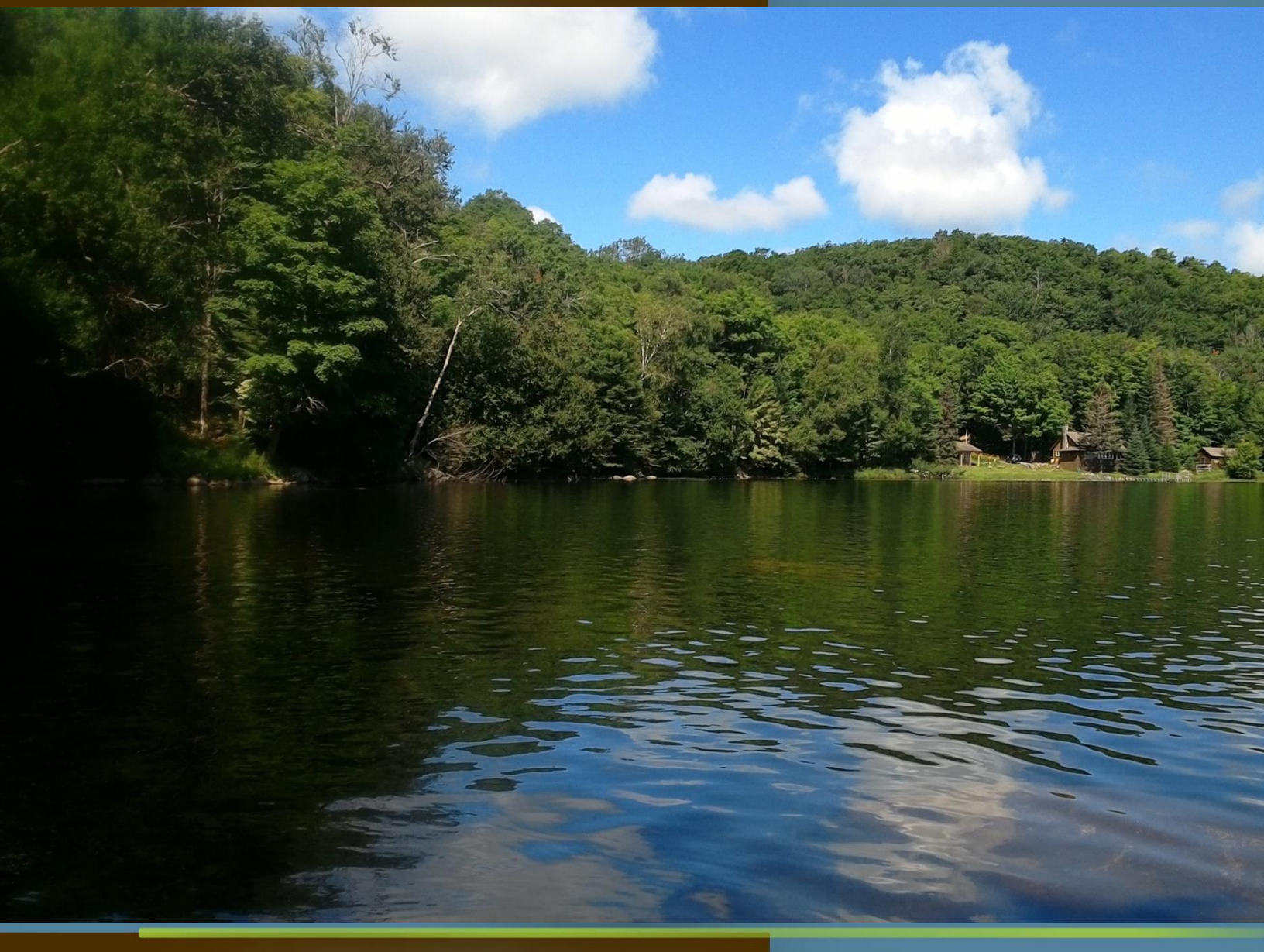
ENVIRONMENTAL IMPACT STUDY & LAKE CAPACITY ASSESSMENT

Bray Lake Property
Township of Machar
April 2023



RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.

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April 27, 2023
RS# 2020-053

Frank Polsinelli and Nghi Nguyen

via email: frank.polsinelli@ltcustom.com

SUBJECT: Environmental Impact Study & Lake Capacity Assessment – Bray Lake, Township of Machar

Dear Mr. Polsinelli and Mr. Nguyen,

RiverStone Environmental Solutions Inc. is pleased to provide you with the attached report.

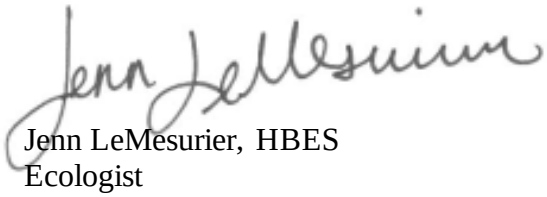
Please contact us if there are any questions regarding the report, or if further information is required.

Best regards,

RiverStone Environmental Solutions Inc.

Report prepared by:

Al Shaw, M.Sc.
Principal / Senior Ecologist



Jenn LeMesurier, HBES
Ecologist

ENVIRONMENTAL ASSESSMENT NON-TECHNICAL SUMMARY

Type of Study Environmental Impact Study (EIS) Lake Capacity Assessment		**Date** April 27, 2023
Project Manager Al Shaw	**Legal Description** Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound	**Development Proposed** Consent application to create twenty (20) single residential lots (15 waterfront, 5 backlot)
	Planning Authorities Township of Machar	**Owner/Agent** Mr. Frank Polsinelli and Mr. Nghi Nguyen / John P Gallagher & Associates

Report Summary

The purpose of this study was to address provincial and municipal requirements pertaining to the protection of significant natural features such as wetlands, watercourses, species at risk, and fish habitat.

Based on both desktop and on-site evaluations, RiverStone determined that:

1. The subject property contains steep slopes. These are located at the back of the proposed severed lots and will leave adequate room for future property development.
2. The property includes a number of watercourses that have potential to contribute to fish habitat.
3. The property includes a number of wetland areas; however they can be protected with mitigation measures.
4. Potential habitat of Species at Risk including endangered, threatened and special concern species was identified on the property; however, it can be protected with mitigation measures.

To ensure that the area's significant features are protected, RiverStone has made a number of recommendations that are presented below.

RECOMMENDATIONS

Lake Capacity

Calculations related to lakeshore capacity model were found to be incapable of accurately predicting the phosphorus concentration in Bray Lake. This was confirmed with the Township peer reviewer prior to undertaking the EIS studies. In the absence of the model, the Provincial mandate is to utilize the interim Provincial Water Quality Objective (PWQO). The proposed development falls within the boundaries of the interim PWQO.

It is our expectation that although lake capacity is respected with the proposed development, best management practices will be applied to ensure that phosphorus movement into the lake will be minimized to the extent possible. Best management recommendations are as follows;

- **design of the septic system shall include pump-dosing or equivalent technology to uniformly distribute septic effluent over the tile bed;**

- **provision of a 30m minimum undisturbed shoreline buffer and soil mantle, with the exception of a pervious pathway;**

- **phosphorus attenuation measures such as directing runoff and overland drainage from driveways, parking areas, other hard surfaces to soak away pits, infiltration facilities should be included in the lot design;**

- **All imported soils used for leaching bed construction should be silt free, fine to medium grained non-calcareous soils, having the presence of iron and aluminum. Native soils removed for the placement of a dwelling may also be used should they meet all criteria noted above and those for septic use as noted in the Ontario Building Code.**

These recommendations, particularly the 30m setback, will be suitable to protect many other natural features and functions (**Section 5,** below) such as other components of water quality, fish habitat, and wildlife habitat.

Water Quality and Fish Habitat

The subject property includes rugged terrain with varying topography. There are areas of the property that include steep slopes. In areas with moderate to steep slopes, the functionality of vegetated buffers is reduced as the slopes act to increase the speed of water moving over the land. To increase the functionality of vegetated buffers adjacent to the shoreline of Bray Lake and wetland communities on the subject property, development should be located in areas of moderate or low slopes and with an increased setback. To this end, RiverStone recommends:

- **Development of the primary dwelling for the each of the proposed lots be setback a minimum of 23 m and 30 m for the septic systems from the shoreline of Bray Lake (Figure 3).**

- **Development of the primary dwellings and septic systems for each of the proposed lots be setback a minimum of 30 m from identified wetlands and watercourses (Figure 3).**

- **No additional vegetation clearing outside of the identified development envelopes is to occur within 30 m of the shoreline of Bray Lake.**

To ensure that water quality is not negatively impacted by stormwater runoff during construction activities (e.g., land clearing and grubbing, dwelling and septic system construction, driveway construction), RiverStone recommends the following measures in addition to those already imposed through the lakeshore capacity review above:

- **When the native soil is exposed, sediment and erosion control works, in the form of heavy-duty sediment fencing, be positioned along the downgradient edge of any construction envelopes adjacent to water bodies, wetlands, or watercourses.**

- **Temporary storage locations of aggregate material be located no less than 30 m from the shoreline of Bray Lake in areas of low slopes. This material is to be contained by heavy-duty sediment fencing.**

- **The sediment fencing must be constructed of heavy material and solid posts to ensure its integrity and be properly installed (trenched in) to maintain its integrity during inclement weather events.**

- **Additional sediment fencing and appropriate control measures (e.g., straw bales) be stockpiled on site so that any breach can be immediately repaired through construction of check dams.**

- **Regular inspection and monitoring will be necessary to ensure that the structural integrity and continued functioning of the sediment control measures is maintained (i.e., proper installation is not the only action necessary to satisfy the mitigation requirements).**

- **Inspections of sediment and erosion control measures be completed within 24 hours of the onset of a storm event.**

- **Sediment control measures be maintained in good working order until vegetation has been established on the exposed soils.**

- **Offloading of construction materials and aggregate should be completed during fair weather.**

To ensure that the wetland communities and their protective buffers are not negatively impacted by increased nutrient loading and run off, RiverStone recommends the following measures:

- **Vegetation is not to be removed within 30 m of the wetlands unless it is a safety hazard, and debris from clearing or materials to be used in construction are not to be placed within this area.**

- **Because stormwater runoff can impact the thermal regime of watercourses, where stormwater management is applied, Low Impact Development (LID) techniques should be implemented, that promote infiltration and use of vegetated swales to take-up overland runoff, before entering watercourses.**

Species at Risk

Eastern Hog-nosed Snakes

Eastern Hog-nosed Snakes were not documented on the subject property during field investigations; however, due to the cryptic nature of this species, it is possible they are present but were not located. Based on the observations made during RiverStone's on-site assessments, features on the subject property are suitable to function as general habitat for Eastern Hog-nosed Snakes. In order to prevent impacts upon the habitat of Eastern Hog-nosed Snakes, and other snakes, that may be utilizing the subject property, RiverStone recommends the following:

- **Aggregate storage, particularly sand, is a suitable nesting substrate for Hog-nosed snakes. Should sand be stored on the property between June 1 and August 31, the stockpile should be surrounded by exclusion fencing to prevent access.**

Endangered Bats

Habitat for bats is prevalent throughout Central Ontario. As a predominantly forested area, habitat for maternal roosting bats is not limited across the landscape. The primary reason for these species of bats

being listed under the *ESA* is the prevalence of White-nose Syndrome, which is a fungus that infects bats as they hibernate over winter. This fungus grows on their muzzle, ears and wing-membranes, continually waking them from hibernation and causing dehydration, resulting in mortality.

In order to prevent impacts to the habitat of at-risk bats that may be utilizing the subject property, RiverStone recommends the following;

- **Tree clearing for the purposes of development on each proposed lot only occur in the fall, winter and early spring (from October 15 to April 15). This timeframe is outside of the maternal roosting period.**

- **In the event that tree clearing must occur between April 15 and October 15, additional studies will need to be completed to confirm the presence or absence of SAR bats. These studies will include snag tree surveys and acoustic monitoring of the area where trees will be removed, by a qualified professional. Should SAR bats be detected, the MECP should be contacted to determine if a permit would be required to proceed.**

Significant Wildlife Habitat

Wood Thrush and Eastern Wood-pewee are both small forest birds that are found in intermediate to mature aged forests. These two species are most sensitive to disturbance during the nesting season when alteration of vegetation communities can result in damage or destruction of nests and young. To minimize the likelihood that these two species are impacted by the proposed development, RiverStone recommends:

- **Vegetation removal should be restricted during the migratory bird nesting season, May 1st to Aug 15th each year. This timeframe falls entirely within the restricted timing window for removal of trees as it relates to roosting bats and noted above. In the event that tree clearing must occur between May 1st and Aug 15th, a qualified professional should complete a nest survey for the area where tree clearing is proposed. If nesting birds are found, tree clearing should wait until the birds have fledged.**

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1 BACKGROUND

RiverStone Environmental Solutions Inc. (hereafter "RiverStone") was retained by Mr. Frank Polsinelli and Mr. Nghi Nguyen, through Mr. Tom Harsani, to complete an Environmental Impact Study (EIS) related to a proposed development application to create twenty (20) new single residential lots on a property located on Bray Lake in the Township of Machar (hereafter "Township"). The subject property is approximately 162 ha (400 ac) in size with approximately 2438 m (8000 ft) of shoreline and is legally described as Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound (**Figure 1**). According to the Township of Machar's Zoning by-law (45-12), the subject property is zoned as a combination of Shoreline Residential (SR), Environmental Protection (EP), and Rural (RU).

It is our understanding that the proposed development will include an application to create a total of twenty (20) lots from the subject property. According to discussions, and consultation with Township as well as their consulting planner and peer review consultants, two studies are required to further the application; first, a lake capacity assessment following provincial guidelines is required to determine the capacity of the lake for new development, and an EIS is required to assess significant natural features and functions following Section B5.6.2 of the Township of Machar Official Plan. This includes, but is not limited to, wetlands, watercourses, fish habitat, significant wildlife habitat, and species at risk habitat. In advance of completing the studies, we communicated with the peer review consultant, Hutchinson Environmental Sciences Ltd. (hereafter "Hutchinson"), regarding our preliminary application of the lake capacity model to ensure we agreed on certain components of the model and its applicability.

RiverStone submits this lake capacity assessment and EIS in fulfillment of the requirements under the Town's Official Plan.

2 APPROACH AND METHODOLOGY

The approach and methods used to carry out this EIS and Lake Capacity Assessment are detailed in this section. Broadly speaking, this includes:

1. Assessing the capacity of the lake using the provincial lakeshore capacity handbook and model.
2. Gathering background biophysical information for the subject property and adjacent lands to become familiar with existing mapping of natural heritage features and occurrences of species of conservation interest and their habitat prior to the site investigation.
3. Conducting a site investigation to field-verify the presence or absence of natural heritage features and/or habitat for species of conservation interest identified during background information gathering, and to identify any additional significant features (where present).
4. Determining the potential for negative impacts associated with the proposed development and ways that these negative impacts can be avoided, minimized and mitigated, and/or compensation measures.
5. Providing an assessment of conformance of the proposed development with applicable municipal, provincial, and federal environmental policies and law.

2.1 Guiding Environmental Legislation and Policy

The following documents guided the investigations:

- Lakeshore Capacity Assessment Handbook Protecting Water Quality in Inland Lakes on Ontario's Precambrian Shield (2010). Ministry of the Environment, Ministry of Natural Resources, Ministry of Municipal Affairs and Housing
- Provincial Policy Statement (2020) and supporting documents (i.e., Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (OMNR 2010), as they relate to Species at Risk
- Provincial *Endangered Species Act* (ESA), S.O. 2007, c. 6, including:
    - Ontario Regulation 230/08: Species at Risk in Ontario List
    - Ontario Regulation 242/08: "Exemption Regulation"

2.2 Information Sources Used to Assess Site Conditions

Information pertaining to the biophysical features and functions of the subject property and surrounding lands was obtained from the following sources:

- **Township of Machar *Official Plan*** (October 8, 2013)
- **Township of Machar *Zoning By-law 45-12*** (September 2016), including
    - Zoning By-law Schedule A
- **MNRF Natural Areas Mapping** from the Natural Heritage Information Centre (NHIC) regarding information on occurrences of species of conservation interest on or adjacent to the subject property, as well as significant natural areas (accessed June 2020) https://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
- **Ontario Breeding Bird Atlas (OBBA) Online Database** and Atlas of the Breeding Birds of Ontario, 2001–2005 (Cadman et al. 2007) regarding birds that were documented to be breeding in the vicinity of the subject lands during the 2001–2005 period (atlas square number: 17PL18) http://www.birdsontario.org/atlas/squareinfo.jsp
- **iNaturalist Mapping and Online Database** regarding citizen scientist observations documented in the vicinity of the subject lands accessed June 8 at: https://inaturalist.ca/projects/nhic-rare-species-of-ontario
- **SAR Range Maps** provided on MNRF's website: http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_WHATS_AT_RISK_EN.html
- **Great Lakes Conservation Blueprint for Aquatic Biodiversity, Volume 2** (Phair et al. 2005) regarding aquatic biodiversity within tertiary watershed 2EC (Black River – Lake Simcoe).
- **Digital Ontario Base Maps** (OBMs; 1:10,000) to ascertain topography.
- **Colour aerial photography** of the property (digital orthophotos: leaf-off, Spring).
- RiverStone's **in-house databases and reference collections**.
- On-site investigations by RiverStone staff (see **Section 2.3**)

2.3 Site Investigation

The results of background information gathering outlined above in **Section 2.2** helped direct on-site data collection activities associated with a site investigation. The site features were assessed on four (4) separate visits in the spring/summer of 2020 by Al Shaw (Principal/Senior Ecologist), Craig Mann (Ecologist/Arborist) and Jenn LeMesurier (Ecologist/Arborist). The surveys included a general walkthrough of the subject property as well as visiting targeted areas of the subject property identified through air photography interpretation, as having higher potential for SAR and conducting breeding bird surveys based on Bird Studies Canada protocol. These areas included forested lands, watercourses, wetlands and shoreline communities. Overall, the level of effort expended on-site was deemed adequate to document potential habitat for SAR species given the location and habitat conditions on the property. Features of interest were photographed, and all information collected was catalogued for future reference.

