

Appendix 7 Spill Response and Contingency Plan

SPILL RESPONSE AND CONTINGENCY PLAN

Even though there will be measures implemented at the Project site to protect the environment, there is still the potential for accidents and malfunctions to occur during the site preparation and operation phases of the Project. These are unplanned events that may result in a release to the environment and result in impacts to the environment.

Specific accidents and malfunctions that have a reasonable probability of occurring during the Project are discussed below. These scenarios are not a comprehensive list but address those incidents that have a reasonable probability of occurring.

The accidents and malfunctions that have been identified and assessed for both the construction and operation phases of the Project are accidental spills from the operation of heavy equipment and vehicles.

Spills

During the construction phase no unusual accidents or malfunctions are anticipated other than those that are typically experienced during general civil construction. However there is the potential for petroleum, oil and lubricant (POL) or other chemical spills from the heavy equipment used during site preparation and operations. A spill of POLs or other chemicals will generally occur from the improper handling of the materials, an accident or from heavy equipment that is not kept in proper working order. The impact of these materials during such an event is dependent on the type of material and its volume released. Minor spills will typically be cleaned up efficiently and effectively and long-term impacts are not anticipated. Major spills are not anticipated based on quantities anticipated to be on site during site preparation and operations.

A Spill Contingency Plan for clean-up procedures for various substances anticipated to be on site during the site preparation and operations has been developed. Additionally, any fuelling of heavy equipment will not be conducted in the pit.

Transportation

During the course of site preparation and operations, there will be several pieces of heavy equipment moving material around the site as well as performing the construction activities. The potential for accidents is not anticipated to increase above that already experienced at the pit.

Contingency Plan

Environmental Contingency Planning consists of identifying potential hazards and preparing a response plan to deal with hazards as they arise. For the work, the potential environmental hazards are spills that may occur during the course of the work from:

- ▶ Equipment operation
- ▶ Tank ruptures/releases

General

The reporting of all spills at the site shall be the responsibility of the Site Manager and he/she shall be guided by the contents of the Spill Response Plan.

Assessment

An initial assessment of the magnitude, type and location of the spill is essential to immediate decisions and actions on whom to alert and what equipment to deploy. Minor spills may well be handled effectively by on-site equipment and personnel, while spills of larger magnitude will require the alerting of further company, industry and governmental personnel and resources. Monitoring and surveillance efforts will continue following the initial assessment until the pollutant is dispersed or recovered.

Site Manager's Responsibilities

1. Make all efforts to cease the flow of pollutant at source
2. Contain the spilled product
3. Assess the situation
4. Request for assistance in clean up if required
5. Report to General Manager or designate
6. Document all events.

It shall be of highest priority that any petroleum products (or other chemicals) which are spilled do not enter the local groundwater.

Spills on land can be controlled with quick response by hand or heavy excavation equipment by excavating contaminated solids (soils) from the ground and placing it in controlled storage (e.g. sealable drum) for appropriate off-site disposal.

Prevention

Equipment should be maintained in good working order. Regular inspections should be made of machinery hydraulic systems, with all leaks repaired immediately upon detection.

No equipment maintenance or service involving petroleum, oils and lubricants shall take place within the pit or 30m of a water body.

No equipment fuelling shall take place within the pit or 30m of a water body.

Mitigation

In the event of major leaks from machinery or fuel delivery vehicles one of the following choices must be made immediately (whichever is judged to be the most expedient):

1. Cease the flow at source.
2. Move the machine away from the pit to an area where the leak may be dealt with.
3. Pump the leaking tank empty.

Attempts must be made to contain the spilled product. A supply of hand excavation equipment (shovels, picks, etc.) and a spill containment kit (absorbent pads, booms and materials, buckets, tarpaulins, etc.) shall be maintained on-site at all times. Personnel shall be trained in the use of the various spill containment materials. Take all necessary precautions to ensure that spill does not recur.

An assessment must be rapidly made as to whether pollutant has entered the groundwater or has the possibility to do so.

Listed below is guidance on the remediation of spills that may occur during the course of this project.

- (1) The person who discovers the leak or spill shall immediately attempt to halt the leak or spill.
- (2) Work in the immediate area will be halted and the spill will be reported to the appropriate emergency responders and regulatory agencies.
- (3) The remedial action plan will consist of:
 - a) Deploy on-site personnel to immediately contain the spill by constructing dykes, berms or pits with hand or mechanized excavation equipment, and/or apply absorbent material, pads or booms, as appropriate.
 - b) Assess the site conditions and the environmental impact of various clean up measures. Choose the most appropriate clean up measure; deploy on-site personnel or subcontracted remediation contractors to mobilize pumps and empty drums (or other appropriate storage) to the spill site. Remove and dispose of the contaminated solids and liquids off-site.
- C) Take all necessary precautions to ensure that spill does not recur.

