Evaluating/Characterizing the Potential Usage of Species at Risk and their Habitat within Portions of the Town Of Renfrew

Part of Lot 11, Concession 3,
Town of Renfrew
County of Renfrew
&
Part of Lot 10 & 11, Concession 4
Township of Horton
County of Renfrew

November 27, 2023

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1.0. Introduction

BCH Environmental Consulting Inc. was retained by the Town of Renfrew to complete an evaluation/characterization of the potential usage of Species at Risk (SAR) and their habitat within town owned lands (Subject Lands). The subject lands are within Part of Lot 11, Concession 3, Town of Renfrew, County of Renfrew and Part of Lot 10 & 11, Concession 4, Township of Horton, County of Renfrew (Figure 1).

1.1. Site Context

The entire subject lands are approximately 83.4 ha in size. For location of the subject lands see Figure 1 & 2.

Portions of the subject lands west of Highway 17 are within the town of Renfrew's jurisdiction, while east of Highway 17 fall within the township of Horton. Both side of the Highway are within the County of Renfrew.

Within the towns Zoning By-law No. 46-2010 portions of the subject lands were zoned Environmental Protection (EP), General Commercial and Residential 1 – Holding (R1-h). Additionally, within the towns official plan the subject lands are designated Environmental Protection (Valleyland), Commercial and Residential. Within the townships Zoning By-law No. 2010-14 portions of the subject lands were zoned Environmental Protection and Rural (RU). Additionally, within the townships official plan the subject lands are designated Environmental Protection Area. Within the County of Renfrew's official plan (2023) the subject lands are within Significant Woodland and Valleylands. Additionally, the subject lands are located in Ecoregion 6E.

2.0. Methodology

A review of background information pertaining to the subject lands was completed. Materials reviewed included:

- Ontario Natural Heritage Information Centre database (NHIC)
- Land Information Ontario Online database (LIO)
- Ministry of Natural Resources and Forestry databases
- Department of Fisheries and Ocean databases
- Ontario Breeding Bird Atlas
- Ontario Reptile and Amphibian Atlas
- iNaturalist
- Global Biodiversity Information Facility
- Town of Renfrew Official Plan and Schedules
- County of Renfrew Official Plan and Schedules
- Satellite Imagery

Colour satellite imagery was used to assess the natural environment features in the general vicinity of the subject lands.

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A field survey of the subject lands was completed by BCH Environmental (S.St.Pierre & C. Fontaine) on September 18, 2023 (air temperature was 18°C, with light air and overcast skies) and on October 23, 2023 (air temperature was 0°C, with light air and clear skies). Staff qualifications are available in Appendix B.

The area was extensively walked and surveyed for potential species at risk and their associated habitat.

Upland vegetation communities were described utilising the Ecological Land Classification Southern Manual (Lee et al. 1998), while wetland communities were described utilising the Ontario Wetland Evaluation System Southern Manual (MNRF 2022).

A snag/cavity survey was completed during the leaf-off season on October 23, 2023 (S.St.Pierre & C. Fontaine) for potential bat usage. These surveys followed the methods present in the 'Maternity Roost Surveys (Forests/Woodlands)' protocol submitted to BCH by MECP on September 19, 2023. The protocol suggest thorough transects through suitable habitat.

Observed plants were recorded for each individual community, the plants utilized in the descriptions are the most abundant specimens observed. A complete observed species list is provided in Appendix A. Plants that could not be identified in the field were collected for a more detailed examination. Nomenclature used in this report follows the Southern Ontario Vascular Plant List (Bradley, 2013) which aligns with the Integrated Taxonomic Information System (ITIS).

3.0. Field Surveys

A butternut survey was conducted along with a search for black ash, American ginseng, and other habitat of species at risk by systematically moving through the subject lands (discussed in section 4.0). Vegetation communities are described in section 3.1.

3.1. Existing Conditions

The subject lands consisted mostly of forest with the occasional thicket and meadow habitats. Steep ravines with associated watercourses were present throughout (some dry, some containing water). The subject lands are bordered to the north by the Bonnechere River, to the south by residential/commercial lands, to the west by residential lands and to the east by forest, thicket, and farm lands. Soils in the subject lands are of the Renfrew series which generally consist of imperfectly drained clay (MAFRA 2023).

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FIGURE 1: SUBJECT LANDS LOCATION