Evidence for the presence of a species or use of an area was determined from visual and/or auditory observation (e.g., song, call) and observation of nests, tracks, burrows, browse, skins, and scats. General vegetation mapping was completed to provide information regarding the likelihood that plant species of conservation interest may be present (for example, most rare plants have strong affinities for specific ecological communities). Additionally, if a potentially rare plant not in flower was encountered, then a second site visit would have been conducted during the appropriate season for flowering or fruiting to confirm identification. This approach acceptably minimizes the risk that rare plant species would have gone undetected.

Natural features of interest (e.g., SAR habitat, vegetation community boundaries) were delineated in the field with a tablet with highly accurate built in GPS. Features of interest were photographed, and all information collected was catalogued for future reference. Photos representative of onsite conditions are provided in **Appendix 1**.

2.3.1 Terrain, Drainage, and Soils

Geology is a significant factor in the formation of soil, the physical characteristics of a watershed, and ultimately surface water quality. The bedrock and overlying deposits influence surface runoff and infiltration, directly influencing the nutrient balance of receiving water bodies. Knowledge of the existing terrain in a study area is important in understanding how a property and its associated natural environment will respond to development pressures. The geophysical setting of the property was reviewed using OBMs, soils mapping, and aerial photography, and subsequently verified on-site.

2.3.2 Vegetation Communities

The vegetation communities on the subject property were characterized in accordance with Ontario's Ecological Land Classification (ELC) system. The ELC system defines ecological units or communities based on bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect), and corresponding vegetation. Use of the system permits biologists and other land managers to use a common language to describe ecological communities, which in turn facilitates the identification of communities likely to support features or functions of conservation interest. The ELC system is an organizational framework that can be applied at different scales. The ecological units most useful for site-specific evaluations are ecosites and vegetation types (also known as ecoelements). Vegetation types are the finest level of resolution in the ELC system and are recurring patterns found in the plant species assemblages that are associated with a particular ecosite (Lee et al. 1998).

Vegetation communities were classified using the Great Lakes-St. Lawrence ELC manual (Banton et al, 2009). Plant nomenclature is generally consistent with the Southern Ontario Vascular Plant Species List, Third Edition (Bradley 2013) except where updates that postdate publication of the list are noted in the Integrated Taxonomic Information System database.

2.3.3 Wildlife

2.3.3.1 Breeding Bird Surveys

Three (3) rounds of breeding bird surveys were conducted in 2020 in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada *et al.* 2001). Surveys were conducted within the appropriate season (May 28–July 7), time of day (between dawn and 5 hours after dawn), and weather conditions (no rain; wind speed ≤3 on the Beaufort Wind Scale). Five (5) point count stations were established and situated systematically to cover potentially significant bird habitats (**Figure 2**). Surveys occurred for a minimum duration of 10 minutes at each station. Birds were also recorded incidentally in transit between stations during the breeding bird survey, and incidentally during other field activities on-site.
The OBBA provides four breeding categories to accompany each observation:

> ***Observed:*** Species observed during its breeding season (no evidence of breeding).
>
> ***Possible Breeding:*** Includes any of the following observation types: 1) species observed in its breeding season in suitable nesting habitat, and 2) singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.
>
> ***Probable Breeding:*** Includes any of the following observation types: 1) pair observed in their breeding season in suitable nesting habitat, 2) permanent territory presumed through registration of territorial song on at least 2 days, a week or more apart, at the same place, 3) courtship or display between a male and a female or 2 males, including courtship feeding or copulation, 4) visiting probable nest site, 5) agitated behaviour or anxiety calls of an adult, 6) brood patch on adult female or cloacal protuberance on adult male, and 7) nest-building or excavation of nest hole.
>
> ***Confirmed Breeding:*** Includes any of the following observation types: 1) distraction display or injury feigning, 2) used nest or egg shell found (occupied or laid within the period of the study), 3) recently fledged young or downy young, including young incapable of sustained flight, 4) adults leaving or entering nest site in circumstances indicating occupied nest, 5) adult carrying faecal sac, 6) adult carrying food for young, 7) nest containing eggs, and 8) nest with young seen or heard.

2.3.4 Natural Features and Functions of Conservation Interest

2.3.4.1 Habitat-based Approach

RiverStone's primary approach to site assessment is habitat-based. This means that our field investigations first focus on evaluating the potential for features within an area of interest to function as habitat for species considered potentially present, rather than searching for live specimens. An area is considered potential habitat if it satisfies a number of criteria, usually specific to a species, but occasionally characteristic of a broader group (e.g., several turtles of conservation interest use sandy shorelines for nesting, numerous fish species use areas of aquatic vegetation for nursery habitat). Physical attributes of a site that can be used as indicators of its potential to function as habitat for a

species include structural characteristics (e.g., physical dimensions of rock fragments or trees, water depth), ecological community (e.g., meadow marsh, rock barren, coldwater stream), and structural connectivity to other habitat features required by the species. Species-specific habitat preferences and/or affinities are determined from status reports produced by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Cadman et al. (2007a), published and unpublished documents, and direct experience.

In instances where habitat features are such that either (i) a species presence cannot be easily determined through an assessment of habitat feature alone, or (ii) habitat features are such that they suggest a species may be present in an area where development is proposed and impacts are likely, RiverStone adds an additional level of assessment by completing further species-specific observations (e.g., Whip-poor-will call surveys, Massasauga hibernation/gestation surveys, etc.) in accordance with industry standard methods and protocols.

As described above, RiverStone's primary approach to site assessment is habitat-based. For species and ecological communities of conservation interest, this approach involves both desktop and on-site assessments. The results of these assessments, as well as descriptions of the methodology and rationale employed are provided in **Appendix 2**.

2.3.4.2 Species at Risk – Endangered and Threatened Species

This report considers those species listed as endangered or threatened on the Ontario species at risk list (*O. Reg*. 230/08) that receive protection under s.9 and s.10 of the *ESA*. These species are considered within the local Official Plan and Provincial Policy Statement as SAR.

As described in **Section 2.3.4.1**, RiverStone's approach to site assessment is primarily habitat-based. The assessment included a thorough review of available information, our previous work on the subject property, site visits, and assessment of findings. The results of these assessments are provided in **Section 4.5** below and in **Appendix 2**.

2.3.4.3 Fish Habitat

The following recommendations for completing a fisheries assessment have been made by DFO and MNRF:

1) confirm the presence or absence of fish habitat
2) identify any potential fisheries features including intermittent watercourses and seasonally flooded areas, and assess their importance in terms of supporting fisheries functions
3) determine the fish communities located at a specific site and understand the life-cycle requirements
4) determine the sensitivity of the fish habitat on a site-specific basis

Fish habitat assessment is completed using the most recent classification criteria established by the MNRF. The three key habitat types are described in **Table 1** and differ based on their sensitivity to development and overall productive capacity for fish. Fish habitat mapping, fisheries records, thermal regime, and the known fish community of a lake or watercourse are used in conjunction with site-specific field evaluation, to determine what areas should be considered Type 1 or Type 2 habitat in any waterbody.

Table 1. Classification of Fish Habitat Types.

Classification Type	Description
Type 1	Habitats have high productive capacity, are rare, in space and/or time, are highly sensitive to development, or have a critical role in sustaining fisheries (e.g., spawning and nursery areas for some species, and ground water discharge areas for summer and/or winter thermal refuges).
Type 2	Habitats are moderately sensitive to development and, although important to the fish population, are not considered critical (e.g., feeding areas and open water habitats of lakes).
Type 3	Habitats have low productive capacity or are highly degraded, and do not currently contribute directly to fish productivity. They often have the potential to be improved significantly (e.g., a portion of a waterbody, a channelized stream that has been highly altered physically).

2.3.5 Wildlife Habitat

The terms of reference for environmental impact studies in the Township's Official Plan notes that the assessment must consider endangered and threatened species presence and/or significant habitat, although no further details are provided (s. B5.6). RiverStone has taken the approach that the intention is to consider habitat of endangered and threatened species, and significant wildlife habitat (SWH).

2.3.5.1 Endangered and Threatened Species

This report considers those species listed as endangered or threatened on the Ontario Species at Risk List (*O. Reg*. 230/08) that receive protection under s.9 and s.10 of the provincial *Endangered Species Act, 2007* (ESA). As described in **Section 2.3.4.1**, RiverStone's approach to site assessment is primarily habitat-based. The results of these assessments are provided in **Appendix 2**.

2.3.5.2 Significant Wildlife Habitat

The Provincial Policy Statement (PPS) protects SWH from development and site alteration unless it can be demonstrated that no negative impacts on the feature or its function will occur. As outlined in the SWH Technical Guide (OMNR 2000) and supporting Ecoregion Criteria Schedules (OMNRF 2015a, 2015b, 2015c), SWH is composed of four principal components:

1. Seasonal concentration areas of animals;
2. Rare vegetation communities or specialized habitats;
3. Habitat of species of conservation concern; and
4. Animal movement corridors.

The process for identifying SWH is outlined in s. 9.2.3 of the *Natural Heritage Reference Manual* (OMNR 2010b). **Step 1** requires the answers to two questions:

A. Does the development proposed involve a trigger for significant wildlife habitat; and
B. Has any confirmed significant wildlife habitat been identified?

Triggers for significant wildlife habitat (question A) are outlined in s.9 of the Natural Heritage Reference Manual {OMNR, 2010 #2473} and include:

- Creation of more than three (3) lots through either consent or plan of subdivision;
- Changes in land use, not including the creation of a lot, that required approval under the Planning Act;

- Shoreline consent along a large inland lake, small inland lake or large river that is within 120 m along the shoreline of an existing lot of record or lot described in an application for subdivision or consent; and.
- Construction for recreational uses (e.g., golf courses, serviced playing fields, serviced campgrounds, and ski hills) that require large-scale medication of terrain, vegetation or both.

If the development proposed involves a trigger (question A), the assessment of SWH proceeds to **Step 2**.

Confirmed SWH (question B) are areas that have been identified in existing planning documents (e.g., official plans) or by the MNRF. Where confirmed SWH is present, and the development proposed does not involve a trigger (question A), the assessment of SWH proceeds to **Step 4**.
Step 2 of the SWH assessment involves undertaking a more thorough analysis of features, functions, and habitats on the subject property *via* ELC. The list of ELC Ecosite codes generated for the subject property is compared to those codes considered candidate SWH in the relevant ecoregion criterion schedule (*i.e.* 5E, 6E, or 7E) in **Step 3**. Where a positive match between an ELC ecosite and candidate SWH exists, the area is considered candidate SWH.
In **Step 4**, two options are available for candidate or confirmed SWH:

1. the area may be protected without further study, or
2. the area may be evaluated to ascertain whether confirmed SWH is present. Evaluation may involve generating more detailed maps of vegetation cover or conducting surveys of the wildlife population within the candidate SWH including reproductive, feeding, and movement patterns.

If the area is confirmed SWH, the final step in the process (**Step 5**) is the completion of an impact assessment to demonstrate that no negative impacts to the confirmed SWH or its function will occur. The impact assessment process is assisted by SWH Mitigation Support Tool (OMNRF 2014).
RiverStone employed the approach as outlined above (i.e. **Steps 1-5**) in assessing the potential for SWH to exist on the subject property. Technical results of our assessment and additional discussion is provided in **Section 4**.

2.4 Impact Assessment

RiverStone employs the following approach in order to carry out a standardized, rigorous assessment of impacts associated with the proposed development (as described in **Section 0**):

1. *Predict* impacts to existing biophysical features and functions on site based on the proposed development plan (from construction to post-completion), including both direct (e.g., vegetation clearance, etc.) and indirect (e.g., light pollution, encroachment post-development, etc.) impacts.
2. *Evaluate* the significance of predicted impacts to existing biophysical features and functions based on their spatial extent, magnitude, timing, frequency (how often), and duration (how long).
3. Assess the *probability* or likelihood that the predicted impacts will occur at the level of significance expected (e.g., high, medium, low probability).

In instances where a reasonable potential for impact to a significant feature with recognized status exists, opportunities to mitigate (avoid, minimize, compensate) and/or enhance such features are provided.

2.5 Assessment of Conformance with Applicable Environmental Policies

The suite of relevant municipal and environmental policies that apply to the subject property and proposed development are listed below. Based on the results of the background information gathering, site investigation, impact assessment, and recommendations, RiverStone has advised the extent to which the proposed development conforms to all applicable environmental policies in **Section 6**.

- Federal *Migratory Birds Convention Act*, S.C. 1994, c. 22, including:
    - Migratory Birds Regulations.
- Federal *Fisheries Act*, R.S.C. 1985, c. F-14, including:
    - *Applications for Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations*, S.O.R/2013-191
    - Fisheries Protection Policy Statement (Oct. 2013)
- *Provincial Policy Statement*, 2020, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including:
    - Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (OMNR 2010)
- Provincial *Endangered Species Act* (ESA), S.O. 2007, c. 6, including:
    - Ontario Regulation 230/08: Species at Risk in Ontario List
    - Ontario Regulation 242/08: "Exemption Regulation"
- Township of Machar Official Plan (October 8, 2013)
- Township of Machar Zoning By-law (45-12, Consolidated September, 2016)

3 LAKE CAPACITY ASSESSMENT

As background to this component of the study, lakeshore capacity is based entirely on phosphorus. Phosphorus occurs in dissolved and particulate, organic and inorganic forms in aquatic ecosystems. In a chemically combined state (the elemental form is rare), it is virtually non-toxic to aquatic life; however, it has been shown to be the principal nutrient causing eutrophication of surface waters of many parts of Canada (Schindler 1974). Phosphorus present in human and domesticated animal wastes, farm and industrial wastewater, and a variety of products, such as soaps and fertilizers, which are components of sanitary sewage and stormwater or runoff. The most readily documented and obvious effects of increased levels of phosphorus in surface waters are a marked increase of algae and aquatic vegetation, reduced water clarity, and in some cases reduced habitat for coldwater fish species such as lake trout. These changes are generally considered undesirable, although it should be emphasized that native aquatic plants are an important component of a healthy, productive aquatic ecosystem.

Lakes located on the Canadian Shield have a relatively low natural concentration of phosphorus compared to southern Ontario lakes, because their basins are formed in rock and the surrounding landscape has thin soils, which only leach a comparatively small concentration of nutrients. The exceptions are dystrophic lakes that have variable nutrient concentrations and dark tea-stained water, resulting from high concentrations of humic acids. Humic acids are produced during the decay of plant material from wetlands within the upper watershed of a lake system. The provincial government,

through the Ministries of Environment, Conservation and Parks (MECP, Formerly Ministry of Environment and Climate Change), Natural Resources and Forestry (MNR) and Municipal Affairs and Housing (MMAH), developed the Lakeshore Capacity Assessment Handbook, most recently updated in 2010, to provide direction in determining the capacity of a lake for shoreline development using the lakeshore capacity model (LCM) and phosphorus as the key nutrient to determine lake capacity.

Section B4.8 of the Township of Machar Official Plan states that Bray Lake, along with three other lakes, "have unique characteristics and limited carrying capacity with respect to the amount of shoreline development they can accommodate". The policy continues to state that new development shall not raise the phosphorus concentration in the lake more than 50% above its natural background or exceed 20 ug/L. The Lakeshore Capacity Assessment Handbook includes the lakeshore capacity model (LCM) which uses watershed and lake characteristics to predict the natural background and future concentrations of phosphorus.

The completion of the Lakeshore Capacity model calculations for Bray Lake was completed in advance of beginning the EIS component. Without establishing that there was capacity for future development, it did not make sense to complete other studies. The results that are presented in the following sections were discussed and reviewed with the peer reviewers (Hutchinson Environmental Sciences, Brent Parsons) commissioned by the Township to ensure that the results of the model were corroborated and the interpretation to proceed validated.

3.1 Lakeshore Capacity Model

The Lakeshore Capacity Model (LCM) has a long history directing development along lakeshores throughout Ontario. In the mid-1970's the Dorset Environmental Science Centre was established to devise technical methods to predict changes in water quality due to increasing recreational development on lakeshores (Yan et al. 2008). The LCM has been reviewed and modified several times since its inception, updating coefficients and relationships as new studies were completed and verified (Dillon et al. 1986, Hutchinson et al. 1991, 2002, Dillon et al. 1994, Paterson et al 2006). The MOE officially began a review of the LCM in 2009 and published the updated Lakeshore Capacity Assessment Handbook in May 2010.

The LCM is a steady state, mass balance, mathematical model that uses empirical relationships to predict ice-free concentrations of phosphorus. The model can also be used to predict how phosphorus concentrations would change, should additional development within 300 m of the lake shoreline be permitted. This is how the model will be used for the present assignment; that is to construct the LCM for Rock to determine where the lake currently is in relation to phosphorus and how the concentration will change should additional lots be permitted to be developed. Phosphorus is the primary nutrient that controls plant growth (including algae) in lakes on the Canadian Shield (Schindler et al. 1971) and similarly over the world's north temperate lakes (Schindler 1977), which is the primary reason for limiting lakeshore development based on phosphorus concentrations. Phosphorus can enter a lake through atmospheric deposition, stream and overland flow, and groundwater. Within a lake, phosphorus concentration is determined by local geology, land-use, lake morphometry and human activity. These factors, along with various coefficients are used in the LCM to predict phosphorus concentration during the ice-free period (**Table 2**). The human inputs of phosphorus are of prime importance to this study, as they can be controlled by limiting the amount of development along a lake shoreline. To understand the expected change in phosphorus concentration due to additional development on a lake, the model is used to predict the current concentration of phosphorus, which includes the existing inputs from development on the lake, then the model is calculated a second time

with the additional proposed development included. The proposed development in this assessment includes an additional fourteen (14) lots fronting on Bray Lake and six (6) backlots.