Site Contacts

General Emergency	911
RCMP, New Minas Detachment	1.800.803.7267
Nova Scotia Environment	Kentville Office: 902.679.6086
	24hr: 1.800.565.1633
Canadian Coast Guard – Environmental Emergencies	1.902.426.6030
	24hr: 1.800.565.1633

Appendix 8 Vascular Plant Survey

Vascular Plant Survey
FOR
**Lovett Road Site,
Kings County, Nova Scotia**

July 22, 2014

Prepared By:
Jim Jotcham, Marbicon Inc.

Marbicon Inc. was contracted in 2014 to perform a botanical survey of a site located near Lovett Road in Coldbrook, Kings County, Nova Scotia, centered at approximately 45° 04' 36" North and 64° 35' 18" West. Figure 1 is an aerial view (Google Earth 2014) of the study area. The site borders an actively worked sand pit. The sampled area was bound on the north by Highway 101, on the south by the sandpit and a low shrub barren (Figure 2). A barbed-wire fence line was on the east side, and a forested buffer between the subject site and another sand pit was to the west. A small portion of the property, at the southeast corner, touched the Cornwallis River and a bit of the associated riparian strip.

The site was inventoried by botanist Jim Jotcham on June 3, 2014. The list of plant species identified and their rarity status is presented in Appendix 1. Identifications and habitat preferences were determined using Roland's Flora of Nova Scotia (Zinck, 1998). The taxon names and S-ranks were taken from ACCDC (2014).

The site was quite diverse, and included a red pine (*Pinus resinosa*) stand (Figure 3), mixed woods (Figure 4), and hardwood stands of various ages (Figure 5). The more recently cut areas included a significant dominance of gray birch. The southeast side of the property included a steep slope (Figure 6) dominated by Eastern White Pine (*Pinus strobus*), Balsam Fir (*Abies balsamea*), Red Spruce (*Picea rubens*), and Eastern Hemlock (*Tsuga canadensis*). Yellow Birch (*Betula allegheniensis*) was occasional throughout the property. The understory was quite variable, depending on the shading and stand type. Typical herbaceous vegetation included common woodland plants such as Wild Lily-of-the-Valley (*Maianthemum canadense*), Wild Sarsaparilla (*Aralia nudicaulis*), and Northern Star-Flower (*Trientalis borealis*). The exotic weedy species were mostly along the access road and around the edge of the sand pit.

Appendix 1 shows the list of plant species identified on site. It must be noted that no conclusions may be drawn as to the presence or absence of species more easily seen or identified in other seasons.

Appendix 2 is a summary of the botany portion of the report supplied by the Atlantic Canada Conservation Data Centre (ACCDC). Their list includes sub-national (S) ranks. Some of

the species and/or synonym scientific names may not be found in Zinck (1998), but can usually be found in Hinds (2000). The ACCDC list shown is for all rare flora identified within 5 km, with no sorting by habitat. Hence many of the species are not likely to be seen. In fact, most of the nearby species records were for riparian or wetland (or at least damp) sites adjacent to the Cornwallis River, and/or rich hardwoods. Reviewing the ACCDC list, the most likely species to be found on the subject site might include Pinebarren Golden Heather (*Hudsonia ericoides*), possibly in the sand barrens south of the sand pit). This species is reported to be abundant in the centre of the Annapolis Valley, but none were seen on site.

In summary, no rare or unusual species or habitats were identified during this survey.

A handwritten signature in black ink that reads "Jim Gotcham". The signature is written in a cursive style with a prominent initial "J".

July 22, 2014



Figure 1. Study site and vicinity. Google Earth Image, 2014. The subject site encircles the central sand pit. Highway 101 is shown in the upper portion of the image.



Figure 2. The open sand barrens southwest of the sand pit, dominated by the low shrub sweet fern (*Comptonia peregrina*).



Figure 3. Red Pine (*Pinus resinosa*) stand near Highway 101.



Figure 4. Mixed woods typical of the area, with common Balsam Fir (*Abies balsamea*), Large-tooth Aspen (*Populus grandidentata*), and Paper Birch (*Betula papyrifera*).



Figure 5. Hardwoods stand, mostly Large-tooth Aspen (*Populus grandidentata*), Red Maple (*Acer rubrum*) and Paper Birch (*Betula papyrifera*).



Figure 6. Steep slope along the southeast boundary. Note the riparian zone of the Cornwallis River at the base of the slope (at the property boundary). Trees on the slope included some large Eastern White Pine (*Pinus strobus*) and Eastern Hemlock (*Tsuga canadensis*).

REFERENCES

Atlantic Canada Conservation Data Centre, 2014:
<http://accdc.com/Products/ranking.html>

Google Earth. 7.1.2.2041. 2014.

Hinds, H.R. 2000. Flora of New Brunswick, 2nd Ed. University of New Brunswick, Fredericton. 699 pp.

NS Department of Natural Resources, 2014:
<http://www.gov.ns.ca/natr/wildlife/genstatus/background.asp#Ranks>

Zinck, M. 1998. Roland's Flora of Nova Scotia. Nimbus Publishing and the Nova Scotia Museum. Halifax, Nova Scotia. 2 Vols, 1297 pp.

Appendix 1: Vascular plant inventory, surveyed June 3, 2014.

