Penn Energy – Hamilton_Port Hope-4
SOLAR ENERGY FACILITY

In the

Township of HAMILTON

Fit Contract No. F-000687-SPV-130-505
FIT Application No. FIT-FQWKQZF
COD: May 5, 2012

Natural Heritage Assessment
Part II: Site Investigation Report

DRAFT

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1.0 INTRODUCTION

Penn Energy Trust (Penn) has executed a Feed-in-Tariff (FIT) contract with the Ontario Power Authority (OPA) for the construction of a 10 MW (peak AC) solar energy facility near the Town of Baltimore, northeast of Cobourg, Ontario. The subject lands are located in Lot 3 Concession 2 of the Township of Hamilton. The proposed Renewable Energy Generation Facility (REGF) would consist of a collection of solar photovoltaic (PV) modules (each approximately 1.00 m x 1.67 m in dimension) that are grouped into arrays tilted and facing south. These stationary arrays are strung together forming a series of rows oriented east to west. The Environmental Protection Act (EPA) administered by the Ministry of the Environment (MOE) regulates Renewable Energy Approvals (REA) under Part V.0.1 of the act, pursuant to Ontario Regulation 359/09. As part of this act, a Natural Heritage Assessment (NHA) is required in order to identify potential impacts to the natural area. Bowfin Environmental Consulting Inc. (Bowfin) has been retained by Penn to conduct the NHA.

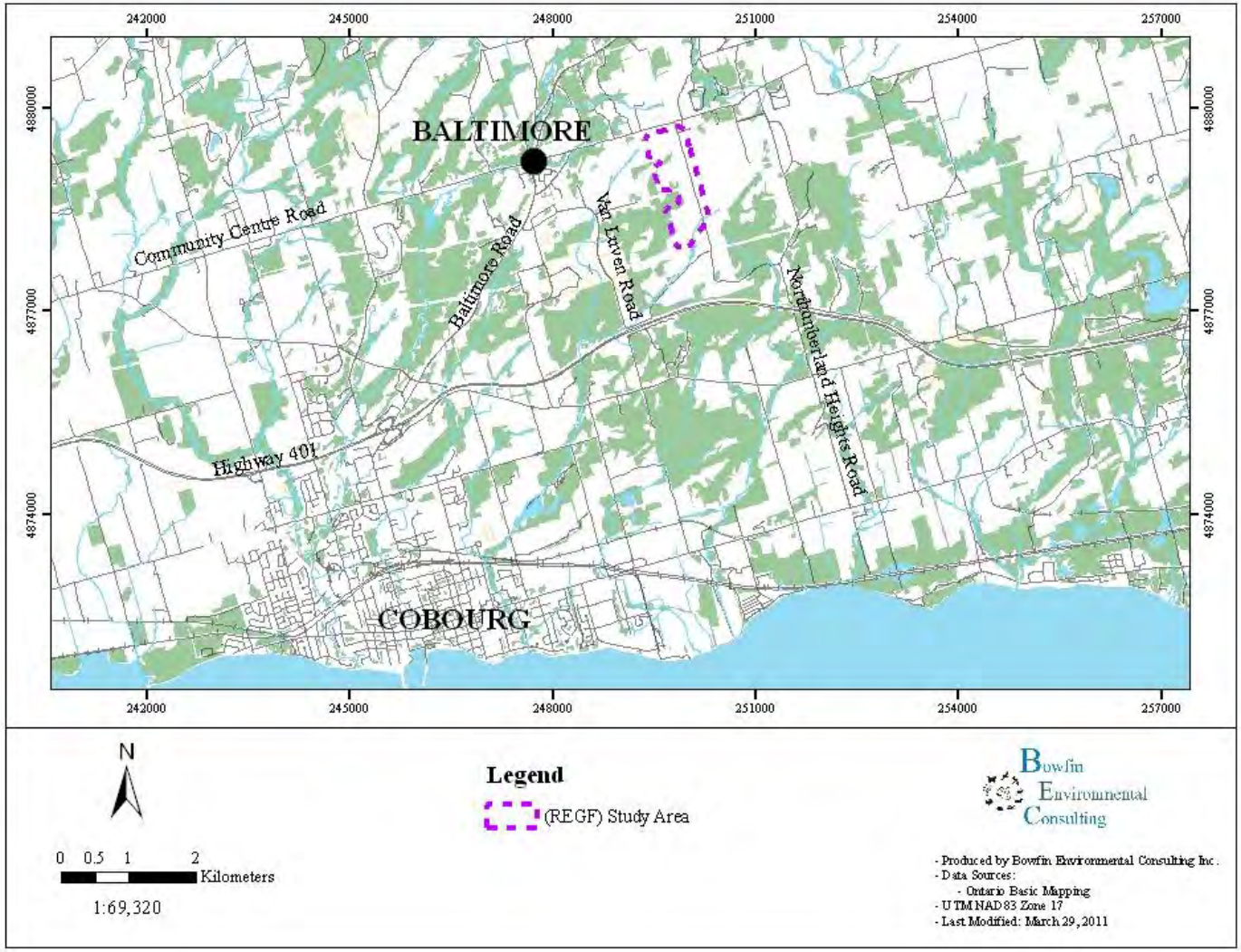
A NHA study includes three activities: a review of records (background information), a site investigation and an evaluation of the significance of each natural feature identified. This Site Investigation Report includes a description of the natural features encountered, the confirmation/correction of features identified in the Records Review and identification of the presence of any additional natural features on or up to 120 m (depending on the feature) from the REGF project location. These features would include:

- Areas of natural and scientific interest (ANSI) (earth or life science);
- wetlands (coastal, northern, southern);
- valleylands;
- wildlife habitat;
- woodlands;
- Certain additional Natural features in the Oak Ridges Moraine Conservation Plan Area;
- Certain additional Natural features in the Greenbelt Plan's Protected Countryside;
- Provincial parks; and
- Conservation Reserves.

Should any significant natural features be found within the REGF project location or the appropriate adjacent lands to the feature, then an Environmental Impact Study (EIS) is required to identify and assess the potential environmental effects of the project on the natural feature, Provincial Park or conservation reserve.

The following report provides a summary of the site investigations, the second of three parts of this project's Natural Heritage Assessment.

Figure 1 Location of the Subject Lands



2.0 METHODOLOGY

The study area for this proposed solar facility includes the portion of subject lands where any construction activities, including support facilities and staging areas, would take place (–REGF Project Location") as well as all adjacent lands within 120 m (collectively, the –Study Area") (Figure 2).

Preliminary mapping completed during the records review was corrected through ground truthing during the multiple site visits. Site investigations occurred on June 14th and 15th and July 7th and 8th and August 19th 2010. A total of 56 man hours were spent on site (Table 1).

Resumes for key personnel are provided in Appendix A.

Field notes are included in Appendix B.

Table 1 Summary of Dates, Times of Site Investigations

Date	Start time	End time	Staff	Total No. of Staff Hours	Air Temperature (min-max °C)	Comments
June 14, 2010	1000	1700	Michelle Lavictoire (M.Sc.) Shaun St. Pierre (B. Sc., and Fisheries and Wildlife Technologist)	14	13-21	overcast, little wind
June 15, 2010	0530	1100		11	11-21	sunny with scattered clouds in the morning, no wind
July 7, 2010	1100	1500		8	18-28	sunny
	2000	000		4		no wind
July 8, 2010	0500	1030		11	16-25	sunny
August 19, 2010	0830	1440	Michelle Lavictoire	6	14.2-24.4	sunny, little wind, very humid

Min-max. temp taken from: Environment Canada 2010. National Climate Data and Information Archive [on-line] available: http://www.climate.weatheroffice.gc.ca [November 23, 2010]

2.1 Habitat Description and Flora Observations

The habitat descriptions were completed by systematically cruising the study area. Specific habitat types identified during the preliminary mapping exercise were also targeted for community description. Habitat descriptions and flora observations were completed on June 14th and 15th, July 7th and 8th and August 19th, 2010. Habitat descriptions were based on the appropriate methodologies such as: *Ontario Wetland Evaluation System, Southern Manual* (OWES) for wetland habitats and the *Ecological Land Classification for Southern Ontario* (ELC) for terrestrial habitats. The minimum community size described was 0.5 ha. Smaller habitats were only described if they contained rare vegetation communities. Sufficient level of detail was collected in order to provide a general habitat description and identify the presence/absence of any of the natural environmental features.

Representative plants species were recorded within the communities and a running list of plants observed within the study area was kept. Specific attention was paid to locating species of conservation value[1] listed as potentially occurring within the study area (Appendix C). Any species of conservation value observed was photographed and its coordinates were recorded on a hand held GPS using NAD83. Plants that could not be identified in the field were collected for a more detailed examination in the laboratory. Nomenclature used in this report follows the Southern Ontario Plant List (Bradley, 2007) for both common and scientific names which are based on Newmaster *et al.* (1998). Authorities for scientific names are given in Newmaster *et al.* (1998).

2.2 Breeding Bird Surveys

Bird surveys were completed during the morning beginning in the early hours (typically by 0500 hours) and terminating before the afternoon (in response the decrease in the amount of singing). A focused effort to observe birds was made on June 14th, 15th and July 7th and 8th during the morning (0500hrs-1000hrs) by Michelle Lavictoire and on July 7th in the evening (2000hrs-0000hours) by Michelle Lavictoire and Shaun St. Pierre. The birding visits were completed on days with little wind. Breeding bird surveys were completed by travelling through the area by foot and stopping periodically for 5 minutes to listen and observe. Birds were identified by sound and/or sight. A search for raptor nests which was completed by looking for evidence of nesting [such as stick nests, food caches, whitewashing of branches and foliage, accumulation of feathers/fur or prey remains as per Appendix O of the *Significant Wildlife Habitat Technical Guide* (SWHTG)] as well as the raptors themselves. While walking the site special attention was paid at identifying flushed grassland species and/or their nests. This site was also visited on August 19th and any incidental sightings were recorded.

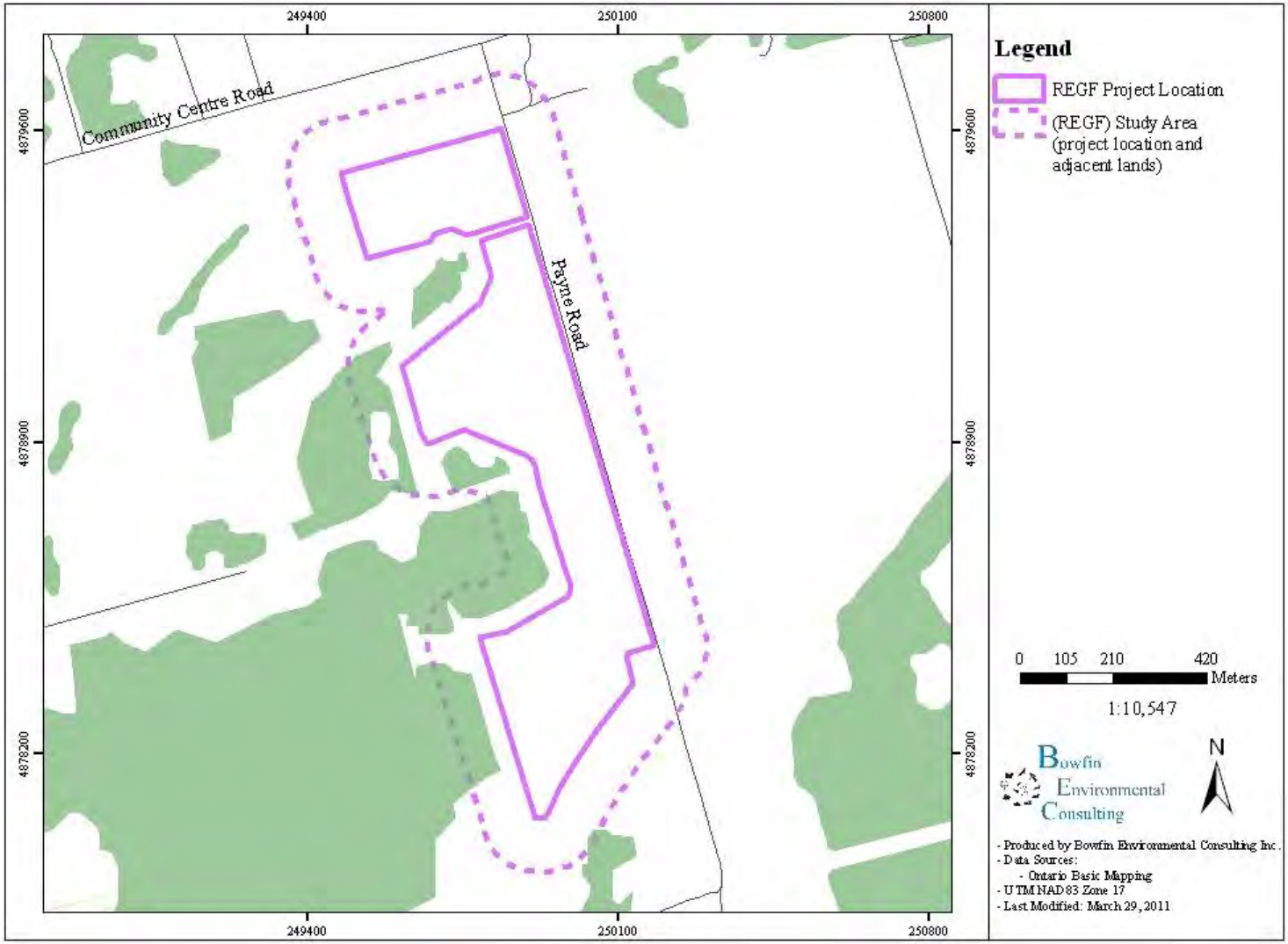
[1] "Species of conservation value" are those species listed as S1-S3 or as Special Concern (provincially or federally) or endangered or threatened federal species that are not listed as endangered or threatened provincially.

2.3 Incidental Fauna Observations

During all site visits any wildlife observations were recorded (June 14th and 15th, July 7th and 8th and August 19th, 2010). Incidental observations included observations of an individual, its tracks, burrows, feces and/or kill sights. Special attention was paid to wetted areas, rocky habitats and potential nesting sites which may provide habitat for amphibians and reptiles. Within the wetted areas searches for eggs, larvae and adult amphibians were made. Logs and stones were overturned for salamanders and reptiles.

Note: Neither species and/or their habitats that are protected under the Provincial *Endangered Species Act* nor fish and/or fish Habitat are included within the REA process, pursuant to O.Reg. 359/09. These subjects will all be dealt with in a parallel but separate process.

Figure 2 REGF Study Area (including the Project Location and adjacent lands within 120 m)



3.0 VERIFICATION OF RECORDS REVIEW

Results of the records review (part I of the NHA) identitfied candidate significant woodlands, valleylands and wildlife habitat in or within 120 m of the REGF project location. There were no records of wetlands or provincial park or conservation reserves in or within 120 m of the REGF project location and no ANSIs (earth science or life science) within 50 m of the REGF project location. The potential for additional natural features, wildlife habitat and sand barrens, savannahs, tallgrass prairie and alvars was studied during the site investigations.