As noted above, the province determines the capacity of a lake based on the background concentration of phosphorus. A lake is deemed to be at capacity for development when the modeled concentration of phosphorus is 50% higher than the background concentration. Further development is permitted by the province until the model predicts that the 50% over background concentration is reached. The background concentration of phosphorus is determined through the LCM, inputting all necessary watershed, lake and development data particular to a lake.

It should also be noted that the model is not effective in predicting phosphorus concentrations in all lakes. It has been our experience that in some cases where water components of the model are not well understood, the model may not accurately predict phosphorus concentrations. In some cases, this can be overcome by considering the oxygen status of the bottom waters (anoxia). In other cases, the model just does not predict well, and the results are considered unreliable. Model accuracy is a component of the calculations, and the results are presented below.

Table 2. Lakeshore Capacity Model Parameters and Calculated Components, Rock Lake

Model Parameter	Value	Units	Description	Reference
Lake Surface Area	340.0	ha	Area of lake surface at high water	OMNR Lake Fact Sheet, Bray Lake, Ontario Flow Assessment Tool
Watershed Area	940	ha	Upstream watershed	OMNR Lake Fact Sheet, Bray Lake, Ontario Flow Assessment Tool
Watershed Wetland Area	15.0	%	Area of wetlands in watershed	Ontario Base maps/aerial photo interpretation
Precipitation on lake	0.95	(m/y)	Water falling on lake surface	Hydrological Atlas of Canada 1978
Lake Evaporation	0.65	(m/y)	Lake water loss by evaporation	Hydrological Atlas of Canada 1978
Runoff	0.526	(m/y)	Overland drainage from watershed	Hydrological Atlas of Canada 1978
Phosphorus settling velocity	12.4	(m/y)	Phosphorus bound to sediments	Paterson et al 2006
Atmospheric phosphorus load	16.7	mg/m^2/yr	TP load from precipitation	Paterson et al 2006
Overland phosphorus export	5.5	mg/m^2/yr	TP load from adjacent lands	Paterson et al 2006
P load from residences	0.66	kg/capita y/y	TP load from dwellings	Hutchinson 2002, Paterson et al 2006
Septic/Soils retention coefficient	0	%	Amount of septic TP escaping tilebed and natural soils	Hutchinson 2002, Paterson et al 2006
Watershed/Wetland - Slope	0.47		Relationship between wetland area and TP export	Paterson et al 2006
Watershed/Wetland - Intercept	3.82		Relationship between wetland area and TP export	Paterson et al 2006

3.2 Current Provincial Guidelines for Lake Phosphorus

The current Provincial Guidelines for Phosphorus concentrations in lakes as they relate to shoreline development are governed by the MOECP. Under the 1994 Provincial Water Quality Objectives (PWQO), there is an interim guideline for phosphorus, which is as follows:

To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice-free period should not exceed 20µg/L;

A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice-free period of 10µg/L or less. This should apply to all lakes naturally below this value;

Additionally, the MOECP's Water Management Policy Guidelines (Procedure B-1-1, "Blue Book") set out policies for the management of surface and ground water resources, and is a companion to the PWQO document noted above. The Blue Book provides further details on lakes where water quality currently meets or exceeds the PWQO; in this case, phosphorus. The policies are as follows:

Policy 1

"In areas which have water quality better than the Provincial Water Quality Objectives, water quality shall be maintained at or above the Objectives." Although some lowering of water quality is permissible in these areas, degradation below the Provincial Water Quality Objectives will not be allowed, ensuring continuing protection of aquatic communities and recreational uses

Policy 2

"Water quality which presently does not meet the Provincial Water Quality Objectives shall not be degraded further and all practical measures shall be taken to upgrade the water quality to the Objectives."

In consideration of the Provincial policies above, should a lake have a phosphorus concentration below 10 µg/L, changes to land use that would cause water quality to exceed 10 µg/L would not be permitted.

The more recently released Lakeshore Capacity Assessment Handbook (MOECP 2010), includes a proposal to revise the PWQO for phosphorus as it relates to the protection of aquatic life. The revised approach for lakes on the Precambrian Shield "**allows for a 50 per cent increase in phosphorus concentration from a modelled baseline of water quality in the absence of human influence**". The purpose for the change is to recognize the individual nature of each lake and maintain a diversity of lakes on the shield, as opposed to ultimately generating many lakes near 10 µg/L and 20 µg/L. Although the handbook has been finalized, the associated policy change recommendations have yet to be incorporated into the PWQO's; however, the background + 50% development limit is promoted and considered by the MECP to be the benchmark governing this assessment.

3.3 Lakeshore Capacity Model Results and Discussion

As previously stated, the purpose of this assessment is to determine the development capacity of Bray Lake according to the Provincial LCM, as it relates to the current proposal to develop a long section of shoreline with new lots having waterfront access.

Using the parameters and values shown in **Table 2**, the results of the LCM for Bray Lake show that the predicted spring total phosphorus concentration is **5.24 µg/L**, which is the background value before any of the existing or proposed development is considered. Based on the current guidelines for lake development, the capacity of the lake is calculated as 50% above the background concentration; **7.86 µg/L**. These calculations also consider that the lake is anoxic, introducing the idea that an internal load of phosphorus is possible, further elevating the expected background concentration.

The current state of phosphorus in Bray Lake is determined by including the current number of shoreline residents. These data were established by using the current lot fabric and through counting the number of dwellings using aerial photography. Many back-lots were also included if they were estimated to be within 300 m of the shoreline as required by the LCM. A total of a combined 57 dwellings and vacant lots of record were noted. The amount of phosphorus that is exported from each lot is partly a function of the amount of time the dwellings are used. The LCM considers various categories of cottage usage, including permanent, extended seasonal and seasonal. It was noted that the roads accessing cottages along the lakeshore are not winter maintained road and therefore would not support permanent dwellings. Based on this, we have considered all 57 lots to be used in an extended seasonal manner; although it is very likely that many of the cottages are used seasonally only. Based on the existing development, the resulting phosphorus concentration increased from a background concentration of 5**.24 µg/L** to **6.89 µg/L**. This accounts for all of the current development on the lake, as well as existing lots that have yet to be developed up to 300 m from the shoreline.

The final step in the modeling scenario is to add the additional proposed development to determine the increase in phosphorus concentration that can be expected following development. In this case, the proposal is to add an additional 14 lots with shoreline access and 6 backlots (all considered to have development within 300 m of the lake shoreline). The resulting concentration of the lake is modeled to be **8.03 mg/L**.

3.4 Model Validation

Given the model is a predictor of total phosphorus and uses primarily mapped data and coefficients; it does not incorporate actual measured values of phosphorus in its calculations. Measured values are used to validate and check the model to determine how well the model predicts current concentrations of phosphorus and therefore how well it will quantify water quality changes expected by proposed developments. As noted above, the model is not effective in predicting phosphorus concentrations in all lakes. This is determined through the validation of the model by comparing modeled phosphorus values with measured values of phosphorus.

Measured values were collected by Lake Partner Program volunteers in 2007 and 2008. Water samples are collected by lake resident volunteers and analysed for a number of parameters, including phosphorus, by the MECP. The duplicate samples from May 2007 were reported as **10.6 µg/L** and **10.6 µg/L,** while July 2008 samples were reported as **12.7 and 11.0 µg/L**. In order to determine the validity of using the model, Hutchinson et al. (1991) suggests that the LCM is considered an adequate predictor of lake phosphorus concentration if the modeled spring overturn values are within ± 20% of measured values, as variation in this order can be experienced even in intense water quality sampling programs. The model has predicted a spring overturn phosphorus concentration of **6.89 µg/L**, based on the current development level on the lake (57 lots). The spring values reported through the lake partner program in 2007-2008 have an average of **11.22 µg/L**, which is **33.1**% different from the modeled values and outside of the criteria established by Hutchinson et al. (1991).

The model does not provide any reason for the discrepancy, it just notes that the model is not a suitable predictor of phosphorus in the lake, underpredicting the measured phosphorus by over 33%. It is our assumption that the dam at the lake outlet may be one significant factor. It is logical that the construction of the dam has elevated water levels and flooded additional lands. These lands have become prominent wetlands in the northwest and southwest portions of the lake. Wetlands and their soils are exporters of phosphorus to the adjacent lake and could therefore be responsible for some of the additional phosphorus measured in the lake above what the model predicted. The dam also is an

artificial means of controlling the outlet of the lake, which would differ from an unregulated lake. There are no means of addressing these items in the model. Finally, Bray Lake is a fairly shallow lake with an average depth of 4m. Shallow lakes are known to potentially exhibit an internal load of phosphorus, which could elevate the measures values that are not contemplated in the model. In any case, the model calculations were no applicable to the lake as a reliable means of predicting phosphorus; therefore, the model is also an unreliable means of predicting the change in phosphorus that would be expected through additional development.

In cases where the model does not predict phosphorus concentrations within acceptable limits (20%), it is recommended that the interim PWQO be followed as a guideline, with the Lakeshore Capacity Assessment Handbook noting that "a total phosphorus concentration of **20 µg/L** will be used as the upper limit to protect against nuisance algal blooms" (Section 4.3 pg 32). In the case of Bray Lake, if we consider the modeled change in phosphorus from existing development to proposed new 17 lots, a rise of **1.14 µg/L (6.89 µg/L to 8.03)** in total phosphorus was expected. If that additional **1.14 µg/L** is added to the measured phosphorus concentration, **11.22 µg/L**, the result is **12.36 µg/L**, which is well below the interim PWQO of **20 µg/L.** As a result, the proposed 14 shoreline and 6 backlots would be permitted.

It is our expectation that although lake capacity is respected with the proposed development, best management practices will be applied to ensure that phosphorus movement into the lake will be minimized to the extent possible. Best management recommendations are as follows;

- **design of the septic system shall include pump-dosing or equivalent technology to uniformly distribute septic effluent over the tile bed;**
- **provision of a 30m minimum undisturbed shoreline buffer and soil mantle, with the exception of a permeable pathway;**
- **phosphorus attenuation measures such as directing runoff and overland drainage from driveways, parking areas, other hard surfaces to soak away pits, infiltration facilities should be included in the lot design;**
- **All imported soils used for leaching bed construction should be silt free, fine to medium grained non-calcareous soils, having the presence of iron and aluminum. Native soils removed for the placement of a dwelling may also be used should they meet all criteria noted above and those for septic use as noted in the Ontario Building Code.**

These recommendations, particularly the 30m setback, will be suitable to protect many other natural features and functions (**Section 5,** below) such as other components of water quality, fish habitat, and wildlife habitat.

4 BIOPHYSICAL FEATURES AND FUNCTIONS

4.1 General Site Conditions

The subject property is currently developed with a cottage dwelling, bunkie, sauna, and pile/post dock. Generally, the natural features of the property consists of upland forest, various wetland communities, watercourses, and lake shoreline habitat. Riding Ranch Road is located on the western edge of the property, and bisects the property in one section, and there is an access driveway to the existing development on the subject property. There is also a smaller piece of property located on the opposite

shore of Bray Lake, owned by the same ownership group as the subject property. It is accessed from Riding Ranch Road at a single location on the northwest corner of the lake. This parcel has been subdivided under a separate application, although the natural features were assessed as part of this study and contributed to that application. Vegetation communities on the subject property consist of deciduous forest, coniferous forest, rock barren, wetlands and riparian watercourse. Existing vegetation communities are identified on **Figure 2**.

4.2 Terrain, Drainage, and Soils

The subject property is situated in the Ecodistrict 5E-8 (Huntsville). This ecodistrict is comprised of bedrock exposures (primarily orthogneisses and migmatites) complexed with a veneer of glacially-derived sandy substrate (Henson and Brodribb 2005). Differential erosion of the bedrock since the Grenville Orogeny over one billion years ago has generated a landscape of gently- to steeply-sloping ridges separated by hollows filled by wetlands or lakes. Proglacial Lake Algonquin (a precursor to Lake Huron) drowned most of the western half of the ecodistrict following glacial recession around 10,000 years ago, including the subject property.

Overland drainage from the subject property is conveyed toward the watercourses and wetland communities identified on **Figure 2**, as well as directly toward Bray Lake. The property has varying topography throughout the 400-acre parcel. Steep slopes are present in some areas adjacent to the shoreline, with long stretches of more level ground. (**Figure 32**). The steepest slopes on the subject property exist in the northern and central portions along the shoreline of Bray Lake. In some areas, slopes have been identified as between 20-40%, and other areas over 40%. The remainder of the property is quite rugged; however, there are considerable areas that provide terrain suitable for development (**Figure 3**).

4.3 Vegetation Communities

Existing forest communities on the subject property were assessed during the on-site investigation. A desktop exercise was undertaken to approximately map forest community boundaries using background information sources and current aerial photographs; the mapped forest communities were then ground-truthed and boundaries updated following the site investigation. Forest community mapping in accordance with Wester et al. (2015) is provided on **Figure 3**.

4.3.1 Terrestrial Vegetation Communities

G051Tt Dry to Fresh, Coarse: Hemlock-Cedar Conifer

The riparian shoreline areas, and the majority of the western side of the subject property contains a forest community that is dominated by Eastern Hemlock (*Tsuga canadensis*). These areas contain relatively low vegetation diversity due to the low nutrient and moisture holding capacity of the substrates. Other vegetation species that were noted within this community include Balsam Fir (*Abies balsamea*), Sugar Maple (*Acer saccharum*), Black Cherry (*Prunus serotina*), Yellow Birch (*Betula alleghaniensis var. fallax*), Red Maple (*Acer rubrum*), Striped Maple (*Acer pensylvanicum*), Beaked Hazelnut (*Corylus cornuta*), Canada Mayflower (*Maianthemum canadense*), Spinulose Wood Fern (*Dryopteris carthusiana*), Partridgeberry (*Mitchella repens*), Tree Groundpine (*Lycopodium dendroideum*), Club Moss Species (*Lycopodium sp*), Wild Sarsaparilla (*Aralia nudicaulis*), and Drooping Woodland Sedge (*Carex arctata*). Common mosses and lichens were also present throughout this community in areas where there was exposed rock. This community was present along much of the riparian area of the shoreline. Species within these areas also included Leatherleaf

(*Chamaedaphne calyculata*), Sweetgale (*Myrica gale*), Three-way Sedge (*Dulichium arundinaceum*), Canada Bluejoint (*Calamagrostis canadensis*), White Meadow-sweet (*Spiraea alba var. alba*), Broadleaf Cattail (*Typha latifolia*), Common Sheep Sorrel (*Rumex acetosella*), Black-girdle Bulrush (*Scirpus atrocinctus*), Marsh St. Johnswort (*Triadenum virginicum*), and Water-horehound (*Lycopus sp*).

G058Tt Dry to Fresh, Coarse: Maple Hardwood

The central portion of the subject property is dominated by Sugar Maple and is best classified as Maple Hardwood. Rich soils in this area support a canopy of mature Sugar Maple, American Beech (*Fagus grandifolia*), and White Birch (*Betula pendula*), with some Eastern Hemlock. Balsam Fir, Yellow Birch, Red Maple, and Black Cherry were also present. Understory species include Striped Maple, Northern Starflower (*Trientalis borealis*), Wild Sarsaparilla, Spinulose Wood Fern, Red Trillium (*Trillium erectum*), White Trillium (*Trillium grandiflorum*), New York Fern (*Thelypteris noveboracensis*), Canada Mayflower, Hobble Bush (*Viburnum lantanoides*), Red Raspberry (*Rubus occidentalis*), Rose Twistedstalk (*Streptopus lanceolatus*), Bearded Shorthusk (*Brachyelytrum erectum*), Indian Pipe (*Monotropa uniflora*), Cinnamon Fern (*Osmunda cinnamomea*), and Common Lady Fern (*Athyrium filix-femina ssp. angustum*).

4.3.2 Wetland Vegetation Communities

G130Tt Intolerant Hardwood Swamp

Throughout the subject property, there are forested wetland pockets that are hydrologically connected with the watercourses that lead toward Bray Lake. The best classification for this community type is an intolerant hardwood swamp dominated by Black Ash (*Fraxinus nigra*). Other tree species include Yellow Birch, Red Maple, and Sugar Maple. The herbaceous layer is dense and includes Sensitive Fern (*Onoclea sensibilis*), Spotted Jewelweed (*Impatiens capensis*), Horsetail Species (*Equisetum sp*), Interrupted Fern (*Osmunda claytoniana*), Fringed Sedge (*Carex crinita var. crinita*), Canada Bluejoint, and Wood-sorrel Species (*Oxalis sp*).

G142N Mineral Meadow Marsh

Along the western boundary of the subject property there are three wetlands that are best classified as mineral meadow marsh vegetation communities. These areas are located near Riding Ranch Road, and include some pockets of open water wetland, but are dominated by herbaceous vegetation with sporadic tree growth. Vegetation species include: Joe-pye-weed Species (*Eupatorium sp*), Canada Bluejoint, White Meadow-sweet, Leatherleaf, Broadleaf Cattail, Black Raspberry, Eastern White Pine (*Pinus strobus*), Red Maple, Black Spruce (*Picea mariana*), Marsh St. Johnswort, and Harlequin Blue Flag (*Iris versicolor*).