Scientific Name	Common Name	S-Rank	GS-Rank
<i>Acer pensylvanicum</i>	Striped Maple	S5	Secure
<i>Acer rubrum</i>	Red Maple	S5	Secure
<i>Acer saccharum</i>	Sugar Maple	S5	Secure
<i>Alnus incana</i>	Speckled Alder	S5	Secure
<i>Amelanchier sp.</i>	---	---	---
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	SNA	Exotic
<i>Aralia hispida</i>	Bristly Sarsaparilla	S5	Secure
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	Secure
<i>Arisaema triphyllum</i>	Swamp Jack-In-The-Pulpit	S4S5	Secure
<i>Athyrium filix-femina</i>	Lady-Fern	S5	Secure
<i>Betula alleghaniensis</i>	Yellow Birch	S5	Secure
<i>Betula papyrifera</i>	Paper Birch	S5	Secure
<i>Betula populifolia</i>	Gray Birch	S5	Secure
<i>Brachyelytrum septentrionale</i>	Bearded Short-Husk	S5	Secure
<i>Cardamine pratensis</i>	Cuckooflower	SNA	Exotic
<i>Carex arctata</i>	Black Sedge	S5	Secure
<i>Carex communis</i>	Fibrous-Root Sedge	S5	Secure
<i>Carex crinita</i>	Fringed Sedge	S5	Secure
<i>Carex novae-angliae</i>	New England Sedge	S5	Secure
<i>Carex scoparia</i>	Pointed Broom Sedge	S5	Secure
<i>Carex stricta</i>	Tussock Sedge	S5	Secure
<i>Circaea alpina</i>	Small Enchanter's Nightshade	S5	Secure
<i>Clintonia borealis</i>	Clinton Lily	S5	Secure
<i>Comptonia peregrina</i>	Sweet Fern	S5	Secure
<i>Cornus canadensis</i>	Dwarf Dogwood	S5	Secure
<i>Corydalis sempervirens</i>	Pale Corydalis	S4	Secure
<i>Corylus cornuta</i>	Beaked Hazelnut	S5	Secure
<i>Crataegus chrysoarpa</i>	Fineberry Hawthorn	S4S5	Secure
<i>Cypripedium acaule</i>	Pink Lady's-Slipper	S5	Secure
<i>Daucus carota</i>	Wild Carrot	SNA	Exotic
<i>Diervilla lonicera</i>	Northern Bush-Honeysuckle	S5	Secure
<i>Dryopteris carthusiana</i>	Spinulose Shield Fern	S5	Secure
<i>Echinocystis lobata</i>	Wild Mock-Cucumber	SNA	Exotic
<i>Epigaea repens</i>	Trailing Arbutus	S5	Secure
<i>Equisetum hyemale</i>	Rough Horsetail	S3S4	Secure
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5	Secure
<i>Fagus grandifolia</i>	American Beech	S5	Secure
<i>Fraxinus americana</i>	White Ash	S5	Secure

Scientific Name	Common Name	S-Rank	GS-Rank
<i>Galium trifidum</i>	Small Bedstraw	S5	Secure
<i>Gaultheria procumbens</i>	Teaberry	S5	Secure
<i>Gaylussacia baccata</i>	Black Huckleberry	S5	Secure
<i>Gymnocarpium dryopteris</i>	Northern Oak Fern	S5	Secure
<i>Hamamelis virginiana</i>	American Witch-Hazel	S5	Secure
<i>Hieracium pilosella</i>	Mouseear	SNA	Exotic
<i>Impatiens capensis</i>	Spotted Jewel-Weed	S5	Secure
<i>Iris versicolor</i>	Blueflag	S5	Secure
<i>Juniperus communis</i>	Ground Juniper	S5	Secure
<i>Kalmia angustifolia</i>	Sheep-Laurel	S5	Secure
<i>Luzula acuminata</i>	Hairy Woodrush	S5	Secure
<i>Lysimachia nummularia</i>	Creeping Jennie	SNA	Exotic
<i>Maianthemum canadense</i>	Wild Lily-of-The-Valley	S5	Secure
<i>Maianthemum racemosum</i>	Solomon's-Plume	S4S5	Secure
<i>Malus pumila</i>	Common Apple	SNA	Exotic
<i>Mitchella repens</i>	Partridge-Berry	S5	Secure
<i>Myosotis laxa</i>	Small Forget-Me-Not	S5	Secure
<i>Oenothera biennis</i>	Common Evening-Primrose	S5	Secure
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	Secure
<i>Oryzopsis asperifolia</i>	White-Grained Mountain-Ricegrass	S5	Secure
<i>Osmunda cinnamomea</i>	Cinnamon Fern	S5	Secure
<i>Picea glauca</i>	White Spruce	S5	Secure
<i>Picea rubens</i>	Red Spruce	S5	Secure
<i>Pinus resinosa</i>	Red Pine	S4S5	Secure
<i>Pinus strobus</i>	Eastern White Pine	S5	Secure
<i>Plantago lanceolata</i>	English Plantain	SNA	Exotic
<i>Plantago major</i>	Nipple-Seed Plantain	SNA	Exotic
<i>Poa pratensis</i>	Kentucky Bluegrass	S5	Secure
<i>Polystichum acrostichoides</i>	Christmas Fern	S5	Secure
<i>Populus grandidentata</i>	Large-Tooth Aspen	S5	Secure
<i>Prunus virginiana</i>	Choke Cherry	S5	Secure
<i>Pteridium aquilinum</i>	Bracken Fern	S5	Secure
<i>Quercus rubra</i>	Northern Red Oak	S5	Secure
<i>Ranunculus acris</i>	Tall Butter-Cup	SNA	Exotic
<i>Ranunculus repens</i>	Creeping Butter-Cup	SNA	Exotic
<i>Rosa virginiana</i>	Virginia Rose	S5	Secure
<i>Rubus allegheniensis</i>	Allegheny Blackberry	S5	Secure
<i>Rubus idaeus</i>	Red Raspberry	S5	Secure
<i>Rumex obtusifolius</i>	Bitter Dock	SNA	Exotic

