothlypis trichas*	BBS1, BBS4, BBS5	2024-05-31, 2024-07-05	Possible
Dark-eyed Junco	*Junco hyemalis*	BBS2	2024-05-31	Possible
Eastern Kingbird	*Tyrannus tyrannus*	BBS2	2024-06-18	Possible
Eastern Meadowlark	*Sturnella magna*	BBS4	2024-05-31	Possible
Eastern Phoebe	*Sayornis phoebe*	BBS3	2024-07-05	
Eastern Wood-pewee	*Contopus virens*	BBS1, BBS7	2024-06-18, 2024-07-05	Possible
Field Sparrow	*Spizella pusilla*	BBS5	2024-06-18, 2024-07-05	Possible
Gray Catbird	*Dumetella carolinensis*	BBS1, BBS3, BBS6	2024-05-31, 2024-06-18, 2024-07-05	Possible
Great Crested Flycatcher	*Myiarchus crinitus*	BBS1, BBS5, BBS9	2024-05-31, 2024-07-05	Possible
Green Heron	*Butorides virescens*	BBS6	2024-06-18	Possible
Hermit Thrush	*Catharus guttatus*	BBS5	2024-05-31	Possible
House Finch	*Haemorhous mexicanus*	BBS4	2024-06-18	Possible
House Wren	*Troglodytes aedon*	BBS1, BBS2, BBS8, BBS9	2024-05-31, 2024-06-18	Probable
Mourning Dove	*Zenaida macroura*	BBS5, BBS9	2024-05-31, 2024-07-05	Possible
Northern Cardinal	*Cardinalis cardinalis*	BBS7	2024-05-31	Possible
Northern Flicker	*Colaptes auratus*	BBS1, BBS6	2024-06-18, 2024-07-05	Possible
Red-eyed Vireo	*Vireo olivaceus*	BBS2, BBS5, BBS6	2024-05-31, 2024-07-05	Possible
Red-winged Blackbird	*Agelaius phoneiceus*	BBS3, BBS5, BBS6, BBS8, BBS9	2024-05-31, 2024-06-18	Probable

Common Name	Scientific Name	Station(s) Observed	Date(s) Observed	Highest Breeding Evidence
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	BBS2, BBS5	2024-06-18, 2024-07-05	Possible
Song Sparrow	*Melospiza melodia*	BBS1, BBS3, BBS4, BBS7, BBS8, BBS9	2024-05-31, 2024-06-18, 2024-07-05	Possible
Swamp Sparrow	*Melospiza georgiana*	BBS6, BBS8, BBS9	2024-06-18	Possible
Tennessee Warbler	*Leiothlypis peregrina*	BBS8	2024-05-31	Possible
Virginia Rail	*Rallus limicola*	BBS8	2024-05-31	Possible
Warbling Vireo	*Vireo gilvus*	BBS8	2024-06-18	Possible
White-breasted Nuthatch	*Sitta carolinensis*	BBS6, BBS8	2024-05-31, 2024-06-18	Possible
White-throated Sparrow	*Zonotrichia albicollis*	BBS2	2024-06-18	Possible
Yellow Warbler	*Setophaga petechia*	BBS5, BBS8, BBS9	2024-05-31, 2024-06-18, 2024-07-05	Possible

Appendix K Site Plan Details

KEY PLAN
NOT TO SCALE

DRAFT PLAN OF SUBDIVISION

PART OF LOTS 21, 22, 23, 24 AND 25 CONCESSION 4 (RIDEAU FRONT)

GEOGRAPHIC TOWNSHIP OF NEPEAN

CITY OF OTTAWA

J.D. BARNES LIMITED

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

SCALE 1 : 1500

25 0 25 50 75 100 metres

SCHEDULE OF PROPOSED LAND USES

LAND USE	BLOCK(S)	AREA (Sq. m)
SINGLES (DETACHED)	1 TO 35 (BOTH INCLUSIVE)	120,397.63
TOWNHOMES	36 TO 48 (BOTH INCLUSIVE)	42,399.19
REAR LANE TOWNHOMES	49 TO 53 (BOTH INCLUSIVE)	8,285.84
BACK TO BACK TOWNHOMES	54 TO 61 (BOTH INCLUSIVE)	13,060.77
MIXED USE	62 TO 63	34,703.38
MEDIUM DENSITY	64 TO 65	26,328.37
CONDO BLOCKS	66 TO 67	61,992.76
WALKWAYS	68 TO 69	373.58
PARKS & OPEN SPACES	70 TO 75 (BOTH INCLUSIVE) AND 81	49,933.15
WETLAND AND CONSERVATION AREAS	76 TO 78 (BOTH INCLUSIVE)	148,046.31
SWM POND	79 TO 80 (BOTH INCLUSIVE)	51,716.15
MTO BUFFER	82 TO 85	27,641.30
STREETS	1 TO 24 (BOTH INCLUSIVE)	137,876.77
LANES	1 TO 4 (BOTH INCLUSIVE)	1,726.40
TOTAL AREA OF SUBDIVISION		724,481.60

ADDITIONAL INFORMATION AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 2001

(A)(B)(E)(F)(G)(J) AND (L) – AS SHOWN ON THIS PLAN.
(C) – AS SHOWN ON THIS DRAFT AND KEY PLAN
(D) – LAND TO BE USED IN ACCORDANCE WITH THE SCHEDULE OF LAND USE.
(H)(K) – FULL MUNICIPAL SERVICES
(I) – OFFSHORE MARINE DEPOSITS OF CLAY, SILTY CLAY AND SILT, BEDROCK OTTAWA FORMATION, LIMESTONE

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED......................,THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT THIS .... DAY OF ...., 2021.