4.4 Wildlife

4.4.1 Breeding Birds

Breeding bird surveys in accordance with the OBBA were undertaken by RiverStone on two (2) occasions between May 28 and July 14, 2020 at five designated survey stations illustrated on **Figure 2**. Additional incidental observations of individuals were noted during all assessments when new species were heard or observed. RiverStone field studies recorded a total of twenty-one (21) different bird species during the breeding bird surveys conducted in 2020 (**Table 3**). The assemblage and abundance

of birds recorded during the OBBA surveys generally reflects the structure and composition of on-site vegetation communities (per **Figure 2**). Recorded species and field data are illustrated in **Table 3**. No bird species listed under the ESA were recorded; however, one (1) bird was recorded that is listed as species of special concern by the Province. Further recommendations are provided in **Section 4**.

Table 3. Breeding Bird Survey Results, 2020. Shaded blue rows indicate species of conservation concern.

Date	Station	Temperature	Beaufort Wind	Cloud Cover	Species
25-Jun-20	1	13ºC	0-1	100%	Roughed Grouse
					Red-winged Blackbird
					Red-eyed Vireo
					Black-and-white Warbler
					Chestnut-sided Warbler
					Eastern Phoebe
					Ovenbird
					Black-throated Green Warbler
					Blue Jay
					Great Blue Heron
					White-throated Sparrow
					Wild Turkey
	2	13ºC	0-1	80%	White-throated Sparrow
					Ovenbird
					Chestnut-sided Warbler
					Song Sparrow
					Common Raven
					Tree Swallow
					Common Yellowthroat
					Hermit Thrush
					American Crow
	3	14ºC	0-1	60%	Black-throated Green Warbler
					Common Yellowthroat
					White-throated Sparrow
					Black-throated Blue Warbler
	4	15ºC	0-1	50%	Hermit Thrush
					Black-throated Green Warbler
					Red-eyed Vireo
	5	15ºC	0-1	50%	Red-eyed Vireo
					Black-throated Green Warbler
					Ovenbird
					Eastern Wood Pewee
14-Jul-20	1	16ºC	0-1	5%	Black-and-white Warbler
					Red-eyed Vireo
					Ovenbird
					Red-winged Blackbird
					Eastern Phoebe
					White-throated Sparrow
	2	22ºC	0-1	5%	Tree Swallow

				Song Sparrow
				American Crow
				White-throated Sparrow
				Common Yellowthroat
				Veery
	3	26ºC	0-1	5%	White-throated Sparrow
				Blue Jay
				American Crow
				Common Raven
				Veery
				Red-winged Blackbird
	4	26ºC	0-1	5%	White-throated Sparrow
				Red-eyed Vireo
				Blue Jay
				American Crow
				Common Raven
				Hermit Thrush
				Black-throated Green Warbler
	5	26ºC	0-1	5%	Common Yellowthroat
				Eastern Phoebe
				Eastern Wood Pewee
				Pine Warbler
				Ovenbird

4.5 Fish Habitat

Existing information from the MNRF indicates that Bray Lake is approximately 340 ha in area, with a maximum depth of 16 m and a mean depth of 4 m. The shoreline perimeter is 24 km in length with several large bays. Bray Lake is located within the South River basin and drains several small watercourses and wetland communities surrounding the lake, through to the northeast side of the lake via a dam into Bray Creek. There are no locks for boat passage or ladders for fish passage. Shoreline development on the lake is considered low with some shoreline residential dwellings. The water levels are regulated and controlled by a dam that is owned and operated by Ontario Power Generation. Flows and levels are dictated by the South River Water Management Plan (draft).

Bray Lake supports a typical warmwater fish community including Smallmouth Bass (*Micropterus dolomieu)*, as well as Bluntnose Minnow (*Pimephales notatus*), White Sucker (*Catostomus commersonii*), Trout-perch (*Percopsis omiscomaycus*), Blacknose Shiner (*Notropis heterolepis*), Golden Shiner (*Notemigonus crysoleucas*), Yellow Perch (*Perca flavescens*), Pumpkinseed (*Lepomis gibbosus*), Pearl Dace *(Margariscus margarita*), and Brown Bullhead (*Ameiurus nebulosus*). These warmwater species are typical of similar shallow warmwater lakes.

RiverStone's observation of fish habitat conditions were completed from shore and by kayak along the length of the subject property in the summer of 2020. As noted in **Section 2.3.4.3** above, our assessment intended to observe many habitat characteristics for comparison to the requirements of fish species found in Bray Lake, and ultimately classify the habitat according to MNRF criteria (**Table 1**).

During our assessment of the entire frontage of the property on Bray Lake was surveyed for fish habitat characteristics. As previously noted, key variables related to habitat quality include substrates, nearshore slopes, presence of aquatic vegetation, and cover objects, as well as riparian vegetation. Beginning from the southern property boundary, fish habitat was characterized by moderate to steep shoreline slopes with cobble and boulders at the shoreline edge. Substrates included silt over a sandy bottom with some detritus. Nearshore slopes were very shallow ranging from 1 m depths at 5 m from the shoreline to 1 m depths at 10 m from the shoreline. Water temperature recorded on July 14, 2020 was 21 degrees Celsius. Riparian vegetation was complete and dense of the vast majority of the shoreline frontage, with the exception of the area with existing development, where vegetation had been removed. There was abundant cover objects within the lake, including fallen trees and overhanging branches, as well as ample downed woody debris in many sections along the shoreline frontage. Aquatic vegetation was present in many locations and included species such as American Eel Grass (*Vallisneria americana*), White Water Lily (*Nymphaea odorata*), Pickerelweed (*Pontederia cordata*), Seven-angle Pipewort (*Eriocaulon aquaticum*), Pondweed Species (*Potamogeton sp*), Watershield (*Brasenia schreberi*), Softstem Bulrush (*Schoenoplectus tabernaemontani*), and Yellow Pond Lily (*Nuphar lutea*). **Figure 2** outlines the fish habitat conditions along the entire frontage of the subject property with respect to MNRF classification guidelines.

Several watercourses (both intermittent and permanent) were noted on the subject property, as outlined on **Figure 2**. These watercourses generally drained from the wetland communities on the western edge of the subject property toward Bray Lake. It should be noted that fish habitat typing for watercourses are not typically completed by the MNRF, as it is for lakes; however, we did assess

Based on our assessment of the watercourses, the permanency and thermal regime of each are illustrated on **Figure 2**. The permanent watercourse that enters Bray Lake had clearly defined channel banks and substrates differing from the surrounding lands. The other watercourses outlined on **Figure 2** are best classified as intermittent based on the characteristics of very shallow to non-existent channel banks, vegetation that did not differ from the surrounding upland area, and substrates that were not sorted or typical of permanently flowing features. Each of the watercourses on the subject property should be considered either direct or indirect habitat for fish species in Bray Lake and protected as such.

4.6 Endangered and Threatened Species

Based on the initial steps of our desktop analysis and contact with the MNRF, eleven (11) endangered or threatened species had the potential to occur on the property or on adjacent lands. Following review of the aerial photography and our on-site assessment, four (4) endangered or threatened species have the potential to use features in the location of the subject property based on the habitat-based approach: Blanding's Turtle (*Emydoidea blandingii*), Eastern Hog-nosed Snake (*Heterodon platirhinos*), Little Brown Myotis (*Myotis lucifugus*) and Northern Long-eared Myotis (*Myotis septentrionalis*). Features with the highest potential to provide habitat for species at risk on the subject property were associated with the wetland, watercourses, and forest communities (**Figure 2**). See **Appendix 2** for a detailed technical description of RiverStone's assessment to review the boundary of these habitat features and potential habitat for each SAR species.

Although no SAR species were directly observed during the site investigation, the potential habitat was documented on the subject property. In the absence of targeted studies for each species at the appropriate time of year, it is not possible to conclusively determine whether the habitat features are absolutely used by any of the potential SAR that we determined may occur on the property. Therefore,

these habitats are being treated as if the species are present, with mitigation measures implemented to ensure no impacts to the habitat of endangered or threatened species occurs according to the applicable legislation and policy.

Blanding's Turtle

Habitat for Blanding's Turtles in Ontario is characterized by three categories to direct appropriate habitat protection. These categories are outlined in **Table 4**. Potential Blanding's Turtle habitat was observed on the subject property and is outlined in **Appendix 2**. The wetland habitat present on the subject property would be suitable as a movement corridor and foraging area between adjacent wetland areas. The subject property habitat could also provide suitable water depths for overwintering or suitable nesting locations. While species were not documented during site investigations, they should not be ruled out as utilizing the subject property. The wetland habitats on the subject property are best described as Category 2.

Table 4: Habitat categorization for Blanding's Turtle

Category 1	Nest and the area within 30 m or Overwintering sites and the area within 30 m
Category 2	The wetland complex (i.e. all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies
Category 3	Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence

4.7 Significant Wildlife Habitat

The results of RiverStone's desktop, habitat-based, and targeted assessments of potential features and communities that could function as significant wildlife habitat (SWH) per provincial policies is provided in **Appendix 3**. Four (4) communities or features with the potential to be identified as SWH were identified. Based on the initial steps of our desktop analysis, seven (7) special concern species had the potential to occur on the subject property. Following review of the aerial photographs and onsite assessment, four (4) special concern species had the potential to use features found on the subject property.

The following SWH features or communities have the potential to be impacted by the proposed development. An impact assessment is provided for each SWH feature in **Section 5.3.**

- Seasonal Concentration Areas of Animals
    - Bat Maternal Colonies
    - Turtle Wintering Areas
- Specialized Habitats for Wildlife
    - Amphibian Breeding Habitat (Woodlands)
    - Amphibian Breeding Habitat (Wetlands)
- Habitat of Species of Conservation Concern
    - Special Concern and Rare Wildlife Species

- Snapping Turtle (*Chelydra serpentina*)
- Eastern Wood-pewee (*Contopus virens*)
- Wood Thrush (*Hylocichla mustelina*)
- Monarch (*Danaus plexippus*)

- Animal Movement Corridors
  - Amphibian Movement Corridors

5 IMPACT ASSESSMENT AND RECOMMENDATIONS

Based on the results of the assessment conducted, features and functions of conservation interest have been identified. **Figure 3** illustrates the features and functions of conservation interest and any protective measures (those recommended by RiverStone).

The proposed development plan for the subject property includes severance for twenty (20) new lots, including fifteen (15) shoreline residential lots and five (5) backlots, with a right-of-way to access each of the lots. These proposed lots are outlined on **Figure 3** and **Appendix 4**. The proposed lot frontages and area dimensions meet the current standards required under the zoning to permit the creation of the lots. As previously noted, the smaller separate parcel along the northern shoreline of Bray Lake was included in a separate application.

RiverStone has reviewed the existing zoning and our impact assessment takes into consideration the activities that are permissible within the context of the proposed development. Our determination of whether the risk of potential impacts on a specific feature is acceptable relies upon the relevant policies and legislation referenced in **Section 2.3.4.1**, as well as our assessment of the significance or quality of the particular feature.

5.1 Water Quality and Fish Habitat

As part of the impact analysis, potential impacts on the wetlands and watercourses, as well as steep slopes and fish habitat, were assessed. In general, negative impacts on water quality and fish habitat can result via the following processes:

- stormwater runoff during construction activities
- modification of drainage patterns or flow rates
- inappropriately located sewage treatment systems that increase nutrient (phosphorous) loading to water bodies
- increased runoff due to an increase in the extent of hard surfaces (e.g., rooftops, driveways, patios)
- construction of in-water structures (e.g., culverts, docks)
- changes to in-water structural features (e.g., substrates, woody debris, aquatic vegetation)
- changes to onshore structural features (e.g., removal of vegetation or soil, importation of aggregates)

Although the land use changes that are proposed have the potential to have negative impacts the wetland community, it is RiverStone's opinion that the mitigation measures recommended below can reduce the risk of negative impacts to an acceptable level. Several of the mitigation measures relate to establishing vegetated buffers or setbacks. Within vegetated buffers, trees, shrubs, ground cover, and associated leaves and twigs slow rainfall and surface-water flows to water bodies and thus allow additional time for water to soak into the ground. This facilitates nutrient uptake and provides less opportunity for erosion by stabilizing soils. The retention of vegetation allows for a continual source of

woody debris and leaves, while increasing the uptake of phosphorus from overland run off prior to it entering the wetland.

The subject property includes rugged terrain with varying topography. There are areas of the property that include steep slopes. In areas with moderate to steep slopes, the functionality of vegetated buffers is reduced as the slopes act to increase the speed of water moving over the land. To increase the functionality of vegetated buffers adjacent to the shoreline of Bray Lake and wetland communities on the subject property, development should be located in areas of moderate or low slopes and with an increased setback. To this end, RiverStone recommends:

- **Development of the primary dwelling for the each of the proposed lots be setback a minimum of 23 m and 30 m for the septic systems from the shoreline of Bray Lake (Figure 3).**
- **Development of the primary dwellings and septic systems for each of the proposed lots be setback a minimum of 30 m from identified wetlands and watercourses (Figure 3).**
- **No additional vegetation clearing outside of the identified development envelopes is to occur within 30 m of the shoreline of Bray Lake.**

To ensure that water quality is not negatively impacted by stormwater runoff during construction activities (e.g., land clearing and grubbing, dwelling and septic system construction, driveway construction), RiverStone recommends the following measures in addition to those already imposed through the lakeshore capacity review above:

- **When the native soil is exposed, sediment and erosion control works, in the form of heavy-duty sediment fencing, be positioned along the downgradient edge of any construction envelopes adjacent to water bodies, wetlands, or watercourses.**
- **Temporary storage locations of aggregate material be located no less than 30 m from the shoreline of Bray Lake in areas of low slopes. This material is to be contained by heavy-duty sediment fencing.**
- **The sediment fencing must be constructed of heavy material and solid posts to ensure its integrity and be properly installed (trenched in) to maintain its integrity during inclement weather events.**
- **Additional sediment fencing and appropriate control measures (e.g., straw bales) be stockpiled on site so that any breach can be immediately repaired through construction of check dams.**
- **Regular inspection and monitoring will be necessary to ensure that the structural integrity and continued functioning of the sediment control measures is maintained (i.e., proper installation is not the only action necessary to satisfy the mitigation requirements).**
- **Inspections of sediment and erosion control measures be completed within 24 hours of the onset of a storm event.**
- **Sediment control measures be maintained in good working order until vegetation has been established on the exposed soils.**

- **Offloading of construction materials and aggregate should be completed during fair weather.**

To ensure that the wetland communities and their protective buffers are not negatively impacted by increased nutrient loading and run off, RiverStone recommends the following measures:

- **Vegetation is not to be removed within 30 m of the wetlands unless it is a safety hazard, and debris from clearing or materials to be used in construction are not to be placed within this area.**

- **Because stormwater runoff can impact the thermal regime of watercourses, where stormwater management is applied, Low Impact Development (LID) techniques should be implemented, that promote infiltration and use of vegetated swales to take-up overland runoff, before entering watercourses.**

5.2 Endangered and Threatened Species

Appendix 2 presents our assessment of potential impacts to endangered and threatened species while **Figure 3** graphically outlines the features and functions of conservation interest and recommendation detailed below. RiverStone field assessments have identified the habitat of four (4) species at risk with confirmed or potential habitat on the subject property: Blanding's Turtle, Eastern Hog-nosed Snake, Little Brown Bat, and Northern Long-eared Bat (hereafter "endangered bats"). RiverStone recommends the following measures:

Blanding's Turtle

Based on the observations made during RiverStone's onsite assessments, wetland and watercourse features on the subject property would be most appropriately categorized as Category 2 habitat for Blanding's Turtle, including the immediate 30 m adjacent to the wetland habitats. The recommendations made above to protect wetland and watercourse features, including a 30 m development setback and buffer, are suitable to also protect Category 2 habitat for Blanding's Turtles.

Eastern Hog-nosed Snake

The Eastern Hog-nosed Snake specializes in hunting and eating toads, and usually only occur where toads can be found. They prefer sandy, well-drained habitats such as beaches and dry forests where they can lay their eggs and hibernate. Eastern Hog-nosed Snakes are a highly mobile species and somewhat generalist with respect to habitat preferences. They use large areas to carry out life processes such as foraging, thermoregulation, mating and dispersal. Because of their mobility, they have large activity ranges and long average distances moved daily. These habitat areas can include a mosaic of open natural areas such as woods, brushland and meadow; forest and forest edge; rock barrens; and sandy areas. The most significant threats to Eastern Hog-nosed Snake are habitat loss, fragmentation and road mortality.

Eastern Hog-nosed Snakes were not documented on the subject property during field investigations; however, due to the cryptic nature of this species, it is possible they are present but were not located. Based on the observations made during RiverStone's on-site assessments, features on the subject property are suitable to function as general habitat for Eastern Hog-nosed Snakes. In order to prevent impacts upon the habitat of Eastern Hog-nosed Snakes, and other snakes, that may be utilizing the subject property, RiverStone recommends the following:

- **Aggregate storage, particularly sand, is a suitable nesting substrate for Hog-nosed snakes. Should sand be stored on the property between June 1 and August 31, the stockpile should be surrounded by exclusion fencing to prevent access.**

This has been accomplished through the design of road access to the lots presented in the development plan (**Appendix 4**). All efforts have been made to shorten road length and minimize the expectation of potential road mortality.

Endangered Bats

Potential roosting habitat for two (2) endangered bats, Little Brown Bat and Northern Long-eared Bat is located across the subject property in the forested vegetation communities.