Scientific Name	Common Name	S-Rank	GS-Rank
<i>Salix bebbiana</i>	Bebb's Willow	S5	Secure
<i>Solidago rugosa</i>	Rough-Leaf Goldenrod	S5	Secure
<i>Taraxacum officinale</i>	Common Dandelion	SNA	Exotic
<i>Thalictrum pubescens</i>	Tall Meadow-Rue	S5	Secure
<i>Trientalis borealis</i>	Northern Starflower	S5	Secure
<i>Trifolium repens</i>	White Clover	SNA	Exotic
<i>Trillium erectum</i>	Ill-Scent Trillium	S4	Secure
<i>Tsuga canadensis</i>	Eastern Hemlock	S4S5	Secure
<i>Tussilago farfara</i>	Colt's Foot	SNA	Exotic
<i>Vaccinium myrtilloides</i>	Velvetleaf Blueberry	S5	Secure
<i>Veronica officinalis</i>	Gypsy-Weed	S5	Exotic
<i>Viola cucullata</i>	Marsh Blue Violet	S5	Secure

Rankings:

S4 - Usually widespread, fairly common, and apparently secure with many occurrences, but of longer-term concern (100+ occurrences).

S5 - Widespread, abundant, and secure, under present conditions.

SNA - Exotic; an exotic, established in the province; may be native in nearby regions.

Secure - Species that are not believed to be at risk, or sensitive. This category includes some species that have declined in numbers but remain relatively widespread or abundant.

Appendix 2. Modified data summary from the Atlantic Canada Conservation Data Centre (ACCDC) report (# 5198) prepared March 21, 2014. Only the botanical information is presented here, up to a 5-km radius.

Scientific Name	Common Name	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
<i>Allium tricoccum</i>	Wild Leek	S1	2 May Be At Risk	3	1.0 ± 0.01
<i>Caulophyllum thalictroides</i>	Blue Cohosh	S2	2 May Be At Risk	4	1.0 ± 1.0
<i>Cinna arundinacea</i>	Sweet Wood Reed Grass	S1	2 May Be At Risk	1	1.5 ± 0.01
<i>Floerkea proserpinacoides</i>	False Mermaidweed	S2	3 Sensitive	9	1.5 ± 1.0
<i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed	S3	4 Secure	2	1.5 ± 5.0
<i>Fraxinus nigra</i>	Black Ash	S2S3	3 Sensitive	4	1.6 ± 0.1
<i>Laportea canadensis</i>	Canada Wood Nettle	S3	3 Sensitive	1	1.6 ± 0.5
<i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass	S2?	3 Sensitive	2	2.1 ± 1.0
<i>Sanicula odorata</i>	Clustered Sanicle	S1	2 May Be At Risk	4	2.1 ± 1.0
<i>Corallorhiza trifida</i>	Early Coralroot	S3	4 Secure	4	2.2 ± 0.5
<i>Carex lupulina</i>	Hop Sedge	S3	4 Secure	1	2.2 ± 1.5
<i>Hedeoma pulegioides</i>	American False Pennyroyal	S2S3	3 Sensitive	1	2.3 ± 1.0
<i>Equisetum hyemale var. affine</i>	Common Scouring-rush	S3S4	4 Secure	2	2.3 ± 10.0
<i>Hudsonia ericoides</i>	Pinebarren Golden Heather	S2	3 Sensitive	2	2.3 ± 7.07
<i>Impatiens pallida</i>	Pale Jewelweed	S2	3 Sensitive	1	2.3 ± 7.07
<i>Pyrola minor</i>	Lesser Pyrola	S2	3 Sensitive	1	2.3 ± 7.07
<i>Carex hystericina</i>	Porcupine Sedge	S2	2 May Be At Risk	3	3.0 ± 1.5
<i>Lilium canadense</i>	Canada Lily	S2S3		2	3.0 ± 1.5
<i>Galium aparine</i>	Common Bedstraw	S1	7 Exotic	1	3.2 ± 2.0
<i>Juncus secundus</i>	Secund Rush	S1	2 May Be At Risk	1	3.3 ± 0.1
<i>Verbena hastata</i>	Blue Vervain	S3	4 Secure	2	3.3 ± 0.1
<i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn	S3	3 Sensitive	1	3.3 ± 0.3
<i>Lindernia dubia</i>	Yellow-seeded False Pimperel	S3S4	4 Secure	1	3.3 ± 1.0
<i>Salix pedicellaris</i>	Bog Willow	S2	3 Sensitive	3	3.5 ± 0.5
<i>Carex argyrantha</i>	Silvery-flowered Sedge	S3S4	4 Secure	2	3.6 ± 2.0
<i>Elodea canadensis</i>	Canada Waterweed	S3?	4 Secure	1	3.7 ± 0.01