The site investigations confirmed that the candidate woodlands and some of the valleylands identified in the Records Review Report do indeed occurr within 120 m of the REGF project location. Much of the valleyland located to the south of the study area was located within meadow habitat and active crop lands. These portions of the ~~–v~~alleyland" consisted of an incised channel but did not contain any unique landform features associated with valleylands. However, within the beech forest, a 200 m long segment of valleyland was still present (Figure 3). The location of the northern valleyland was also corrected. The uppermost (eastern) end of this valleyland was also surrounded by agriculture and had been manipulated. As such, the valleyland length was reduced by 210 m (Figure 3). Note that during the records review a fith valleyland located to the northwest of the study area was included on the map, since this valleyland is located 235 m from the study area it is not discussed in the site investigation report.

The majority of the habitat was not suitable for deer overwintering yard (i.e. project location consisted of row crops and much of the surrounding forest habitat was deciduous). A portion of the adjacent woodlands to the southwest of the REGF project location did provide potential deer overwintering habitat and this area is described in Section 4.0.

Additional natural features documented during the site investigations included: windrows, seeps, and a small wetland feature. All habitats observed during the site investigations are described in Section 4.0 of this report. A summary of the site investigation findings and corrections to the records review is presented in Table 2 and on Figure 3.

Table 2 Summary of Known and Candidate Natural Features Located within the REGF Project Location or the Adjacent Lands

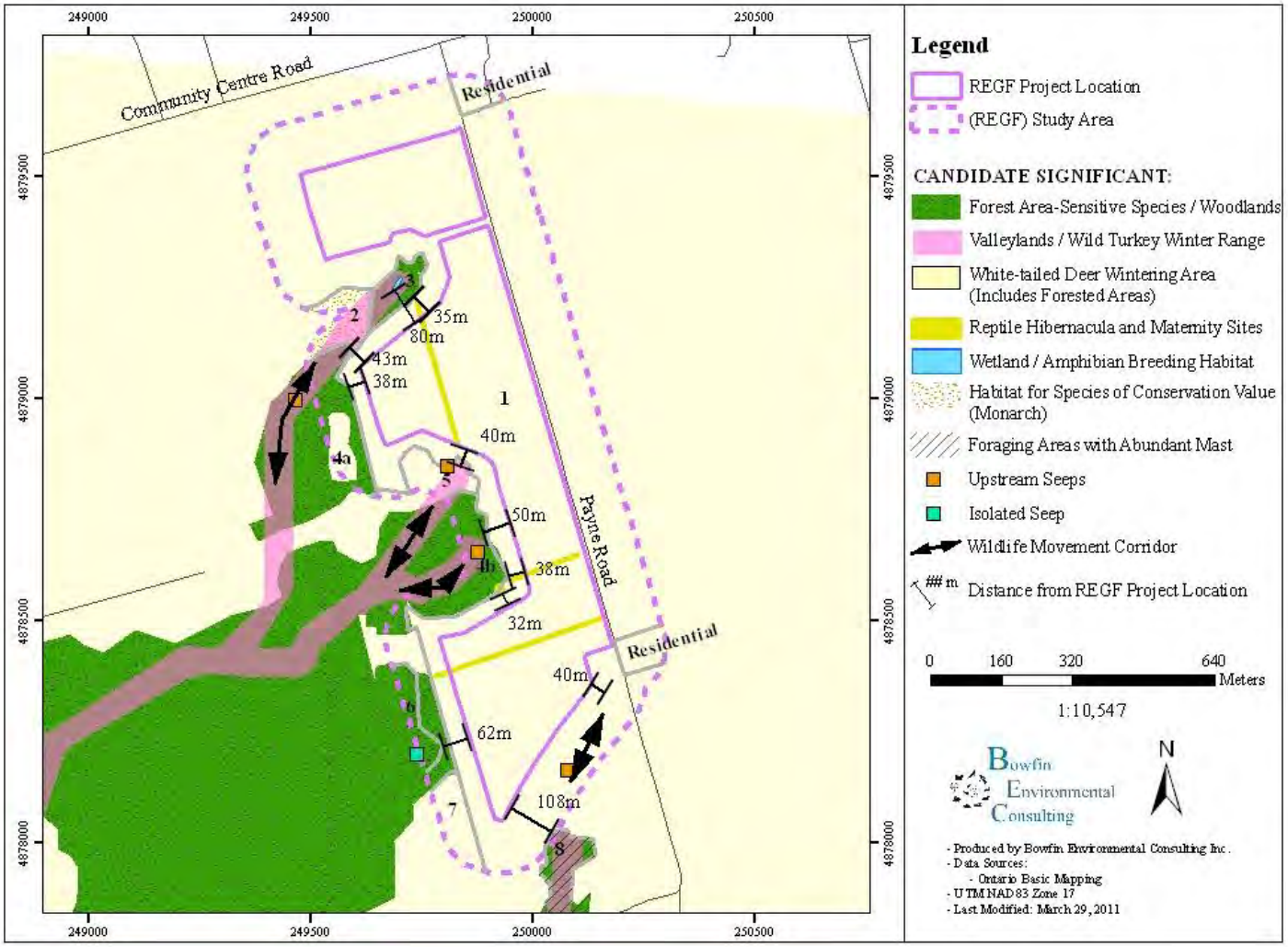
Natural Heritage Feature	Findings		Corrections to Records Review and Additional Natural Features
	Records Review	Site Investigations	
Wetlands	• No PSW are identified within the study area on the OP or during the records analyzed.	• A small wetland is located immediately to the southwest of the house. It consists of a man-	• New wetland feature identified (Figure 3)

Natural Heritage Feature	Findings		Corrections to Records Review and Additional Natural Features
	Records Review	Site Investigations	
		made pond (created by a berm). • Significance of feature to be evaluated in Evaluation of Significance Report.	
Woodlands	• OP and the records analyzed did not list any significant woodlands within the study area. • Satellite imaging identified a large woodland within 120 m of the REGF project location.	• A large woodland was confirmed to the west of the REGF area. • Significance of feature to be evaluated in Evaluation of Significance Report.	• Woodland presence and boundaries confirmed (Figure 3)
Valleylands	• The four headwater tributaries to Brook Creek are located within valleys that are designated as Environmentally Sensitive Areas on the OP.	• The presence of four headwater tributaries to Brook Creek was confirmed during the site investigations. • Significance of feature to be evaluated in Evaluation of Significance Report.	• The southern valleyland was reduced to an isolated 200 m long segment. • The northern valleyland length was reduced by 210 m (Figure 3)
Wildlife Habitat	• Located within an OMNR listed deer overwintering area. • Valleylands and woodlands likely provide wildlife habitat.	• The habitat within the REGF project location consists of primarily row cropping with the exception of rock piles and windrows. • The remainder of the candidate	• Potential for winter deer yard within coniferous stand confirmed. Remainder of area not suitable as it consisted of

Natural Heritage Feature	Findings: Records Review	Findings: Site Investigations	Corrections to Records Review and Additional Natural Features
		significant wildlife habitat is located outside of the REGF project location. • Significance of feature to be evaluated in Evaluation of Significance Report.	deciduous habitats or active row cropping. • New potential wildlife habitat confirmed (Figure 3)
ANSIs – Earth Science	• No significant ANSIs are listed as occurring within the study area on the OP or the records analyzed. • REGF project location is not located within 50 m of an ANSI	confirmed	no change
ANSIs – Life Science	• No significant ANSIs are listed as occurring within the study area on the OP or the records analyzed. • REGF project location is not located within 50 m of an ANSI		
Sand Barrens, Savannah, Tallgrass Prairie and/or Alvars	• None were identified as occurring within the records review.		
Provincial Park or Conservation Reserve	• REGF project location is not within a provincial park or conservation reserve.		

OP = official plan of the Township of Hamilton

Figure 3 Location of Candidate Significant Natural Features (based on site investigations)



4.0 DESCRIPTION OF NATURAL FEATURES

The site investigations confirmed that the REGF project location habitat consisted primarily of croplands with rock piles and deciduous windrows. The surrounding lands included meadow, thickets and deciduous and coniferous forest communities. These areas have been classified, at a minimum, to the ELC Community Ecosite level for upland habitats or using OWES for the wetland habitats (Figure 4). A description of each ecosite, series or vegetation type is provided below outlining the canopy cover, dominant species in the different layers and any species of conservation value that were observed. The descriptions are based on observations completed following leaf-out. The size of the polygon (located within the study area) is listed next to each community type. Attributes, functions are listed under the heading within each community description. A photograph is also included for each polygon.

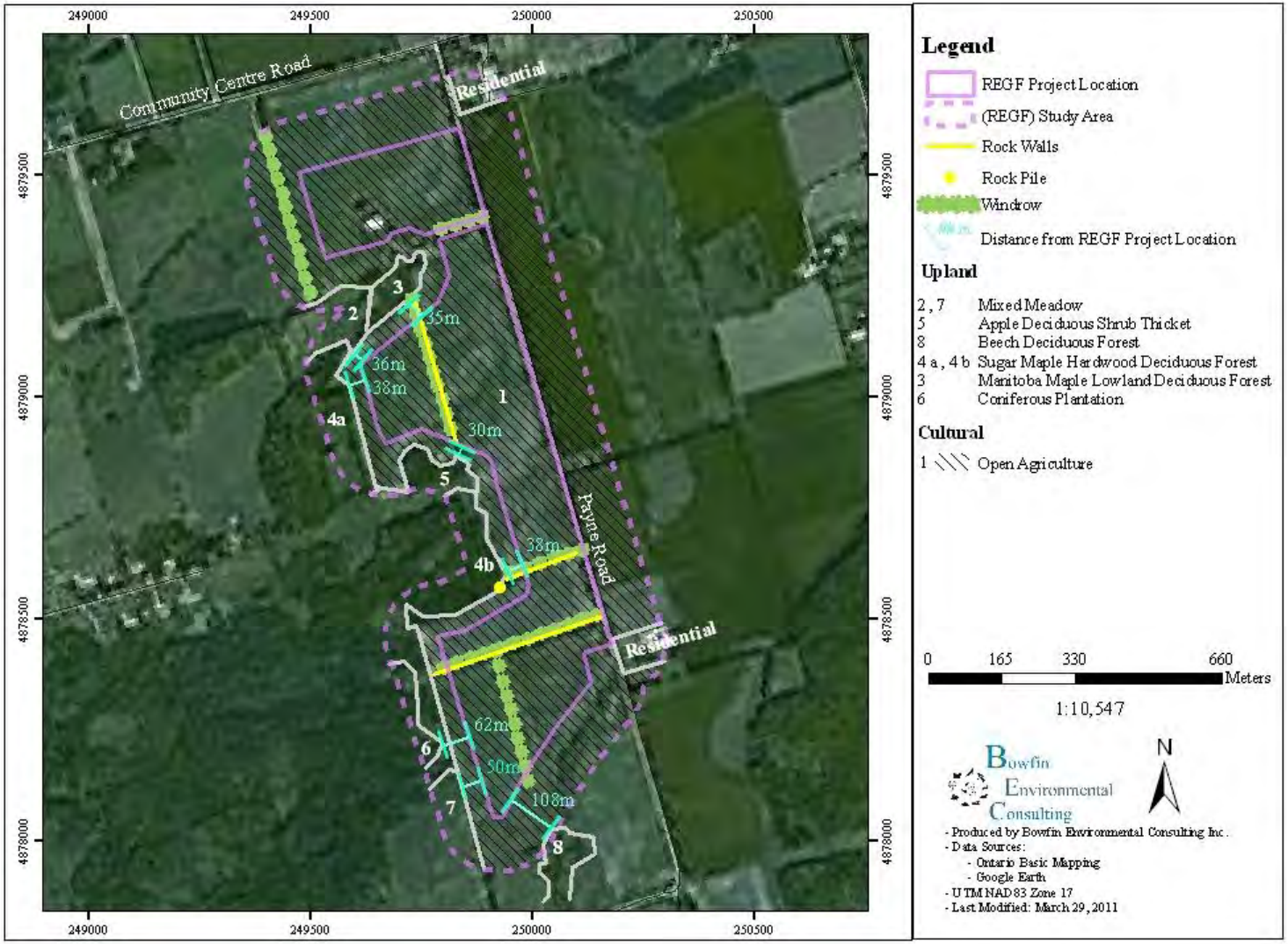
4.1 Natural Features within REGF Project Location

Type: Polygon 1 = Open Agriculture with deciduous windrows and rock walls

Attributes and Functions: This area is a candidate significant: reptile hibernacula and maternity sites. No reptiles or signs of reptile use were observed (no skins among rocks).

Composition: Note that while the open agricultural consists of active row cropping which are not considered significant wildlife habitat features due to the land-use; included within this polygon are windrows and rock piles which could provide significant habitat. The vegetation within the windrows consisted of deciduous woody vegetation including: American basswood, largetooth aspen, Manitoba maple, white ash, black cherry, white mulberry, wild red raspberry, riverbank grape, common yarrow, common milkweed, goldenrod and grasses. The row crops are also located up to the edge of the valleylands and the associated seeps and springs.

Figure 4 Habitat Mapping of Study Area



4.2 Natural Features within Adjacent Lands

Type: **Mixed Meadows (MEM)** (Polygon 2-1.5 ha and Polygon 7 -1.5 ha)

Attributes/Functions: Candidate significant: habitat for species of conservation value (monarch).

Photo 1 – MEM community located on the north side of the study area, June 15th, 2010

Composition: Mixed meadows are areas that have less than 25% tree and shrub cover and are dominated by both grass-like and broadleaf species. There were three mixed meadows (MEM) polygons; two on the northwest side and one in the south of the study area (Figure 4). These polygons consisted of fallow fields. There was little canopy cover within the meadow habitat. The ground cover provided 100% cover and consisted primarily of cow vetch, Canada goldenrod, and early goldenrod other species included bittersweet nightshade, tall buttercup, common milkweed and grasses (Photo 1). Vegetation that was more tolerant of wet conditions was found along the riparian corridor in the southern polygon (i.e. spotted joe-pye weed, purple loosestrife, and awl-fruited sedge).

Deciduous Thicket

Thickets are areas that contain more than 25% cover by shrub species and less than 25% cover by tree species. In deciduous thickets the cover provided by the shrub species is dominated by deciduous shrub species (must be >75%).

Type: Apple Deciduous Shrub Thicket (THDM2-10) (Polygon 5 measuring 1.5 ha)

Attributes/Functions: Candidate Significant: None. Food source for wildlife such as deer (apples).

Photo 2 – Apple deciduous shrub thicket, June 15th, 2010

Composition: An apple deciduous shrub thicket was located in the centre of the study area (Figure 4, Photo 2). The canopy layer was 2-4 m tall and was dominated by apple trees which were greater than white ash which was greater than hawthorn which was equal to common buckthorn (30% cover). The ground layer consisted of grasses, poison ivy, cow vetch, red clover, common milkweed, field hawkweed (90% cover).