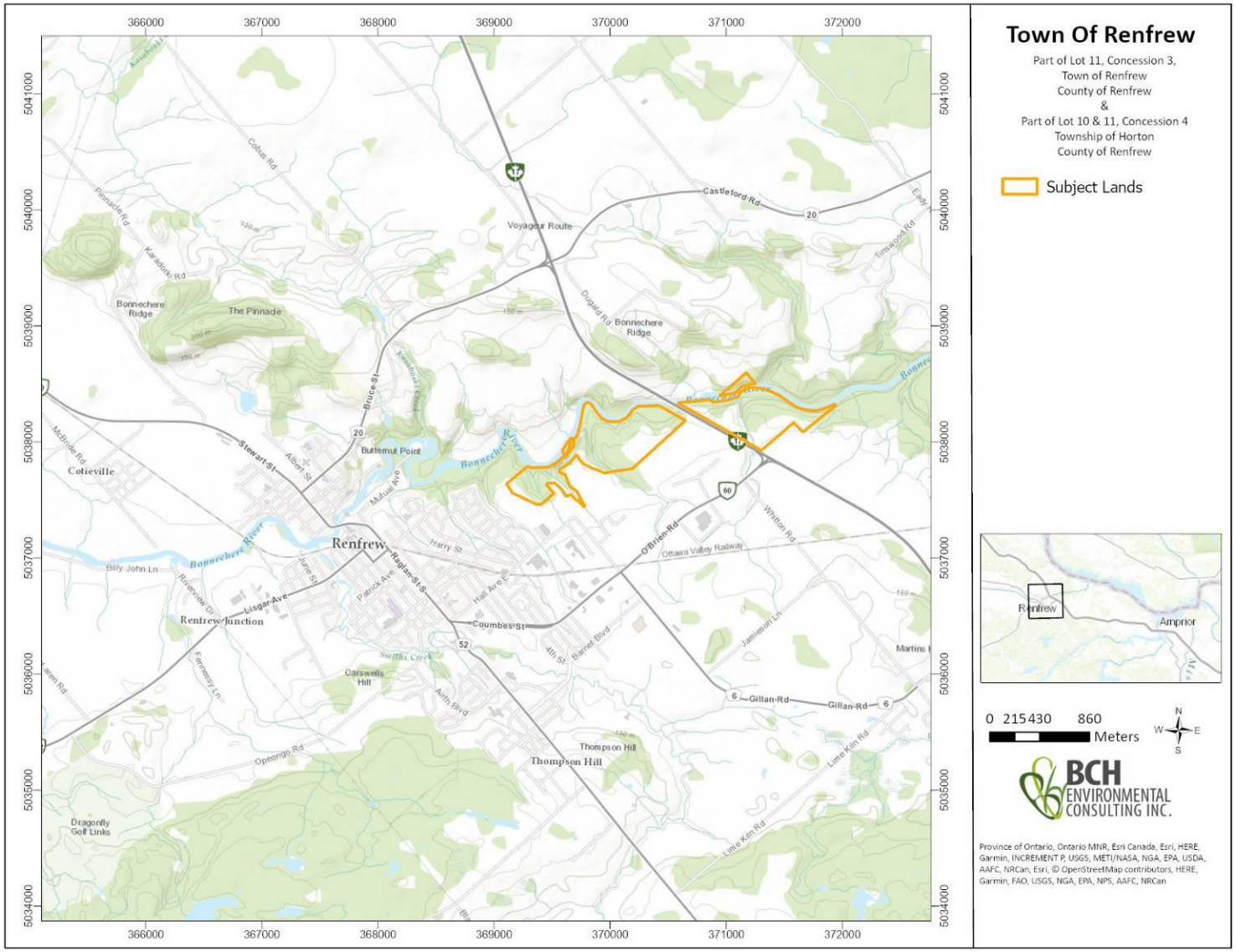

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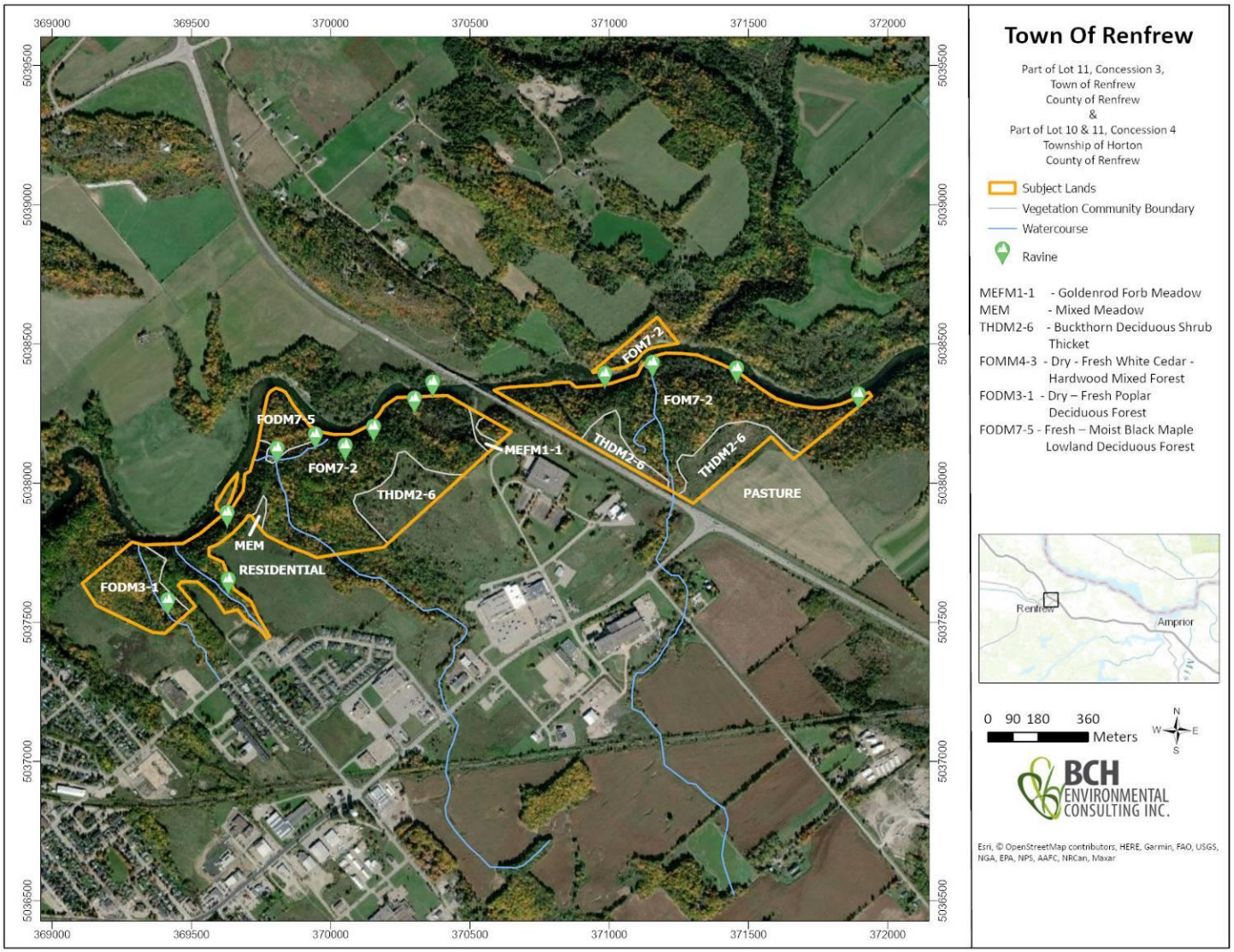
FIGURE 2: SUBJECT LANDS



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3.1.1. Goldenrod Forb Meadow (MEFM1-1)

This community is present centrally within the subject lands, just to the west of Highway 17. The ground cover (100% cover) consisted mainly of Canada goldenrod, rough-stemmed goldenrod, tall goldenrod and wild parsnip. The occasional white ash and American elm was present. A cobble gully with a stormwater outlet was present, conveying water towards the Bonnechere River.

Photo 1: Goldenrod Forb Meadow (September 18, 2023)

3.1.2. Mixed Meadow (MEM)

This community is present almost centrally within the subject lands, immediately north of an area which is currently being developed for residential use, and is present immediately north of what is now a storm management pond. The ground cover (100% cover) was a mixture of grasses and goldenrods. The occasional American elm and common buckthorn was present.

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Photo 2: Mixed Meadow (September 18, 2023)

3.1.3. Buckthorn Deciduous Shrub Thicket (THDM2-6)

There were two Buckthorn Deciduous Shrub Thicket communities within the subject lands. The first community was present centrally along the southern border of the subject lands west of Highway 17. The shrub cover was variable (40-90%) and dominated by common buckthorn followed by hawthorns. Where there were openings in the shrub cover, meadow habitat was present. Species in the meadow habitat included Canada thistle, grasses, goldenrods, and common milkweed. The occasional American elm and white ash was present.

The second community was present within the southeast portion of the subject lands east of Highway 17. The shrub cover was variable (40-90%) and consisted mostly of common buckthorn followed by hawthorn, apple, Tartarian honeysuckle, and wild red raspberry. Where there were openings in the shrub cover, meadow habitat was present. Species in the meadow habitat included grasses, goldenrods, wild carrot, and New England aster.

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Photo 3: Buckthorn Deciduous Shrub Thicket – Community 1 (September 18, 2023)

Photo 4: Buckthorn Deciduous Shrub Thicket – Community 2 (October 23, 2023)

3.1.4. Dry - Fresh White Cedar - Hardwood Mixed Forest (FOMM4-3)

This community was the dominant community present throughout the majority of the subject lands. The average tree diameter ranged from 25-35cm. The forest composition was semi variable ranging from 35-65% coniferous trees and 45-75% deciduous trees. The canopy was the dominant layer. The canopy (10-12m tall; 70-80% cover) which was highly variable in composition was in some locations dominated by white cedar while in other areas dominated by sugar maple other species present included white spruce, bur oak, largetooth aspen and white pine. The sub-canopy (8m tall; 20-40% cover) consisted of

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American basswood which was more than sugar maple which was more than white cedar which was more than bur oak. The understory (1-3m tall; 40-60% cover) included common buckthorn, white ash, and sugar maple. The ground cover (20-40% cover) included mosses, poison ivy, northern lady fern, and false Solomon's seal. Some coniferous inclusions (balsam fir, white spruce, white pine and red pine) and deciduous inclusions (black maple and sugar maple) were noted.

East of Highway 17 and north of the Bonnechere River within the subject lands, there is a small clump of similar forest, with the exception that this forest is highly disturbed and the percentage of coniferous trees within it is lower than the southern side. Trails were noted within this forest.

Photo 5: Dry - Fresh White Cedar - Hardwood Mixed Forest (September 18, 2023)

3.1.5. Dry – Fresh Poplar Deciduous Forest (FODM3-1)

This community is present within the far western portion of the subject lands. The average tree diameter ranged from 20-30cm. The forest was made up of 90% deciduous trees and 10% coniferous trees. The canopy was the dominant layer. The canopy (12m tall; 60% cover) consisted of largetooth aspen which was much more than bur oak which was more than black maple which was more than white pine. The sub-canopy (7-9m tall; 60% cover) consisted of largetooth aspen which was more than bur oak which was more than American basswood which was more than black maple which was more than sugar maple. The understory (1-3m tall; 40% cover) included common buckthorn, nannyberry, black maple, and balsam fir. The ground cover (60% cover) included bracken fern, barren strawberry, and large-leaved aster. Cattle was noted as utilizing this community.

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Photo 6: Dry – Fresh Poplar Deciduous Forest (September 18, 2023)

3.1.6. Fresh – Moist Black Maple Lowland Deciduous Forest (FODM7-5)

This community is present west of Highway 17 within the northern portion of the subject lands, and consisted of a low flat plateau surrounded by the Bonnechere River. The average tree diameter ranged from 20-30cm. The forest was made up of deciduous trees. The canopy was the dominant layer. The canopy (12-15m tall; 75% cover) consisted of black maple which was more than American basswood which was more than green ash. The sub-canopy (6m tall; 10-20% cover) consisted of green ash which was more than black maple. The understory (1-3m tall; 30% cover) included black maple and green ash. The ground cover (100% cover) included ostrich fern and Virginia creeper.

This community is located at the end of a large ravine, within this ravine there is the occasional small clump of black maples. Of note black maples are a regionally rare species at the northern limit of its range. It is even more rarely found in Renfrew County as a canopy dominant.