Habitat for bats is prevalent throughout Central Ontario. As a predominantly forested area, habitat for maternal roosting bats is not limited across the landscape. The primary reason for these species of bats being listed under the *ESA* is the prevalence of White-nose Syndrome, which is a fungus that infects bats as they hibernate over winter. This fungus grows on their muzzle, ears and wing-membranes, continually waking them from hibernation and causing dehydration, resulting in mortality.

In order to prevent impacts to the habitat of at-risk bats that may be utilizing the subject property, RiverStone recommends the following;

- **Tree clearing for the purposes of development on each proposed lot only occur in the fall, winter and early spring (from October 15 to April 15). This timeframe is outside of the maternal roosting period.**

- **In the event that tree clearing must occur between April 15 and October 15, additional studies will need to be completed to confirm the presence or absence of SAR bats. These studies will include snag tree surveys and acoustic monitoring of the area where trees will be removed, by a qualified professional. Should SAR bats be detected, the MECP should be contacted to determine if a permit would be required to proceed.**

5.3 Significant Wildlife Habitat

As mentioned in **Section 3.7** of this report, the subject property contains a number of features that have the potential to meet the definitions of Significant Wildlife Habitat according to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (OMNRF 2015a). The following impact assessment considers direction provided by MNRF in their Significant Wildlife Habitat Mitigation Support Tool (OMNRF 2014). **Appendix 3** presents our assessment of potential impacts on significant wildlife habitat and **Figure 3** outlines the features and functions of conservation interest and recommendations.

5.3.1 Seasonal Concentration Areas for Wildlife Species

5.3.1.1 Bat Maternal Colonies

During the summer season, pregnant and lactating female bats will move from roost to roost each morning in responses to changes in thermal conditions and prey (insect) availability. Areas containing a high density of snags increases the chances of use by endangered bats as these areas provide a variety

of microhabitat conditions. Changes within the forest community adjacent to maternal roosts have the potential to reduce the suitability of a given snag or cavity tree by changing the extent of shading by adjacent trees, which can result in changes to thermal conditions within the roost. Additionally, as roosting trees inherently exhibit some level of decay, removal of trees surrounding roosts may increase the potential for wind-throw of both the roost itself and surrounding trees, thereby damaging or destroying the habitat feature.

As mentioned above, habitat for bats is prevalent throughout much of the landscape surrounding the subject property. Where portions of the municipality are predominantly forested, habitat for maternal roosting bats is not limited. The recommendations provided to address potential impacts to endangered bats is sufficient to ensure that there are no impacts to the ecological form and function of the subject property as it pertains to bat maternal colonies.

5.3.1.2 Turtle Wintering Areas

Turtles overwinter in ponds, streams, and lakes. Ideal overwintering habitats provide low temperatures and high dissolved oxygen conditions but must not freeze to the bottom. Some species of turtles, (e.g., Snapping Turtles) are able to overwinter in areas with limited dissolved oxygen. Based on the results of the background and onsite assessment, the watercourses and marsh communities (G142N) located on the subject property have the potential to provide overwintering habitat for turtles. To minimize the potential for negative impacts to these ecological features and their ability to function as turtle wintering areas the recommendation to provide a 30 m development setback from all wetland communities (**Figure 3**) will provide the appropriate protection.

5.3.2 Specialized Habitats for Wildlife

5.3.2.1 Amphibian Breeding Habitat (Woodland)

In Ontario, many species of amphibians breed in permanent, seasonal, or ephemeral pools within forest communities. Breeding typically occurs early in the spring as the hydroperiod of many of these ecological features does not extend into the warmer months. Swamp communities with the potential to contain standing pools of water early in the spring were identified, in addition to forested wetlands and open water meadow marsh communities. These communities have the potential to function as breeding habitat for amphibians. Maintaining the ecological function of these areas requires that the overland surface runoff be maintained, and that the extent of surrounding vegetation be maintained to minimize the potential to alterations to the hydroperiod. The previous recommendation to implement a 30 m development setback from treed swamp communities (**Figure 3**) will provide the appropriate protection for woodland breeding amphibians.

5.3.2.2 Amphibian Breeding Habitat (Wetland)

Wetland communities are commonly associated with amphibians. Choruses of calling amphibians are commonly encountered in wetland communities during spring and summer months during the evening in Ontario. On the subject property, several marsh communities are present. While these areas appear to have direct connection to a watercourse and the adjacent lake, suggesting the presence of predatory fish species, the marshes have a high likelihood of functioning as breeding habitat for amphibians. To minimize the potential for negative impacts to these ecological features and their function as amphibian breeding habitat, the previous recommendation to require a 30 m development setback from all wetland communities (**Figure 3**) will provide the appropriate protection.

5.3.3 Habitat for Species of Conservation Concern (excluding Endangered or Threatened Species)

5.3.3.1 Special Concern and Rare Wildlife Species

There are seven (7) species that have the potential to be present or use vegetation communities on the subject property or within adjacent lands based on existing records and range mapping. This list of species was refined to four (4) species that had the potential to be present on the subject property. These remaining species were anticipated to be found within the wetland/watercourses [Snapping Turtle (*Chelydra serpentine*)], forested habitat [Eastern Wood Pewee (*Contopus virens*) and Wood Thrush (*Hylocichla mustelina*)], and edge/anthropogenic habitats [Monarch (*Danaus plexippus*) which are present on the subject property.

Snapping Turtle

Snapping Turtles make use of wetland and shoreline habitats. Snapping Turtles spend most of their lives in the water. They prefer to hide under the soft mud and leaf litter with only their noses exposed to the surface to breathe. During nesting season, females will travel overland in search of suitable sandy/gravelly areas along streams or wetlands. They often take advantage of man-made structures for nest sites, including roads and aggregate pits. Potential habitat for this species is largely restricted to the shoreline of Bray Lake and the inland wetland communities as mapped on **Figure 2**. In-water basking structure is present on the subject property, but due to the steep slopes in some areas of the subject property and the extent of vegetative cover, potential nesting habitat may be limited. To maintain the existing habitat, the previous recommendations to maintain a 30 m development setback from wetlands and 15 m setback from the shoreline of Bray Lake will maintain habitat for snapping turtles.

Wood Thrush and Wood Pewee

Wood Thrush and Eastern Wood-pewee are both small forest birds that are found in intermediate to mature aged forests; both species prefer deciduous forests but can be found in mixed stands as well. Wood Thrush nest in saplings, trees, or shrubs, often selecting American Beech or Sugar Maple as a preferred nesting site. Eastern Wood-pewee's select nesting sites in the mid-canopy layer and prefers forests with little to no understory vegetation. These two species at most sensitive to disturbance during the nesting season when alteration of vegetation communities can result in damage or destruction of nests and young. To minimize the likelihood that these two species are impacted by the proposed development, RiverStone recommends:

- **Vegetation removal should be restricted during the migratory bird nesting season, May 1st to Aug 15th each year. This timeframe falls entirely within the restricted timing window for removal of trees as it relates to roosting bats and noted above. In the event that tree clearing must occur between May 1st and Aug 15th, a qualified professional should complete a nest survey for the area where tree clearing is proposed. If nesting birds are found, tree clearing should wait until the birds have fledged.**

This timing restriction also provides protection of birds under the *Migratory Bird Convention Act, 1994* or provincial *Fish and Wildlife Conservation Act, 1997*.

Monarch

As caterpillars, Monarch's feed exclusively on Milkweed (*Asclepias* spp.). Given this species reliance on a host plant, breeding habitat for Monarch is limited to areas where Milkweed is present. As adult butterflies, Monarchs seek out wildflowers such as Goldenrods (*Solidago* spp.), Asters (*Doellingeria* spp., *Eurybia* spp., *Oclemena* spp., *Symphyotrichum* spp., and *Virgulus* spp.); non-native species such as Purple Loosestrife (*Lythrum salicaria*) also provide a food source for adults.

The proposed development plan requires the removal of vegetation from the forest community on the subject property. Based on the development plan, full removal of breeding and foraging habitat for Monarch is not anticipated as the suitable habitat was restricted to the driveway/roadway and in an open area where the existing development is located. Potential food sources and breeding habitat is found along the margins of the forest community and boundaries of the site; these areas are proposed to be left in a natural state. Given the location and extent of the development proposed, there is a low likelihood that negative impacts will occur to the site's ecological form and function as habitat for Monarch. Also, the primary reason for the consideration of Monarch as a species of special concern relate to the aggressive loss of critical habitat during their life cycle in Mexico.

5.3.4 Animal Movement Corridors

5.3.4.1 Amphibian Movement Corridors

The subject is bound by a single roadway and Bray Lake. Generally, roads are a known source of mortality for amphibians. Avoiding placement of development between features that amphibians utilize for the various elements of their life history requirements will limit the potential for negative impacts while increasing the likelihood that existing movement corridors will be maintained. The proposed development is primarily located along the shoreline of Bray Lake and will be accessed by two private driveways (one which is existing) that will avoid the identified wetland communities. Most of the subject property will be left in its current condition, thereby maintaining ability of amphibians to move between seasonal habitats. Based on the development as proposed, there is a low likelihood that it will result in negative impacts to features with the potential to function as amphibian movement corridors on the subject property.

5.4 Other Natural Features and Functions

The proposed land use changes will result in the felling of both deciduous and coniferous trees, and vegetation will be removed or substantially modified within the development footprints for each proposed lot. Outside of the significant features and functions noted above, migratory birds in general have protection under the *Migratory Birds Convention Act* (the *"MBCA"*). To be compliant with this Federal legislation, RiverStone recommends:

- **Vegetation removal (e.g., tree/shrub clearing, etc.) should be completed outside of the primary breeding bird nesting window (i.e., between April 1 and August 31). If vegetation removal occurs during this period, a nest survey should be conducted by a qualified biologist within 5 days of commencement of construction activities to identify and locate active nests of bird species (where present) covered by the federal *Migratory Bird Convention Act, 1994* or provincial *Fish and Wildlife Conservation Act, 1997*. If a nest is located or evidence of breeding noted, a mitigation plan should be developed to avoid any potential impacts on birds or their active nests. Mitigation may require establishing appropriate buffers around active nests or delaying construction activities until the conclusion of the nesting season.**

6 CONFORMANCE WITH APPLICABLE ENVIRONMENTAL POLICIES

6.1 Federal Fisheries Act (R.S.C., 1985, amended 2019-08-28)

The *Federal Fisheries Act* states that:

34.4 (1) No person shall carry on any work, undertaking or activity, other than fishing, that results in the death of fish.

35. (1) No person shall carry on any work, undertaking or activity that results in harmful alteration, disruption or destruction of fish habitat.

DFO further states that "under subsection 35(1) a person may carry on such works, undertakings or activities without contravening this prohibition, provided that they are carried on under the authority of one of the exceptions listed in subsection 35(2), and in accordance with the requirements of the appropriate exception. In most cases, this exception would be Ministerial authorizations granted to proponents in accordance with the *Authorizations Concerning Fish and Fish Habitat Protection Regulations."*

The recommendations included in this report will keep development and site alteration away from all fish habitat identified on the subject property. As such, it is the opinion of RiverStone that activities proposed on the property will not contravene the *Fisheries Act*, and that an Authorization under the Section 35(2) is not likely required. Should however, during the course of this project, situations arise and lead to occurrences that result in a HADD, persons responsible for the project have a "duty to notify" DFO, take corrective actions, and provide written reports under Section 38 of the *Act.*

6.2 Provincial *Endangered Species Act, 2007* (ESA)

The *Endangered Species Act* (ESA) protects designated endangered and threatened species in Ontario from being killed, harmed, or harassed (s. 9) or having their habitat damaged or destroyed (s. 10). The protection afforded to Endangered and Threatened species "habitat" is defined as follows (s. 2[1])

> *(a) with respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or*
>
> *(b) with respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding,*
>
> *and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences; ("habitat").*

A detailed assessment of potential endangered and threatened species and their habitat on the subject property is provided in **Section 5.2** and **Appendix 2**. Provided that RiverStone's recommended measures outlined in **Section 5** are implemented in full, the proposed development is anticipated to be consistent with the ESA.

6.3 Provincial Policy Statement, 2020 (PPS)

The significant natural features documented on the subject property include, potential habitat for endangered and threatened species, significant wildlife habitat, and wetlands/watercourses with the

potential to function as fish habitat. Based on these identified features the following provisions from Section 2.1 of the 2020 PPS are relevant to this assessment:

> **2.1.5** *Development* and *site alteration* shall not be permitted in:
> *d) significant wildlife habitat;*
> ...unless it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.

Based on the results of RiverStone's background review and assessment of the subject property and contingent on the implementation of the recommendations outlined in **Section 4** of this report, the development as proposed is consistent with policy 2.1.5 of the PPS.

> **2.1.6** *Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.

As per **Section 5.1** fish habitat was identified along the shoreline of the subject property fronting onto Bray Lake and within the wetlands and watercourses present on the property. Adherence to the recommendations outlined in **Section 4** of this report will ensure there are no negative impacts to fish habitat.

> **2.1.7** *Development* and *site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements.*

Excluding development and site alteration from the areas shown on **Figure 3** and implementing the mitigation measures outlined in **Section 5** will ensure that these activities do not occur in areas that could be considered habitat of endangered or threatened species which is consistent with policy 2.1.7.

> **2.1.8** *Development* and *site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or on their *ecological functions*.

The extent of the area evaluated for negative impacts on potentially significant natural heritage features as described in **Appendix 2** and in **Section 5** are more than sufficient to ensure that impacts on adjacent lands were appropriately assessed. Careful evaluation of the ecological function of the lands potentially affected by the permissible development and site alteration on the subject property indicates that the activities will be consistent with policy 2.1.8, as long as the recommended mitigation measures are followed.

6.4 Township of Machar Official Plan (October 8, 2013)

The preceding sections discuss how the proposed land use change would comply with federal and provincial legislation and policy, as well as the policies of the District Municipality of Muskoka. Many of the policies addressed are similar to those set out in the Township's Official Plan. Specifically, issues pertaining to the protection of endangered and threatened species habitat as per the requirements and recommendations of the Official Plan have been addressed.

Section C1.2 of the Township of Machar OP addresses environmental features that are not included in the natural heritage protection designation.

Section C1.2.1 outlines that it is the intent of the plan to protect all lakes, rivers, and streams from incompatible development to minimize the impacts of such development on their function. The subject property includes approximately 2438 m (8000 feet) of shoreline on Bray Lake, in addition to wetland communities and several watercourses. **Figure 3** outlines these natural features and RiverStone has provided recommendations for locating development outside of these constraints and their recommended buffers to protect the natural feature and its function.

Section C1.2.2 outlines measures for protecting fish habitat and states that "new development may be permitted within fish habitat if it can be demonstrated through an EIS that such development will have no negative impact on the feature". Presently, the shoreline of the subject property is listed as "unknown" fish habitat. As part of this EIS, RiverStone completed a fish habitat assessment for the entire shoreline of the subject property to determine areas that are classified as both Type 1 and Type 2 fish habitat according to MNRF guidelines. **Figure 2** outlines each of these areas and **Figure 3** illustrates the additional recommendations that are outlined in **Section 4** of this report to protect fish and fish habitat on the subject property.

Section C1.2.4 outlines that "new development and site alteration may be permitted within or adjacent to areas of significant wildlife habitat or the adjacent lands only where it can be demonstrated through an EIS that such development or site alteration will have no negative impact on the feature or the ecological function". As illustrated in **Section 3.7** of this report, SWH has been identified on the subject property (**Appendix 3** provides an assessment of SWH); however, recommendations outlined in **Section 4** will ensure that both candidate and confirmed SWH will be protected.

6.5 Township of Machar Zoning By-law No. 45-12

The subject property is currently zoned Shoreline Residential (SR), Rural (RU), and Environmental Protection (EP) in the Township of Machar Zoning By-law. Section 4.2 of the Zoning By-law addresses regulations for permitted uses within the Shoreline Residential Zone. Minimum lot requirements within the SR zone are that lots be a minimum of 1.0 ha in area with a minimum of 60 m of water frontage. The proposed lots to be located along the shoreline are consistent with the requirements of the SR zone. Section 4.8 of the Zoning By-law addresses regulations for permitted uses within the Rural Zone. Minimum lot area is required to be 10 ha with a minimum lot frontage of 135 m. Proposed lots 1, 2, and 3 are consistent with the requirements of the RU zone.

Environmental Protection (EP) zoning restrictions are outlined in Section 4.16. This section states that "no person shall within any Environmental Protection Zone use any land, or erect, alter or use any building or structure". The recommendations outlined in **Section 4** of this report will ensure that the proposed severance for the subject property will be consistent with these requirements.

7 CONCLUSIONS

Based upon the findings presented in this report and contingent upon the implementation of the recommendations made herein, we conclude that the proposed development application will not negatively impact any features of conservation interest protected under relevant municipal, provincial, or federal environmental policies as outlined. Given this, and providing that our recommended measures to minimize the potential for impact are implemented, RiverStone is of the opinion that the proposed development is compliant with the relevant environmental legislation and policies. We

advise that the recommendations in this report be incorporated into any development or building permits for the subject property.