SEAN MOORE, MCIP, RPP, MANAGER
DEVELOPMENT REVIEW SOUTH
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT,
CITY OF OTTAWA

OWNER'S CERTIFICATE

2436091 ONTARIO LIMITED, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS HEARBY AUTHORIZES J.D. BARNES LIMITED TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

2436091 ONTARIO LIMITED

DATE

KEVIN MURPHY
"I HAVE THE AUTHORITY TO BIND THE CORPORATION"

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ARE CORRECTLY SHOWN

JULY 16, 2025
DATE

SHAWN LEROUX
ONTARIO LAND SURVEYOR

J.D. BARNES LIMITED
LAND INFORMATION SPECIALISTS
SURVEYING MAPPING GIS
140 RENFREW DRIVE, SUITE 100, MARKHAM, ON L3R 6B3
T: (905) 477-3600 F: (905) 477-3882 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO.:
JM/MC	CF/SL	23-10-099-01
		DATED: 7/16/2025

PLOT DATE: 7/22/2025 12:57 PM

FILE: G:\23-10-099-01 Cedarview\Drawing\Draft Plan\V1\23-10-099-01- Draft Plan.dwg

Appendix L Future Canopy Projections

☐MEMORANDUM	001
To: Anthony Francis Kilgour & Associates LTD	Project: 800 Cedarview, Ottawa, ON Date: 25 July 2025

Methodology for early-stage Tree Canopy Coverage

The final constructed form of the Cedarview community is not yet designed, with many steps in the development process still to be undertaken. It is understood, however, that a projected, eventual tree canopy coverage is essential, even at this early date, to forecast and maintain a healthy urban forest in this new part of the city, towards an overall, robust and effective urban forest canopy throughout Ottawa.

The calculations prepared by Urbantypology for this exercise rely on known assumptions about city and developer requirements, such as a tree-per-lot calculation, coupled with the current sizes of land use types in the proposed development.

The following explains how these constants and variables are used to prepare an early projection of eventual tree coverage:

Street Trees:

Assuming 1 tree per detached home, 1 tree per 2 townhouse or semi-detached units, and 1 tree per every 4 back-to-back (B2) or stacked town, the projected number of street trees is based on the anticipated number of new units.

The anticipated mature canopy of a single street tree (100 m²) is based on the assumption that a mix of large, medium, and small deciduous trees will be planted, depending on the conditions. While 100m2 is smaller than the projected canopy coverage of a large species and larger than the eventual canopy of a small tree, it is proposed as an average canopy spread across a variety of species. It also reflects a street tree spacing of ~10-11m on centre, where the canopies of two separate trees might meet.

Open Space Canopy Cover Target:

- The size of the Open Space and Park blocks is included per the current overall plan. Because the city of Ottawa currently targets a mature canopy coverage of 40%, this is the anticipated eventual cover of these areas, even though the exact number and location of future trees are not yet known.

- Stormwater Management blocks (SWM) are also assumed to be subject to the 40% target canopy cover; however, since a portion of the stormwater blocks will be water, this target is modified accordingly. Assuming approximately 35% of the total area of that block will be water or shoreline, the remaining area is assumed to eventually have a 40% coverage (since pathways, stabilized areas for maintenance access, and other naturalization

processes will also need to be accommodated).

- Condo Blocks: Since the ultimate building footprint and configuration of lots anticipated to house mid- to high-rise buildings are not yet known, the assumed planting area for these blocks is calculated as a 3m ‘buffer’ around the perimeter of the site. This is not what the end result will be, certainly, however it reflects requirements related to surface parking buffers and offsets and can be adjusted when more information is known about the development of this block.

Total Coverage: This percentage of coverage reflects the area of canopy of all street trees, combined with the anticipated target coverage of the open space blocks, divided by the total area of subdivision.

Preliminary Tree Canopy Coverage

Project: 800 Cedarview, Ottawa, ON

Date: 25 July 2025

Client: Mattamy Ottawa

Urbantypology

Street Trees					
Unit types	**Unit qnts**	**# of trees**	**Canopy area of 1 tree at planting (m2)**	**Canopy area of 1 tree at maturity (m2)**	**Tree Coverage (m2)**
Detached	327	327	*20*	*100*	32700.00
Townhouse	302	151			15100.00
B2B Towns	46	12			1150.00
Stacked/B2B (Condo Block)	621	155			15525.00
Subtotal					***64475.00***

Open space Canopy Cover Target					
Blocks	**Total area (m2)**	**Plantable area (m2)**		**Canopy coverage target**	**Tree Coverage (m2)**
Park Blocks	49926.13	49950.00		*0.4*	19980.00
SWM Blocks	51781.70	33650.00	*35% of SWM pond block assume to be water*	*0.4*	13460.00
Open Space (other)	26448.32	26450.00		*0.4*	10580.00
Condo Blocks	26324.28	2900.00	*Perimeter x 3m*	*0.4*	1160.00
Subtotal					***45180.00***

Total coverage	**109655.00**

Total percentage coverage **19%**

Appendix M Site Grading Considerations

Preliminary Grading Markup

2025-07-31

KING'S HIGHWAY NO. 416

MTO BUFFER

EX. HYDRO POLES

HYDRO

EXISTING RESIDENTIAL

OBV. 106.99

400mmØ CSP

OBV. 107.07

ONASSA CIRCLE

STREET 1

STREET 2

STREET 3

STREET 4

STREET 5

STREET 6

STREET 7

STREET 8

STREET 9

SERVICING BLOCK

HYDRO CORRIDOR

HYDRO CORRIDOR

CEDARHILL DRIVE

PARK

PARK

BLOCK V

Grading changes have not been considered as part of preliminary design for these blocks. Assumed to be open space with no park features - Mattamy to confirm.