Deciduous Forests

Forested areas contain tree species, regardless of their age, which provide over 60% canopy cover. The deciduous designation signifies that deciduous tree species provide 75% or more of the canopy cover. The majority of the deciduous forests were located within the adjacent lands.

Type: Beech Deciduous Forest (FODM4-1) (Polygon 8 measuring 0.1 ha)

Attribute/Functions: Candidate Significant: woodland, valleyland, wildlife movement corridor. Foraging area (beech).

Composition: The dry-fresh beech deciduous forest was located in the south central portion of the study area (Figure 4, Photo 3). The canopy layer was 20 m tall and consisted of larger beech trees [diameter at breast height (DBH) 30-45 cm] and provided 40% canopy cover. The subcanopy was 8-12 m tall and was also dominated by beech (DBH average 20 cm). The understory consisted of beech and maple and was 0.5-10 m tall and provided 20% canopy cover. The sparse ground vegetation consisted of grasses and zig-zag goldenrod (cover 15%).

Photo 3 – Beech forest located on the south end of the study area, June 14th, 2010.

Type: Sugar Maple – Hardwood Deciduous Forest (FODM6-5) (Polygon 4a – 2.5 ha and Polygon 4b -5.0 ha)

Attribute/Function: Candidate Significant: woodland, valleyland, habitat for area-sensitive species, wildlife movement corridor and seep and springs (potential foraging area for deer and wild turkey)

Composition: Polygons 4a and 4b were separated by two inclusions a mixed meadow (MEM) and a buckthorn deciduous shrub thicket (THDM2-6).

Photo 4 – Sugar maple forest located in Polygon 4b, June 15, 2010.

Polygon 4a was located on the northwest side of the study area (Figure 4). The canopy was 20-25 m tall and was represented by sugar maple which was much greater than white ash which was greater than basswood (canopy cover 90%).

The sub-canopy was 4-8 m tall and was dominated by sugar maple which was greater than white ash which was greater than basswood which was greater than beech. The understory was 0.5-1.0 m tall and consisted of regenerating sugar maple which was much greater than prickly gooseberry which was equal to red-berried elderberry (5-10% cover). The ground layer included regenerating sugar maple, trilliums, jack-in-the-pulpit, and sensitive fern (cover 10%). There was deadfall.

Polygon 4b was located in the middle of the study area on the slopes of a valley. The valley had two branches; a north and south branch. The southern side of the polygon had a canopy layer that was 20-25 m tall and was dominated by white ash which was greater than basswood (canopy cover 40%). The sub-canopy was 15 m tall and was dominated by basswood (DBH average 25 cm), sugar maple (DBH average 20 cm), beech (DBH 30-40 cm), ironwood (DBH average 15 cm) and black cherry (DBH average 30 cm) (canopy cover 25%). The understory was 4-8 m tall and was represented by white ash which was greater than common buckthorn which was greater than basswood which was greater than eastern white cedar (cover 40%). The ground layer was up to 1.0 m tall and included white ash, common buckthorn, prickly gooseberry, spotted jewel-weed, lady fern, sensitive fern and herb-roberts (cover 60%) (Photo 4).

The northern side of Polygon 4b was similar in terms of the canopy layer (although somewhat shorter and denser 18-22 m with a cover of 65%). The sub-canopy was 4-10 m tall and was dominated by beech which was greater than birch, sugar maple and white ash (60% cover). The ground layer was less than 0.5 m tall and consisted of blue cohosh which was greater than white ash (regenerating), enchanter's nightshade and jack-in-the-pulpit (cover 35%).

Photo 5 – Mixed meadow inclusion, June 15. 2010

The MEM inclusion contained less than 25% tree and shrub cover. Those individuals present were 4-6 m tall and consisted of white ash, eastern white cedar, apple, common buckthorn and hawthorn. The dominant vegetation were the grasses and broadleaf herbaceous species such as timothy, field hawkweed, cow vetch black-eyed Susan, common milkweed, black medick, wild carrot, viper's bugloss and riverbank grape (60% cover).

The buckthorn thicket (THDM2-6) had a canopy layer that was 8-10 m tall and consisted of common buckthorn which was greater than white ash which was greater than eastern white cedar (cover 50%). The understory consisted of up to 1.0m tall common buckthorn which was greater than white ash (cover <5%). The ground layer included dog-

Photo 6 – Buckthorn inclusion, June 15, 2010

strangling vine which was much greater than lady fern and violets.

Type: Manitoba Maple Lowland Deciduous Forest (FODM7-7) (Polygon 3 measuring 1.4 ha)

Attribute/Function: Candidate Significant: wetland, woodland, valleyland, reptile hibernacula and maternity site, turtle nesting habitat, bullfrog concentration area, wildlife movement corridor

Photo 7 – Manitoba maple lowland with a pond inclusion, August 19, 2010

Composition: The fresh-moist Manitoba maple lowland deciduous forest (FODM7-7) was located in the middle of the northern half of the study area, southwest of the house (Figure 4, Photo 7). This community surrounded a small isolated wetland pond. This small forest patch had a canopy layer was 12-15 m tall and was dominated by Manitoba maple which was greater than white ash (canopy cover 65%). The understory was 1.0m tall and consisted of white ash and alternative leaved dogwood (<1% cover). The ground layer was dominated by spotted jewel-weed, ostrich fern, and late goldenrod (100% cover).

This polygon included a small isolated wetland habitat consisting of a man-made pond with a canopy layer of Manitoba maple, white ash and weeping willow. The wetland was 96 m². The understory included regenerating sugar maple as well as wild black currant and common buckthorn. Other species included: sugar maple, wild red raspberry, red berried elderberry, common burdock, reed canary grass, wild cucumber, bittersweet nightshade, spotted joe-pye-weed, wood anemone, white avens, spotted jewel-weed. Large number of green frogs was observed within the pond.

Type: Coniferous Plantation (TAGM1) (Polygon 6 - measuring 1.0 ha within the study area)

Attribute/Function: Candidate Significant: woodland, white-tailed deer wintering area, habitat for area-sensitive species, wildlife corridor movement, and seeps and springs (potential foraging area for deer and wild turkey)

Photo 8 – Cedar plantation, June 15th, 2010

Composition: This cedar plantation was located on the western edge in the southern half of the study area (Figure 4, Photo 8). The canopy was 16-18 m tall and consisted of white cedar (DBH average 20 cm) with a few white ash

(DBH 16 cm) (canopy cover 90%). There was no ground cover. There was the occasional hawthorn in the understory. A seep was located within this polygon. The vegetation at the seep include species that were more tolerant of wetter conditions such as spotted joe-pye-weed, cut-leaved water-horehound, field horsetail, awl-fruited sedge, sparse flowered thimbleberry, bittersweet nightshade and crack willow. The ground within the seep was moist with some surface water.

Type: Payne Road Deciduous and Coniferous Roadside Windrows
The roadside vegetation contained a mixture of deciduous and coniferous windrows and cultural meadows. The vegetation included both native and non-native species such as: eastern white cedar, basswood, trembling aspen, black walnut, staghorn sumac, hawthorn, lilac, common milkweed, common mullein, white clover, goat's beard, wild carrot, riverbank grape, ragweed, bird's foot trefoil, ox-eye daisy, Philadelphia fleabane, European stinging nettle, foxtail, and timothy.

5.0 SUMMARY OF FLORA AND FAUNA OBSERVATIONS

5.1 Plants

The plant species data was collected as outlined in section 2.1 of this report. A list of the plant species that were recorded within the study area is provided in Appendix D. A total of 94 species were identified of which 66% were native and all but one was ranked at a value higher than S4. The butternut is a S3? ranked species (the question mark signifies that OMNR is uncertain of the ranking). The butternuts are dealt with in a separate document on Species at Risk. The number of native species is indicative of a disturbed area (sites with more than 70% native species are generally considered to be less disturbed). This is as expected due to the dominance of altered sites (i.e. croplands and plantations). The Co-efficient of Conservatism (CC) of the species recorded provides information on the species' tolerance to disturbance; those species with a high CC (maximum of 10) are highly sensitive. The average CC for this site was 3.47 which would place it in the low sensitivity range. The majority of the species had a CC value of 5 or lower (86%) as such none of the species found are considered to be highly sensitive. The plant species found indicated that the vegetation communities consisted of common communities for the area. No remnants of rare vegetation communities were observed.

5.2 Birds

Bird species were recorded as described in section 2.2 of this report. A total of thirty-five bird species were observed within the study area during the site visits (Appendix E). The majority of the sightings included singing males on one or more occasions. The few area-sensitive species that were observed included: red-breasted nuthatch, veery, and black-throated green warbler (Table 3) (Appendix G of the SWHTG). No birds were heard calling or seen during the night visit. All species that were observed are considered to be common species within the general area.

5.3 Incidental Wildlife Observations

A list of wildlife observations (other than bird species) for the study area was recorded as outlined in section 2.3 of this report and the list is located in Appendix F. The list includes 9 species: 2 butterflies, 2 amphibians and 5 mammals. Monarch butterfly is a species of conservation value, however this species is also commonly observed throughout the general area. No concentrations of monarchs or monarch caterpillars were observed. All species that were observed are considered to be common species.

6.0 SITE INVESTIGATION CONCLUSIONS

The site investigations confirmed that the habitat located within the REGF project location consisted primarily of row cropping with a few deciduous windrows and rock piles. While the row cropping by virtue of its land use is not considered significant wildlife, the windrows and rock piles may provide significant habitat. The value of these features is discussed in the Evaluation of Significance Report. Outside of the REGF project location, but within the study area there was a wide variety of habitats. The presence of candidate significant woodland, valleylands, and wildlife habitat were all confirmed within these adjacent lands (Figure 3, Table 2). Some of the potential significant wildlife habitats identified include: forest area sensitive species habitat, wild turkey winter range, deer overwintering area, reptile hibernacula/maternity sites, amphibian breeding habitat, bullfrog concentration areas, habitat for species of conservation value, foraging areas with abundant masts and wildlife movement corridor. All of these potentially significant features will be evaluated in the Evaluation of Significance Report, part III of this project's Natural Heritage Assessment.

Table 3 List of Area Sensitive Bird Species (requiring more than 10 ha), their requirements and Location where they were observed

Species	Min. Area Required (ha) (SWHTG)	Preferred Habitat	Observed (polygon number where available)		Comments
			REGF Project Location	120 m Adjacent Lands	
Red-breasted nuthatch	10	coniferous or mixed forests	✓ (4b)		heard calling during June
veery	10	cool, moist mixed coniferous forests			heard calling in June, outside of study area 400 m to the SW.
black-throated green warbler	30	mixed or coniferous forests		✓ (6)	hear calling to west of REGF project location in the coniferous plantation

7.0 REFERENCES

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Appendix A – Resumes

MICHELLE L. (NUNAS) LAVICTOIRE, M. Sc.

EDUCATION

M.Sc. Natural Resources, Environmental Assessment of Best Management Practices for Cattle Pasturing near Small Streams, Macdonald Campus, McGill University – Supervisor Dr. Curtis
B.Sc. Wildlife Biology, Macdonald Campus, McGill University, 1997

LANGUAGES

Fluent in English, French, Spanish and novice Indonesian.

PROFESSIONAL AFFILIATIONS

American Fisheries Society (AFS), Ontario Association of Certified Engineering Technicians and Technologists (O.A.C.E.T.T.), Association Québécoise pour l'évaluation d'impacts (AQEI), International Association for Impact Assessment (AIAI), World Sturgeon Conservation Society.

POSITIONS HELD

2002-:	Bowfin Environmental Consulting Inc., Principal/Biologist
2000-2002:	Self-employed, Biologist
1999-2000	Tera Environmental Consultants, Calgary, AB, Environmental Planner
1998-1999:	Enviroconsult Inc. Calgary, AB, Biologist
1998:	Golder Associates Ltd., Calgary, AB, Contract Technician
1997-1998:	Envirowest Consultants Ltd., Prince George, BC, Biologist
1996:	Heritage Laurentien, Montreal, PQ, Naturalist
1996:	Martineau-Walker, Montreal, PQ, Naturalist
1995:	Ottawa-Carleton Wildlife Centre, Ottawa, ON, Wildlife Intern

CERTIFICATIONS/COURSES

OACETT rcjii Graduate Technologist, Class 1 WSC Electroshocking Certification, first aid, CPR, PADI Instructor, marine radio operator, Pleasure Craft Operator Card. Ontario Fishes course offered by the Centre for Biodiversity and Conservation Biology at the Royal Ontario Museum. Ontario Freshwater Mussel Identification Workshop, Ontario Wetland Evaluation Training, Ecological Land Classification, Butternut Health Assessor. MTO R.A.Q.S. Fisheries Assessment, Environmental Inspection during Construction and Fisheries Compliance during Contracts

EXPERIENCE

Experience in environmental assessments, peer reviews, terrestrial habitat assessment, freshwater and marine habitat assessment, route selection, watershed studies and terrestrial and fisheries inventories including habitat mapping, stream classification, underwater surveys, electroshocking, and development of mitigation and compensation measures, including obtaining extensions to OMNR in-water timing constraints and DFO Authorizations and DFO Permits for Killing Fish by Means other than Fishing.