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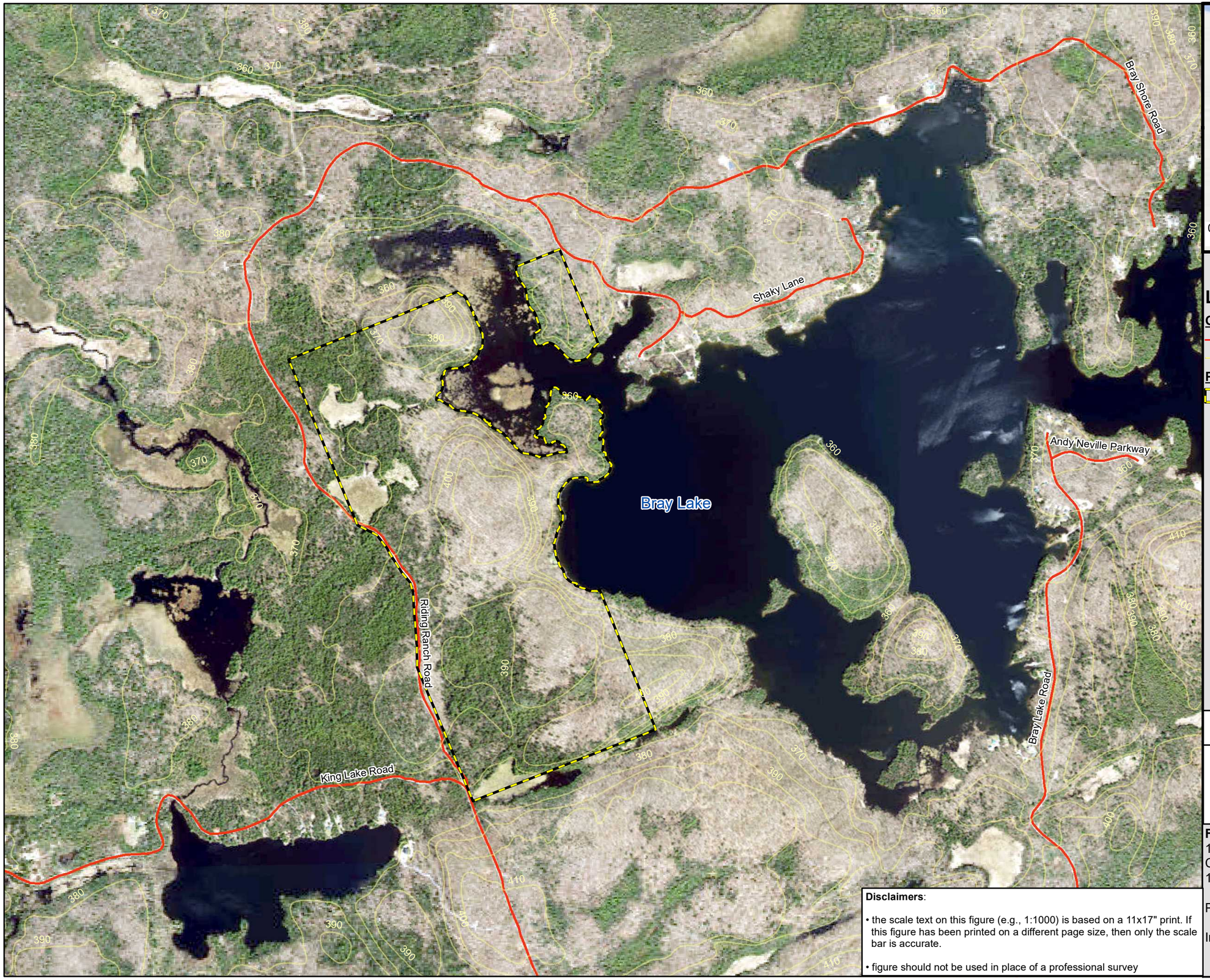


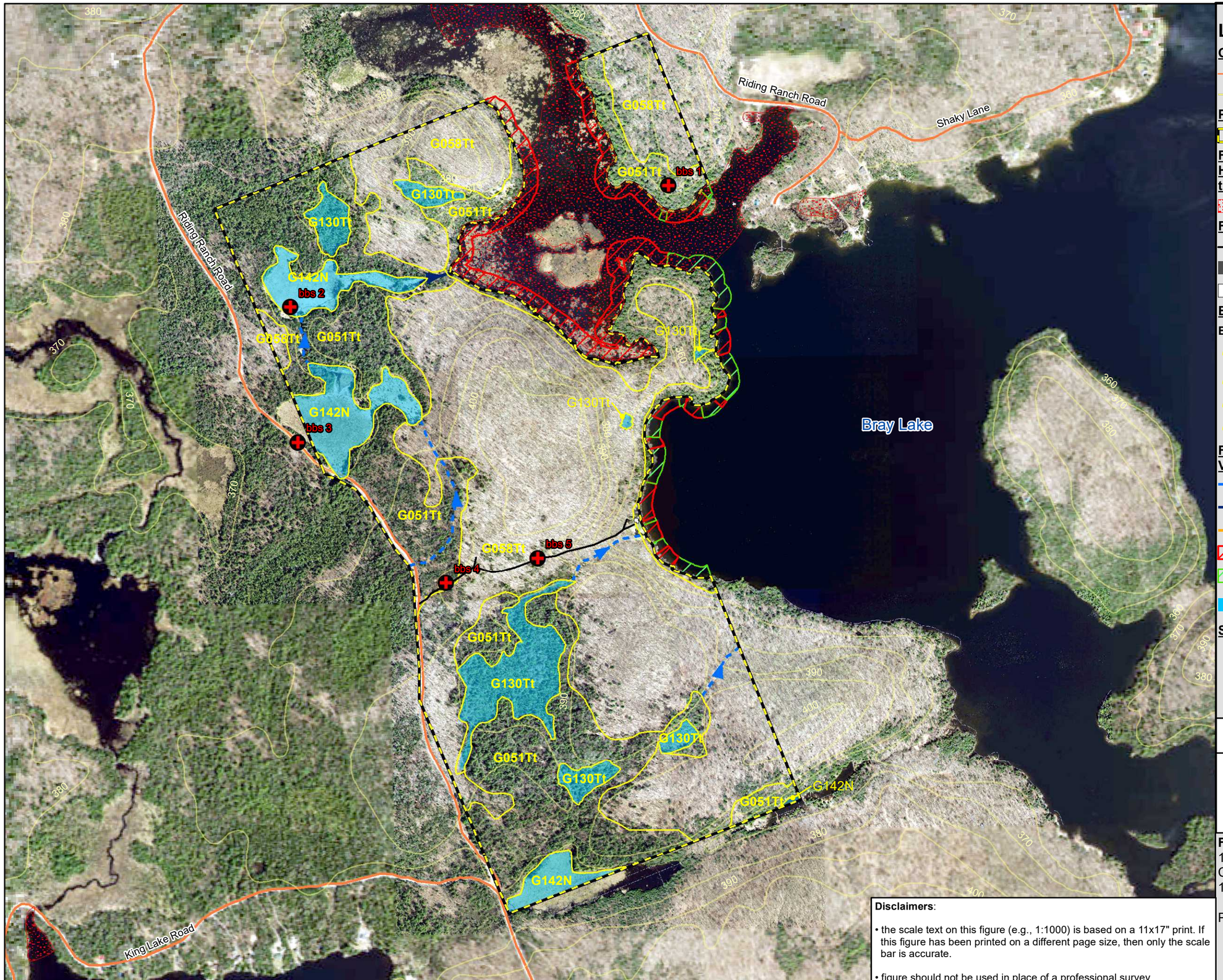
Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey

Figure 1. Location Of Subject Property.
1791 Riding Ranch Road .Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound

Prepared for: Frank Polsinelli and Nghi Nguyen

Inset: General Location Of Subject Property



Legend

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Ontario Base Mapping (OBM)

- Roads
- 5 m Contours

Planning Boundaries

- Subject Property

Features with Recognized High Natural Heritage Value - Identified by the Province or the Relevant Approval Authorities

- Fish Habitat (MNRF)

Features Taken from Existing Survey

- Access Road
- Accessory Building
- Cottage

Biophysical Features+Functions-RiverStone

Ecological Communities

- G051Tt: Dry to Fresh, Coarse: Hemlock-Cedar Conifer
- G058Tt: Dry to Fresh, Coarse: Maple Hardwood
- G130Tt: Intolerant Hardwood Swamp
- G142N: Mineral Meadow Marsh

Features with Recognized Natural Heritage Value - Identified by RiverStone

- Intermittent Watercourse
- Permanent Watercourse
- Shoreline
- Type 1 Fish Habitat
- Type 2 Fish Habitat
- Wetland – Species At Risk Habitat and Significant Wildlife Habitat

Survey Station

- Breeding Bird Station

Orthorectified aerial photo - spring 2018

Scale	RS Project No.	Date Last Updated	By
1:9,500	2020-053	Jan 08, 2021	JG

0 140 280 Metres

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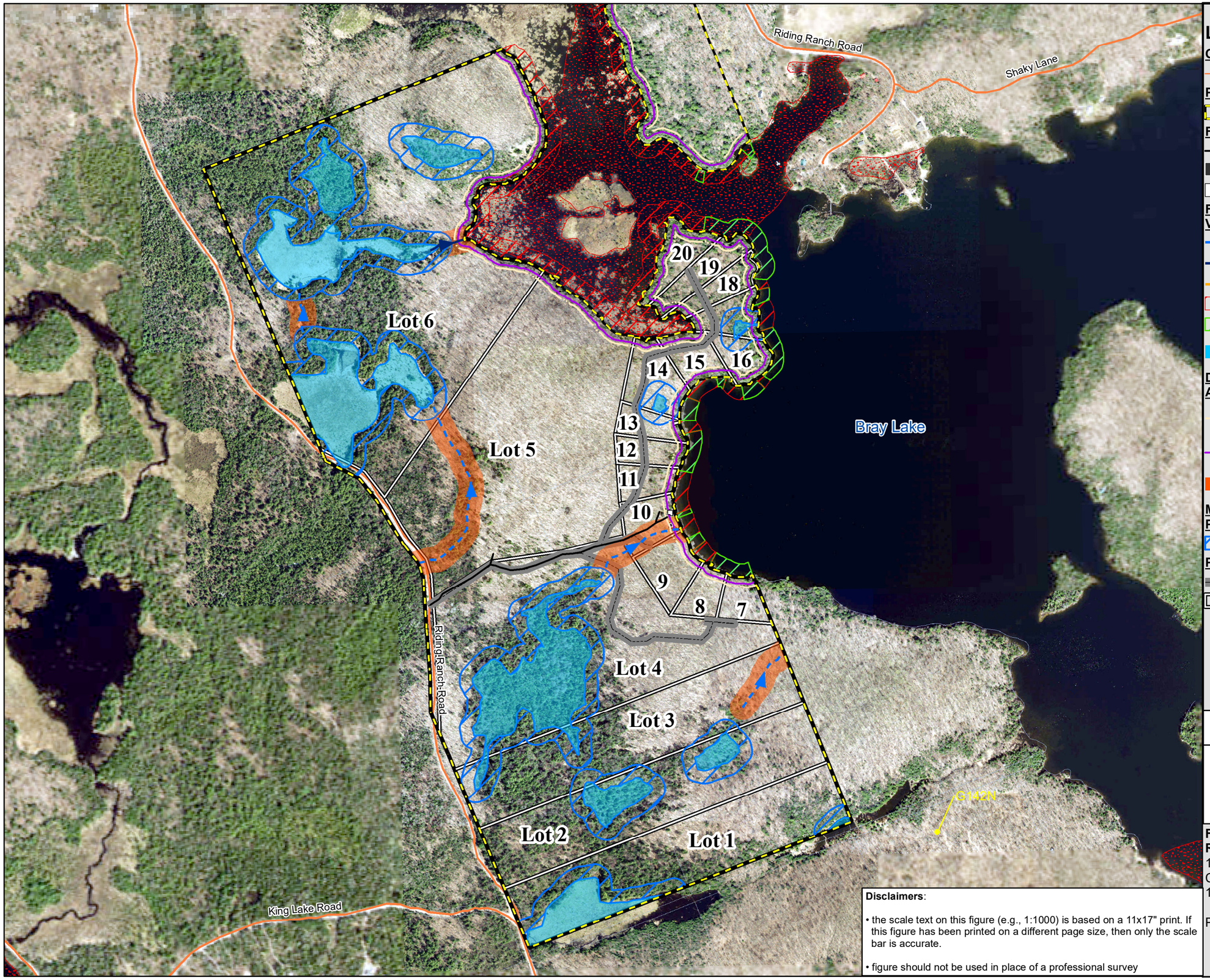
Figure 2. Existing Conditions.
1791 Riding Ranch Road .Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound

Prepared for: Frank Polsinelli and Nghi Nguyen

Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey



Legend

N

Ontario Base Mapping (OBM)

- Roads

Planning Boundaries

- Subject Property

Features Taken from Existing Survey

- Access Road
- Accessory Building
- Cottage

Features with Recognized Natural Heritage Value - Identified by RiverStone

- Intermittent Watercourse
- Permanent Watercourse
- Shoreline
- Type 1 Fish Habitat
- Type 2 Fish Habitat
- Wetland – Species At Risk Habitat and SIgnificant Wildlife Habitat

Development Setbacks Required by Relevant Approval Authorities

- 23 m Shoreline Setback (Township of Machar Zoning By-law)
- 15 m Shoreline Natural Vegetative Buffer(Township of Machar Zoning By-law)
- 30 m Watercourse Buffer (Township of Machar Zoning By-law)

Measures Recommended by RiverStone to Prevent and/or Reduce Impacts

- 30 m Wetland Setback

Proposed Development and Site Alteration

- Right-of-Way
- Lot Lines

Orthorectified aerial photo - spring 2018

Scale	RS Project No.	Date Last Updated	By
1:8,500	2020-053	Apr 27, 2023	JG

0 125 250 Metres

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Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey

Figure 3. Proposed Development And Recommendations.
1791 Riding Ranch Road .Lots 19 and 20, Concession 11, and Lots 18, 19, and 20, Concession 12, Township of Machar, District of Parry Sound

Prepared for: Frank Polsinelli and Nghi Nguyen

Appendix 1. Site Photos

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Photo 1. Existing cabin and bunkie development on subject property (June 25, 2020).

Photo 2. Existing sauna development on subject property (June 25, 2020).

Photo 3. Sugar Maple dominated forest community on subject property (June 25, 2020).

Photo 4. Sugar Maple dominated forest community on subject property (June 25, 2020).

Photo 5. Watercourse on subject property within Sugar Maple dominated forest community (June 25, 2020).

Photo 6. Watercourse on subject property within Sugar Maple dominated forest community (June 25, 2020).

Photo 7. Watercourse leading to shoreline of Bray Lake depicting rugged terrain on subject property (June 25, 2020).

Photo 8. Meadow marsh wetland community on subject property (June 25, 2020).

Photo 9. Riparian area of meadow marsh community on subject property (June 25, 2020).

Photo 10. Rock face within maple hardwood vegetation community on subject property (June 25, 2020).

Photo 11. Fish habitat characteristics fronting existing development on subject property (July 14, 2020).

Photo 12. Type 1 fish habitat characteristics fronting the subject property (July 14, 2020).

Photo 13. Sandy substrates with abundant downed woody debris along shoreline of subject property (July 14, 2020).

Photo 14. Evidence of bass nests along shoreline of subject property (July 14, 2020).

Photo 15. Type 1 fish habitat within northern bay on subject property (July 14, 2020).

Photo 16. Intolerant hardwood swamp community on subject property (August 3, 2020).

Photo 17. Intolerant hardwood swamp community on subject property (August 3, 2020).

Photo 18. Permanent watercourse on subject property flowing from wetland communities to Bray Lake (August 3, 2020).

Appendix 2. Assessment of Endangered and Threatened Species

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Habitat-based Approach

Properly assessing whether an area is likely to contain Endangered or Threatened species for the purposes of determining whether a proposed development is likely to have a negative impact is becoming more difficult as the number of listed species increases. Approaches that depend solely on documenting the presence of individuals of a species in an area almost always underrepresent the biodiversity actually present because of the difficulty of observing species that are usually rare and well camouflaged. Given these difficulties, and the importance of protecting habitats of Endangered and Threatened species, RiverStone's primary approach to site assessment is habitat-based. This means that our field investigations focus on *evaluating the potential for features within an area of interest to function as habitat for species considered potentially present, rather than searching for live specimens*. An area is considered potential habitat if it satisfies a number of criteria, usually specific to a species, but occasionally characteristic of a broader group (e.g., several turtles use sandy shorelines for nesting, multiple bat species use dead or dying trees for roosting habitat). Physical attributes of a site that can be used as indicators of its potential to function as habitat for a species include structural characteristics (e.g., physical dimensions of rock fragments or trees, water depth), ecological community (e.g., meadow marsh, rock barren), and structural connectivity to other habitat features required by the species. Species-specific habitat preferences and/or affinities are determined from status reports produced by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Cadman et al. (2007), published and unpublished documents, and direct experience.

Table 1 provides RiverStone's desktop screening and on-site assessment for Endangered and Threatened species. RiverStone measures species- and feature-specific distances from the boundaries of proposed lots or development area(s)—rather than from the boundary of the significant natural heritage feature—and refers to this area as *adjoining lands* (AL). Evaluating the likelihood of species' presence and the potential for negative impacts using this approach ensures that the Adjacent Lands test of the PPS will be met.

For the purposes of RiverStone's assessment, the *subject property* as shown in **Figure 1** is referred to as the Area of Interest (AOI) and the adjoining lands (AL) extents were measured from the boundaries of the AOI.