S.W.M POND-2

PP = 106.70

SEDIMENT FOREBAY

SEDIMENT DRYING AREA

CUT-OFF SWALE

OPEN BOTTOM BOX CULVERT

SERVICING BLOCK

STREET 10

STREET M

EDGE OF WETLANDS

WETLANDS

PARK

EDGE OF WETLANDS

EX. HYDRO POLES

LANE 1

LANE 2

LANE 3

LANE 4

STREET 11

STREET 12

STREET 13

STREET 14

STREET 15

STREET 16

STREET 17

STREET 18

STREET 19

STREET 20

STREET 21

STREET 22

STREET 23

CEDARHILL GOLF CLUB

CEDARHILL DRIVE

WAY NO. 416

EXISTING RECREATION PATHWAY EASEMENT

PARK

Does not match existing grades in preliminary design.

Grading in conservation lands can be avoided with terracing or retaining walls on private blocks.

SPRING CRESS DRIVE

PARK

S.W.M POND - PP ELEV 102.95

SEDIMENT FOREBAY

SEDIMENT DRYING AREA

O'KEEFE DRAIN

Limit of grading. To match existing.

CONSERVATION LANDS

EXISTING CHANNEL

OPEN BOTTOM BOX CULVERT INV=106.35

CONSERVATION LANDS

REALIGNED CHANNEL

EXISTING CHANNEL

Re-grading needed for road/channel construction. Re-planting possible post development.

FUTURE LANDS

PARK LAND

STREET 24

O'KEEFE DRAIN

SPRING CRESS DRIVE

INV. 101.23

INV. 100.13

450mmØ CSP

INV. 101.06

1000mmØ CSP

INV. 99.90

O'KEEFE COURT

FALLOWFIELD

LEGEND

- SITE BOUNDARY
- STORM OVERLAND FLOW ARROW
- EXTERNAL STORM OVERLAND FLOW ARROW
- EMERGENCY OVERLAND FLOW ARROW
- 187.60 PROPOSED CENTERLINE ELEVATION
- [187.60] PROPOSED CENTERLINE ELEVATION BY OTHERS
- PROPOSED ELEVATION
- EXISTING ELEVATION
- CL DELTA - SPLIT DRAINER LOTS
- CL DELTA - LOOK OUT LOTS
- CL DELTA - WALKOUTS LOTS
- CL DELTA - EXTENDED WALKOUTS
- RETAINING WALL
- TEMPORARY CUT-OFF SWALE
- MATCH EXISTING
- EXISTING CONTOUR ELEVATION

CUT-FILL DEPTH ALONG CENTER LINE:

CUT DEPTH (m)	FILL DEPTH (m)
0.00~0.50:	0.00~0.50:
0.50~1.00:	0.50~1.00:
1.00~1.50:	1.00~1.50:
1.50~2.00:	1.50~2.00:
2.00~2.50:	2.00~2.50:
2.50~3.00:	2.50~3.00:
>3.00	>3.00

DSEL

120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

MATTAMY - CEDARVIEW

CITY OF OTTAWA

CONCEPTUAL GRADING PLAN

SCALE:	1:2500	PROJECT No.:	14-746
DATE:	JULY 2025	DRAWING:	5

Appendix N Site SWM Concept Plan

NORTH OUTLET
3.30Ha
0.70

LYTLE AVENUE

LYTLE AVENUE
EXISTING
RESIDENTIAL

EXISTING
RESIDENTIAL

EX. HYDRO POLES

HYDRO

MTO BUFFER

KING'S HIGHWAY NO. 416

STREET 1

STREET 2

STREET 3

STREET 4

STREET 5

STREET 6

STREET 7

STREET 8

STREET 9

SERVICING BLOCK

ONASSA
CIRCLE

NORTH OUTLET
6.35Ha
0.29

PARK

HYDRO CORRIDOR

WETLAND
0.76Ha
0.56

CEDARHILL
DRIVE

SWM POND 2
20.39Ha
0.67

PARK

PARK

100 Yr

WETLAND
2.20Ha
0.40

S.W.M POND-2 *
PP = 106.70

WETLAND
0.57Ha
0.40

BLOCK N

WETLAND
0.54Ha
0.40

5 Yr

WETLAND
22.02Ha
0.37

5 Yr

BLOCK M

BLOCK L

5 Yr

SERVICING
BLOCK

PARK

HYDRO

STREET 10

STREET 11

WETLANDS

EDGE OF WETLANDS

LANE 1

LANE 2

EX. HYDRO
POLES

STREET 14

STREET 15

STREET 16

STREET 12

STREET 17

STREET
18

STREET 13

LANE 3

WETLAND
0.53Ha
0.56

CEDARHILL GOLF CLUB

100 Yr

CEDARHILL
DRIVE

PARK

LANE 4

STREET 19

STREET 20
STREET 21

STREET 22

SWM POND 1
28.30Ha
0.71

SPRING CRESS
DRIVE

KING'S HIGHWAY NO.
416

EXISTING RECREATION
PATHWAY EASEMENT

EXT.
5.07Ha
0.2

S.W.M POND 1
PP ELEV 102.95

O'KEEFE DRAIN

CONSERVATION
LANDS

CONSERVATION
LANDS

EXT.
1.95Ha
0.2

100 Yr

VACANT
LANDS

FUTURE LANDS

PARK
LAND

EXT.
53.12Ha
0.32

100 Yr

STREET 24

EX. WATER
FEATURE

O'KEEFE DRAIN

SPRING CRESS
DRIVE

6.47Ha
0.80

O'KEEFE COURT

FALLOWFIELD

DRAFT

LEGEND

SUBJECT LANDS
EXISTING DITCH
STORM TRIBUTARY AREA
STORM SEWER TRUNK
STORM MANHOLE
TOTAL POST-DEVELOPMENT
DRAINAGE AREA TO SWM PONDS