Aquatic and Terrestrial Environmental Impact Assessments

- Completed EIS for proposed WPCP expansion in the Town of Greater Napanee, ON
- Currently working on a terrestrial and aquatic component for the evaluation of proposed small hydroelectric options for a Cree community in northern Quebec.
- Currently responsible for the aquatic component for the Cataraqui Bridge Crossing, Kingston, ON.
- Currently completing the aquatic and terrestrial assessments for the proposed Clear Point small hydroelectric facility in Renfrew, ON.
- Currently completing the aquatic and terrestrial assessments for three proposed solar farms located in Port Hope, Prescott and Martintown.
- Currently working on an aquatic assessment for a proposed quarry near Rockland, ON.
- Completed aquatic environmental impact assessment for proposed sand pit operations in Greely and Bourget.
- Completed an environmental assessment for a proposed development along Heb Gordon Drain, Manotick, ON.
- Evaluated wetland boundaries for Doran Creek Wetland following OWES, Iroquois Ontario.
- Evaluated wetland boundary and significant woodland features for several single lot developments in the United Counties of SD&G and City of Ottawa.
- Completed the Environmental Impact Statement for the route selection and the Environmental Impact Assessment for the preferred option for the Caron Street Expansion in Rockland, ON.
- Completed the aquatic impact assessment and terrestrial species at risk evaluation for a proposed expansion to a small hydroelectric facility in Douglas, ON.
- Completed terrestrial EIS for proposed WTTP expansion in Iroquois, ON.
- Completed a terrestrial and aquatic route selection assessment for the Simcoe WPCP.
- Completed a Level 1 and Level 2 aquatic and terrestrial assessments for a proposed quarry expansion near Cornwall, ON
- Completed Level 2 fisheries report for Gagne Pit expansion near Rockland, Ontario.
- Completed wetland assessment following OWES for the proposed Morrisburg Industrial Park
- Completed aquatic impact assessment for PTTW, Apple Hill Quarry.
- Currently working on Aquatic and Terrestrial Environmental Impact Assessments for First Chute small hydroelectric facility projects on the Bonnechere River, ON.
- Completed the aquatic habitat and community assessment for a permit to take water for the Amberwood Golf Course, Ottawa ON
- Complete fish community and habitat impact assessment for the Morrisburg Waste water tunnel
- Prepared aquatic impact assessment for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Created artificial reef design for the Town of Saugeen Shores WPP.
- Conducted assessment of fish habitat use and determined potential impacts for the Town of Saugeen Shores WPP.
- Developed and conducted a study to assess fish kills within the Town of Saugeen Shores WWP.
- Fish habitat assessment along Stagecoach Road, Ottawa ON.
- Complete aquatic habitat and community impact assessment for a permit to take water for the Summersheights Golf Course.
- Prepared impact assessment and monitoring plan for the Burloak Water Purification Tunnel project (Burlington, ON).
- Completed aquatic habitat and community assessments for the permit to take water for the Riverbend Golf Course, Ottawa ON
- Conducted aquatic field assessments and reports for EA for vermiculite Canada project near

Bobcaygeon.
- Terrestrial screening level habitat assessment of Ferguson Lake development.
- Designed fish habitat compensation and monitoring plans for Cataraqui River Drilling Project.
- Assessed fish habitat within the Ottawa River near L'Orignal for the Wastewater treatment plant environmental screening report.
- Assessed fish habitat within Lake St. Lawrence (St. Lawrence River) near Morrisburgh for the wastewater treatment plant environmental screening report.
- Conducted level 1 terrestrial impact assessment for Vermiculite Canada project near Bobcaygeon.
- Conducted Environmental Screening Report for South Dundas between Morrisburg and Iroquois.
- Fish habitat assessment Foster Drain, Jock River, Ottawa ON
- Fish habitat assessment on drains on HWY 417 in Casselmen, ON
- Conducted fisheries habitat assessment and designed artificial embayments and fish habitat enhancements for the Chat Falls Boat By-pass.
- Conducted environmental assessment for the proposed South River Hydroelectric Facility including an assessment of impacts on aquatic and terrestrial habitats and communities.
- Wrote Environmental Screening Report and conducted environmental inspections for Cataraqui River Drilling Project.
- Conducted Alexandria Wastewater treatment Plant Expansion Environmental Impact Study.
- Conducted Westley's Point terrestrial and Aquatic Environmental Screening Report for a sewer and watermain.
- Fish habitat assessment on Poole Creek near Stittsville, ON.
- Conducted field work for the environmental screening for the Harbour Front Trunk Sewer Overflow Control – Environmental Assessment.
- Fish habitat assessment Sawmill Creek, Cahill Tributary and Brown's Inlet, Ottawa ON
- Conducted fish habitat assessment and prepared environmental impact statement investigating the potential impacts of a lowering and realignment on the aquatic habitat on Spratt Municipal Drain.
- Conducted terrestrial and aquatic field assessment and wrote Environmental Screening Report for a development project on Loughborough Lake.
- Identified and mitigated potential fish habitat impacts as a result of a proposed increase in water level of the Garry River System, Alexandria, Ontario.
- Fish habitat assessment of Hosaic Creek within the Dupont Nature Reserve, Morrisburg ON.
- Assisted with terrestrial environmental impact assessments, in identification of environmental features to identify constraints and opportunities in support of a proposed Official Plan amendment in Tatlock, Ontario.
- Conducted the marine aquatic impact assessment for the Strait of Georgia Pipeline Crossing, BC.
- Assisted with environmental impact assessments, environmental field reports and fieldwork for various pipeline projects in Alberta.
- Wrote Environmental Overview for Tanglewood Residential Development in Calgary.
- Wrote Environmental Overview for Creekside Mills Residential Development in Calgary.
- Wrote Environmental Overview and Environmental Protection Plan for Beddington Trail, Calgary.
- Wrote Environmental Overview for Elbow Valleye Environmental Protection Plan in Calgary.

Aquatic Inventories
- Completed fish community sampling for the Third Crossing on the Cataraqui River (boat electrofishing and seine netting).

- Completed fish community sampling on Lafontaine drain in Rockland for a proposed subdivision.
- Completed backpack electrofishing and minnow trapping on watercourses at proposed sand pit expansions in Greely, and Bourget Ontario.
- Completed backpack electrofishing and minnow trapping on tributaries to Brook Creek in Port Hope, on a tributary to the St. Lawrence River near Prescott and Wood Drain in South Glengarry for proposed solar farms.
- Completed walleye spawning monitoring (night surveys and egg traps) in and around the chute between Lakes Opemisca and Barlow in northern Quebec.
- Completed a fish kill monitoring of the recently upgraded water treatment facility in Southampton, ON.
- Completed fish community sampling on a tributary to Gray's Creek in Cornwall, Ontario for a proposed subdivision.
- Conducted young-of-the-year walleye monitoring on the Raisin River and Lake St. Francis using boat electrofishing, Cornwall ON.
- Conducted boat electrofishing sampling on the Cataraqui River for a proposed dredging program, Kingston ON.
- Completed boat elecrofishing and habitat mapping for Port of Prescott proposed expansion.
- Conducted fish community sampling within an unnamed drain in Russell, ON.
- Conducted fish community sampling within Feedmill Creek for a proposed development Ottawa, ON.
- Conducted fish community sampling within a tributary to the St. Lawrence River, Brockville, ON.
- Conducted fish community sampling and pike monitoring on the Eastman Drain, Cornwall ON.
- Conducted fish community monitoring and pike surveys on the Heb Gordon Drain, Manotick, ON.
- Conducted fish community sampling on tributaries to Shirley's Creek Kanata, ON.
- Conducted fish community sampling on Foster Drain, Ottawa ON.
- Designed and conducted walleye larvae survey of Hoople Creek and Raisin River (neuston net).
- Collected and analyzed fish and benthic macroinvertebrates from Pattingale and Hoople Creeks for a comparison study of impacted and non-impacted sites for the Raisin Region Conservation Authority.
- Developed and conducted first year of sampling for a benthic macroinvertebrate monitoring program for PTTW, Riverbend Golf Course, near Ottawa, ON.
- Completed R.I.N. (OMNR) gill netting protocol on Reach 1 of the Bonnechere River, Renfrew ON.
- Collected fish community and benthic macroinvertebrate information within tributaries to Clarence Creek for a proposed subdivision, Rockland, ON.
- Collected fish community and benthic macroinvertebrate information within tributaries to Lafontaine Creek for a proposed subdivision, Rockland, ON.
- Collected fish community information from two tributaries to the Ottawa River, Wendover, ON.
- Sampled fish communities within Adams Pond (Ottawa, ON).
- Completed first year of fish community monitoring for the Poole Creek re-alignment at Huntmar Road, Ottawa (backpack electrofishing multi-season)
- Completed the first year of a three year monitoring project for the Cataraqui Utilities Crossing project within the Cataraqui River (boat shocking, seine netting, habitat assessment)
- Completed a three year monitoring project of the new wetland channel created in the Little

Cataraqui River, Kingston ON (seine netting).
- Assessment of benthic macroinvertebrates and fish communities within tributaries of the Bonnechere River (Renfrew ON) (seine netting, gill netting, backpack electrofishing, minnow trapping, multi-season).
- Conducted fish removal on a tributary to Trout Lake for Cruickshank on HWY 60
- Conducted young-of-the-year muskie seining within the Ganonoque area for Muskies Canada and OMNR (seine netting)
- Fish community sampling Mosquito Creek, Carp River and its tributaries. Ottawa, ON (backpack shocking)
- Provided fish removal services for Poole Creek at Huntmar, Kanata Ontario.
- Conducted young-of-the-year muskie and walleye seining within Lake St. Francis (Cornwall, ON).
- Assisted the City of Ottawa in locating and identifying potential walleye spawning grounds in the Rideau River.
- Conducted boat electrofishing on the Cataraqui River (Kingston, ON).
- Collected and analyzed walleye eggs from the spawning grounds at on the Raisin River and Hoople Creek.
- Conducted shoreline boat and beach seining along Lake St. Francis for the Lake St. Francis Fish Habitat Plan.
- Conducted and analyzed data from a stream assessment project of Hoople, Hoasic and Sutherland Creeks (OSAP protocol).
- Conducted boat electrofishing along the shoreline of Lake St. Francis and Raisin River, Cornwall ON with the RRCA.
- Designed, collected and analyzed the results for benthic macroinvetebrate community surveys on several watercourses within Ontario including: South River (Village of South River), tributary to the Beaudette River (Alexandria), Hoasic and Hoople Creeks (Morrisburgh), Sutherland Creek and Raisin River (Cornwall), Jock River (Ottawa) and a tributary to Feedmill Creek (Ottawa).
- Collected information on aquatic habitat, including inventory of fish communities and spawning survey to support proposed water taking from the Tay River (backpack shocking).
- Conducted boat electrofishing along the shoreline of Raisin River, Cornwall ON.
- Lake St. Francis (Cornwall, ON) and on the Cataraqui River (Kingston, ON).
- Developed and conducted fish habitat and community study on the Lower Raisin River (backpack shocking, seine netting, boat eletrofishing multi-season).
- Developed, organized and conducted marine field work, gathered environmental information, located contacts and assisted in writing the draft report for the Strait of Georgia Pipeline Crossing.
- Developed and conducted a fish survey on West Nose Creek, Alberta.
- Assisted in a fry monitoring project at the NOVA pump house on Red Deer River, Alberta. Responsibilities included setting and monitoring fry traps, and data collection.
- Conducted FRBC stream inventorying for Lakeland Mills, British-Columbia.
- Project Director: Realized, developed and presented a population study on the host sea anemones and anemonefishes in Sulawesi, Indonesia in cooperation with McGill University, Ecosurveys Ltd (UK) and Newman Biomarine Pte Ltd (Singapore). The study involved coral habitat mapping and fish surveys.

Environmental and Fisheries Inspections

- Completed inspections during construction and fish salvage on Meade Creek at HWY 7, near Peterborough, ON.
- Designed fish salvage operations for a small hydro facility in Ontario.

- Clarkson's wastewater tunnel inspection design and quality control
- Burloak water purification tunnel blasting fish kill monitoring design and implementation
- Burloak water purification tunnel suspended sediments inspection design and implementation
- Provided environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.
- Conducted fish removal for MTO project on HWY 125.
- Provided fish removal services on the Trans-Northern Pipeline near Cornwall
- Provided fish removal services for a culvert replacement on Green's Creek near Maynooth, ON.
- Provide environmental and fisheries inspections for MTO projects in Napanee and Vankleek Hill, Lancaster and Ottawa Ontario.
- Conducted Environmental inspection of the dewatering process for the Elbow Valley Residential sanitary sewer system, Calgary Alberta.

Species at Risk Inventories

- Completed SAR assessment for the Colborne Effluent forcemain.
- Completed Protection of SAR assessment for MTO Contract 2010-4028 near Perth, ON.
- Completed butternut assessments in Port Hope, Prescott, and Martintown for proposed solar farms.
- Completed butternut assessments for a proposed sand pit expansion near Bourget, ON.
- Completed butternut assessment for proposed quarry near Moose Creek, ON.
- Completed SAR habitat assessment and search for butternut and American ginseng inventories along Thorps-Ellis Drain, S, D & G
- Completed SAR habitat assessment for proposed WPCP expansion in Greater Napanee, ON.
- Completed butternut assessment on butternuts located on a proposed property to be subdivided in Stittsville.
- Completed butternut inventory for the proposed Clear Point Hydroelectric facility, Renfrew, ON.
- Completed visual surveys for turtle species at risk along the Bonnechere River, Renfrew, ON.
- Completed visual survey for Eastern musk turtle near Kemptville, ON

Other

- Currently co-authoring the Walleye Management Plan for Lake St. Francis with the Raisin Region Conservation Authority and OMNR.
- Assisted in the peer review of the Talston Hydroelectric project, NWT Canada.
- Presented a talk on monitoring walleye larvae and BMPs at the IAGLR Conference, May 2006.
- Presented *How to Develop a Monitoring Program for BMPs* at the Great Lakes Sustainability Non Point Source Symposium, March 2006
- Co-authored Lake St. Francis Fish Habitat Plan for Raisin Region Conservation Authority.
- Coordinated the 2003 Strategic Habitat Restoration Working Group workshop for the Raisin Region Conservation Authority.
- Co-authored a paper on the Effects of Marine Pipelines on the Benthic Environment, presented at the 7th International Symposium on Environmental Concerns in Right-of-Way Management.
- Created and conducted environmental education programs in French for children and the general public.

SHAUN M. ST.PIERRE, B.Sc.

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

2006-:	Bowfin Environmental Consulting Inc., Field Assistant/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
Ontario Benthos Biomonitoring Network, Ontario Stream Assessment Protocol, Butternut Health Assessor, Class 2 Electroshocking, first aid, CPR, Pleasure Craft Operator Card, Marine Radio Operator, WHMIS, All Terrain Vehicle Riders Course (issued by the Manitoba Safety Council), Water Safety Training (Bronze Cross), Ontario Trapping Course and Snowmobile Licenses.

EXPERIENCE
Experience assisting in environmental monitoring, environmental assessments, terrestrial habitat assessment, freshwater habitat assessment, fish behavioral studies, winter bat hibernaculum inventories and fisheries inventories including habitat mapping, electroshocking, FWIN and RIN. Other experience include GIS.

Aquatic Inventories
- Assisted with boat electrofishing along the shoreline of the Cataraqui River (Kingston, ON), South Nation River (Casselman, ON), Raisin River (Lancaster, ON), and Lake St.Francis (South Lancaster, ON).
- Assisted in collecting and data entry for benthic macroinvetebrate community surveys on several watercourses within Ontario including: Bonnechere River (Renfrew, ON), tributaries of the Bonnechere River (Renfrew, ON), the Jock River (Ottawa, ON) and tributary to the Beaudette River (Alexandria, ON).
- Assisted in collecting and data entry for several fish community surveys using backpack electrofisher including: Bonnechere River (Renfrew and Douglas, ON), tributaries of the Bonnechere River (Renfrew, ON), tributary to the Beaudette River (Alexandria, ON), tributaries to the South Nation River (Jessup Falls, ON), Butler's Creek (Brockville, ON), Black Creek (Westminster, ON) and Lac Opemisca (Ouje-Bougoumou, QC).
- Mapped fish habitat in many watercourses including: tributaries to the South Nation River (Jessup Falls, ON), Butler's Creek (Brockville, ON), Black Creek (Westminster, ON).