Common Name[1]	Scientific Name	Step 1 (Desktop): Rationale for considering	Step 2 (Desktop): Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from aerial photography and other information sources indicate that potential habitat or communities might be present? Area of Interest (AOI)	Step 2 (Desktop): Adjoining Lands (AL)	Step 3 (On Site): Potential and/or confirmed habitat documented during on-site assessment Area of Interest (AOI)	Step 3 (On Site): Adjoining Lands (AL)	Step 4: Is there potential for the species, its habitat, or ecological community to be negatively impacted by the activities that would be permissible within the AOI?
Endangered & Threatened (Provincially): status from Species at Risk in Ontario List (O Reg 230/08); updated August 2018							
Blanding's Turtle	*Emydoidea blandingii*	SAR by Geo-Township Tool (MNR)	YES, suitable wetland and/or aquatic communities are present.	YES, suitable wetland and/or aquatic communities are present.	YES, suitable wetland and/or aquatic communities are present.	YES, suitable wetland and/or aquatic communities are present.	YES.
Eastern Hog-nosed Snake	*Heterodon platirhinos*	SAR by Geo-Township Tool (MNR)	YES, a mosaic of open-canopy communities and mixed forest are present.	YES, a mosaic of open-canopy communities and mixed forest are present.	YES, a mosaic of open-canopy communities and mixed forest are present.	YES, a mosaic of open-canopy communities and mixed forest are present.	YES.
Eastern Whip-poor-will	*Caprimulgus vociferus*	SAR by Geo-Township Tool (MNR)	NO, majority of property is forested with openings in canopy limited to the wetland communities.	NO, majority of property is forested with openings in canopy limited to the wetland communities.	NO, majority of property is forested with openings in canopy limited to the wetland communities.	NO, majority of property is forested with openings in canopy limited to the wetland communities.	NO, see steps 2 and 3.
Bobolink	*Dolichonyx oryzivorus*	SAR by Geo-Township Tool (MNR)	NO, suitable grassland or agricultural communities are absent.	NO, suitable grassland or agricultural communities are absent.	NO, suitable grassland or agricultural communities are absent.	NO, suitable grassland or agricultural communities are absent.	NO, see steps 2 and 3.
Chimney Swift	*Chaetura pelagica*	SAR by Geo-Township Tool (MNR)	YES, dark sheltered hollow vertical structures (large trees with cavities and rock crevices) suitable for nesting or roosting may be present.	YES, dark sheltered hollow vertical structures (large trees with cavities and rock crevices) suitable for nesting or roosting may be present.	NO, dark sheltered hollow vertical structures (chimneys, smoke stacks, silos, large trees with cavities and rock crevices) suitable for nesting or roosting are absent.	NO, dark sheltered hollow vertical structures (chimneys, smoke stacks, silos, large trees with cavities and rock crevices) suitable for nesting or roosting are absent.	NO, see step 3.
Barn Swallow	*Hirundo rustica*	SAR by Geo-Township Tool (MNR)	YES, man-made or natural structures suitable for nesting may be present.	YES, man-made or natural structures suitable for nesting may be present.	NO, man-made or natural structures suitable for nesting are absent.	NO, man-made or natural structures suitable for nesting are absent.	NO, see step 3.
Eastern Meadowlark	*Sturnella magna*	SAR by Geo-Township Tool (MNR)	NO, suitable grassland or agricultural communities are absent.	NO, suitable grassland or agricultural communities are absent.	NO, suitable grassland or agricultural communities are absent.	NO, suitable grassland or agricultural communities are absent.	NO, see steps 2 and 3.
Bank Swallow	*Riparia riparia*	SAR by Geo-Township Tool (MNR)	YES, man-made or natural structures suitable for nesting may be present.	YES, man-made or natural structures suitable for nesting may be present.	NO, man-made or natural structures suitable for nesting are absent.	NO, man-made or natural structures suitable for nesting are absent.	NO, see step 3.
Eastern Small-footed Myotis	*Myotis leibii*	SAR by Geo-Township Tool (MNR)	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	NO, potential habitat not observed; however, trees suitable for gestating or roosting may be present. Although areas of exposed rock faces were present on the subject property, they were too vegetated to provide suitable habitat.	NO, potential habitat not observed; however, trees suitable for gestating or roosting may be present.	NO, see step 3.
Little Brown Bat	*Myotis lucifugus*	SAR by Geo-Township Tool (MNR)	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting are present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting are present.	YES, development and site alteration has the potential to damage habitat.
Northern Long-eared Bat	*Myotis septentrionalis*	SAR by Geo-Township Tool (MNR)	YES, dead or partially-decayed trees with crevices beneath exfoliating/peeling bark may be present.	YES, dead or partially-decayed trees with crevices beneath exfoliating/peeling bark may be present.	YES, dead or partially-decayed trees with crevices beneath exfoliating/peeling bark are present.	YES, dead or partially-decayed trees with crevices beneath exfoliating/peeling bark are present.	YES, development and site alteration has the potential to damage habitat.

[1]Shaded rows denote species or communities for which negative impacts have been deemed possible.

Appendix 3. Assessment of Significant Wildlife Habitat

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Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Seasonal Concentration Areas of Animals			
Waterfowl Stopover and Staging Areas (Terrestrial)	Fields with sheet water during Spring (mid March to May) Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. Agricultural fields with waste grains are commonly used by waterflow, these are not considered SWH unless they have spring sheet water available.	These field/meadow ELC ecosites with appropriate soils and vegetation: G060-062, G077-079, G093-095, G109-111 Plus evidence of annual spring flooding from melt water or run-off.	NO, the assessment area and surrounding lands do not contain fields or agricultural areas.
Waterfowl Stopover and Staging Areas (Aquatic)	Ponds, marshes, lakes, bays, coastal inlest, and watercourses used during migration. Sewage treatment Ponds and storm water Ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundance food supply (mostly aquatic invertebrates and vegetation in shallow water)	ELC Ecosites: G142-G152	NO, while the assessment area does contain frontage on Bray Lake, conditions associated with the lake in the vacinity of the assessment area do not provide shelter and water depths limit the availability of aquatic invertebrates. There is a low likelihood that the assessment area is associated with aquatic waterfowl stopover and staging areas.
Shorebird Migratory Stopover Areas	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH.	ELC Ecosites: G005-G006, G160-G162, G170-G172, G176-G178, G186-G188, G204-G214	NO, while the assessment area has frontage on Bray Lake, the shoreline is well vegetated and contains moderate slopes suggesting area is unsuitable for use by shorebirds.
Raptor Winter Feeding and Roosting Areas	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering sites need to be > 20 ha with a combination of forest and upland. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands Field area of the habitat is to be wind swept with limited snow depth or accumulation.	A combination of meadow/field and forest/woodland ecosites. Need to have a forest ELC Ecosite: G011-G19, G023-G028, G033-G043, G048-G059, G064-G076, G081-G092, G097-G108, G133-G125 or Central Ontario FEC Ecosites ES11–ES35 **AND** a meadow/field ELC Ecosite: G020-022, G029-G032, G044-G047, G060-G063, G077-080, G093-096, G109-G112	NO, while the assessment area contains forest/woodland ecosites, meadow/field ecosites are not present suggesting this area does not provide winter feeding and roosing areas for raptors.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites are not SWH. The locations of bat hibernacula are relatively poorly known.	Bat Hibernacula may be found in association with components of cliffs and rock talus in these ELC Ecosites: G158-G159, G164, G180-G181 Or Central Ont. FEC: ES4, ES5 Note: buildings are not considered to be SWH	NO, while the assessmetn area contains steep slopes, tock crevices, caves, and mine shafts suitble for use as hibernation sites are absent.
Bat Maternal Colonies	Maternity colonies can be found in tree cavities, vegetation and often in buildlings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario Maternity colonies located in Mature (dominant trees > 80yrs old) deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees Female Bats prefer wildlife trees (snags) in early stages of decay, class 1-3 . Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	Maternity colonies considered SWH are found in forested Ecosites. ELC Ecosites: G016-G019, G028, G040-G043, G055-G059, G070-G076, G088-G092, G103-G108, G118-G125 or: Central Ontario Forest Ecosites: ES14, ES17, ES18, ES23, ES24, ES25, ES26, ES27, ES28, ES29, ES30	YES, the subject property contains the appropriate ELC ecosite, large undisturbed forest communities, and mature trees containing snags with a significant number of these features (i.e., > 10/ha).
Turtle Wintering Areas	-For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. -Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen -Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	For Snapping and Midland Painted turtles; ELC Ecosites: G128-G135 G140-G152 For Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	YES, wetland habitats both within the subject property and along the shoreline of the property could provide appropriate habitat for turtle wintering.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Snake Hibernaculum	-For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. -Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line -Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. -Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.	For all snakes, habitat may be found in any forested ecosite in central Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. The existence of rock piles or slopes, stone fences, and crumbling foundations assist in identifing candidate SWH. For Five-lined Skink; Central Ontario Forest Ecosites: ES14.2, ES17 – ES20, ES23 – ES30 Or; ELC Ecosites: G056-G059 G070-G076 G087-G092 G103-G108 G118-G125	NO, while the assessment area contains steep slopes, it lacks piles of loose rock and areas of rock crevices that may provide suitable hibernation habitat for snakes.
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	-Any site or areas with exposed soil banks, sandy hills, borrow pits, steep slopes, and sand piles that are undisturbed or naturally eroding that is not a licensed/permitted aggregate area. -Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. -Does not include a licensed/permitted Mineral Aggregate Operation.	Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns. Habitat found in the following ELC Ecosites: G001-G004 G007-G008 G020-G021 G029-G031 G044-G046 G060-G062 G077-G079 G093-G095 G109-G111 G173-G175 G201-G203 G210-G212	NO, while the assessment area and adjacent lands contain steep slopes, these areas are forested and do not provide opportunityies for bank and cliff nesting avian species.
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	-Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. -Most nests in trees are 11 to 15 m from ground, near the top of the tree.	ELC Ecosites: G064-G076 G081-G092 G097-G108 G113-G125 G128-G136 Central Ontario Forest Ecosites: ES11.2 ES12.2 ES13.2 ES14.2 ES15.2 ES16.2 ES17.2 ES18.2 ES19.2 ES20.2 ES21.2 ES23.2 ES24.2 ES25.2 ES26.2 ES27.2 ES28.2 ES29.2 ES30.2 ES31 ES32 ES33 ES34 ES35	NO, no large stick nests were identified during on site assessments.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Colonially - Nesting Bird Breeding Habitat (Ground)	-Nesting colonies of gulls and terns are on islands or peninsulas (natural or artificial) associated with open water, marshy areas, lake or large river (two-lined on a 1;50,000 NTS map). -Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) G001-G004 G007-G008 G020-G021 G029-G031 G044-G046 G060-G062 G077-G079 G093-G095 G109-G111 G142-G145	NO, evidence of colonial nesting was not documented in the assessment area or adjacnt lands.
Deer Yarding Areas	-Deer wintering areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. -The Core of a deer yard (Stratum I) is located within Stratum II and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. -OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual". -Woodlots with high densities of deer due to artificial feeding are not significant.	May be found in all Tall Treed forest and swamp ELC Ecosites; G12-G15 G23-G27 G33-G38 G48-G54 G64-G69 G81-G87 G97-G103 G113-G118 G128-G129 Central Ontario Forest Ecosites: ES11 ES14 ES16 ES18 ES20 ES21 ES22 ES27 ES28 ES30 ES31 ES32 ES33 ES34 Note: OMNRF to determine this habitat.	NO, deer wintering area has not been identified on the assessment area and adjacent lands by OMNRF.
Rare Vegetation Communities			
Beach / Beach Ridge / Bar / Sand Dunes	Vegetation can vary from patchy and barren to tree cover but less than 60%. Characterised by unstable sand. **Indicator Spp.** Marram Grass (*Ammophila breviligulata*), Beach Pea (*Lathyrus japonicus*)	Central Ontario FEC: ES1, ES2 ELC Ecosites: G005-G006, G166-G168, G182-G184, G213-G214	NO, communities characterized by unstable sand with less than 60% vegetation cover were not identified on the assessment area or adjacent lands.
Shallow Atlandtic Coastal Marsh	Shallow marsh occurs on shallow mineral (sand) or mineral organic (sandy peat) shoreline subject to low wave energy, on inland lakes and beaver ponds particularly those that experience fluctuating water levels from year to year (i.e. some years with exposed shorelines in summer /fall). **Indicator Spp.:** Virginia Meadowbeauty (*Rhexia virgininica*) **Other Associated Spp:** *Rhynchospora capitellata, Xyris difformis, Panicum spretum, Triadenum virginicum, Polygonum careyi* and *Juncus militaris* .	ELC Ecosites: G143-G145, G148-G152	NO, the ELC ecosite associated with this SWH was not present on the subject property.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Cliffs and Talus Slopes	Vegetation can vary from patchy and barren to tree cover but less than 60%. Cliffs and talus slopes in 5E are primarily Precambrian rock and are typically sparsely vegetated. Characteristic flora for cliffs and talus slopes include: lichen, such as Rock Tripe *Umbilicaria* spp., and ferns *Polypodium virginianum* , *Cystopteris fragilis* and *Woodsia ilvensis, Cryptogramma stelleri, Woodsia alpina* , and *Saxifraga paniculata* .	ELC Ecosites: G158-G159, G166-G168, G173, G175, G182-G184, G201-G203	NO, while there are some areas of steep cliffs, they are within a forested ecosite and are not large enough to be considered their own community.
Rock Barren	Vegetation can vary from patchy and barren to tree cover but less than 60%. Rock barrens are characterized by extensive areas of exposed granitic rock bedrock sparsely vegetated. Characteristic flora for Rock Barrens include: lichens *Cladina* spp. and mosses *Polytrichum* spp.), sparse grasslands of *Danthonia spicata* and *Deschampsia flexuosa* , low shrubs (*Juniperus communis, Vaccinium angustifolium, Comptonia peregrina* , and stunted open grown trees *Quercus alba, Quercus rubra* and *Pinus strobus* . Also, *Pteridium aquilinum, Aralia hispida, Spiranthes casei, Saxifraga virginiensis, Gaylussacia baccata, Corydalis sempervirens, Prunus pensylvanica* , and *Comandra umbellata* .	ELC Ecosites: G163-G165, G179-G181 Central Ontario Forest Ecosites: ES8	NO**,** the assessment area does not contain rock barren communities.
Sand Barren	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%. Characteristic plant species of sand barrens in 5E include: *Cladina* spp., *Carex houghtoniana, Carex merrittfernaldii, Comptonia peregrina, Rubus flagellaris, Selaginella rupestris,* and *Viola labradorica, Polygonella articulata,* and *Stipa spartea* .	ELC Ecosites: G007, G215 Central Ontario Forest Ecosite: ES10	NO, communities characterized by exposed sand were not documented in the assessment area or adjacent lands.
Alvar	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars may be complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover. 5E Alvar Plant Indicator species: *Penstemon hirsutus, Panicum philadelphicum, Scutellaria parvula, Rhus aromatica, Monarda fistulosa, Senecio pauperculus* .	Southern Ontario ELC Ecosites: ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2 Central Ontario Forest Ecosites on very shallow soils: ES13.1, ES14.1, ES16.1, ES21.1, ES9	NO, alvar communities were not documented in the assessment area or adjacent lands.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Old Growth Forest	Old Growth forests are characterized by exhibiting the greatest number of old-growth characteristics, such as mature forest with large trees that has been undisturbed. Heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Long-lived forest spp. within these Central Ontario Forest Ecosites: ES11, ES12, ES14, ES20, ES21, ES22, ES23, ES24, ES25, ES26, ES27 ES28 ES29 ES30 or ELC Ecosites: G011-G15, G017-G018, G023, G027, G033, G036, G039-G042, G048, G051, G054-G058, G064, G066, G069, G071-G075, G081, G084, G087, G089-G091, G103, G105-G107, G113, G115, G118, G120-G124.	NO, based on a review of available background documentation, old growth forest communities were not present on the assessment area. This was supported by conditions documented during on-site review (i.e., trees observered were of insufficient size).
Bog	Bogs are nutrientpoor, acid peatlands dominated by peat mosses (Sphagnum sp.), ericaceous shrubs and sedges (Cyperaceae). The water table is at or near the surface in spring and slightly lower the remainder of the year and is vitually isolated from mineral soil waters.	ELC Ecosites: G126, G137-G138	NO, communities characterised by nutrient poor peatlands with a high water table were absent from the assessment area and adjacent lands.
Tallgrass Prairie	Tallgrass Prairie is an open vegetation with less than < 25% tree cover, and dominated by prairie species, including grasses. **Indicator Spp.** *Andropogon gerardii* and *Spartina pectinata* **Characteristic Spp.** *Bromus kalmii, Ceanothus herbaceus, Lechea intermedia, Monarda fistulosa, Penstemon hirsutus, Polygala polygama, Rudbeckia hirta, Sorghastrum nutans, Viola fimbriatula* .	Southern ELC Ecosites: TPO1, TPO2 Central Ontario Ecosite: ES10	NO, communities dominated by prairie species with less than 25% tree cover were not documented in the assessment area or adjacent lands.
Savannah	A Savannah is related to tallgrass prairie, but includes trees, which vary from 25 – 60% canopy cover. The open areas between the trees are dominated by prairie species, while forest species are found beneath the tree canopy.	Southern ELC Ecosites: TPS1, TPS2, TPW1, TPW2, CUS2	NO, communities dominated by prairie species were not documented in the assessment area or adjacent lands.
Rare Forest Type - Red Spruce	Red Spruce is a valued wildlife cover tree. Historically red spruce was much more abundant then it is now within the Ecoregion 5e forests. Red spruce is a shade tolerant conifer that evolved within tolerant hardwood forests. Red spruce grows best in a cool, moist climate. It will grow in shallow, till soils (ave. of 46 cm) and may grow on sites unfavourable for other species such as organic soils over rock, steeper slopes, and wet bottomlands, although poorly drained sites will inhibit growth.	ELC Ecosites: G036, G051, G066, G084, G086, G100, G102, G116, G117 Central Ontario Forest Ecosites: ES 30.1, ES 30.2	NO, Red Spruce were not documented in the assessment area.
Rare Forest Type - White Oak	White oak is a valued wildlife mast producing tree. The mast produced by the white oak tree is often preferred over the more common red oak acorn. Forest stands containing white oak trees are uncommon in the Great Lakes St. Lawrence Forest.	ELC Ecosites: G017, G041, G057, G072, G090, G106, G121 Central Ont. FEC: ES 14.1, ES14.2	NO, White Oak were not documented in the assessment area.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Specialized Habitats for Wildlife			
Waterfowl Nesting Area	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. Wood Ducks, Bufflehead, Common Goldeneye and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites.	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: G129-G135, G142-G152 Note: includes adjacency to provincially Significant Wetlands	NO, while wetland habitats are present on the subject property, waterfowl nesting is not known to occur, and species presence was not documented during on-site breeding bird surveys.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).	Forest communities directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	NO, stick nests were not documented in the assessment area or along the shorleline of adjacent lands
Woodland Raptor Nesting Habitat	All natural or conifer plantation woodland/forest stands. Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Merlin or Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. Includes nest sites within tree cavities for Barred Owl and sometime Great Horned Owls and Merlin. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	May be found in all forested ELC Ecosites in Community Class: TR May also be found in the forested swamp ELC Ecosites: G128-G133	NO, stick nests were not documented in the assessment area. Trees with cavities suitable to function as nesting habtiat for owls were not documented.
Turtle and Lizard Nesting Areas	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Skinks will nest under logs, in stumps or under loose rock in partially wooded areas.	Turtle Nesting areas may be adjacent to these ELC Ecosites: G138, G140-149 For Five-lined Skink - Central Ontario Forest Ecosites: ES14.2, ES17–ES20, ES23–ES30 or; ELC Ecosites: G056-G059, G070-G076, G087-G092, G103-G108, G118-G125	NO, the assessment area does not contain features that are suitable to function as nesting habitat for turtles. Open areas containing sand or gravel suitable for excavation of nests are absent as well. While the property does contain numerous stumps and logs, these are located within the forest community that lacks sufficient openenings in the canopy to provide areas suitable for use by lizards for nesting.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Seeps and Springs	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species.	NO, areas of groundwater upwellings were not documented in the assessment area.
Aquatic Feeding Habitat	MNRF maps these location on Crown land and rates the site on a scale of 0 – 4, with 4 being the best. Feeding sites classed 3 or 4 are potential/candidate significant. Where Moose Aquatic Feeding Areas (MAFA) habitat is in low supply, class 2 MAFA habitat could also be considered potential/candidate significant. Wetlands and isolated embayments in rivers or lakes which provide an abundance of submerged aquatic vegetation such as pondweeds, water milfoil and yellow water lily are preferred sites. Adjacent stands of lowland conifer or mixed woods will provide cover and shade.	Habitat may be found in all forested ecosites adjacent to water.	NO, the assessment area contains frontage on Bray Lake, and Official Plan mapping shows Moose Aquatic Feeding Areas on adjacent lands. Wetland areas and isolated embayments containing submerged aquatic vegetation were documented.
Mineral Lick	This habitat component is found in upwelling groundwater and the soil around these seepage areas. It typically occurs in areas of sedimentary and volcanic bedrock. In areas of granitic bedrock, the site is usually overlain with calcareous glacial till.	Habitat may be found in all forested ecosites.	NO, groundwater upwellings nor seepage areas were not identified on the assessment area which suggests that mineral licks are absent as well.
Denning Sites and Mink, Otter, Martin, Fisher, and Eastern Wolf	Mink prefer shorelines dominated by coniferous or mixed forests with dens usually underground. Mink will sometimes use old muskrat lodges. Otters prefer undisturbed shorelines along water bodies that support productive fish populations with abundant shrubby vegetation and downed woody debris for denning. They often use old beaver lodges or log jams and crevices in rock piles. Marten and fisher share the same general habitat, requiring large tracts of coniferous or mixed forests of mature or older age classes. Denning sites are often in cavities in large trees or under large downed woody debris.	Habitat may be found in all forested ecosites.	POSSIBLE, features potentially functioning as denning sites were documented in the assessment area; however, no dens or excavated areas were documented.
Amphibian Breeding Habitat (Woodland)	Presence of a wetland or pond >500 m^2 (about 25 m diameter) within or adjacent (within 120m) to a woodland (no minimum size). The wetland, lake or pond and surrounding forest, would be the Candidate SWH. Some small wetlands may not be mapped and may be important breeding pools for amphibians. Breeding ponds within the woodland or the shortest distance from forest habitat are more significant because of reduced risk to migrating amphibians and more likely to be used. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	All forested, ELC Ecosites; The wetland breeding ponds (including vernal pools) may be permanent, seasonal, ephemeral, large or small in size and could be located within or adjacent to the woodland.	YES, wetland habitats that meet the size requirements for this SWH are present on the subject property in several locations.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Amphibian Breeding Habitat (Wetlands)	Wetlands and pools (including vernal pools) >500 m^2 (about 25 m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. Bullfrogs require permanent water bodies with abundant emergent vegetation.	ELC Ecosites: G129-G135,G142-G152 Typically these wetland ecosites will be isolated (>120 m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g., Bull Frog) may be adjacent to woodlands.	YES, wetland habitats that meet the size requirements for this SWH are present on the subject property in several locations.
Mast Producing Areas	Most important areas are mature forests >0.5 ha containing numerous large beech and red oak trees that supply the energy-rich mast that wildlife prefer. Other significant tree species include hickory, basswood, black cherry, ironwood, mountain ash, pin cherry, and butternut. Significant shrub species include blueberries, wild black berry, serviceberry, raspberry, beaked hazel, choke cherry and hawthorn. Sites providing long-term, relatively stable food supplies, forest openings or barrens >1 ha provide excellent sites for mast producing shrubs. Sites such as clear-cuts or burns are temporary source of food and are less significant.	ELC Ecosites: G015, G017, G019, G027-G028, G041-G043, G057, G059, G072, G090, G106, G108, G121, Central Ontario Forest Ecosites: ES14, ES17.1, ES23, ES24, ES25, ES26	NO, the ELC ecosite associated with this SWH was not present on the subject property.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)			
Marsh Bird Breeding Habitat	Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.	ELC Ecosites: G138-G152 For Green Heron: above Ecosites plus G129-G136.	NO, while the subject property contains wetland communities with shallow water and emergent aquatic vegetation, breeding bird surveys conducted during the appropriate timing window did not result in observations that meet the criteria for confirming SWH.
Open Country Bird Breeding Habitat	Large grassland areas (includes natural and cultural fields and meadows) >30 ha Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e., no row cropping or intensive hay or livestock pasturing in the last 5 years). Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	ELC Ecosites: G008-G009, G020-G021, G029-G031, G044-G046, G060-G062, G077-G079, G093-G095, G109-G111	NO, open grassland areas such as natural or cultivated fields are not present in the assessment area.
Shrub/Early Successional Bird Breeding Habitat	Large field areas succeeding to shrub and thicket habitats >30 ha in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e., no row-cropping, haying or livestock pasturing in the last 5 years). Larger shrub thicket habitats (>30 ha) are most likely to support and sustain a diversity of these species. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or lightly grazed pasturelands.	ELC Ecosites: G009-G010, G021-G022, G031-G032, G046-G047, G062-G063, G079-G080, G095-G096, G111-G112, G134-G135 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	NO, the assessment area does not contain, nor is it adjacent to, large field communities that are succeeding into shrub and thicket habtiats.
Special Concern and Rare Wildlife Species	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. All plant and animal element occurrences (EO) within a 1 or 10 km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or Provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites	See **Table 2**
Animal Movement Corridors			