Scientific Name	Common Name	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
<i>Potamogeton richardsonii</i>	Richardson's Pondweed	S2S3	2 May Be At Risk	5	3.7 ± 1.0
<i>Potamogeton friesii</i>	Fries' Pondweed	S2	2 May Be At Risk	2	3.7 ± 2.0
<i>Pseudognaphalium obtusifolium</i>	Eastern Cudweed	S3S4	4 Secure	1	3.9 ± 5.0
<i>Viola sagittata var. ovata</i>	Arrow-Leaved Violet	S3S4	4 Secure	1	3.9 ± 5.0
<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely	S2	2 May Be At Risk	1	4.0 ± 1.0
<i>Agrimonia gryposepala</i>	Hooked Agrimony	S3	4 Secure	1	4.0 ± 5.0
<i>Platanthera grandiflora</i>	Large Purple Fringed Orchid	S3	4 Secure	1	4.2 ± 1.0
<i>Polygonum arifolium</i>	Halberd-leaved Tearthumb	S2	3 Sensitive	1	4.6 ± 0.01
<i>Equisetum scirpoides</i>	Dwarf Scouring-Rush	S3S4	4 Secure	1	4.7 ± 1.0
<i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed	S2S3	3 Sensitive	2	4.7 ± 1.0

Appendix 9 Atlantic Canada Conservation Data Centre Report



DATA REPORT 5198: Coldbrook, NS

Prepared 21 March, 2014
by J. Churchill, Data Manager

CONTENTS OF REPORT

1.0 Preface

- 1.1 Data List
- 1.2 Restrictions
- 1.3 Additional Information

2.0 Rare and Endangered Species

- 2.1 Flora
- 2.2 Fauna
- Map 1: Flora and Fauna

3.0 Special Areas

- 3.1 Managed Areas
- 3.2 Significant Areas
- Map 2: Special Areas

4.0 Rare Species Lists

- 4.1 Fauna
- 4.2 Flora

5.0 Source Bibliography



1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The ACCDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
ColdbrookNS_5198ob.xls	Rare and legally protected <i>Flora and Fauna</i> in your study area
ColdbrookNS_5198ff.xls	Rare and common <i>Freshwater Fish</i> in your study area (DFO database)
ColdbrookNS_5198sa.xls	All <i>Significant Natural Areas</i> in your study area
ColdbrookNS_5198ma.xls	All <i>Managed Areas</i> in your study area

1.2 RESTRICTIONS

The ACCDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting ACCDC data, recipients assent to the following limits of use:

- a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
- b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
- c) The ACCDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
- d) ACCDC data responses are restricted to the data in our Data System at the time of the data request.
- e) Locations given for rare species records may be deliberately imprecise. Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
- f) ACCDC data responses are not to be construed as exhaustive inventories of taxa in an area.
- g) The absence of a taxon cannot be inferred by its absence in an ACCDC data response.

1.3 ADDITIONAL INFORMATION

The attached file DataDictionary 2.1.pdf provides metadata for the data provided.

Please direct any additional questions about ACCDC data to the following individuals:

Plants, Lichens, Ranking Methods

Sean Blaney, Botanist
Tel: (506) 364-2658
sblaney@mta.ca

Animals (Fauna)

John Klymko, Zoologist
Tel: (506) 364-2660
jklymko@mta.ca

Plant Communities

Sarah Robinson, Community Ecologist
Tel: (506) 364-2664
srobinson@mta.ca

Data Management, GIS

James Churchill, Data Manager
Tel: (902) 679-6146
jlchurchill@mta.ca

Billing

Cindy Spicer
Tel: (506) 364-2665
cspicer@mta.ca

All other Inquiries

R.A. Lautenschlager
Tel: (506) 364-2661
rlautenschlager@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2657, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Stewart Lusk, Natural Resources: (506) 453-7110.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Sherman Boates, NSDNR: (902) 679-6146.

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Rosemary Curley, PEI Dept. of Agriculture and Forestry: (902) 368-4807.