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Photo 7: Fresh – Moist Black Maple Lowland Deciduous Forest (September 18, 2023)

3.1.7. Ravines

Throughout the subject lands many steep ravines were present. The habitat along most of the ravines was the Dry - Fresh White Cedar - Hardwood Mixed Forest (FOMM4-3) habitat. The location of each ravine was recorded and their general location is shown of figure 2. As these were very large steep ravines for safety reasons they were not walked in their entirety. These ravines all connect at the downstream end to the Bonnechere River. The watercourses depicted on figure 2 are all present within ravines and likely represent some form of fish habitat (permanent or seasonal). The ravines present on figure 2 without watercourses had channels but all were dry during the field visits and due to their steepness are unlikely to hold water for extended periods of time and are unlikely to represent fish habitat. The banks along much of the ravines were very steep, signs of erosion and bank failure were noted throughout.

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Photo 8: Example of Ravines Present (September 18, 2023)

3.1.8. Bonnechere River

The Bonnechere River was present along the northern edge of the subject lands. Substantial flows were noted with aquatic vegetation providing cover throughout. Within the subject lands, the banks along the Bonnechere River were generally steep with some areas containing a gentler incline. Signs of erosion and bank failure were noted throughout. This is a cool water system that represents suitable fish, turtle, and amphibian habitat. Through a background review (LIO), fish species present within the Bonnechere river include, but are not limited to: brassy minnow, mimic shiner, eastern blacknose dace, blackchin shiner, rosyface shiner, Percina sp., fallfish, golden shiner, spottail shiner, emerald shiner, bluntnose minnow, johnny darter/tesselated darter, northern pike, Suckers, common shiner, muskellunge, rock bass, logperch, creek chub, and brown bullhead.

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Photo 10: Bonnechere River (September 18, 2023)

4.0 Potential Species at Risk

The Make a Map: Natural Heritage online database (OMNRF) was reviewed on September 14, 2023. This database provides sightings of provincially tracked species including Threatened and Endangered species covered by the 2008 Endangered Species Act in 1 km squares across most of Ontario. A search was conducted on the site and adjacent lands (18UR6938, 18UR6937, 18UR7038, 18UR7037, 18UR7138, and 18UR7147) and identified the following results:

- Eastern Wood-Pewee (Special Concern)
- Eastern Meadowlark (Threatened)
- Bobolink (Threatened)
- Lake Sturgeon (Threatened)
- Butternut (Endangered)
- American Ginseng (Endangered)

The Ontario Breeding Bird Atlas provides a searchable database in the form of a 10km square grid. A query revealed the following Species at Risk and species of special concern were identified within the 10km square that encompasses the site and adjacent lands (18UR63 and 18UR73):

- Common Nighthawk (Special Concern)
- Eastern Wood-Pewee (Special Concern)
- Barn Swallow (Special Concern)
- Bank Swallow (Threatened)
- Wood Thrush (Special Concern)
- Grasshopper Sparrow (Special Concern)
- Bobolink (Threatened)

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- Eastern Meadowlark (Threatened)
- Evening Grosbeak (Special Concern)

Similar to the Ontario Breeding Bird Atlas, the Ontario Reptile and Amphibian Atlas provides a searchable database in the form of a 10km square grid. A query revealed the following species of special concern was identified within the 10km square that encompasses the subject lands and adjacent lands (18UR63 and 18UR73):

- Snapping Turtle (Special Concern)
- Blanding's Turtle (Threatened)

iNaturalist and the Global Biodiversity Information Facility provides a searchable database. A query revealed the following Species at Risk and species of special concern:

- Common Nighthawk (Special Concern)

The Department of Fisheries and Oceans provide species at risk sightings via their online map tool. A query found no results in the vicinity of the site.

In addition to the above potential Species at Risk, many other endangered and threatened species may potentially occur in the general area:

- Little Brown Myotis (Endangered)
- Northern Myotis (Endangered)
- Eastern Small-footed Myotis (Endangered)
- Tri-coloured Bat (Endangered)
- Black Ash (Endangered)

4.1. Fish

Lake Sturgeon have been designated as threatened and their habitat is provincially regulated. Lake Sturgeon requires a variety of habitats to complete its lifecycle, and the species has evolved to exploit typical upstream to downstream hydraulic and substrate gradients. Spawning habitat is typically characterized by fast-moving water found at the base of falls, rapids, or dams (COSEWIC 2017b). The Bonnechere River may represent sturgeon habitat although not in the immediate vicinity of the site. The most likely location where sturgeon would be utilising the river would be at the base of First Chute (falls) approximately 6.5km downstream of the site.

4.2. Turtles and Reptiles

Snapping turtles are designated as special concern under the Ontario Endangered Species Act (ESA). The habitat of species of special concern is not regulated under the Ontario ESA. Blanding's turtles have been designated as threatened and their habitat is provincially regulated.

Blanding's turtles are often observed within clear water eutrophic wetlands and have a strong site fidelity but may use several connected water bodies during the active season (COSEWIC 2016a). Blanding's turtles were identified as occurring within the 10km search area (Ontario Reptile and Amphibian Atlas).

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The Ontario Ministry of Natural Resources developed the general habitat description for the Blanding's Turtle (habitat provincially regulated), dividing habitat into three categories:

- **Category 1:** the nest and the area within 30 m or overwintering sites and the area within 30 m. Suitable nesting habitat occurs in sun-exposed areas with low vegetation cover and loose soils. They may overwinter in permanent or temporary waterbodies (young are also known to hibernate terrestrially), with the reported water depth varying from 0 to >100 cm and often show a high site fidelity. No evidence of this habitat was noted, and so Category 1 habitat is not considered to be present on the subject lands.
- **Category 2:** the wetland complex that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies. For the purpose of this report the Bonnechere River in the general vicinity of the subject lands will be considered Category 2 Blanding's turtle habitat. The portions of the two largest tributaries may be used by turtles and should be considered Category 2 Blanding's turtle habitat until turtle survey show otherwise.
- **Category 3:** Category 3 habitat provides essential movement corridors of up to 500m between wetlands, a function which is essential for carrying out life processes associated with the Category 1 and 2 habitats. Category 3 habitat is the area between 30m and 250m around suitable wetlands or waterbodies identified in Category 2, within 2 km of an occurrence. Category 3 habitat may be present, specifically around The Bonnechere River and portions of the largest tributaries.

As no turtle surveys have been completed, their presence cannot be confirmed, but it is highly likely snapping turtles are utilising the Bonnechere River and it is possible that Blanding's turtles are also. It is also possible that portions of the largest tributaries are being utilised by these species. It may be prudent to conduct turtle surveys to confirm their presence.