70.15Ha
0.69
SWM 7

DRAINAGE DESTINATION
TOTAL AREA
RUN-OFF COEFFICIENT

DSEL
120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

MATTAMY -
CEDARVIEW

CITY OF OTTAWA

OVERALL POND DRAINAGE PLAN

SCALE:	1:3000	PROJECT No.:	14-746
DATE:	JULY 2025	DRAWING:	4

Appendix O Tree Conservation Report

TREE CONSERVATION REPORT

INTRODUCTION

This report is a high-level, initial Tree Conservation Report (TCR) prepared by Kilgour & Associates Ltd. (KAL) on behalf of 2436091 Ontario Ltd. ("Mattamy") in support of two development applications to be filed with the City of Ottawa supporting Mattamy's proposed redevelopment of two properties – located at 4497 A and 4497 B O'Keefe Court, Ottawa, Ontario (the "Site"; Figure O-1).

The Site is subject to the City of Ottawa's Tree Protection By-law (By-law No. 2020-340). Under the by-law, a TCR is required for all Plans of Subdivision, Site Plan Control Applications, Common Elements Condominium Applications, and Vacant Land Condominium Applications where there is a tree of 10 cm in diameter at breast height (DBH) or greater on a site and/or if there is a tree on an adjacent site that has a critical root zone (CRZ) extending onto a development site. A "tree" is defined as any species of woody perennial plant, including its root system, which has reached or can reach a minimum height of at least 450 cm at physiological maturity. The CRZ is calculated as DBH x 10 cm.

The removal of trees on the Site cannot occur until written approval of the TCR has been granted through a tree permit as per the City of Ottawa's Tree Protection By-law. The approval of the TCR will come in the form of a letter (the tree permit) from the General Manager[2] with conditions specific to the Site, tree retention, and associated tree protection and tree removal. The approved TCR is a requirement for the approval of the development applications listed above. A copy of the report must be available on the Site during tree removal, grading, construction, or any other site alteration activities, and for the duration of construction on the Site.

The purpose of this report is to review general areas likely to be subject to tree clearing over the course of future site development. Site access, however, for the purpose of eventual vegetation clearing and/or initial ground works is dependent upon the establishment of a road connection to the southern portion of the site, which will be planned and reviewed under a separate development application. Detailed tree inventories will be completed following the confirmation of the access road route to support the development of a phase-specific TCR for each stage of site development.

TREE INVENTORY

Within a TCR, descriptions of trees within contiguously treed areas need only identify the tree species present and their size ranges as opposed to detailing every tree, unless the cluster is otherwise unremarkable. Detailed locations must still be provided for trees of "notable" size, species type, or character (personal communication, Mark Richardson, City of Ottawa Planning Forester, March 13, 2020).

For this initial TCR, tree cover descriptions are based on ecosite divisions across the Site (Figure O-1). KAL Biologists completed the ecosite descriptions through the spring of 2024 as part of the site Ecological Land Classification (ELC). No trees occur individually on the Site or as part of hedgerows or small clusters.

[2] General Manager of the Public Works & Environmental Services Department or the General Manager of the Planning, Infrastructure and Economic Development Department of the City of Ottawa, or their designate.

FORESTED ECOSITES WITH SIGNIFICANT CANOPY COVER (GENERALLY >80%)

Fresh - Moist White Cedar Coniferous Forest Type (FOCM4-1)
A Fresh – Moist White Cedar Coniferous Forest (FOCM) is widespread on the Site south of the hydro corridor. The canopy comprises a monoculture of Eastern White Cedar (*Thuja occidentalis*). Understorey layers are sparse, with no shrubs and little vascular plant groundcover.

Dry Jack Pine Calcareous Bedrock Coniferous Forest Type (FOCS1-1)
A Dry Jack Pine Calcareous Bedrock Coniferous Forest (FOCS1-1) is situated in the northeast corner of the Site, north of the hydro corridor. The canopy comprises Jack Pine (*Pinus banksiana*), with a subcanopy of White Ash (*Fraxinus americana*). The dense shrub layer is characterized by Common Buckthorn (*Rhamnus cathartica*), Dwarf Honeysuckle (*Lonicera xylosteum*), and Common Juniper (*Juniperus communis*).

Dry – Fresh Oak – Hardwood Deciduous Forest Type (FODM2-4)
A Dry – Fresh Oak – Hardwood Deciduous Forest (FODM2-4) is situated on the north side of the Site, adjacent to the hydro corridor and access road. Dominant canopy species comprise Red Oak (*Quercus rubra*) and Basswood (*Tilia americana*), with a subcanopy of White Ash. The shrub layer is characterized by Common Buckthorn and White Ash saplings.