3.0 SPECIAL AREAS

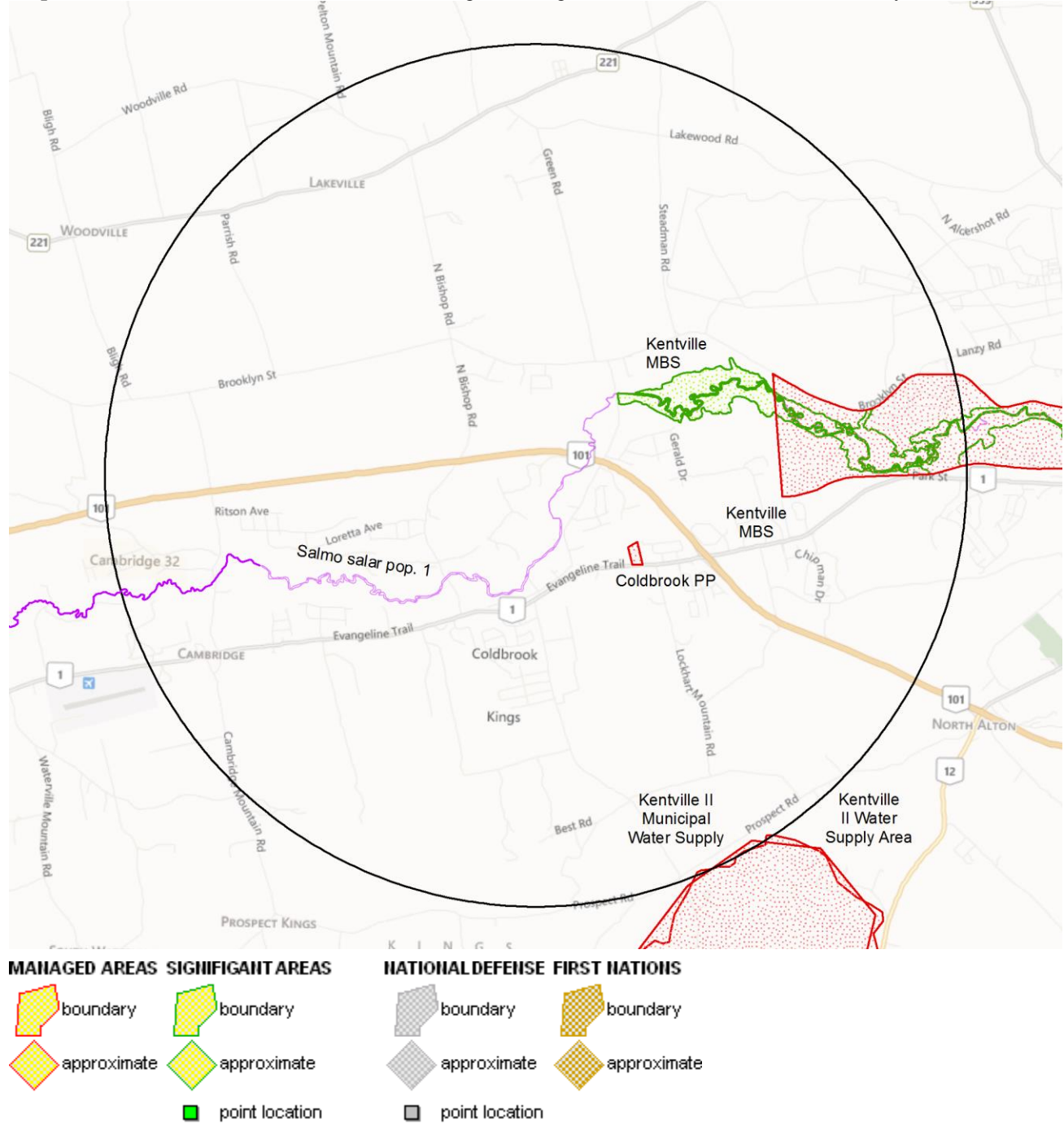
3.1 MANAGED AREAS

The GIS scan identified 4 managed areas in the vicinity of the study area (Map 2 and attached file: *ma*.xls)

3.2 SIGNIFICANT AREAS

The GIS scan identified 2 biologically significant sites in the vicinity of the study area (Map 2 and attached file: *sa*.xls)

Map 2: Boundaries and/or locations of known Managed and Significant Areas within 5 km of the study area.





4.0 RARE SPECIES LISTS

Rare and/or endangered taxa within the buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation. [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community.