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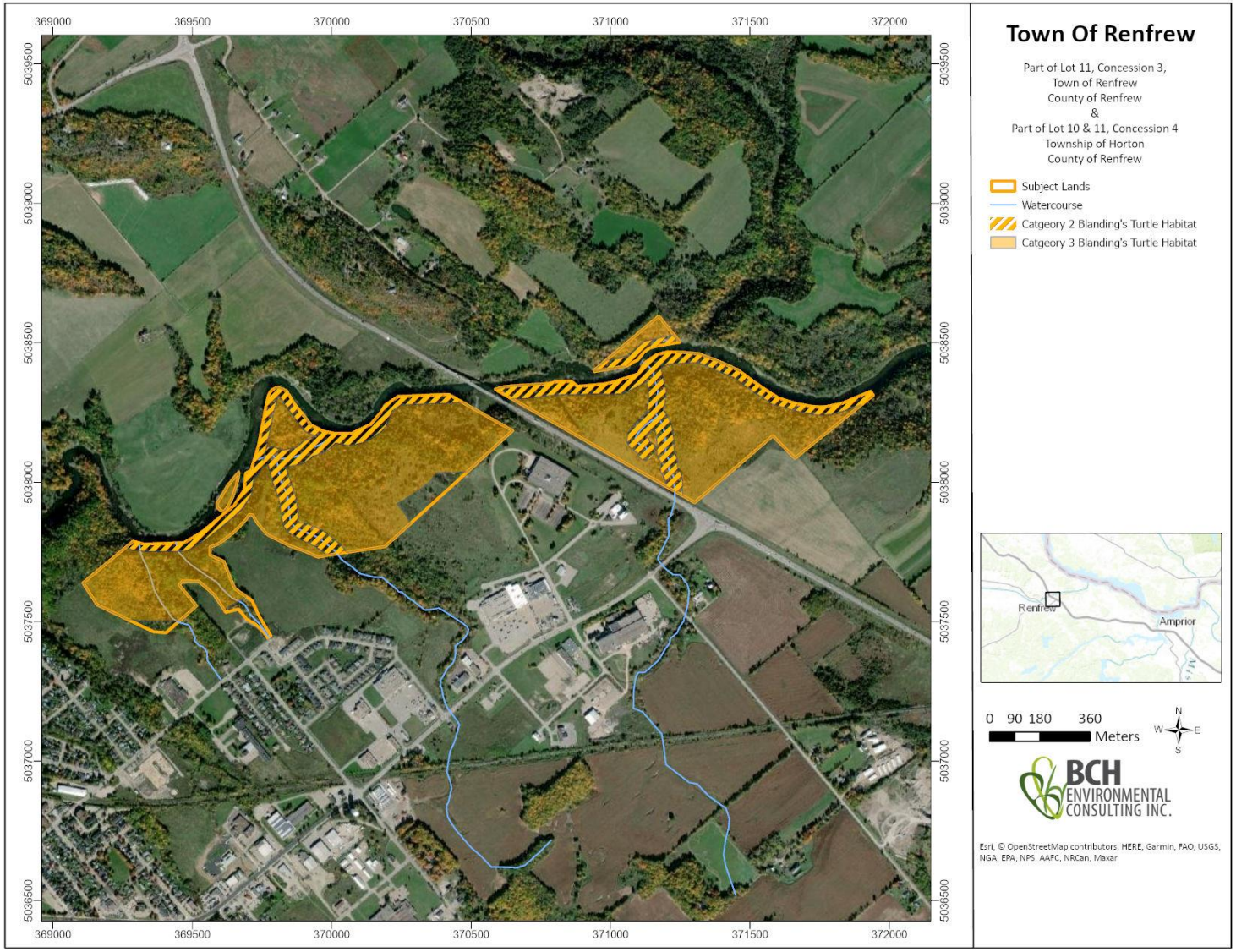
FIGURE 3: POTENTIAL BLANDING'S TURTLE HABITAT WITHIN THE SUBJECT LANDS



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4.3. Birds

Common nighthawk, Eastern wood-pewee, barn swallow, wood thrush, grasshopper sparrow and evening grosbeak are designated special concern under the Ontario Endangered Species Act (ESA). The habitat of species of special concern is not regulated under the Ontario ESA. Common Nighthawk breeds in a range of open and partially open habitats, including forest openings and post-fire habitats, prairies, bogs, and rocky or sandy natural habitats, as well as disturbed areas. It is also found in settled areas that meet its habitat needs, those with open areas for foraging and bare or short-cropped surfaces for nesting (COSEWIC 2018b). This habitat was not present within the subject lands. The eastern wood-pewee is mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests (COSEWIC 2012a). The forested portions of the subject lands did support this type of habitat. Although not protected by the ESA, the presence of the eastern wood-pewee may constitute Significant Wildlife Habitat: Habitat of Species of Conservation Concern. An August 2014 report titled Natural Environment and Species at Risk Assessment of the Hall Avenue Extension Technically Preferred Alternative, Town of Renfrew, Renfrew County (Brunton 2014) identified at least two signing males within the largest ravine/tributary west of Highway 17. Barn swallow nest sites are commonly found along the interior or exterior of building structures, under bridges and wharves, and in road culverts (Heagy et al. 2014.). No barn swallow or barn swallow nests were observed. It is possible that they could utilise the bridge on Highway 17 crossing the Bonnechere River. This too may constitute Significant Wildlife Habitat: Habitat of Species of Conservation Concern. The wood thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers (COSEWIC 2012b). This type of habitat was not present. Grasshopper Sparrow typically breeds in large human created grasslands (≥ 5 ha), such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained, often poor soil dominated by relatively low, sparse perennial herbaceous vegetation (COSEWIC 2013a). South of the Buckthorn Deciduous Shrub Thicket and outside of the subject lands, suitable meadow habitat for potential use by Grasshopper Sparrow exists. This too may constitute Significant Wildlife Habitat: Habitat of Species of Conservation Concern. Optimal Evening Grosbeak breeding habitat generally includes open, mature mixedwood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant. Outside the breeding season, the species seems to depend largely on seed crops from various trees such as firs and spruces in the boreal forest, but is also attracted to ornamental trees that produce seeds or fruit, and bird feeders stocked with sunflower seeds (COSEWIC 2016b). This habitat wasn't present within the subject lands.

Bank swallow, bobolink, and eastern meadowlark are designated as threatened under the Ontario Endangered Species Act (ESA). Bank swallow are generally associated with sand-silt vertical banks (COSWIC 2013c). Portions of the Bonnechere River had sand vertical bank suitable for this species, along with portions of the eastern watercourse (east of Highway 17), although no nest were observed. Bobolink and eastern meadowlark are associated with native and non-native larger grassland habitats such as hayfields (COSEWIC 2010, and COSEWIC 2011). South of the western Buckthorn Deciduous Shrub Thicket and outside of the subject lands, suitable meadow habitat for potential use by bobolink and meadowlark exists. The August 2014 report titled Natural Environment and Species at Risk Assessment of the Hall Avenue Extension Technically Preferred Alternative, Town of Renfrew, Renfrew County (Brunton 2014) identified meadowlarks utilising this habitat and it does constitute suitable habitat for bobolink and meadowlark.

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As recent bird surveys have not been completed, their presence cannot be confirmed, but eastern wood-pewee and eastern meadowlark have been confirmed utilising the subject lands and adjacent lands in 2014 (Brunton 2014). Additionally, it may be likely that barn swallow, grasshopper sparrow, bank swallow, and bobolink may be utilising portions of the subject lands as suitable habitat was observed within these lands and adjacent lands. It may be prudent to conduct bird surveys to confirm their presence.

4.4. Mammals

Little brown Myotis, northern Myotis, Eastern Small-footed Myotis, and tri-coloured bat are designated endangered under the Ontario Endangered Species Act (ESA). All four bats may forage in open areas on-site and may roost in trees or buildings on or adjacent to the Site. The Atlas of Mammals of Ontario (Dobbyn, 1994) suggests that the tri-colored bat is not present within this part of Ontario however, the NatureServe mapping in the COSSARO (2015) includes all of southeastern Ontario. Based on this information, this species is considered to have a very low potential of occurring.

Maternity colonies are established by females in the summer, often in buildings, or large-diameter trees with suitable cavities (COSEWIC 2013b). No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the subject lands.

Maternity colonies are established by females in the summer, often in buildings, or large-diameter trees with suitable cavities (COSEWIC 2013b). No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the subject lands. The protocol suggest a minimum of 10 plots for sites ≤10 hectares and add another plot for each extra hectare up to a maximum of 35 plots. Following the protocol 35 random plots (determined by utilising a random point generator) were established within suitable habitat throughout the subject lands. Each plot was a fixed 12.6m radius (0.05 ha) and all snags/cavities were recorded. As per the protocol if the snag/cavity density is calculated to be ≥10 snags/hectare then this the ELC polygon should be considered high quality potential maternity roost habitat. If maternity roost habitat is identified using ELC, acoustic monitoring is recommended to determine if little brown myotis, eastern small-footed myotis, tri-colored and/or northern myotis are recorded in the area.

Throughout all 35 plots, 24 suitable snags/cavities that could be utilised by bats for this purpose were identified. Table 1 shows the breakdown of the survey per ELC community. All the ELC communities potentially represent a Maternity Colony as demonstrated in Table 1. Although highly likely that the area is being utilised by bats, acoustic monitoring is recommended to confirm the little brown myotis, eastern small-footed myotis, tri-colored and/or northern myotis are in the area.

Table 1 Maternity Roost Survey Results

ELC Community	# of Plots (0.05ha each)	Results	Snag/Cavity Density	Maternal Colony (Y/N)
FOMM4-3	2	1 snag /cavity tree	10 snags/cavity tree per hectare	Y

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ELC Community	# of Plots (0.05ha each)	Results	Snag/Cavity Density	Maternal Colony (Y/N)
FODM3-1	31	22 snags /cavity trees	14.19 snags/cavity tree per hectare	Y
FODM7-5	2	1 snag /cavity tree	10 snags/cavity tree per hectare	Y

4.5. Vegetation

Butternut (designated as endangered by the ESA) tends to reach greatest abundance in rich well-drained mesic loams in floodplains, streambanks, terraces and ravine slopes, but can occur in a wide range of other situations (COSEWIC 2017a). No butternut were found during a detailed survey of the subject lands (transects). A single butternut was noted within the immediate adjacent lands. Of note is that within the town of Renfrew there are multiple locations with many butternuts throughout.