Dry – Fresh Ironwood Deciduous Forest Type (FODM4-4)
A Dry – Fresh Ironwood Deciduous Forest (FODM4-4) is situated in a single patch north of the existing hydro corridor and access road (Figure 5). Dominant canopy species comprise Ironwood (*Ostrya virginiana*) and Red Oak. The shrub layer comprises Common Buckthorn, Dwarf Honeysuckle and Ironwood saplings.

Dry – Fresh Sugar Maple – Hickory Deciduous Forest Type (FODM5-5)
A Dry – Fresh Sugar Maple – Hickory Deciduous Forest (FODM5-5) is located on the northwest edge of the Site, adjacent to the Site boundary along Highway 416. Dominant canopy species comprise Sugar Maple (*Acer saccharum*), Bitternut Hickory (*Carya cordiformis*) and Ironwood, with a subcanopy of White Ash. Dominant shrubs include Common Buckthorn, Dwarf Honeysuckle and Eastern Gooseberry (*Ribes cynosbati*), with White Ash and Sugar Maple saplings.

Dry – Fresh Sugar Maple – Basswood Deciduous Forest Type (FODM5-6)
A Dry – Fresh Sugar Maple – Basswood Deciduous Forest (FODM5-6) occurs as two distinct patches on the Site; one is located along the southeast edge of the Site, adjacent to Lytle Park and the east property boundary, and the other adjacent to Cedarhill Drive in the northeast corner of the Site, northeast of the large evaluated marsh wetland. Dominant canopy species comprise Sugar Maple and Basswood, with some Red Oak and White Ash.

Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest Type (FODM6-1)
A Fresh – Moist Sugar Maple – Lowland Ash Deciduous Forest (FODM6-1) is situated in the southwest corner of the parcel, south of the existing hydro corridor. The canopy is dominated by Sugar Maple exclusively, with a subcanopy of Green Ash. The shrub layer is characterized by Green Ash and Sugar Maple saplings.

Fresh – Moist Sugar Maple – Yellow Birch Deciduous Forest Type (FODM6-3)

A Fresh – Moist Sugar Maple – Yellow Birch Deciduous Forest (FODM6-3) is situated in the northern part of the Site, immediately adjacent to the hydro corridor and access road. The canopy is characterized by Sugar Maple, with some White Spruce.

Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FODM6-5)
A Fresh – Moist Sugar Maple – Hardwood Deciduous Forest (FODM6-5) is situated in two patches on the Site, one in the central portion of the parcel to the south of the hydro corridor, and the other along the north edge of the north parcel, adjacent to the property boundary along Highway 416. Dominant canopy species comprise Sugar Maple, Trembling Aspen, and Basswood, with a subcanopy of White Ash and Basswood.

Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest Type (FODM7-2)
A Fresh – Moist Green Ash – Hardwood Lowland Deciduous Forest (FODM7-2) is situated in the central portion of the parcel to the south of the hydro corridor. Dominant canopy species comprise Green Ash and Black Cherry (*Prunus serotina*).

Fresh – Moist Poplar Deciduous Forest Type (FODM8-1)
A Fresh – Moist Poplar Deciduous Forest (FODM8-1) is situated in the northwest corner of the Site, surrounding the Quarry Pond. Dominant canopy species comprise Large-tooth Aspen and Trembling Aspen, with a subcanopy of American Elm (*Ulmus americana*) and Manitoba Maple. Occasional Scots Pine (*Pinus sylvestris*) and Eastern White Cedar are present along the forest edges near the Quarry Pond.

Fresh – Moist White Cedar – Hardwood Mixed Forest Type (FOMM7-2)
A Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7-2) is situated in the south-central portion of the Site, surrounded almost entirely by Eastern White Cedar Forest (FOCM4-1). Dominant canopy species comprise Basswood and Eastern White Cedar, with a subcanopy of White Ash and Basswood saplings. The shrub layer is characterized by Alder Buckthorn and Common Buckthorn.

Green Ash Mineral Deciduous Swamp Type (SWDM2-2)
A Green Ash Mineral Deciduous Swamp (SWDM2-2) is situated on the south edge of the Site, adjacent to a multiuse trail along the north edge of Fallowfield Park and immediately east of the shallow marsh wetland (MASM1-1; Figure 5). The canopy comprises small trees, including predominantly Green Ash with Eastern White Cedar. Occasionally, relatively small Black Ash (*Fraxinus nigra*) trees (DBH <8 cm) are present within this unit. The shrub layer is relatively dense and is dominated by Alder Buckthorn.

FORESTED ECOSITES WITH PARTIAL CANOPY COVER (~50%)

Dry White Cedar Calcareous Bedrock Coniferous Forest Type (FOCS3-1)
A Dry White Cedar Calcareous Bedrock Coniferous Forest (FOCS3-1) is situated in a small patch on the north edge of the Site, adjacent to the property boundary along Highway 416 (Figure 5). The canopy comprises White Spruce (*Picea glauca*) and Eastern White Cedar, with a subcanopy of Green Ash (*Fraxinus pennsylvanica*; Figure 8). Common Buckthorn forms the dominant species in the shrub layer.

Dry – Fresh Poplar Deciduous Forest Type (FODM3-1)
A Dry – Fresh Poplar Deciduous Forest (FODM3-1) is situated immediately south of the hydro corridor and access road in the north portion of the Site. Dominant canopy species comprise Trembling Aspen (*Populus*

tremuloides) and Large-tooth Aspen (*Populus grandidentata*. The shrub layer is characterized by Common Juniper (*Juniperus communis*), European Mountain Ash (*Sorbus aucuparia*) and Common Buckthorn.