- Assisted in YOY sampling on the Raisin River (Lancaster, ON).
- Assisted in conducting riverine index netting on the Bonnechere River (Renfrew, ON).
- Assisted in conducting larvae surveys on Hoople Creek, Raisin River and the Bonnechere River.
- Assisted in collecting walleye eggs from the spawning grounds on the 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 Hoople Creek and the Bonnechere River.
- Assisted in conducting fall walleye index netting for the MNR in Kawartha Lakes

Species at Risk Inventories

- Butternut survey and assessment for proposed development (Brockville, ON).
- Butternut survey and assessment for proposed development (South Lancaster, ON).
- Butternut survey and assessment for quarry expansion (Moosecreek, ON).
- Butternut survey and assessment for quarry expansion (Westminster, ON).
- Butternut survey along the Bonnechere River near Renfrew Ontario.
- American Eel survey on the South Nation River (Casselman, ON)
- American Ginseng survey for proposed development (South Lancaster, ON).
- American Ginseng survey along the Bonnechere River near Renfrew Ontario.

Terrestrial Inventories

- Plant community inventories for proposed development (Ouje-Bougoumou, QC)
- Plant community inventories for proposed development (Brockville, ON)
- Plant community inventories for proposed development (Hamilton, ON)
- Plant community inventories for proposed development (Simcoe, ON)
- Plant community inventories for proposed development (South Lancaster, ON).
- Plant community inventories for quarry expansion (Moosecreek, ON).
- Plant community inventories for quarry expansion (Westminster, ON).
- Plant community inventories along the Bonnechere River (Renfrew)
- Plant community inventories for the Caron street extension (Rockland)

Environmental and Fisheries Inspections

- Conducted environmental inspections for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Assisted in providing environmental and fisheries inspections for the blasting and drilling operation for the Burloak Water Purification Tunnel project (Burlington, ON).
- Assisted in providing environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.

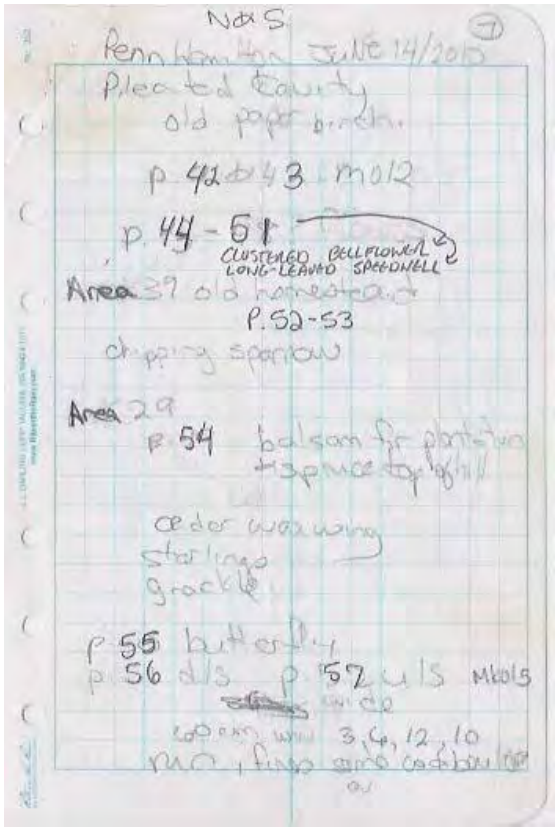
Aquatic Habitat Mapping for Municipal, City Roads and Provincial Highways

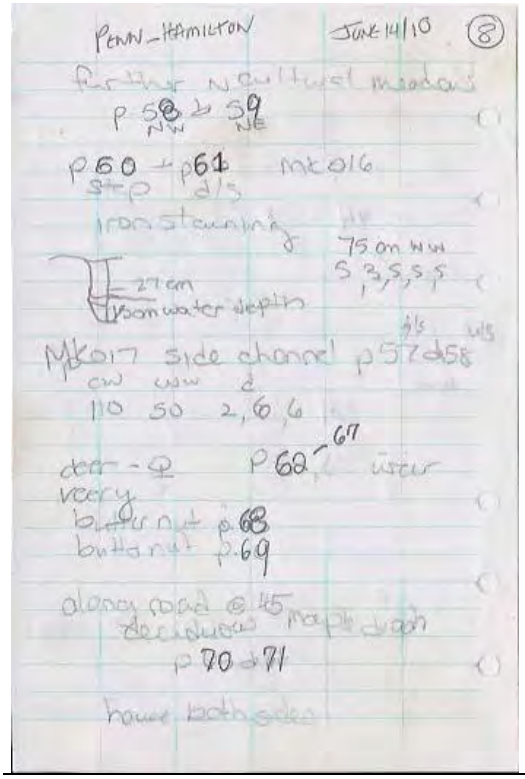
- Conducted MTO habitat assessments at Prince of Wales, Fernbank road, Fallowfield road, HWY 115, Arbuckle drain, the Carp river, tributaries to the Carp river and tributaries to Mud creek.

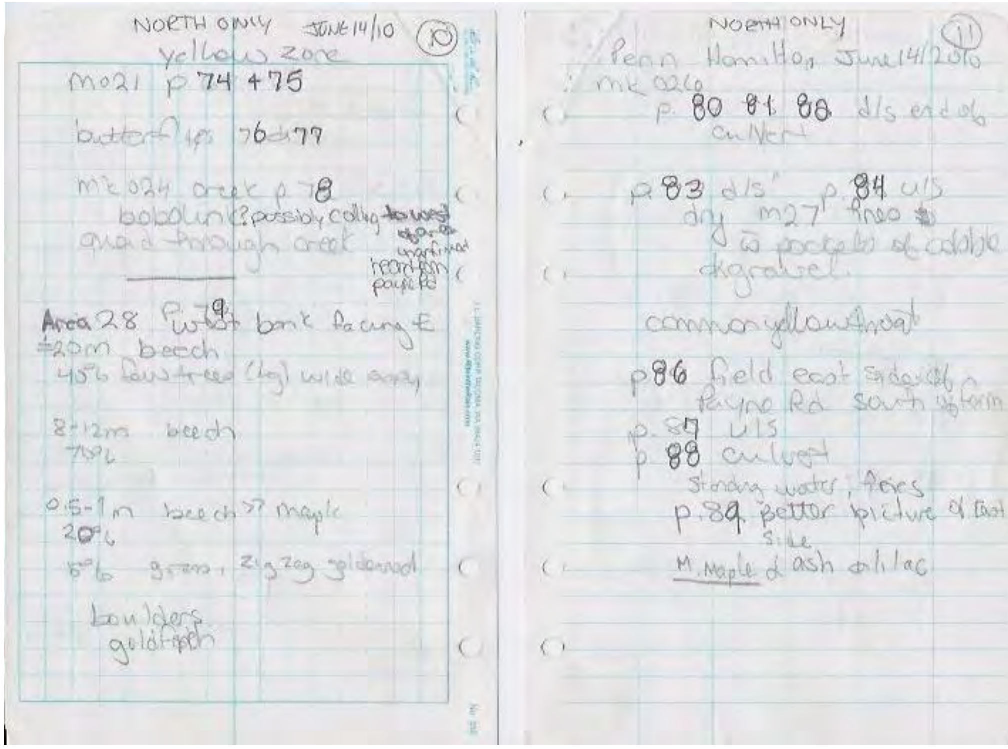
Other

- Assisted in conducting a winter bat hibernaculum inventory (Plantagenet)
- Field research assistant for the Metalicuus study and EDC study (Experimental Lakes Area)
- Captured, pit tagged and tracked Northern Pike (Experimental Lakes Area)
- Construction and maintenance of nature trail (the Cornwall Outdoor Recreational Area)
- Conducted frog deformities surveys (Glengarry)

Appendix B – Field Notes






NORTH ONLY JUNE 14/10 (10)
yellow zone
mo21 p 74 + 75
butterflies 76 + 77
mk 024 creek p 78
bobolink? possibly calling to west
quad through creek
Area 28 P 79 west bank facing E
±20m beech
45% few trees (big) wide apart
8-12m beech
70%
0.5-1m beech >? maple
20%
5% grass, zig zag goldenrod
boulders
goldfinch

NORTH ONLY (11)
Penn Hamilton June 14/2010
mk 026
p. 80 81 88 d/s end of culvert
p 83 d/s p. 84 u/s
dry m27 fines
w pockets of cobble & gravel
common yellowthroat
p86 field east side of Payne Rd south of farm
p. 87 u/s
p. 88 culvert
standing water, fines
p. 89 better picture of east side
M. Maple & ash & lilac

PENN – HAMILTON JUNE 14/10 SS

(4)

YELLOW ZONE

W. PINE
COTTONWOOD MO22 DBH 2
" MO23 " 15 LEANERS
MO24 CREEK WW 24 G DEPTHS 4, 11, 15, 14, 12
C.L.W. HORSETAIL W. MINT

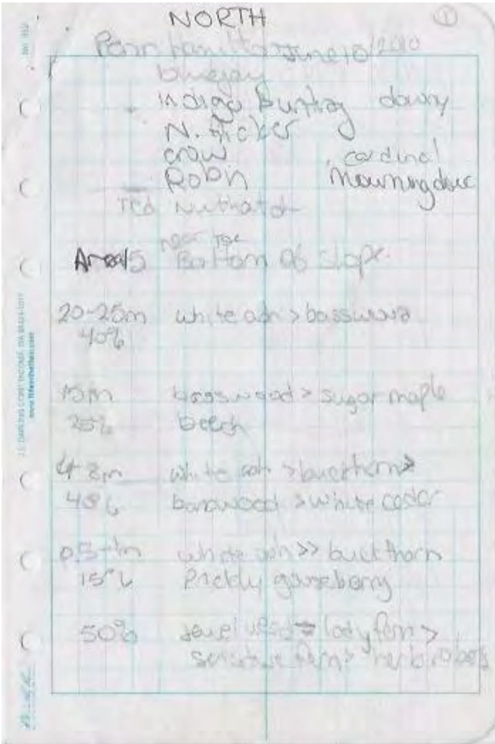
AREA 28 SEC A. BEECH (DBH 45, 30, AVG 20)
SC 5,
VALLEY SAME AS MO41
COLTS FOOT

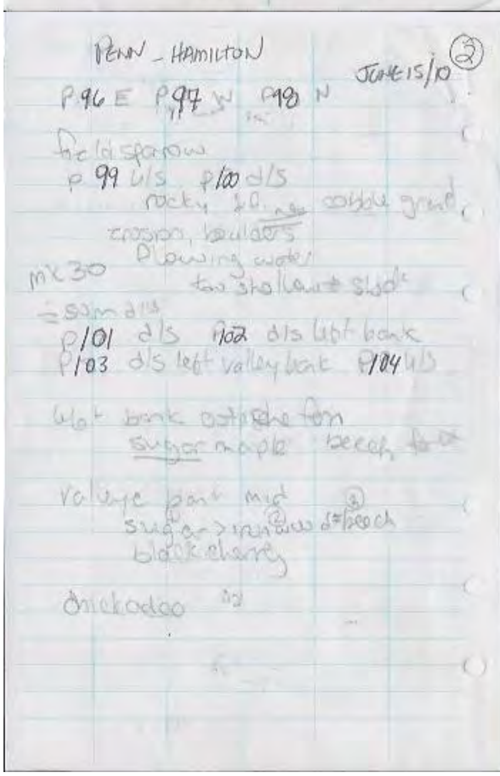
MO25 PAYNE RD .. GOING S → N
EAST: CEDAR HEDGE ROW W/ LILAC THEN AGRI FIELD (SOY?
WEST: AGRI FIELD FOXTAIL – SOME SHRUBS: LILAC
W. AC. H. C. MILKWEED R. CLOVER T. BUTTERCUP B.F. TREFOIL HAWTHORN
C. MULLEIN B. CAMPION DOG-SPREADING VINE RAGWEED S. SUMAC
W. CLOVER C. BUCKTHORN YARROW M. MAPLE OX EYE
R.F. CINQUEFOIL B. MEDICK R. GRAPE GRASS (SAME AS RED ZONE)
G. BEARD W. CARROT THISTLE BASSWOOD T. HONEYSUCKLE
T. ASPEN S. MAPLE P. FLEABANE
S. JEWELWEED, K.C. GRASS, TIMOTHY

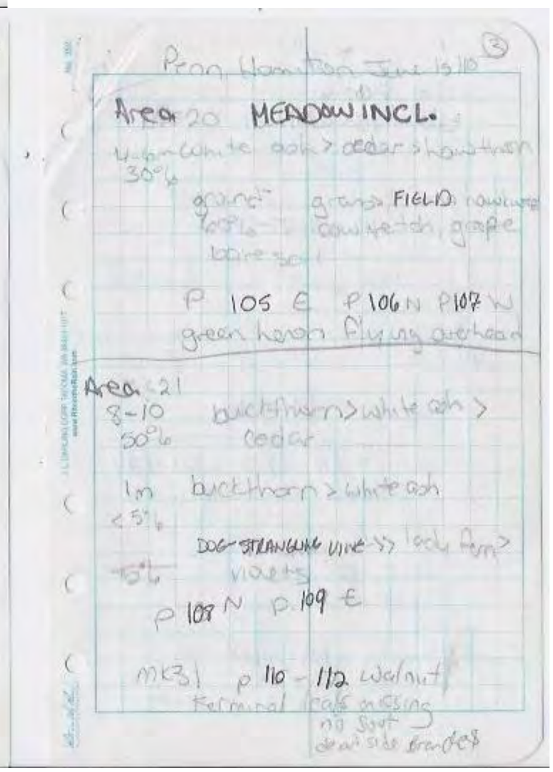
S. NETTLE W. CUCUMBER, P. IVY, C. VETCH
S. JEWELWEED GOLDENROD (SAME AS LAST SITES, RED ZONE)
B. NIGHTSHADE GENTIAN
T. BUTTERCUP