Black ash (designated as endangered by the ESA) occurs most frequently in floodplain forests, basin, seepage and lacustrine swamp forests, shoreline forest margins, and fens (COSEWIC 2018a). Of note the ministry temporarily suspended protections for Black Ash for a period of two years from the time the species was added to the Species at Risk in Ontario List (Ontario Regulation 230/08). During this time, proponents will not need to seek authorizations for activities that impact Black Ash and its habitat. Black ash was listed on January 26, 2022. No black ash were found during a detailed survey of the subject lands (transects).

American Ginseng requires rich, moist, undisturbed and relatively mature sugar maple-dominated deciduous woods in areas of circumneutral soil such as over limestone or marble bedrock. Colonies are often found near the bottom of gentle slopes facing south-east to south-west. This microhabitat is warm, usually well-drained and particularly diverse in species (COSEWIC 2000). Although there are sugar maple present throughout the subject lands, they are highly disturbed isolated forests with evidence of logging, hunting, and trails throughout. A detailed survey of the forests was completed, no ginseng was observed.

4.6. Species at Risk Summary and Recommendations

In summary, based on the background information, field surveys and habitat present within the subject lands the most likely species utilising these lands include snapping turtles, Blanding's turtles, bank swallow, eastern wood-pewee and bats. Within the adjacent lands there is a high potential from barn swallow, grasshopper sparrow, eastern meadowlark and bobolink utilising the area. Eastern wood-pewee and eastern meadowlark have been confirmed utilising the subject lands and adjacent lands in 2014 (Brunton 2014). Butternut was confirmed in the adjacent lands (2023). Figure 4 shows these habitats in relation to the subject lands, excluding potential turtle habitat which is present in Figure 3. If confirmation of these species is required we recommend conducting turtle surveys, breeding bird survey, and acoustic monitoring for bats.

If these species are confirmed, the habitat present would represent significant wildlife habitat (habitat of species of conservation concern and habitat of endangered species and threatened species).

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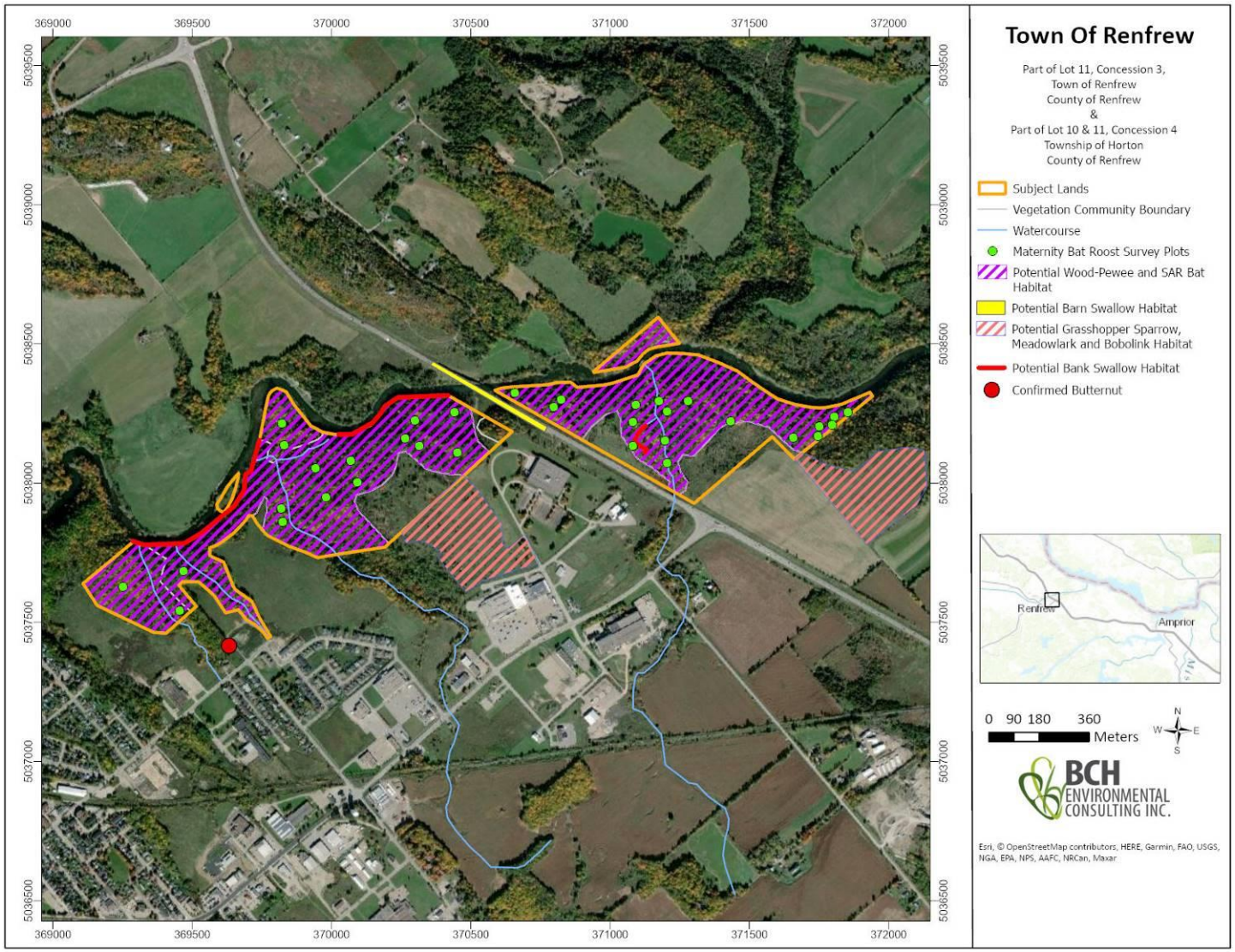
FIGURE 4: POTENTIAL SAR HABITAT EXCLUDING TURTLES



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5.0. Disclosure and Closing

This Evaluating/Characterizing the Potential Usage of Species at Risk and their Habitat within Portions of the Town Of Renfrew Report has been prepared by BCH Environmental Consulting Inc. to assist the town of Renfrew with making planning decisions in the area.

The data presented in this report are in accordance with BCH Environmental Consulting Inc. understanding of the scope of work at the time of reporting. BCH was retained to complete these works mid-summer with the understanding that additional works may be needed in the spring. Additional works are recommended to confirm the following species at risk potentially utilising the area: snapping turtles, Blanding's turtles, bank swallow, eastern wood-pewee and bats. It is recommended that turtle surveys (Early Spring –June), breeding bird survey (May – June) along with acoustic bat monitoring (June 1 - June 30) be completed to confirm these above mentioned species. It is at the discretion of the Town of Renfrew whether these surveys are completed or not. If completed this report can be updated with the results.

Thank you for the opportunity to work with you. If you have any questions or comments please do not hesitate to contact our office.

Shaun St.Pierre, B.Sc. Biology

Cody Fontaine, Wildlife Technologist

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APPENDIX A: OBSERVED SPECIES LIST

COMMON NAME	SCIENTIFIC NAME	SRANK	SARA STATUS	SARO STATUS	COEFF. CONSERVATISM
Cinnamon Fern	*Osmundastrum cinnamomeum*	S5			7
Field Horsetail	*Equisetum arvense*	S5			0
Water Horsetail	*Equisetum fluviatile*	S5			7
Bracken Fern	*Pteridium aquilinum*	S5			2
Northern Maidenhair Fern	*Adiantum pedatum*	S5			7
New England Aster	*Symphyotrichum novae-angliae*	S5			2
White Heath Aster	*Symphyotrichum pilosum*	S5			
Ostrich Fern	*Matteuccia struthiopteris*	S5			5
Sensitive Fern	*Onoclea sensibilis*	S5			4
Balsam Fir	*Abies balsamea*	S5			5
White Spruce	*Picea glauca*	S5			6
Red Pine	*Pinus resinosa*	S5			8
Eastern White Pine	*Pinus strobus*	S5			4
Eastern Hemlock	*Tsuga canadensis*	S5			7
Eastern White Cedar	*Thuja occidentalis*	S5			4
Narrowleaf Cattail	*Typha angustifolia*	SNA			
Broad-fruited Burreed	*Sparganium eurycarpum*	S5			3
Lake Sedge	*Carex lacustris*	S5			5
Smooth Brome	*Bromus inermis*	SNA			
Cottongrass Bulrush	*Scirpus cyperinus*	S5			4
Softstem Bulrush	*Schoenoplectus tabernaemontani*	S5			5
Large False Solomon's Seal	*Maianthemum racemosum*	S5			4
Eastern Helleborine	*Epipactis helleborine*	SNA			
Balsam Poplar	*Populus balsamifera*	S5			4
Large-toothed Aspen	*Populus grandidentata*	S5			5
Bitternut Hickory	*Carya cordiformis*	S5			6
Butternut	*Juglans cinerea*	S2?	END	END	6
Yellow Birch	*Betula alleghaniensis*	S5			6
White Birch	*Betula papyrifera*	S5			2
Ironwood	*Ostrya virginiana*	S5			4
American Beech	*Fagus grandifolia*	S4			6
White Oak	*Quercus alba*	S5			6
Bur Oak	*Quercus macrocarpa*	S5			5
Northern Red Oak	*Quercus rubra*	S5			6