4.1 FLORA

Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P <i>Floerkea proserpinacoides</i>	False Mermaidweed	Not At Risk			S2	3 Sensitive	9	1.5 ± 1.0
P <i>Sanicula odorata</i>	Clustered Sanicle				S1	2 May Be At Risk	4	2.1 ± 1.0
P <i>Galium aparine</i>	Common Bedstraw				S1	7 Exotic	1	3.2 ± 2.0
P <i>Juncus secundus</i>	Secund Rush				S1	2 May Be At Risk	1	3.3 ± 0.1
P <i>Allium tricoccum</i>	Wild Leek				S1	2 May Be At Risk	3	1.0 ± 0.01
P <i>Cinna arundinacea</i>	Sweet Wood Reed Grass				S1	2 May Be At Risk	1	1.5 ± 0.01
P <i>Osmorhiza longistylis</i>	Smooth Sweet Cicely				S2	2 May Be At Risk	1	4.0 ± 1.0
P <i>Impatiens pallida</i>	Pale Jewelweed				S2	3 Sensitive	1	2.3 ± 7.07
P <i>Caulophyllum thalictroides</i>	Blue Cohosh				S2	2 May Be At Risk	4	1.0 ± 1.0
P <i>Hudsonia ericoides</i>	Pinebarren Golden Heather				S2	3 Sensitive	2	2.3 ± 7.07
P <i>Polygonum arifolium</i>	Halberd-leaved Tearthumb				S2	3 Sensitive	1	4.6 ± 0.01
P <i>Pyrola minor</i>	Lesser Pyrola				S2	3 Sensitive	1	2.3 ± 7.07
P <i>Salix pedicellaris</i>	Bog Willow				S2	3 Sensitive	3	3.5 ± 0.5
P <i>Carex hystericina</i>	Porcupine Sedge				S2	2 May Be At Risk	3	3.0 ± 1.5
P <i>Potamogeton friesii</i>	Fries' Pondweed				S2	2 May Be At Risk	2	3.7 ± 2.0
P <i>Dichanthelium linearifolium</i>	Narrow-leaved Panic Grass				S2?	3 Sensitive	2	2.1 ± 1.0
P <i>Fraxinus nigra</i>	Black Ash			Threatened	S2S3	3 Sensitive	4	1.6 ± 0.1
P <i>Hedeoma pulegioides</i>	American False Pennyroyal				S2S3	3 Sensitive	1	2.3 ± 1.0
P <i>Lilium canadense</i>	Canada Lily				S2S3	3 Sensitive	2	3.0 ± 1.5
P <i>Potamogeton richardsonii</i>	Richardson's Pondweed				S2S3	2 May Be At Risk	5	3.7 ± 1.0
P <i>Potamogeton zosteriformis</i>	Flat-stemmed Pondweed				S2S3	3 Sensitive	2	4.7 ± 1.0
P <i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed				S3	4 Secure	2	1.5 ± 5.0
P <i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn				S3	3 Sensitive	1	3.3 ± 0.3
P <i>Agrimonia gryposepala</i>	Hooked Agrimony				S3	4 Secure	1	4.0 ± 5.0
P <i>Laportea canadensis</i>	Canada Wood Nettle				S3	3 Sensitive	1	1.6 ± 0.5
P <i>Verbena hastata</i>	Blue Vervain				S3	4 Secure	2	3.3 ± 0.1
P <i>Carex lupulina</i>	Hop Sedge				S3	4 Secure	1	2.2 ± 1.5
P <i>Corallorhiza trifida</i>	Early Coralroot				S3	4 Secure	4	2.2 ± 0.5
P <i>Platanthera grandiflora</i>	Large Purple Fringed Orchid				S3	4 Secure	1	4.2 ± 1.0
P <i>Elodea canadensis</i>	Canada Waterweed				S3?	4 Secure	1	3.7 ± 0.01
P <i>Pseudognaphalium obtusifolium</i>	Eastern Cudweed				S3S4	4 Secure	1	3.9 ± 5.0
P <i>Lindernia dubia</i>	Yellow-seeded False Pimperel				S3S4	4 Secure	1	3.3 ± 1.0
P <i>Viola sagittata</i> var. <i>ovata</i>	Arrow-Leaved Violet				S3S4	4 Secure	1	3.9 ± 5.0
P <i>Carex argyrantha</i>	Silvery-flowered Sedge				S3S4	4 Secure	2	3.6 ± 2.0
P <i>Equisetum hyemale</i> var. <i>affine</i>	Common Scouring-rush				S3S4	4 Secure	2	2.3 ± 10.0
P <i>Equisetum scirpoides</i>	Dwarf Scouring-Rush				S3S4	4 Secure	1	4.7 ± 1.0