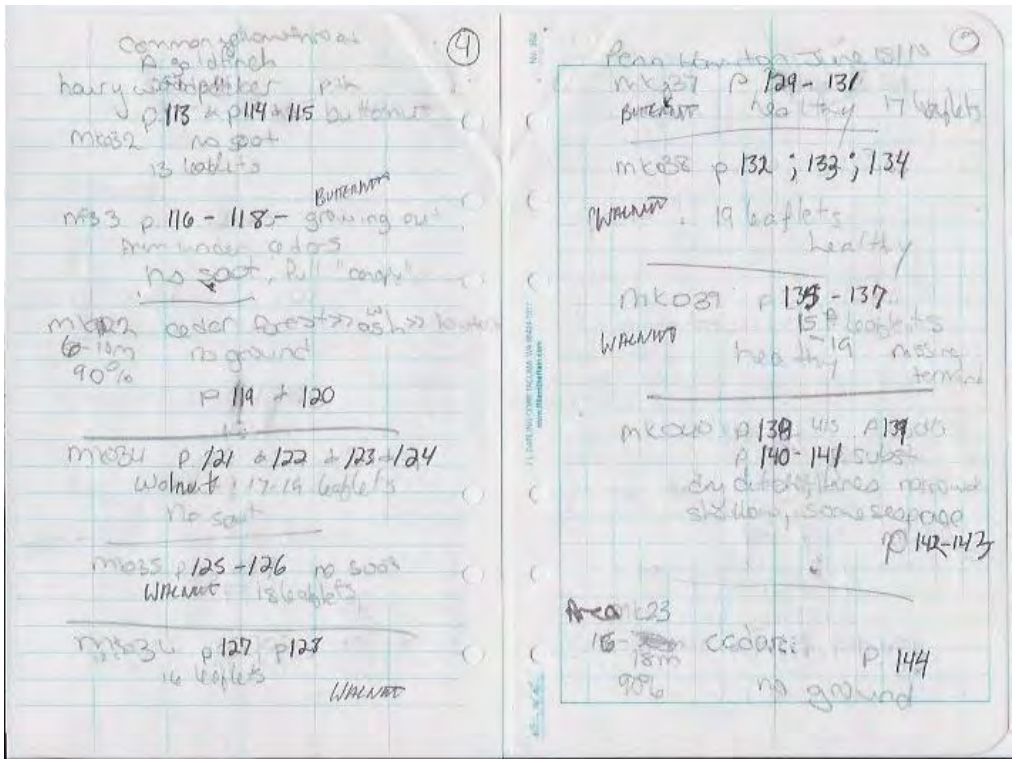
AREA 26 + 27 B. POPLAR BASSWOOD M. MAPLE HAWTHORN
DOG-SPREADING VINE C. BUCKTHORN BLUE STEMMED GOLDENROD B.F. TREFOIL

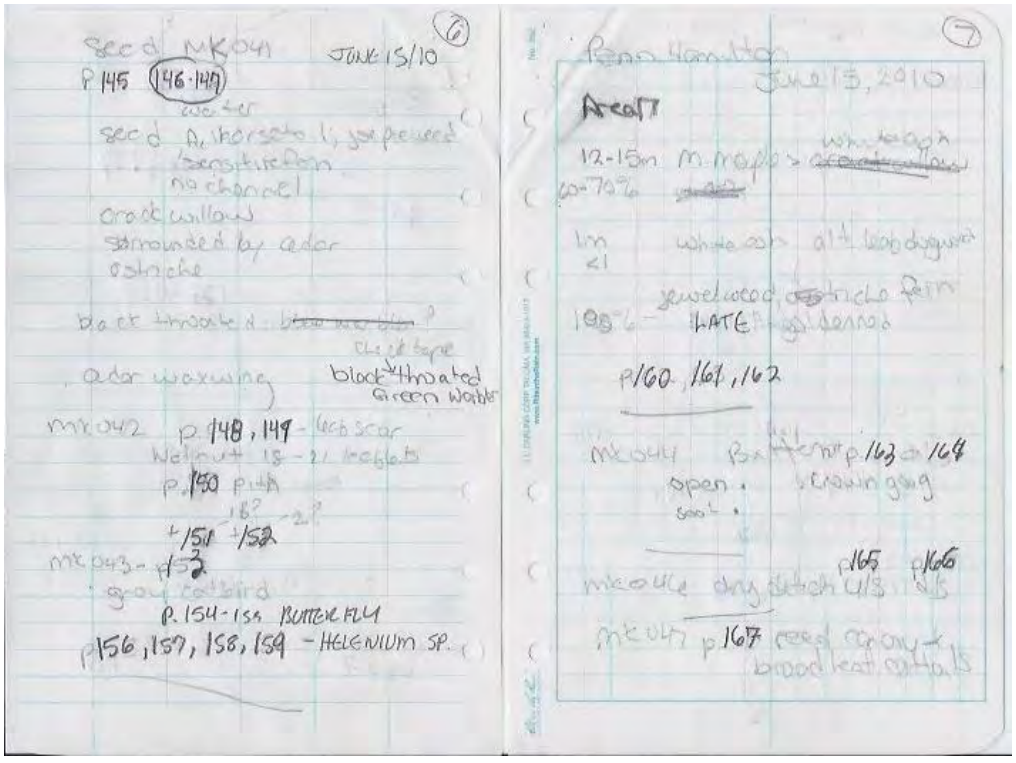
AREA 5 POND S. MAPLE W. AVEN M. MAPLE S. JEWELWEED
W. ASH WOOD ANEMONE C. BUCKTHORN HERB-ROBERT
W. B. CHERRY W. R. RASPBERRY E. NIGHTSHADE
S.J.P. WEED WEEPING WILLOW W. CUCUMBER RED BERRIED ELDERBERRY
B. NIGHTSHADE K.C. GRASS C. BURDOCK

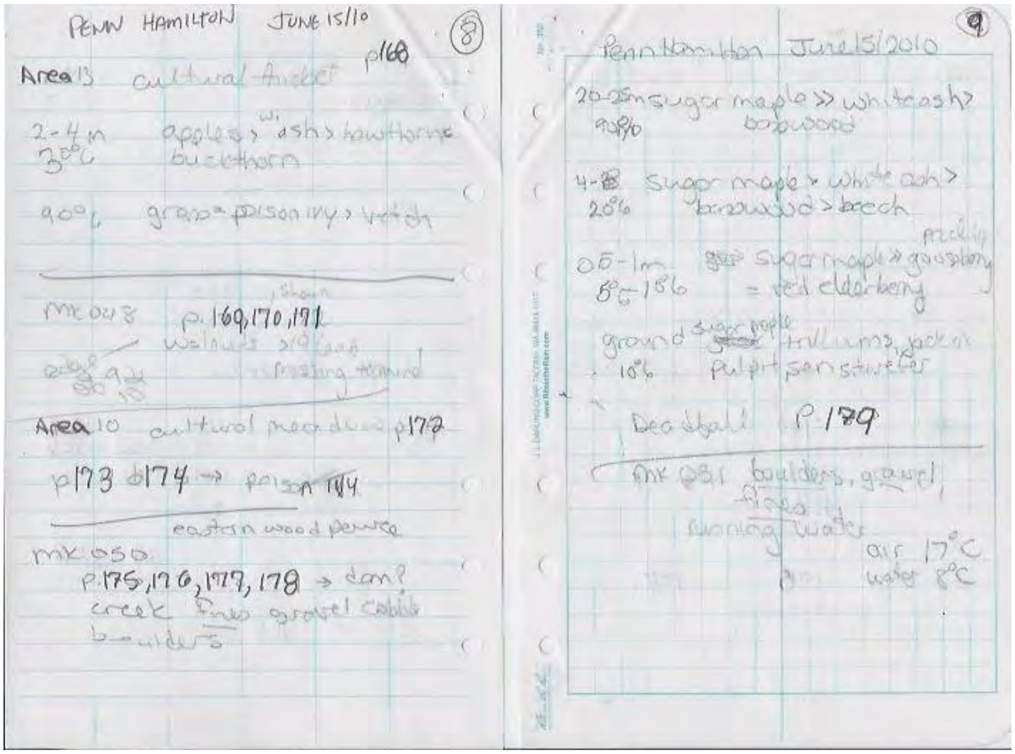

NORTH
Penn Hamilton June 10/2010
bluejay
indigo bunting downy
N. flicker
crow cardinal
Robin Mourning dove
RB Nuthatch
Area 15 Bottom of Slope
20-25m white ash > basswood
40%
15m basswood > sugar maple
25% beech
4-8m white ash > buckthorn >
40% basswood > white cedar
0.5-1m white ash >> buckthorn
15% Prickly gooseberry
50% jewelweed = lady fern >
sensitive fern > herb robert


PENN _ HAMILTON
JUNE 15/10
P96 E P97 W P98 N
field sparrow
P 99 U/S P100 d/S
rocky, cobble gravel
erosion, boulders
Flowing water
mk 30 too shallow to slide
~50m d/s
P101 d/s P102 d/s left bank
P103 d/s left valley bank P104 U/S
Wet bank ostriche fern
sugar maple beech
valley bank mid
sugar > ironwood > beech
black cherry
chickadee

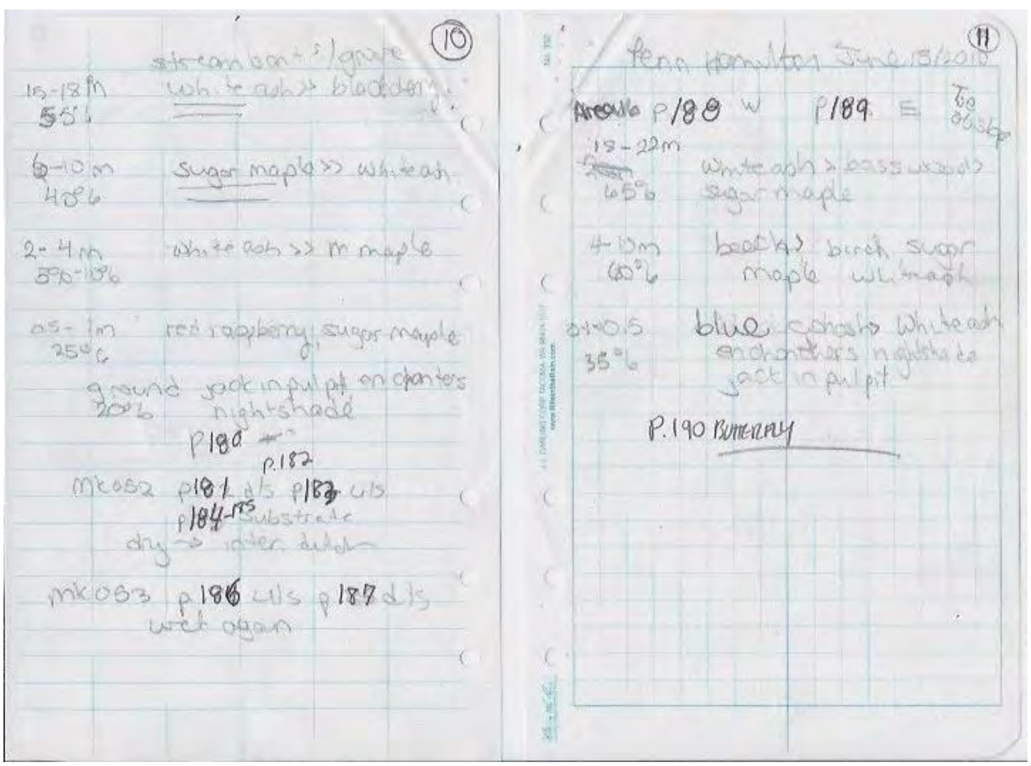

Penn Hamilton June 15/10
Area 20 MEADOW INCL.
white ash > cedar > hawthorn
30%
ground grass FIELD: cow vetch, grape
80%
bare soil
P 105 E P106 N P107 W
green heron flying overhead
Area 21
8-10 buckthorn > white ash >
50% cedar
1m buckthorn > white ash
< 5%
DOG-STRANGLING VINE >> lady fern >
violets
P108 N P109 E
mk31 p110 - 112 walnut
terminal leafs missing
no spot
dead side branches



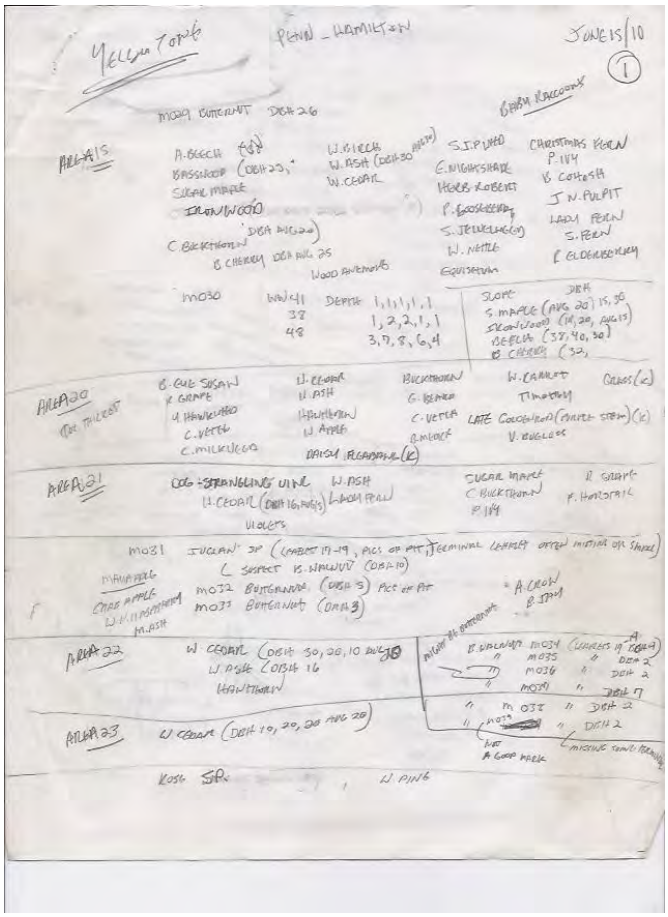


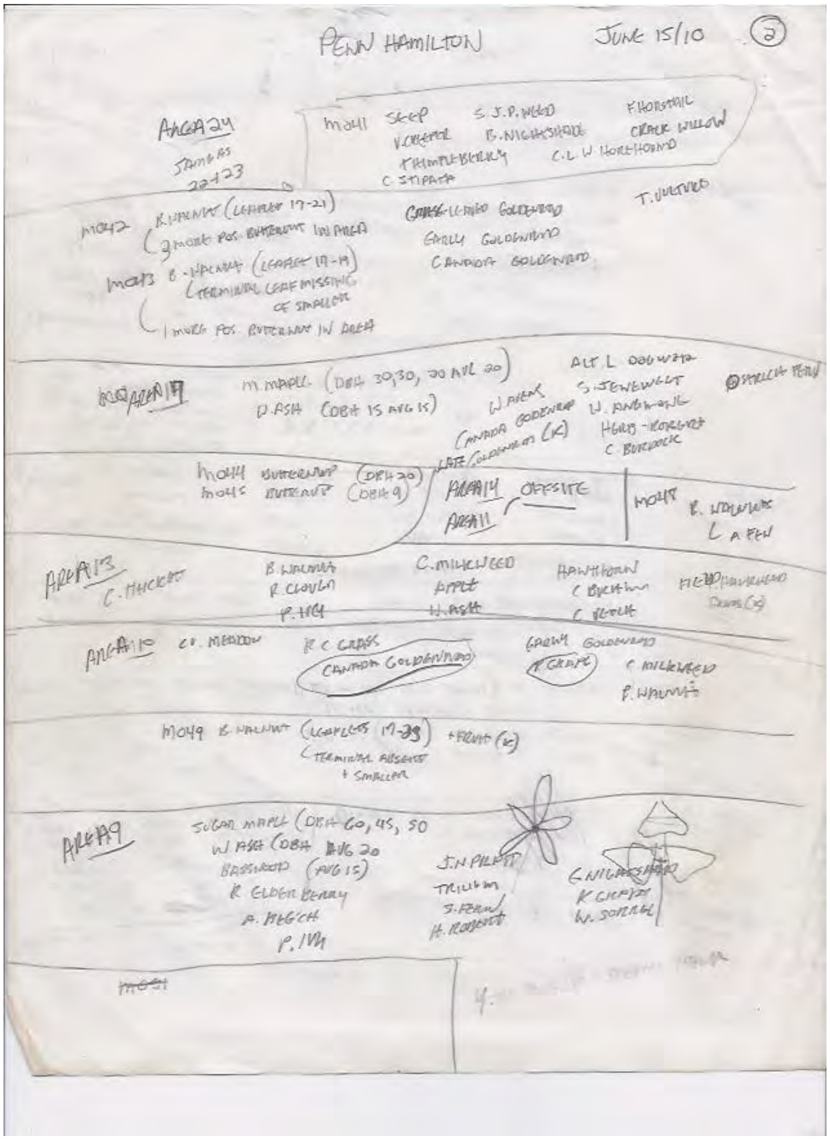

PENN HAMILTON JUNE 15/10 (8)
p168
Area 13 cultural thicket
2-4 m 30% apples > w. ash > hawthorne buckthorn
90% grass poison ivy > vetch
mk 048 p.169,170,171
Area 10 cultural meadow p172
p173 & 174 → poison ivy
eastern wood pewee
mk 050
P.175,176,177,178 → dam?
creek fine gravel cobble boulders