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COMMON NAME	SCIENTIFIC NAME	SRANK	SARA STATUS	SARO STATUS	COEFF. CONSERVATISM
American Elm	*Ulmus americana*	S5			3
Curly Dock	*Rumex crispus*	SNA			
Bladder Campion	*Silene vulgaris*	SNA			
Red Baneberry	*Actaea rubra*	S5			6
Canada Anemone	*Anemonastrum canadense*	S5			3
Virginia Virgin's-bower	*Clematis virginiana*	S5			3
Tall Meadow-rue	*Thalictrum pubescens*	S5			5
Blue Cohosh	*Caulophyllum thalictroides*	S5			5
Wild Black Currant	*Ribes americanum*	S5			4
Common Strawberry	*Fragaria virginiana*	S5			2
Common Apple	*Malus pumila*	SNA			
Black Cherry	*Prunus serotina*	S5			3
Common Blackberry	*Rubus allegheniensis*	S5			2
Purple-flowering Raspberry	*Rubus odoratus*	S5			3
Goldenrods	*Solidogo sp.*				
Canada Goldenrod	*Solidago canadensis*	S5			1
Barren Strawberry	*Geum fragarioides*	S5			5
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	S5			2
Red Clover	*Trifolium pratense*	SNA			
White Clover	*Trifolium repens*	SNA			
Cow Vetch	*Vicia cracca*	SNA			
Poison Ivy	*Toxicodendron radicans*	S5			2
Staghorn Sumac	*Rhus hirta*	S5			1
Manitoba Maple	*Acer negundo*	S5			0
Red Maple	*Acer rubrum*	S5			4
Sugar Maple	*Acer saccharum*	S5			4
Black Maple	*Acer nigrum*	S4?			7
Common Buckthorn	*Rhamnus cathartica*	SNA			
Virginia Creeper	*Parthenocissus quinquefolia*	S4?			6
Riverbank Grape	*Vitis riparia*	S5			0
American Basswood	*Tilia americana var. americana*	S5			4
Wild Sarsaparilla	*Aralia nudicaulis*	S5			4
Wild Carrot	*Daucus carota*	SNA			
Wild Parsnip	*Pastinaca sativa*	SNA			
Bunchberry	*Cornus canadensis*	S5			7
Round-leaved Dogwood	*Cornus rugosa*	S5			6
Fringed Loosestrife	*Lysimachia ciliata*	S5			4

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COMMON NAME	SCIENTIFIC NAME	SRANK	SARA STATUS	SARO STATUS	COEFF. CONSERVATISM
Northern Starflower	*Lysimachia borealis*	S5			6
White Ash	*Fraxinus americana*	S4			4
Green Ash	*Fraxinus pennsylvanica*	S4			3
Common Milkweed	*Asclepias syriaca*	S5			0
Dog-strangling Vine	*Vincetoxicum rossicum*	SNA			
Common Viper's Bugloss	*Echium vulgare*	SNA			
Ground Ivy	*Glechoma hederacea*	SNA			
Self-heal	*Prunella vulgaris*	S5			0
Butter-and-eggs	*Linaria vulgaris*	SNA			
Common Mullein	*Verbascum thapsus*	SNA			
Common Elderberry	*Sambucus canadensis*	S5			5
Red Elderberry	*Sambucus racemosa*	S5			5
Common Plantain	*Plantago major*	SNA			
Smooth Bedstraw	*Galium mollugo*	SNA			
Tatarian Honeysuckle	*Lonicera tatarica*	SNA			
Smooth Arrowwood	*Viburnum recognitum*	S4			7
Nannyberry	*Viburnum lentago*	S5			4
Common Yarrow	*Achillea millefolium*	SNA			
Common Ragweed	*Ambrosia artemisiifolia*	S5			0
Common Burdock	*Arctium minus*	SNA			
Large-leaved Aster	*Eurybia macrophylla*	S5			5
Chicory	*Cichorium intybus*	SNA			
Canada Thistle	*Cirsium arvense*	SNA			
Bull Thistle	*Cirsium vulgare*	SNA			
Daisy Fleabane	*Erigeron annuus*	S5			0
Spotted Joe Pye Weed	*Eutrochium maculatum*	S5			3
Grass-leaved Goldenrod	*Euthamia graminifolia*	S5			2
Prickly Lettuce	*Lactuca serriola*	SNA			
Oxeye Daisy	*Leucanthemum vulgare*	SNA			
Rough-stemmed Goldenrod	*Solidago rugosa*	S5			4
Field Sow-thistle	*Sonchus arvensis*	SNA			
Colts Foot	*Tussilago farfara*	SNA			
Tall Goldenrod	*Solidago altissima spp. Altissima*	S5			1
Hawthorns	*Crataegus sp.*				
Sedges					
Willows	*Salix sp.*				

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COMMON NAME	SCIENTIFIC NAME	SRANK	SARA STATUS	SARO STATUS	COEFF. CONSERVATISM
Wild Lily-of-the-valley	*Maianthemum canadense ssp. canadense*	S5			5
Common St. John's-wort	*Hypericum perforatum ssp. perforatum*	SNA			
Reed Canary Grass	*Phalaris arundinacea var. arundinacea*	S5			0
Grasses					
Common Juniper	*Juniperus communis var. communis*	SNA			
Blue Jay	*Cyanocitta cristata*	S5			
Black-capped Chickadee	*Poecile atricapilla*	S5			
White-tailed Deer	*Odocoileus virginianus*	S5			
Great Blue Heron	*Ardea herodias*	S4			
Canada Goose	*Branta canadensis*	S5			
Mourning Dove	*Zenaida macroura*	S5			
European Starling	*Sturnus vulgaris*	SNA			
Red Squirrel	*Tamiasciurus hudsonicus*	S5			
Beaver	*Castor canadensis*	S5			
Raccoon	*Procyon lotor*	S5			

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APPENDIX B QUALIFICATIONS

SHAUN M. ST.PIERRE, B.Sc. Biology

EDUCATION

B.Sc. Biology, Trent University 2007
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2005
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2004

LANGUAGES

Fluent in French and English

POSITIONS HELD

2018 - :	BCH Environmental Consulting Inc., Biologist / Owner
2006-2017:	Bowfin Environmental Consulting Inc., Biologist / GIS Specialist / Environmental Site Inspector
2005:	St. Lawrence River Institute of Environmental Sciences, Field Research Assistant
2004:	MNR Kawartha Lakes, Field Research Assistant
2003:	DFO- Experimental Lake Area, Field Research Assistant
2001:	Resource Stewardship S, D &G, Stewardship Ranger

CERTIFICATIONS / PROFESSIONAL AFFILIATIONS

MTO/DFO/OMNR Fisheries Protocol, Ecological Land Classification (ELC), Certified in Inventory and Identification Methods for Ontario's Reptiles and Amphibians, North American Benthological Society (NABS) Certified Family Level Taxonomist, Ontario Benthos Biomonitoring Network (OBBN), Ontario Stream Assessment Protocol (OSAP), Certified Ontario Wetland Evaluator (OWES), Butternut Health Assessor/Expert (BHA/BHE), first aid, CPR, Pleasure Craft Operator Card, Marine Radio Operator, WHMIS, WHSA, Hazard Identification, Assessment and Control, All Terrain Vehicle Riders Course (issued by the Manitoba Safety Council), Water Safety Training (Bronze Cross), Possession / Acquisition Firearms Licence, Ontario Hunter Education Course Certificate, Ontario Trapper Education Course Certificate, Wildlife Chemical Immobilization, Vaccination, and Euthanasia- Certificate of Knowledge, South Lancaster/South Glengarry Fish and Game Club (SLFGC; president 2012 and 2013; executive member 2014-2023), Ontario class G driver's license, and Snowmobile License.