Dry – Fresh White Ash – Hardwood Deciduous Forest Type (FODM4-2)

A Dry – Fresh White Ash – Hardwood Deciduous Forest (FODM4-2) occurs as two small patches on the Site; one located immediately south of the existing hydro corridor and access road, and the other in the interior of the parcel south of the hydro corridor, immediately east of the large, central meadow (the southern patch has a more open canopy). Dominant canopy species comprise White Ash, Trembling Aspen, White Willow (*Salix alba*) and Basswood) The shrub layer includes Common Buckthorn, White Ash saplings, Staghorn Sumac (*Rhus typhina*) and Dwarf Honeysuckle.

OPEN ECOSITES WITH ONLY SCATTERED TREES

Kentucky Bluegrass Graminoid Meadow Type (MEGM3-4)

A Kentucky Bluegrass Graminoid Meadow (MEGM3-4) is situated in the north-central portion of the Site, adjacent to the property boundary along Highway 416. The meadow supports scattered tree and shrub cover, predominantly Manitoba Maple and Alder Buckthorn.

Dry – Fresh Mixed Meadow (MEMM3)

A Dry – Fresh Mixed Meadow (MEMM3) is situated northeast of the Quarry Pond, adjacent to the property boundary along Highway 416. The meadow supports relatively small trees in low abundance scattered throughout the unit. Trees include Largetooth Aspen, White Spruce, and White Ash. Occasional shrubs include Staghorn Sumac, Alder Buckthorn, and Tartarian Honeysuckle (*Lonicera tatarica*).