Penn Hamilton June 15/2010 (9)
20-25m sugar maple >> white ash > basswood 90%
4-8 sugar maple > white ash > 20% basswood > beech
0.5-1m sugar maple > prickly gooseberry 8%-15% = red elderberry
ground sugar maple trilliums, jack in 10% pulpit, sensitive fern
Dead ball P179
mk 051 boulders, gravel, fines, running water
air 17°C
water 8°C


(10)
stream bank / grape
15-18 m 55% white ash >> bladdernut
6-10 m 40% sugar maple >> white ash
2-4 m 5%-10% white ash >> m maple
0.5-1m 25% red raspberry, sugar maple
ground 20% jack in pulpit enchanters nightshade
P180
mk 052 p181 d/s p183 u/s p.182
p184-185 substrate
dry → wider ditch
mk 053 p186 u/s p187 d/s
wet again

Penn Hamilton June 15/2010 (11)
Area 16 P188 W P189 E
18-22m 65% white ash > basswood > sugar maple
4-10m 60% beech > birch, sugar maple, white ash
0.1-0.5 35% blue cohosh > white ash enchanters nightshade jack in pulpit
P.190 Butternut


Yellow Tops
PENN - HAMILTON
JUNE 15/10
1
MOBY OUTCROP DBH 26
BARN BLACKBERRY
AREA 15
A. BEECH
BASSWOOD (DBH 23,
SUGAR MAPLE
IRONWOOD
C. BUCKTHORN
B. CHERRY DBH AVG 25
W. ASH
W. CEDAR
S. IRONWOOD
E. NIGHTSHADE
HERB ROBERT
P. GOOSEBERRY
S. IRONWOOD
W. NETTLE
EQUISETUM
CHRISTMAS FERN
P. IVY
VIRGINIA CREEPER
J. W. PULPIT
LADY FERN
S. FERN
E. ELDERBERRY
WOOD PAVEMENT
MO30
DEPTH 1,1,1,1,1
1,2,2,1,1
3,7,8,6,4
SLOPE
DBH
S. MAPLE (AVG 30) 15, 35
BASSWOOD (14, 20, AVG 17)
BEECH (37, 40, 30)
B. CHERRY (32,
AREA 20
B. CUC SUSAN
R. GRAPE
U. HONEYSUCKLE
C. VETCH
C. MILKWEED
U. CEDAR
W. ASH
HAWTHORN
W. APPLE
DAISY FLEABANE (E)
BUCKTHORN
G. BEARD
C. VETCH
G. MILKWEED
W. GARLIC
TIMOTHY
LATE GOLDENROD (GRASS STEM) (E)
V. BUGLOSS
CARROT (E)
AREA 21
COO + STRANGLING VINE
W. ASH
U. CEDAR (DBH 16, FORK)
LADY FERN
VIOLETS
SUGAR MAPLE
C. BUCKTHORN
P. IVY
R. GRAPE
F. HORSETAIL
MO31 SUGAR 30 (CLOSEST 17-19, PICS ON PIT) TERMINAL LEADER OFFSET WITHIN ONE WHORL
C. SUSPECT VS. WHORLY (DBH 10)
MAHA PEEL
CRAB APPLE
W. HAWTHORN
M. ASH
MO32 BUTTERNUT (DBH 5) PICS ON PIT
MO33 BUTTERNUT (DBH 3)
A. CROW
B. STAR
AREA 22
W. CEDAR (DBH 30, 20, 10 BUSH)
W. ASH (DBH 16
HAWTHORN
MIGHT BE BUTTERNUT
B. BIRCH MO34 (LEADERS IN TOWER)
MO35 DBH 2
MO36 DBH 2
MO37 DBH 7
MO38 DBH 2
BUT A GOOD TREE
MISSING TOWN TREE
AREA 23
W. CEDAR (DBH 10, 20, 20 AVG 20)
ROSE SPP.
W. PINE



PENN HAMILTON JUNE 15/10 (2)

AREA 24
JAMES AS
22+23

MO41 SEEP
V.CREEPER
THIMBLEBERRY
C. STIPATA
S.J.P.WEED
B.NIGHTSHADE
C.L.W. HOREHOUND
F.HORSETAIL
CRACK WILLOW

MO42 B.WALNUT (LEAFLET 17-21)
(3 MORE POS. BUTTERNUT IN AREA
MO43 B.WALNUT (LEAFLET 17-19)
(TERMINAL LEAF MISSING OR SMALLER
(1 MORE POS. BUTTERNUT IN AREA
GRASS-LEAVED GOLDENROD
EARLY GOLDENROD
CANADA GOLDENROD
T.VULTURE

AREA 19
M.MAPLE (DBH 30,30, 20 AVE 20)
W.ASH (DBH 15 AVG 15)
W.AVENS
CANADA GOLDENROD
LATE GOLDENROD (K)
ALT L. DOGWOOD
S.JEWELWEED
W. ANGELICA
HERB-ROBERT
C. BURDOCK
SENSITIVE FERN

MO44 BUTTERNUT (DBH 20)
MO45 BUTTERNUT (DBH 9)
AREA 14 OFFSITE
AREA 11
MO48 B. WALNUTS
L A FEW

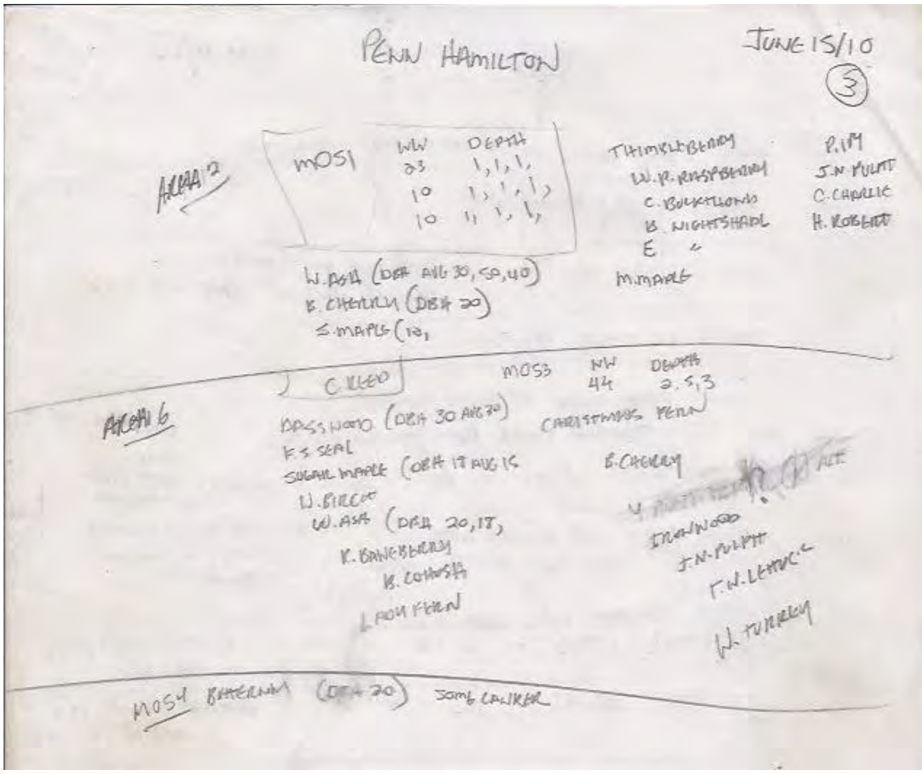
AREA 13
C.THICKET
B.WALNUT
R.CLOVER
P.HQ
C.MILKWEED
APPLE
W.ASH
HAWTHORN
C BUCKTHORN
C VETCH

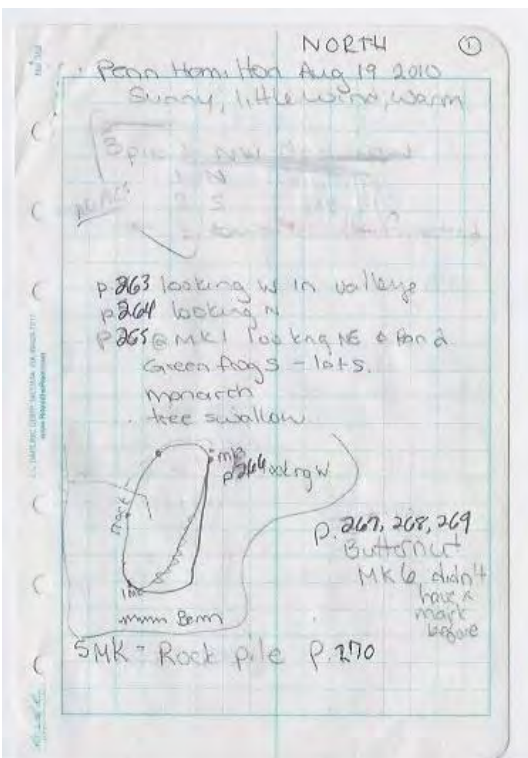
AREA 10 CV. MEADOW
R C GRASS
CANADA GOLDENROD
EARLY GOLDENROD
R.GRAPE
C MILKWEED
B.WALNUT

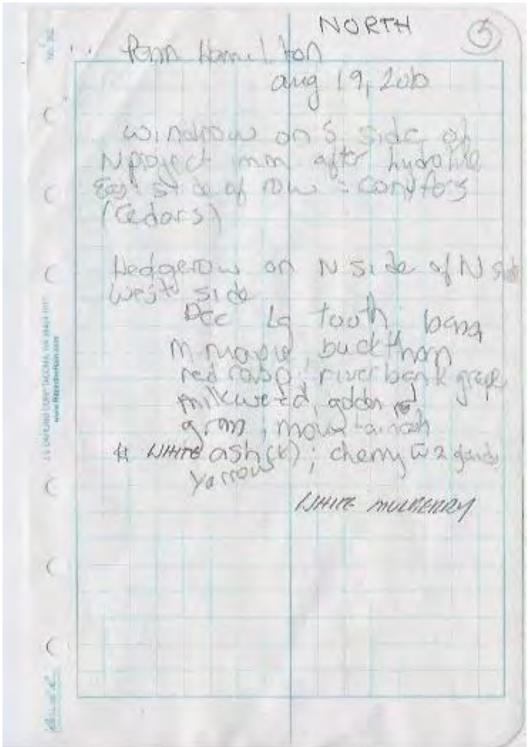
MO49 B.WALNUT (LEAFLETS 17-29) +FRUIT (K)
(TERMINAL ABSENT + SMALLER

AREA 9
SUGAR MAPLE (DBH 60, 45, 50
W ASH (DBH AVG 20
BASSWOOD (AVG 15)
R ELDERBERRY
A. BEECH
P. IVY
J.N PULPIT
TRILLIUM
S.FERN
H. ROBERT
E NIGHTSHADE
K CREEPER
W. SORREL

~~MO51~~


PENN HAMILTON
JUNE 15/10
3
AREA 2
MOS1 WW DEPTH
23 1,1,1,
10 1,1,1,
10 1,1,1,
W.ASH (DBH AVG 30, 50, 40)
B. CHERRY (DBH 20)
S.MAPLE (10,
THIMBLEBERRY
W.R. RASPBERRY
C. BUCKTHORN
B. NIGHTSHADE
E "
M.MAPLE
P.IM
J.N.PULPIT
C. GARLIC
H. ROBERT
C.REED
MOS3 WW DEPTH
44 2,5,3
AREA 6
BASSWOOD (DBH 30 AVG 30)
F.S SEAL
SUGAR MAPLE (DBH 17 AVG 15
W.BIRCH
W.ASH (DBH 20,17,
R. BANEBERRY
B. COHOSH
LADY FERN
CHRISTMAS FERN
B.CHERRY
IRONWOOD
J.N.PULPIT
T.W.LETTUCE
W. TURKEY
MOS4 BUTTERNUT (DBH 20) SOME CANKER


NORTH
1
Penn Hamilton Aug 19 2010
Sunny, little wind, warm
p.263 looking W in valley
p.264 looking N
p.265 @ MK1 looking NE @ pond
Green frogs - lots.
monarch
tree swallow
p.264 looking W
rock
berm
p.267, 268, 269
Butternut
MK6 didn't have a mark before
5MK - Rock pile p.270



NORTH 5
Penn Hamilton
aug 19, 2010
windrow on S side of
N project [illegible] after hydro line
East side of row : conifers
(Cedars)
Hedgerow on N side of N site
west side
Acc Lg tooth bang
m maple, buckthorn
red rasp, riverbank grape
milkweed, golden rod
gray, mountain ash
WHITE ash(k); cherry [illegible]
yarrow
WHITE MULBERRY

Appendix C – Potential Species of Conservation Value for the Study Area based on Records Review

Common Name	Scientific Name	SRANK	Status*	Preferred Habitat
Dragonflies				
swamp darner	*Epiaeschna heros*	S2S3		Slow streams and shady woodland ponds.
mottled darner	*Aeshna clepsydra*	S3		Found within small lakes or in bays of largerivers that have marsh or bog habitat along the shoreline. Often associated with water lilies and clear soft water.
arrowhead spiketail	*Cordulegaster obliqua*	S2		Spring-fed, headwaters with substrate consisting of muck.
Butterflies				
monarch	*Danaus plexippus*	S2N, S4B	SC	Old fields, meadows, roadsides.
sleepy duskywing	*Erynnis brizo*	S1		Oak woods.
juniper hairstreak	*Callophrys gryneus*	S2		Near junipers.
Reptiles				
northern map turtle	*Graptemys geographica*	S3	SC	Large waterbodies.
eastern ribbonsnake	*Thamnophis sauritus*	S3	SC	Prefers meadows or forest edge, often around permanent waterbodies
milksnake	*Lampropeltis triangulum*	S3	SC	Found within open forest, forest edges, meadows, and cultivated areas.
Birds				
great egret	*Casmerodius albus*	S2B		Marshes, ponds, shores and flats.
black-crowned night-heron	*Nycticorax nycticorax*	S3B,S3N		Marshes, and shores.
bald eagle	*Haliaeetus leucocephalus*	S2N, S4B	SC	Associated with large lakes and rivers. Frequently observed on dead branches overlooking water.
yellow rail	*Coturnicops noveboracensis*	S4B	SC	Grassy marshes and wet meadows.
great black-backed gull	*Larus marinus*	S2B		Coastal waters.
Caspian tern	*Sterna caspia*	S3B		Open area near lake, rivers, and beaches.