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Ecoregion 5E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from available information sources and on-site assessment indicate that candidate SHW might be present?
Amphibian Movement Corridors	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat	Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat –Wetland (see above)	YES, due to the abundance of wetland communities on the subject property and the possibility of breeding habitat (both woodland and wetland) for amphibians, it is possible for movement corridors to be present on the subject property.
Cervid Movement Corridors	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH (see above), Moose Aquatic Feeding Area, or Mineral Lick Habitat are identified. A deer wintering habitat identified by the OMNRF as SWH will have corridors that the deer use during fall migration and spring dispersion. Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). Corridors will be multifunctional (i.e., these will function for any smaller mammal species as well).	Corridors may be found in all forested ecosites.	POSSIBLE, given the presence of an identified moose aquatic feeding areas on adjacent lands, movment corridors for cervids may be present; however, due to the topography on the subject property and on adjacent lands, it is unlikely moose would utilize the subject property to access the aquatic feeding area on adjacent lands to the north.
Furbearer Movement Corridor	Mink and Otter den sites are typically found within a riparian area of a lake, river, stream or wetland. The den site will potentially have a movement corridor associated with it. All Mink or Otter den sites identified under the habitat of Denning Sites for Mink, Otter, Marten Fisher and Eastern Wolf (see above) are to be considered for an animal movement corridor.	All Forested Ecosite Codes adjacent to or within shoreline habitats.	NO, as features potentially functioning as denning sites were not documented in the assessment area there is a low likelihood that the assessment area contains movement corridors for burbearers.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 5E (January 2015)

Appendix 4. Site Plan (Tulloch Engineering)

RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.

BRAY LAKE SUBDIVISION
DRAFT PLAN OF SUBDIVISION

PART OF LOTS 18, 19 AND 20, CONCESSION 12 AND PART OF LOTS 19 AND 20, CONCESSION 11
TOWNSHIP OF MACHAR
DISTRICT MUNICIPALITY OF PARRY SOUND
SCALE 1:2500

25m 0 25 125m

KPK SURVEYING INC., O.L.S.
2023

PIN 52053-0306

ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 12 AND 13

N68°05'05"E 390.6 | 348.4± | N68°06'55"E | 52.2± | 206.9± | 812.4 | 194.9±

PIN 52053-0151 | PIN 52053-0338 | PIN 52053-0149

PART 1, 42R - 22091 | PART 1 11372 | PT.R. 42M-572 | 42R - PART 2

LOT 20 | LOT 19 | LOT 18 | LOT 17, 42M-572

WETLAND | 30m O/S FROM WETLAND | 30m O/S FROM WATERWAY

FLOODED LANDS

835.4± | 491.5± | N21°56'35"W 681.3± | 413.6

LOT 20 CONCESSION 12 | LOT 19 CONCESSION 12 | LOT 18 CONCESSION 12

LOT 6
TOTAL AREA=68.2± ha

15m VEGETATED NATURAL SHORELINE BUFFER | 23m BUILDING SETBACK FROM SHORELINE

260.5± | 19.0±

BLOCK 21
1.5± ha

23m BUILDING SETBACK FROM SHORELINE
15m VEGETATED NATURAL SHORELINE BUFFER

LOT 20
2.6± ha

LOT 19
2.3± ha

LOT 18
1.6± ha

LOT 17
1.2± ha

259.0 | LOT 18 | LOT 17

968.9±

N21°56'50"W 616.2±

RIGHT-OF-WAY | 15m WIDE

LOT 14
1.9± ha

LOT 15
1.3± ha

LOT 16
1.1± ha

ROAD ALLOWANCE

LOT 13
1.0± ha

N68°22'50"E 9.9±

LOT 12
1.0± ha

23m BUILDING SETBACK FROM SHORELINE
15m VEGETATED NATURAL SHORELINE BUFFER

SHORE | BUILDING ENVELOPE | ORIGINAL

LOT 11
1.0± ha

LOT 10
1.4± ha

LOT 9
1.6± ha

LOT 8
1.0± ha

LOT 7
1.0± ha

LOT 5
TOTAL AREA=26.2± ha

PIN 52053-0339

LOT 4
TOTAL AREA=23.7± ha

LOT 3
TOTAL AREA=12.2± ha

LOT 2
TOTAL AREA=12.2± ha

LOT 1
TOTAL AREA=12.1± ha

20.117m ROAD PREVIOUSLY TRANSFERRED TO MUNICIPALITY

EXISTING GRAVEL DRIVEWAY | 15m WIDE RIGHT-OF-WAY

"CENTERLINE OF TRAVELLED ROAD AKA RIDING RANCH ROAD"

PART 1, 42R-21538 | PART 2, 42R-21538 | PART 3, 42R-21538 | PART 4, 42R-21538

LOT 20 CONCESSION 11 | LOT 19 CONCESSION 11

N68°23'30"E 28.7 | N68°21'45"E 388.0 | 295.8 | N68°22'20"E 371.8 | N22°41'30"W 1967.6 | 92.2

813.6 | 811.7 | 809.7 | N68°39'30"E 807.8

ORIGINAL ROAD ALLOWANCE BETWEEN LOTS 20 AND 21

PIN 52053-0310

PIN 52053 - 0039

ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 10 AND 11

PIN 52053-0312

OTHER INFORMATION

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

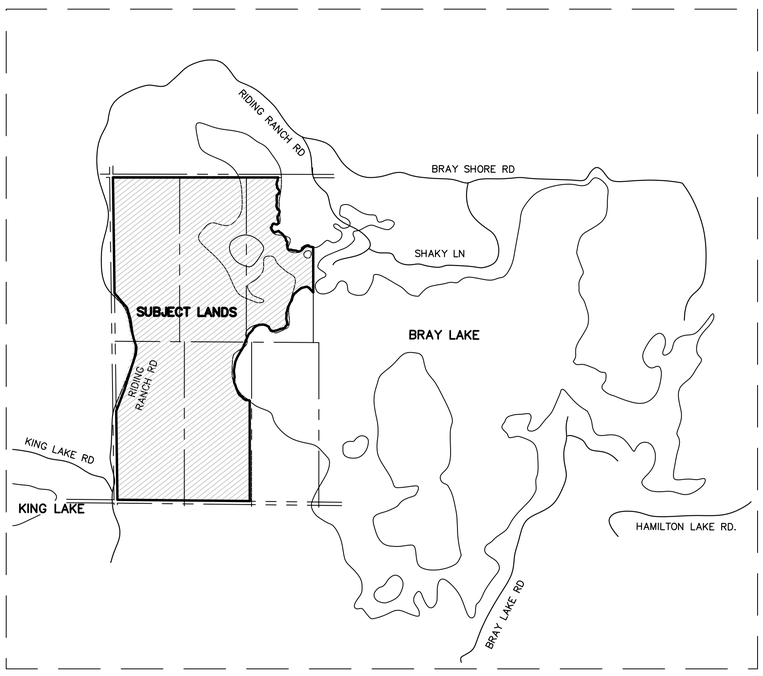
A. LAND BOUNDARIES ARE AS SHOWN ON DRAFT PLAN
B. ROADWAYS ARE AS SHOWN ON DRAFT PLAN AND KEY PLAN
C. KEY PLAN IS AS SHOWN ON DRAFT PLAN
D. PROPOSED LOTS ARE FOR RURAL, NATURAL HERITAGE PROTECTION/ENVIRONMENTAL PROTECTION, AND SHORELINE USE, AS SHOWN ON PLAN
E. ADJACENT USES: CROWN, RURAL, NATURAL HERITAGE PROTECTION/ENVIRONMENTAL PROTECTION, AND SHORELINE, AS SHOWN ON PLAN
F. LOT DIMENSIONS ARE APPROXIMATE ONLY
G. TOPOGRAPHIC FEATURES ARE AS SHOWN, DERIVED FROM ORTHO PHOTOGRAPHIC IMAGERY FROM FIRST BASE SOLUTIONS DATED JULY 29, 2020
H. WATER SUPPLY IS TO BE PROVIDED AND OPERATED BY INDIVIDUAL LAND OWNERS
I. GEOTECHNICAL INVESTIGATION WILL BE REQUIRED TO CONFIRM SOIL AND GROUND COMPOSITION
J. 1m CONTOURS ARE AS SHOWN ON DRAFT PLAN
K. SEPTIC SERVICES ARE TO BE PROVIDED AND OPERATED BY INDIVIDUAL LAND OWNERS
L. PROPOSED LOTS CONTAIN AREAS IDENTIFIED AS A WATERCOURSE, MOOSE AQUATIC FEEDING AREA, OTHER WETLANDS AND FLOODPLAIN AS SUCH WILL HAVE RESTRICTIONS AFFECTING THE SUBDIVISION LANDS

LEGEND:

EP DENOTES ENVIRONMENTAL PROTECTION(NATURAL HERITAGE PROTECTION) ZONING AREA
FP DENOTES FLOOD PLAIN ZONING AREA
SR DENOTES SHORELINE ZONING AREA
RU DENOTES RURAL ZONING AREA
FN DENOTES FENCE

DENOTES TREE
DENOTES 15m VEGETATED NATURAL SHORELINE BUFFER
DENOTES 23m BUILDING SETBACK FROM SHORELINE
DENOTES 30m WETLAND / WATER COARSE SETBACK
DENOTES TYPE 1 FISH HABITAT
DENOTES TYPE 2 FISH HABITAT

KEY PLAN



OWNER'S CERTIFICATE

THIS IS TO CERTIFY THAT :

POLNI HOLDINGS INC. BEING THE REGISTERED OWNERS OF THE SUBJECT LANDS, HEREBY SUBMITS A DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

_____ _____
TOM HARSANYI *DATE*
AUTHORIZED AGENT FOR POLNI HOLDINGS INC.

"I HAVE THE AUTHORITY TO BIND THE CORPORATION"

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN

DRAFT

_____ _____
KEVIN KUJALA HUNTSVILLE, ONTARIO
ONTARIO LAND SURVEYOR

KPK SURVEYING
KPK SURVEYING INC.
HUNTSVILLE, ON
705.788.2701 KPKSURVEY.CA

DRAFTED: KPK | FILE NO: 202405

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