EXPERIENCE

Experience in environmental impact assessments/studies, environmental monitoring, environmental assessments, terrestrial habitat assessment, species at risk surveys, amphibian surveys, avian surveys, freshwater habitat assessment, collection and identification of plants, collection and identification of aquatic invertebrate, collection and identification of fish, fish salvage, fish behavioral studies, winter bat hibernaculum inventories and fisheries inventories including habitat mapping, electroshocking, FWIN and RIN. Other experience include GIS mapping.

Environmental and Fisheries Inspections

- Provided environmental and fisheries inspections for the construction of the Cataraqui Crossing HWY 401- MTO (Kingston, ON).
- Provided environmental and fisheries inspections for the construction of the Three Nations Bridge including surveys for nesting species at risk (Cornwall, ON).
- Provided environmental and fisheries inspections for construction (Ottawa, ON).
- Conducted nest surveys (Kemptville, ON.; Stittsville, ON.; Cornwall, ON.)
- Conducted environmental inspections for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Conducted environmental inspections for the construction of a new bridge crossing Bearbrook Creek along the 417.

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- Provided environmental and fisheries inspections for the blasting and drilling operation for the Burloak Water Purification Tunnel project (Burlington, ON).
- Provided environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.

Environmental Impact Assessments/Studies

- Conducted the field work and authored multiple EIA/EIS throughout Ontario.

Wetland Evaluations and Delineation

- Conducted multiple Wetland Evalautions and Delineation as per OWES (Ottawa, Rideau Lakes, United Counties of SDG, United Counties of Leeds and Grenville and many other locations).

Species at Risk Inventories / Monitoring

- Has over 15 years' experience of conducting butternut assessments. I am a butternut health assessor (BHA #281, a butternut health expert, and has aided for the Forest Gene Conservation Association of Ontario to assess the archivability of Category butternut 3 trees.
- Butternut survey and assessment for proposed developments (Brockville, Carleton Place, Carp, Clarence-Rockland, Cornwall, Munster, Hawkesbury, Kemptville, Ottawa, South Lancaster, Smith Falls, Stittsville, Prospect, Vars, Moose Creek, Prescott, Westminster, Renfrew, Battersea, Jones Falls, and Millbrook).
- American Eel surveys using the boat electrofisher on the Mississippi River (Almonte, ON), South Nation River (Casselman, ON) and Ottawa River (Renfrew, ON; Ottawa, ON: Shawville, QC)
- American Eel collection on the St. Lawrence River for the St. Lawrence River Institute (Cornwall, ON)
- American Ginseng survey for proposed development (Kanata, South Lancaster and Renfrew).
- Whip-poor-will survey for proposed development (Navan, ON; Kemptville, ON; Stittsville, ON; Prescott, ON; Alexandria, ON) and quarries (Avonmore, Moosecreek, Prospect, Stittsville, Kanata, Ottawa)
- Assisted in a Least Bittern survey (Avonmore, ON)
- Conducted turtle surveys: Blanding's turtle, Eastern musk turtle (Carleton Place, ON; Ottawa, ON; Stittsville, ON; Kanata, ON, Prospect, ON)
- Conducted rapid clubtail surveys (Almonte, ON)
- Bat maternal nesting site surveys (Prescott, ON; Battersea, ON; Prescott, ON; Hawkesbury, ON; Russell, ON)

Aquatic Inventories

- Boat electrofishing along the shoreline of the Ottawa River (Chat Falls, ON) along the shoreline of the Cataraqui River (Kingston, ON), downstream of the Carillion Dam (Pointe-Fortune, QC), Lake St. Francis (South Lancaster, ON), South Nation River (Casselman, ON), Raisin River (Lancaster, ON), and the St. Lawrence River (Cornwall, ON)
- Collecting and data entry for benthic macroinvetebrate community surveys on several watercourses within Ontario including: Bonnechere River (Renfrew, ON), Montreal River (Latchford, ON), Jock River (Ottawa, ON), tributaries of the Bonnechere River (Renfrew, ON), tributaries to Feedmill Creek (Ottawa, ON), tributary to Chippewa Creek (North Bay, On) and tributary to the Beaudette River (Alexandria, ON).
- Collecting and data entry for several fish community surveys including: Black Creek (Westminster, ON), Bonnechere River (Renfrew and Douglas, ON), Butler's Creek (Brockville, ON), East Branch of Little Cataraqui Creek (Kingston, ON), Kehoe Ditch (Greely, ON), Lac Opemisca (Ouje-Bougoumou, QC), Marshall Seguin Municipal Drain (Vars, ON), Montreal River (Latchford, ON), tributaries of Lavalle Creek (Carleton Place), tributaries to Feedmill Creek (Ottawa, ON), tributaries to Lafontaine Creek (Clarence-Rockland), tributaries to Shirley's Brook (Kanata, ON), tributaries to the Beaudette River (Alexandria, ON), tributaries to the Bonnechere River (Renfrew, ON), tributaries to the Ottawa River (Carp, ON; Ottawa, ON; Wendover, ON; Clarence-Rockland, ON), tributaries to the South Nation River (Casselman, ON), tributaries to the South Nation River (Jessup Falls, ON), tributary to Hawkesbury Creek (Hawkesbury, ON), Hawkesbury Creek (Hawkesbury , ON), tributary to the St.Lawrence River (Prescott, ON) and tributary to the North Castor River (Greely, ON).

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- Mapped fish habitat in many watercourses including: Black Creek (Westminster, ON), Bonnechere River (Renfrew and Douglas, ON), Butler's Creek (Brockville, ON), Kehoe Ditch (Greely, ON), Lac Opemisca/Lac Barlow Bypass channel (Ouje-Bougoumou, QC), Marshall Seguin Municipal Drain (Vars, ON), McKinnons Creek (Navan, ON), Montreal River (Latchford, ON), tributaries of Lavalle Creek (Carleton Place), tributaries of the Bonnechere River (Renfrew, ON), tributaries to Lafontaine Creek (Clarence-Rockland), tributaries to McKinnons Creek (Navan, ON), tributaries to Shirley's Brook (Kanata, ON), tributaries to the North Castor River (Greely, ON), tributaries to the Ottawa River (Ottawa, ON; Wendover, ON), tributaries to the South Nation River (Casselman, ON), tributaries to the South Nation River (Jessup Falls, ON), tributary to the St.Lawrence River (Prescott, ON) and tributary to Hawkesbury Creek (Hawkesbury, ON).
- Assisted in YOY sampling on the Raisin River (Lancaster, ON).
- Conducted riverine index netting on the Bonnechere River (Renfrew, ON).
- Assisted in gill netting on Bonnechere River (Renfrew, ON), Lac Barlow (Ouje-Bougoumou, QC), Lac Opemisca (Ouje-Bougoumou, QC), Montreal River (Latchford, ON), and Raisin River (Lancaster, ON).
- Assisted in conducting larvae surveys on Bonnechere River, Hoople Creek, Montreal River and Raisin River,
- Collected walleye eggs from the spawning grounds on the Bonnechere River, Montreal River, Raisin River and Hoople Creek.
- Assisted in the monitoring of a new wetland channel created in the Little Cataraqui River.
- Marsh monitoring program breeding amphibian survey at Stittsville, ON; Cornwall, ON; Kanata, ON; Hoople Creek and the Bonnechere River.
- Assisted in conducting fall walleye index netting for the MNR in Kawartha Lakes
- Conducted turtle surveys (Carleton Place, ON; Ottawa, ON)
- Conducted headwater waters assessment (Kanata, ON; Navan, ON, Ottawa, ON)

Terrestrial Inventories

- Multiple Environmental Impact Assessments across Ontario
- Tree Inventory for construction of the light rail (LRT; Ottawa, ON)
- Winter white-tailed deer survey (Edwardsburgh, ON)
- Plant community inventories for proposed developments, quarries, sand pits and road extensions (Brockville, Carleton Place, Carp, Casselman, Elgin, Griffith, Hamilton, Jessup Falls, Navan, Ottawa, Stittsville, Rockland, Simcoe, Cornwall, Kemptville, Hawkesbury, Smith Falls, Wendover, Moosecreek, Westminster, Prescott, Renfrew, Jones Falls, Michipicoten Island and in Ouje-Bougoumou in QC)

Aquatic Habitat Mapping for Municipal, City Roads and Provincial Highways

- Conducted MTO habitat assessments at Galetta Side Road, Torbolton Road, Kinburn Side Road (Ottawa, ON)
- Conducted MTO habitat assessments at Prince of Wales, Fernbank Road, Fallowfield Road, HWY 115, Arbuckle drain, the Carp river, tributaries to the Carp river and tributaries to Mud creek (Ottawa, ON)
- Conducted MTO habitat assessments at Innes Road, Ottawa, ON.
- Conducted MTO habitat assessments at MacLaren Side Road, Ottawa, ON.