Common Name	Scientific Name	SRANK	Status*	Preferred Habitat
black tern	*Chlidonias niger*	S3B	SC	Breed in freshwater marshes
white-eyed vireo	*Vireo griseus*	S2B		Wood edges, brush, bramble and undergrowth.
Plants				
a moss	*Astomum muehlenbergianum*	S2		Thin soil over outcrops and in open prairie.
a moss	*Bryum gemmiparum*	S1		Low-elevation and subalpine sites.
lurking leskea	*Plagiothecium latebricola*	S2		Prefers moist habitats in hardwood swamps and other wetlands with rotting humus.
riverbank quillwort	*Isoetes riparia*	S3		Pond margins, cobble shorelines of large rivers, tidal mudflats, and shallow gravelly areas of lakes.
bushy aster	*Aster dumosus*	S2		Sandy soil.
slender blazing-star	*Liatris cylindracea*	S3		Dry sandy jack pine, oak, aspen woodland, fields, dunes and prairies.
wild lupine	*Lupinus perennis*	S3		Dry sandy ground, from prairies and clearings to oak, jack pine and aspen woodlands.
grooved yellow flax	*Linum sulcatum*	S3		Prairies and dry open ground.
giant pinedrops	*Pterospora andromedea*	S2		Assiciated with dry woods containing conifers and a well-developed needle duff.
evening primrose	*Oenothera pilosella*	S2		Dry to moist ground of fields, roadsides, woodlands, clearings and ditches.
bristly buttercup	*Ranunculus hispidus var. hispidus*	S3		Variety of habitats
rue-anemone	*Thalictrum thalictroides*	S3		Deciduous woods, banks, and thickets.
rough hawthorn	*Crataegus scabrida*	S3?		Little information available, classification uncertain.
limestone swamp bedstraw	*Galium brevipes*	S2S3		Conifer thickets on marshy ground.
large purple agalinis	*Agalinis purpurea*	S1		Sandy, gravelly, rocky shores and interdunal swales.
Schweinitz's flatsedge	*Cyperus schweinitzii*	S3		Prefers sandy and loamy

Common Name	Scientific Name	SRANK	Status*	Preferred Habitat
				soils with moist or wet soils. Shade intolerant.
Eastern few-fruited sedge	*Carex oligocarpa*	S3		Deciduous woods.
ribbed sedge	*Carex virescens*	S3		Dry, sandy woods
blunt-scaled bulrush	*Scirpus smithii*	S3		Sandy or muddy shores, beaches, interdunal swales, mudflats.

(Brownell and Catling 2000, Cosewic 2000, Cosewic 2001, Cosewic 2002, Cosewic 2003, Cosewic 2007, Dunkle 2000, eFlora 2009, Farrar 1995, Hughes 2001, Layberry et al. 1998, MacCulloch 2002, NatureServe 2009, Peterson 1980, Scott and Crossman 1998, Voss 1985)

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

Updated: January 17, 2011

SRANK DEFINITIONS

S1 Critically Imperiled, Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled, Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable, Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SAB Breeding accidental.

SAN Non-breeding accidental.

SZB Breeding migrants/vagrants.

SZN Non-breeding migrants/vagrants.

SARO STATUS DEFINITIONS

SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

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Appendix D – List of observed plant species for study area

(Observations made by Shaun St. Pierre and Michelle Lavictoire)

Common Name	Scientific Name	SRANK	Status*
Northern Lady Fern	*Athyrium filix-femina var. angustum*	S5	
Ostrich Fern	*Matteuccia struthiopteris*	S5	
Sensitive Fern	*Onoclea sensibilis*	S5	
Christmas Fern	*Polystichum acrostichoides*	S5	
Field Horsetail	*Equisetum arvense*	S5	
Eastern White Cedar	*Thuja occidentalis*	S5	
White Pine	*Pinus strobus*	S5	
Manitoba Maple	*Acer negundo*	S5	
Sugar Maple	*Acer saccharum*	S5	
Western Poison-ivy	*Rhus radicans ssp. rydbergii*	S5	
Staghorn Sumac	*Rhus typhina*	S5	
Wild Carrot	*Daucus carota*	SNA	
Common Milkweed	*Asclepias syriaca*	S5	
Dog-strangling Vine	*Cynanchum louiseae*	SNA	
Common Yarrow	*Achillea millefolium ssp. millefolium*	SNA	
Common Ragweed	*Ambrosia artemisiifolia*	S5	
Common Burdock	*Arctium minus ssp. minus*	SNA	
Ox-eye Daisy	*Chrysanthemum leucanthemum*	SNA	
Thistle sp.	*Cirsium sp.*		
Daisy Fleabane	*Erigeron annuus*	S5	
Philadelphia Fleabane	*Erigeron philadelphicus ssp. philadelphicus*	S5	
Spotted Joe-pye-weed	*Eupatorium maculatum ssp. maculatum*	S5	
Grass-leaved Goldenrod	*Euthamia graminifolia*	S5	
Sneezeweed sp.	*Helenium sp.*		
Field Hawkweed	*Hieracium caespitosum ssp. caespitosum*	SNA	
Tall White Lettuce	*Prenanthes altissima*	S5	
Black-eyed Susan	*Rudbeckia hirta*	S5	
Blue-stem Goldenrod	*Solidago caesia*	S5	
Canada Goldenrod	*Solidago canadensis*	S5	
Zig-zag Goldenrod	*Solidago flexicaulis*	S5	
Late Goldenrod	*Solidago gigantea*	S5	
Early Goldenrod	*Solidago juncea*	S5	
Meadow Goat's-beard	*Tragopogon pratensis ssp. pratensis*	SNA	
Coltsfoot	*Tussilago farfara*	SNA	
Spotted Jewel-weed	*Impatiens capensis*	S5	
Blue Cohosh	*Caulophyllum thalictroides*	S5	
White Birch	*Betula papyrifera*	S5	
Gray Birch	*Betula populifolia*	S5	
Ironwood	*Ostrya virginiana*	S5	

Common Name	Scientific Name	SRANK	Status*
Viper's Bugloss	*Echium vulgare*	SNA	
Tartarian Honeysuckle	*Lonicera tatarica*	SNA	
Red-berried Elderberry	*Sambucus racemosa ssp. pubens*	S5	
Bladder Campion	*Silene latifolia*	SNA	
Alternate-leaved Dogwood	*Cornus alternifolia*	S5	
Wild Cucumber	*Echinocystis lobata*	S5	
Bird's-foot Trefoil	*Lotus corniculatus*	SNA	
Black Medick	*Medicago lupulina*	SNA	
Red Clover	*Trifolium pratense*	SNA	
White Clover	*Trifolium repens*	SNA	
Cow Vetch	*Vicia cracca*	SNA	
American Beech	*Fagus grandifolia*	S4	
Gentian sp.	*Gentiana sp.*		
Herb-robert	*Geranium robertianum*	SNA	
Wild Black Currant	*Ribes americanum*	S5	
Prickly Gooseberry	*Ribes cynosbati*	S5	
Butternut	*Juglans cinerea*	S3?	END
Black Walnut	*Juglans nigra*	S4	
Ground Ivy	*Galeopsis hederacea*	SNA	
Common Motherwort	*Leonurus cardiaca ssp. cardiaca*	SNA	
Cut-leaved Water-horehound	*Lycopus americanus*	S5	
White Mulberry	*Morus alba*	SNA	
White Ash	*Fraxinus americana*	S5	
Lilac sp.	*Syringa sp.*		
Canada Enchanter's Nightshade	*Circaea lutetiana ssp. canadensis*	S5	
True Wood-sorrel	*Oxalis acetosella ssp. montana*	S5	
Wood Anemone	*Anemone quinquefolia*	S5	
Tall Buttercup	*Ranunculus acris*	SNA	
Common Buckthorn	*Rhamnus cathartica*	SNA	
Hawthorn sp.	*Crataegus sp.*		
White Avens	*Geum canadense*	S5	
Apple sp.	*Malus sp.*		
Rough-fruited Cinquefoil	*Potentilla recta*	SNA	
Black Cherry	*Prunus serotina*	S5	
Rose sp.	*Rosa sp.*		
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	S5	
Sparse-flowered Thimbleberry	*Rubus parviflorus*	S4	
Showy Mountain-ash	*Sorbus decora*	S5	
Balsam Poplar	*Populus balsamifera*	S5	
Largetooth Aspen	*Populus grandidentata*	S5	
Trembling Aspen	*Populus tremuloides*	S5	
Weeping Willow	*Salix babylonica*	SNA	
Crack Willow	*Salix fragilis*	SNA	
Common Mullein	*Verbascum thapsus*	SNA	

Common Name	Scientific Name	SRANK	Status*
Bittersweet Nightshade	*Solanum dulcamara*	SNA	
American Basswood	*Tilia americana*	S5	
Wood Nettle	*Laportea canadensis*	S5	
European Stinging Nettle	*Urtica dioica ssp. dioica*	SNA	
Violet sp.	*Viola sp.*		
Virginia-creeper	*Parthenocissus inserta*	S5	
Riverbank Grape	*Vitis riparia*	S5	
Jack-in-the-pulpit	*Arisaema triphyllum ssp. triphyllum*	S5	
Bristly Sedge	*Carex comosa*	S5	
Awl-fruited Sedge	*Carex stipata*	S5	
Wool-grass	*Scirpus cyperinus*	S5	
Dudley's Rush	*Juncus dudleyi*	S5	
Lesser Duckweed	*Lemna minor*	S5	
Great Duckweed	*Spirodela polyrhiza*	S5	
Trillium sp.	*Trillium sp.*		
Manna Grass sp.	*Glyceria sp.*		
Reed Canary Grass	*Phalaris arundinacea*	S5	
Timothy	*Phleum pratense*	SNA	
Canada Blue Grass	*Poa compressa*	SNA	
Broad-leaved Cattail	*Typha latifolia*	S5	

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

SRANK DEFINITIONS

S3: **Vulnerable**—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.

SNR: **Unranked**—Nation or state/province conservation status not yet assessed.
SNA: **Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.

SARA STATUS DEFINITIONS

Endangered (END) - A species facing imminent extirpation or extinction.
Special Concern (SC) - A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Appendix E – List of Bird Species Observed within the Study Area

(Observations made by Michelle Lavictoire)

Common Name	Scientific Name	SRank	Status*	Comments
Green Heron	*Butorides virescens*	S4B		June (flying overhead)
Turkey Vulture	*Cathartes aura*	S5B		June (flying overhead)
Wild Turkey	*Meleagris gallopava*	S5		June
Killdeer	*Charadrius vociferous*	S5B, S5N		June
Mourning Dove	*Zenaida macroura*	S5		June
Downy Woodpecker	*Picoides pubescens*	S5		June
Hairy Woodpecker	*Picoides villosus*	S5		June
Northern Flicker	*Colaptes auratus*	S4B		June
Eastern Wood-Pewee	*Contopus virens*	S4B		June
Eastern Phoebe	*Sayornis phoebe*	S5B		June?
Warbling Vireo	*Vireo gilvus*	S5B		June
Red-eyed Vireo	*Vireo olivaceus*	S5B		June, July
Blue Jay	*Cyanocitta cristata*	S5		June
American Crow	*Corvus brachyrhynchos*	S5B		June
Tree Swallow	*Tachycineta bicolour*	S4B		August
Black-capped Chickadee	*Poecile atricapilla*	S5		June
Red-breasted Nuthatch	*Sitta Canadensis*	S5		June
House Wren	*Troglodytes aedon*	S5B		
Veery	*Catharus fuscescens*	S4B		June
American Robin	*Turdus migratorius*	S5B		June
Gray Catbird	*Dumetella carolinensis*	S4B		June
European Starling	*Sturnus vulgaris*	SNA		June
Cedar Waxwing	*Bombycilla cedrorum*	S5B		June
Yellow warbler	*Dendroica petechia*	S5B		June
Black-throated Green Warbler	*Dendroica virens*	S5B		June
Common Yellowthroat	*Geothlypis trichas*	S5B		June
Chipping Sparrow	*Spizella passerine*	S5B		June
Field Sparrow	*Spizella pusilla*	S4B		June
Song Sparrow	*Melospiza melodia*	S5B		June
Northern Cardinal	*Cardinalis cardinalis*	S5		June
Indigo Bunting	*Passerina cyanea*	S4B		June
Bobolink	*Dolichonyx oryzivorus*	S4B		June, not sighted, possible calling from ouside of study area
Common Grackle	*Quiscalus quiscula*	S5B		June
American Goldfinch	*Carduelis tristis*	S5B		June

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

SRANK DEFINITIONS

S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other

factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.
SNA: **Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.

SZB : **Breeding migrants/vagrants.**
SZN: **Non-breeding migrants.**

Appendix F – List of incidental wildlife observations for study area

(Observations made by Shaun St. Pierre and Michelle Lavictoire)

COMMON NAME	SCIENTIFIC NAME	SRANK	Status*	Comments
BUTTERFLIES				
Northern Pearly-eye	*Enodia anthedon*	S5		June
Monarch	*Danaus plexippus*	S2N, S4B	SC	August
AMPHIBIANS				
Wood Frog	*Rana sulvatica*	S5		June
Green Frog	*Rana clamitans*	S5		August, Lots in pond
MAMMALS				
Eastern Chipmunk	*Tamias striatus*	S5		
Red Squirrel	*Tamiasciurus hudsonicus*	S5		
Short-tailed Weasel	*Mustela erminea*	S5		
Raccoon	*Procyon lotor*	S5		
White-tailed Deer	*Odocoileus virginianus*	S5		

* For the purposes of this report the status includes species designated as special concern provincially or are listed as endangered, threatened or special concern federally AND not listed as endangered or threatened provincially.

S2: **Imperiled**—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S4: **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: **Secure**—Common, widespread, and abundant in the nation or state/province.
S#S#: **Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

Additional older Sranks being replaced in 2006
S?: **Not Ranked Yet**; or if following a ranking, Rank Uncertain (e.g. S3?). S? species have not had a rank assigned.

SZB : **Breeding migrants/vagrants.**

SZN: **Non-breeding migrants/vagrants.**

SARA STATUS DEFINITIONS

Endangered (END) - A species facing imminent extirpation or extinction.
Special Concern (SC) - A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.