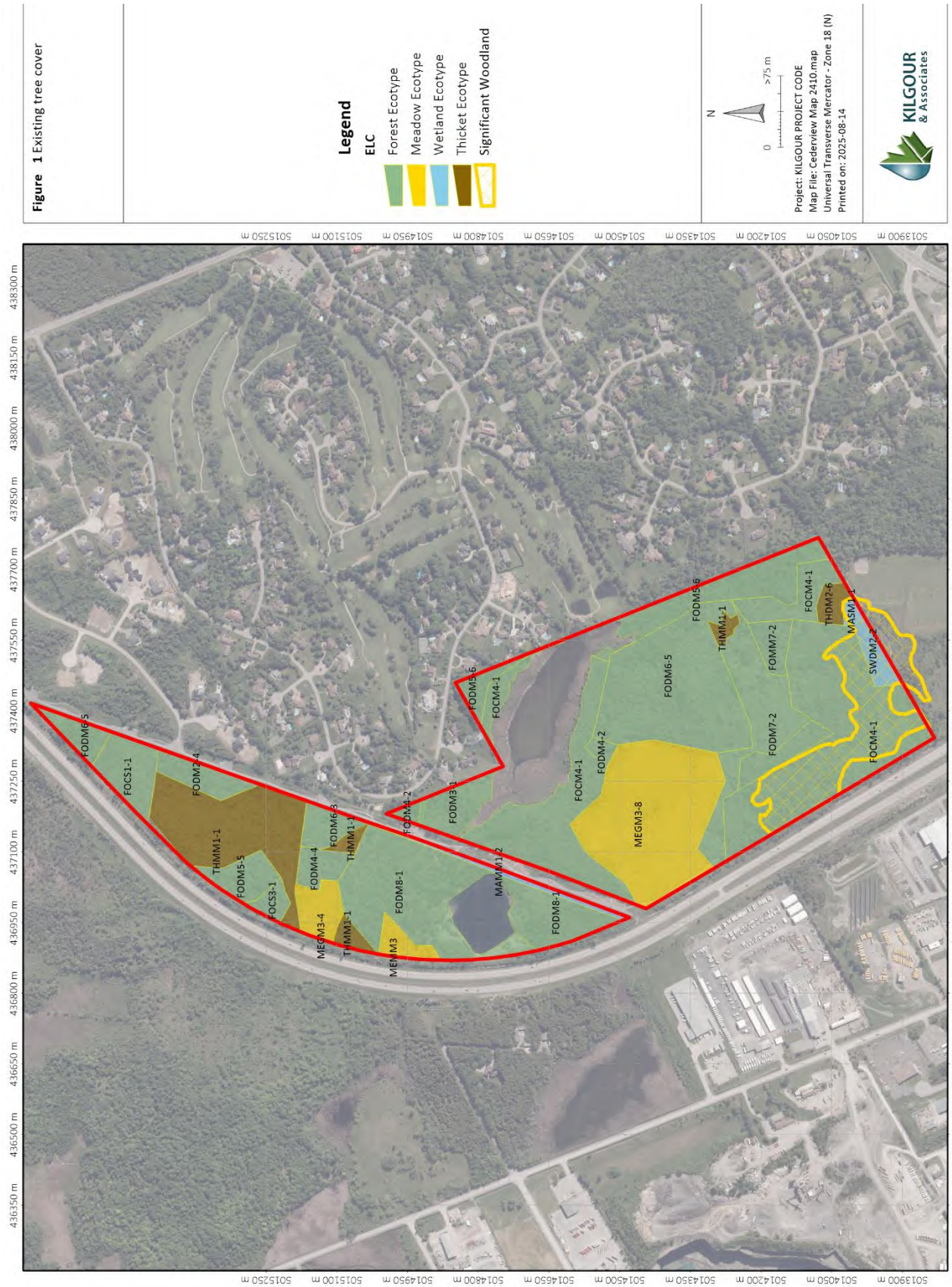


Figure 1 Existing tree cover
Legend
ELC
Forest Ecotype
Meadow Ecotype
Wetland Ecotype
Thicket Ecotype
Significant Woodland
N
0
>75 m
Project: KILGOUR PROJECT CODE
Map File: Cederview Map 2410.map
Universal Transverse Mercator - Zone 18 (N)
Printed on: 2025-08-14
KILGOUR & Associates
FODM6-5
FOCS1-1
FODM2-4
THMM1-1
FODM5-5
FOCS3-1
FODM4-4
FODM6-3
THMM1-1
MEGM3-4
THMM1-1
MEMM3
FODM8-1
FODM4-2
FODM3-1
MAMM1-2
FODM8-1
FODM5-6
FOCM4-1
FOCM4-1
FODM4-2
MEGM3-8
FODM6-5
FODM5-6
THMM1-1
FOMM7-2
FODM7-2
FOCM4-1
THDM2-6
MASM1-1
SWDM2-2
FOCM4-1

OTHER TREEED ELEMENTS CONSIDERED

Steep slopes, including valleys and escarpments

No steeply sloped features are located near the Site.

Valued woodlots

No valued woodlots are located near the Site.

Significant Woodlands

Forest cover in the southeast corner of the Site qualifies as Significant Woodlands (Figure E1)

High-quality, specimen trees

The identification of high-quality specimen trees will be completed as part of future, detailed tree surveys to support phase-specific tree plans.

Species at risk

Both Black Ash and Butternuts occur across the southern half of the Site. Detailed health assessments will be conducted, and relevant SAR permits will be sought from the MECP prior to any tree clearing.

PROPOSED DEVELOPMENT

The proposed residential subdivision will comprise a mix of single detached homes, townhomes, medium density residential areas, and condo blocks, as well as two stormwater ponds, park spaces, mixed-use areas, a retained hydro corridor, and conservation lands, comprising significant woodlands, wetlands and their associated buffers (Figure O-2).

Access to the new community will extend from Onassa Circle to the north, and from O'Keefe Court to the south along the western edge of Lytle Park. Site development will commence from the south end, proceeding northward. As such, site work will not commence until the southern road access is established. Detailed plans for, and development of, that road, however, will be completed as part of a separate approvals process associated with the land parcel between Lytle Park and Highway 416 (i.e. 4497 O'Keefe Court).

The "Marsh" wetland along the east side of the Site will be mostly retained within a 30 m natural buffer where existing tree cover will be retained and/or reestablished. The Significant Woodland area will also be retained, with slight adjustments to the boundary to accommodate proposed development and a road corridor from southern access to the Site via O'Keefe Ct. These areas are currently fully forested and will retain their canopy cover accordingly. The small park on Block 73 in the northeast corner of the Marsh is currently forested and forms part of the treed buffer around the wetland. As such, it would be established as a woodland park retaining its full existing canopy cover. Similarly, existing canopy cover along the outer edge of the community within the MTO buffer would be retained.

Existing canopy cover in all other areas will be fully removed to permit site grading and construction. Urban streetscape forest cover in all residential blocks will be established to develop 20% canopy cover at maturity (Appendix L). Park blocks (other than on Block 73), as well as other open areas (e.g. the portions of SWM Pond blocks not directly covered by active ponds will support 40% canopy cover at maturity. Canopy cover within the community will thus average 95% in areas of retained forest cover and 19% across redeveloped portions, leading to a net canopy coverage for the community of 31%.

Vegetation to be retained

Trees will be retained along the southern edge of the Site and around the Marsh (see Figure E-2). All other site trees will eventually be removed to allow site grading and community construction.