Other

- Fish salvage: Mississippi River (Almonte, ON), Monaghan Drain (Ottawa, ON), tributary to the Rideau Canal (Kemptville, ON), and tributary to Feedmill Creek (Ottawa ON), Bonnechere River (Renfrew, ON)
- Assisted in conducting a winter bat hibernaculum inventory (Plantagenet, ON)
- Field research assistant for the Metalicuus study and EDC study (Experimental Lakes Area, ON)
- Captured, pit tagged, telemetry tagged and tracked Northern Pike (Experimental Lakes Area, ON)
- Construction and maintenance of nature trail (the Cornwall Outdoor Recreational Area, ON)
- Conducted frog deformities surveys (Glengarry, ON)
- Organized youth fishing derbies through SLFGC (2011-2013; South Lancaster)
- Organized the St.Francis Walleye Tournament through SLFGC (2012-2013; South Lancaster)

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CODY J.C FONTAINE, Fisheries and Wildlife Technologist

EDUCATION
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2012
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2011

LANGUAGES
Fluent in English

POSITIONS HELD
2022: BCH Environmental Consulting Inc., Fisheries and Wildlife Technologist
2014: Bowfin Environmental Consulting Inc., Fisheries and Wildlife Technologist
2009: Raisin Region Conservation Authority, Field Research Assistant

CERTIFICATIONS / PROFESSIONAL AFFILIATIONS
MTO/DFO/OMNR Fisheries Protocol, Environmental Monitoring For Construction Projects Practitioner (EMCPP), Ontario Stream Assessment Protocol (OSAP), Class 2 Electroshocking, first aid, CPR, Pleasure Craft Operator Card, WHMIS, WHSA, Hazard Identification, Assessment and Control, Ice Safety Training, Possession / Acquisition Firearms License, Fish Identification Certificate, Radio Telemetry Certificate, Fish Hatchery Operations Certificate, Ontario Hunter Education Course Certificate, Ontario trapper Education Course Certificate, Ontario class G driver's license.

EXPERIENCE
Experience in environmental monitoring, environmental assessments, terrestrial habitat assessment, species at risk surveys, amphibian surveys, freshwater habitat assessment, collection and identification of plants, collection and identification of fish, fish salvage, bat hibernaculum inventories and fisheries inventories including netting and electroshocking. Other experiences include GIS mapping.

Aquatic Inventories
- Assisted with boat electrofishing along the shoreline of the Ottawa River (Chat Falls and Ottawa, ON), Lake St. Francis (South Lancaster, ON), Bonnechere (Renfrew, ON), Raisin River (Lancaster, ON), Buckhorn Lake (Peterborough, ON) and the St. Lawrence River (Cornwall, ON)
- Assisted in collecting and data entry for several fish community surveys including: Bonnechere River (Renfrew, ON), tributaries to Feedmill Creek (Ottawa, ON), tributaries to Shirley's Brook (Kanata, ON), tributaries to the Ottawa River (Ottawa, ON), tributaries to the Rideau River (Manotick, ON), tributaries to the Castor River (Vars, ON), tributaries to the Otonabee River (Lakefield, ON), tributary to the Madawaska River (Arnprior, ON), tributaries to Kemptville Creek (Kemptville, ON), tributary to Blairs Creek (Clarence Creek, ON), tributaries to South Indian Creek River (Russell, ON) tributaries to the South Nation River (Casselman, ON), tributaries to Fraser Clarke Drain (Nepean, ON), tributaries to the Raisin River (Long Sault, ON), Oliver-Magee drain (South Glengarry, ON) and tributary to Hawkesbury Creek (Hawkesbury, ON).
- Assisted in collecting walleye eggs from the spawning grounds on the Raisin River.
- Marsh monitoring program breeding amphibian surveys (Stittsville, Lakefield, Cornwall, Long Sault, South Glengarry, Bourget, Manotick and Kanata, ON).
- Conducted turtle surveys (Carleton Place, Ottawa, Cornwall and Lancaster, ON)
- Conducted Headwater Assessments (Ottawa, Stittsville and Manotick, ON)
- Invasive Species Survey (Ottawa, ON)

Species at Risk Inventories / Monitoring

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- Assisted in butternut surveys, inventories and assessments for proposed developments (Carleton Place, Casselman, Cornwall, South Glengarry, Long Sault, Kemptville, Smiths Falls, Ottawa, Stittsville, Peterborough, Lakefield, Brockville, Alfred, Orleans, Kanata and Prescott, ON).
- American Eel surveys using the boat electrofisher on the Ottawa River (Ottawa, ON)
- American Eel collection on the St. Lawrence River for the St. Lawrence River Institute (Cornwall, ON)
- Conducted tailrace surveys for hydro facilities regarding American eel and lake sturgeon fatalities (Almonte, Renfrew, Ottawa and Fitzroy Harbour, ON)
- Whip-poor-will survey for proposed development (Ottawa, Kemptville, Bourget, Stittsville, Alfred, South Glengarry and Alexandria, ON) and quarries (Ottawa and Cornwall, ON)
- Surveyor for Little Brown bat, Eastern Small Footed Bat and Northern Long Eared Bat surveys at Ernestown Windpark (Ernestown, ON)
- Gray Ratsnake Survey (Smiths Falls and Lakefield, ON)
- Bat Cavity Survey (Lakefield, Smiths Falls, Bourget, Clarence Creek, Casselman, Orleans, Kanata, South Glengarry and Embrun, ON)
- Conducted Least Bittern surveys (Prospect, Alexandria, and Lancaster, ON)
- Conducted Black Tern nest surveys (Alexandria, and Cornwall, ON)
- Conducted turtle surveys: Blanding's turtle, Musk turtle and Northern Map turtle, Painted turtle and Snapping turtle (Carleton Place, Ottawa, Stittsville, Kanata, Rockland, Cornwall, Lakefield, Alfred, Clarence Creek and Lancaster, ON)
- Conducted American Ginseng Survey (Alfred, ON)
- Conducted rapid clubtail surveys (Almonte, ON)
- Conducted Osprey nest surveys (Cornwall, ON)

Terrestrial Inventories

- Assisted plant community inventories for proposed developments (Ottawa, Cornwall and Prescott, ON)
- Assisted in ELC inventories (Ottawa, Lakefield, Alfred, Kanata, Long Sault, South Glengarry and Peterborough ON)
- Nesting Bird Survey (Stittsville and Brockville ON)
- Large Tree Survey (Carp, Kanata and Orleans, ON)
- Deer and Moose Overwintering Survey (Alfred, ON)

Environmental and Fisheries Inspections

- Assisted in providing environmental and fisheries inspections for construction (Ottawa, ON)
- Assisted in turtle salvage during construction at the Cavanagh Snow Dump (Kanata, ON)

Fish Salvage

- Highway 401 Fish Salvage – Brockville, ON and Prescott, ON (Cruikshank, MTO Contract)
- Other fish salvages: Cardinal Creek (Ottawa, ON), Monaghan Drain (Ottawa, ON), tributary to the Rideau Canal (Kemptville, ON), tributary to Feedmill Creek (Ottawa ON), Bonnechere River (Renfrew, ON), Mississippi River (Almonte, ON), Ottawa River (Ottawa, ON), Tributary to Fraser Clarke Drain (Nepean, ON), tributary to St.Lawrence River (Newington, ON), Davidson Pond (Ottawa, ON),. Hazeldean tributary (Ottawa, ON), tributary to Jock River (Richmond, ON), culvert on Thunder Road (Gloucester, ON), culvert on Dunning Road (Cumberland, ON)

Other

- Organized fishing derby through RRCA (2008-2012; Cornwall, ON)
- Conducted environmental education presentations to many school groups (Cornwall, and Lancaster, ON)
- Tree Planting (2008-2012; Cornwall, ON)