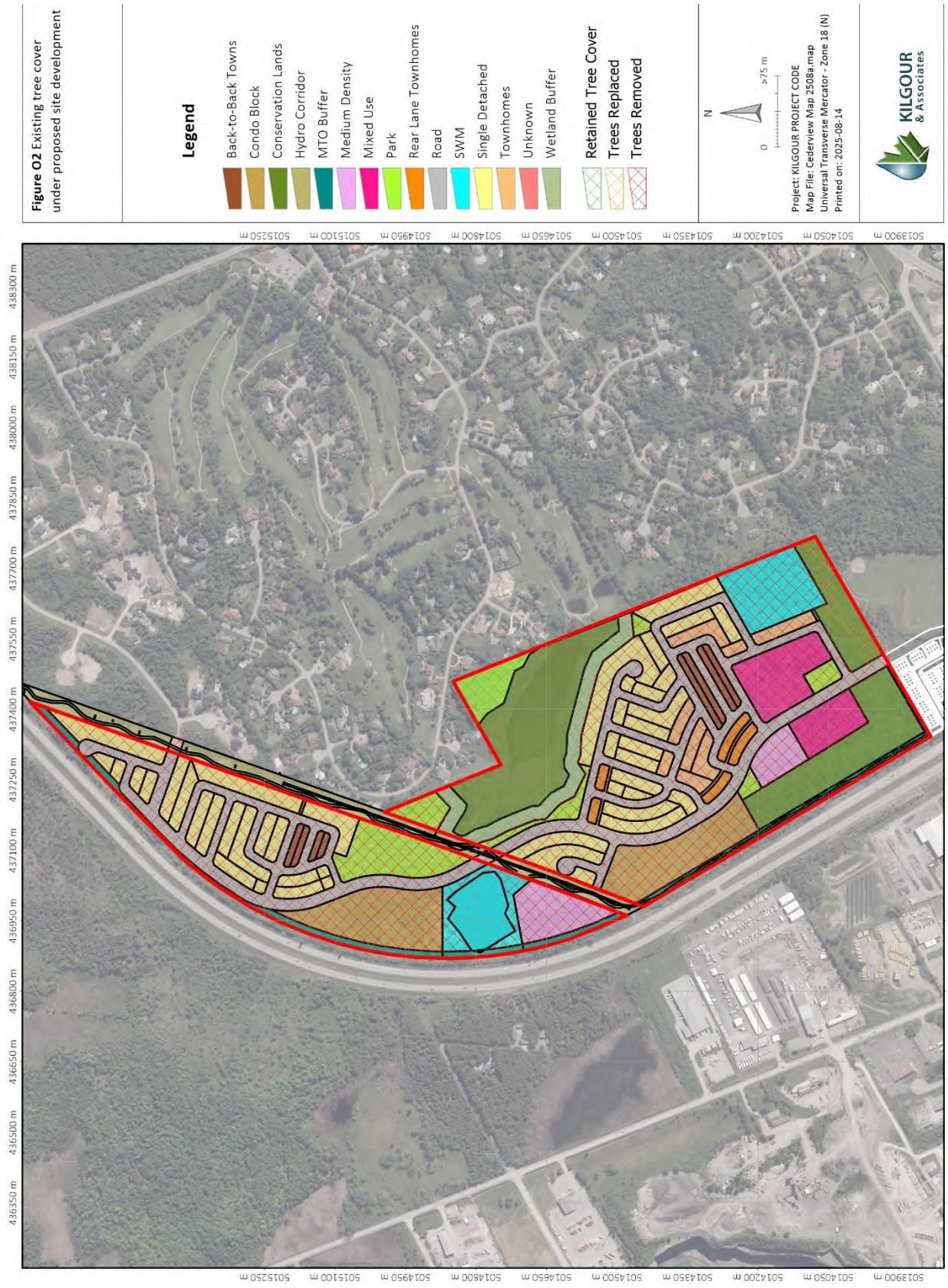


Figure O2 Existing tree cover under proposed site development

MITIGATION MEASURES

Protection measures during construction for trees and woodlands

The following standard measures are to be applied during construction to protect vegetation in neighbouring yards:

- erect a fence at the critical root zone (CRZ; DBH x 10 cm) of trees;
- SAR trees will not be removed without first obtaining a Net Benefit Permit from the MECP authorizing their removal and obliging appropriate offsetting measures;
- do not place any material or equipment within the CRZ of trees;
- do not attach any signs, notices, or posters to any tree;
- do not raise or lower the existing grade within the CRZ without approval;
- tunnel or bore when digging within the CRZ of a tree;
- do not damage the root system, trunk, or branches of any tree;
- ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.

Protection of wildlife during and after construction

- Areas shall not be cleared during sensitive times of the year for wildlife (i.e. breeding season; April 15 to August 15) unless mitigation measures are implemented and/or the habitat has been inspected by a qualified Biologist within five days of clearing (City of Ottawa, 2015).
- Do not harm, feed, or unnecessarily harass wildlife.
- Manage waste to prevent attracting wildlife to the Site. Effective mitigation measures include litter prevention and keeping all trash secured in wildlife-proof containers and promptly removing it from the Site, especially during warm weather.
- Drive slowly and avoid hitting wildlife.
- Manage stockpiles and equipment on the Site to prevent wildlife from being attracted to artificial habitat. Cover and contain any piles of soil, fill, brush, rocks and other loose materials and cap ends of pipes where necessary to keep wildlife out. Ensure that trailers, bins, boxes, and vacant buildings are secured at the end of each workday to prevent access by wildlife.
- Check the entire work site for wildlife prior to beginning work each day.
- Inspect protective fencing and/or other installed wildlife exclusion measures daily and after each rain event to ensure their integrity and continued function.
- Monitor construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.
- If species at risk are encountered on the work site, immediately stop all work in the vicinity of the observation and contact the project Biologist (if applicable) or MECP.

- Buildings on the Site should be inspected to ensure the absence of snakes, bats, and any other wildlife immediately prior to demolition. Bats may day-roost in buildings, while snakes may be present in building foundations/walls in search of food, shelter, and/or overwintering habitat. Any wildlife present in buildings should be removed and safely relocated by a qualified person.

OTHER REQUIRED INFORMATION

Owner contact information

Conor Sutherland
Mattamy Homes
50 Hines Road
Ottawa, ON
K2K 2M5

Conor.Sutherland@mattamycorp.com

Applicant contact information

Same as the owner.

Consultant contact information

Kilgour & Associates Ltd.
Contact: Anthony Francis
Director of Land Development

2285C St. Laurent Blvd. Unit C16
Ottawa, ON
K1G 4Z6

613-367-5556
afrancis@kilgourassociates.com

Contractor contact information

Not applicable.

Municipal address and legal description of the land

The residential development is proposed for the following location within the City of Ottawa, Ontario:

4497 A and 4497 B O'Keefe Court, Ottawa, Ontario

Official Plan and zoning designations, and the status of any planning applications on the property

The Site has multiple zoning designations per Zoning By-law 2008-250, as amended. The majority of the Site is zoned as Rural Residential (RR4).

Schedule of the proposed works

Site preparation cannot begin prior to the establishment of a southern access road; planning for that road is part of a separate planning and development application process. Accordingly, tree removal is not anticipated to be feasible prior to late 2026.

Other applications affecting the land

None.