4.2 FAUNA

	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	<i>Salmo salar pop. 1</i>	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered			S2	2 May Be At Risk	2	0.3 ± 0
A	<i>Hirundo rustica</i>	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	7	2.3 ± 7.07
A	<i>Wilsonia canadensis</i>	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	3	2.3 ± 7.07
A	<i>Chordeiles minor</i>	Common Nighthawk	Threatened	Threatened	Threatened	S3B	1 At Risk	4	2.3 ± 7.07
A	<i>Contopus cooperi</i>	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B	1 At Risk	2	2.3 ± 7.07
A	<i>Riparia riparia</i>	Bank Swallow	Threatened			S3B	2 May Be At Risk	16	2.3 ± 7.07
A	<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened		Vulnerable	S3S4B	3 Sensitive	14	2.3 ± 7.07
A	<i>Contopus virens</i>	Eastern Wood-Pewee	Special Concern		Vulnerable	S3S4B	3 Sensitive	10	2.3 ± 7.07
A	<i>Sialia sialis</i>	Eastern Bluebird	Not At Risk			S3B	3 Sensitive	4	1.0 ± 0.15
A	<i>Accipiter gentilis</i>	Northern Goshawk	Not At Risk			S3S4	4 Secure	2	2.3 ± 7.07
A	<i>Toxostoma rufum</i>	Brown Thrasher				S1?B	5 Undetermined	1	2.3 ± 7.07
A	<i>Piranga olivacea</i>	Scarlet Tanager				S2B	5 Undetermined	2	2.3 ± 7.07
A	<i>Pooecetes gramineus</i>	Vesper Sparrow				S2S3B	2 May Be At Risk	1	2.3 ± 7.07
A	<i>Molothrus ater</i>	Brown-headed Cowbird				S2S3B	4 Secure	9	2.3 ± 7.07
A	<i>Icterus galbula</i>	Baltimore Oriole				S2S3B	2 May Be At Risk	2	2.3 ± 7.07
A	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow				S3B	2 May Be At Risk	2	2.3 ± 7.07
A	<i>Dumetella carolinensis</i>	Gray Catbird				S3B	2 May Be At Risk	9	2.3 ± 7.07
A	<i>Mergus serrator</i>	Red-breasted Merganser				S3B,S5N	4 Secure	1	2.3 ± 7.07
A	<i>Cardinalis cardinalis</i>	Northern Cardinal				S3S4	4 Secure	1	2.3 ± 7.07
A	<i>Botaurus lentiginosus</i>	American Bittern				S3S4B	3 Sensitive	2	2.3 ± 7.07
A	<i>Charadrius vociferus</i>	Killdeer				S3S4B	3 Sensitive	6	2.3 ± 7.07
A	<i>Actitis macularius</i>	Spotted Sandpiper				S3S4B	3 Sensitive	2	2.3 ± 7.07
A	<i>Gallinago delicata</i>	Wilson's Snipe				S3S4B	3 Sensitive	4	2.3 ± 7.07
A	<i>Empidonax flaviventris</i>	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	2	2.3 ± 7.07
A	<i>Sayornis phoebe</i>	Eastern Phoebe				S3S4B	3 Sensitive	7	2.3 ± 7.07
A	<i>Tyrannus tyrannus</i>	Eastern Kingbird				S3S4B	3 Sensitive	5	2.3 ± 7.07
A	<i>Vermivora peregrina</i>	Tennessee Warbler				S3S4B	3 Sensitive	1	2.3 ± 7.07
A	<i>Dendroica castanea</i>	Bay-breasted Warbler				S3S4B	3 Sensitive	1	2.3 ± 7.07
A	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak				S3S4B	3 Sensitive	10	2.3 ± 7.07
A	<i>Carduelis pinus</i>	Pine Siskin				S3S4B,S5N	3 Sensitive	2	2.3 ± 7.07
I	<i>Danaus plexippus</i>	Monarch	Special Concern	Special Concern		S2B	3 Sensitive	4	2.9 ± 0.1
I	<i>Stylurus scudderi</i>	Zebra Clubtail				S1S2	2 May Be At Risk	2	0.6 ± 0.1
I	<i>Pieris oleracea</i>	Mustard White				S2	3 Sensitive	13	0.4 ± 0.05
I	<i>Satyrium calanus</i>	Banded Hairstreak				S2	5 Undetermined	1	3.1 ± 0.01
I	<i>Aglais milberti</i>	Milbert's Tortoiseshell				S2	4 Secure	2	3.7 ± 0.01
I	<i>Erynnis juvenalis</i>	Juvenal's Duskywing				S2S3	4 Secure	2	0.5 ± 0.05
I	<i>Satyrium liparops</i>	Striped Hairstreak				S3	5 Undetermined	1	0.7 ± 0.1
I	<i>Boyeria grafiana</i>	Ocellated Darner				S3	3 Sensitive	1	0.6 ± 0.1
I	<i>Polygonia interrogationis</i>	Question Mark				S3B	4 Secure	1	2.9 ± 0.04
I	<i>Speyeria aphrodite</i>	Aphrodite Fritillary				S3S4	4 Secure	1	2.9 ± 0.1

5.0 SOURCE BIBLIOGRAPHY

The recipient of this data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
80	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 400,000 recs.
44	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
32	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
16	Klymko, J.J.D. 2014. Maritimes Butterfly Atlas, 2012 submissions. Atlantic Canada Conservation Data Centre, 8552 records.
13	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
10	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
9	Klymko, J.J.D. 2012. Maritimes Butterfly Atlas, 2010 and 2011 records. Atlantic Canada Conservation Data Centre, 6318 recs.
9	Newell, R. E. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University. 2013.
8	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiu.ca/library/Herbarium/project/ . 582 recs.
4	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
4	Staff, DNR 2007. Restricted & Limited Use Land Database (RLUL).
3	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
2	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
2	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
2	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
2	Benjamin, L.K. (compiler) 2012. Significant Habitat & Species Database. NS Dept of Natural Resources.
2	Amiro, P.G. 1998. Atlantic Salmon Inner Bay of Fundy SFA 22 & part of 23. DFO Sci. SSR D3-12.
1	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.

Appendix 10 Wildlife Fauna and Habitat Field Survey

Report To: LVM Maritime Testing

For: Proposed Sand Pit Expansion, Coldbrook, Nova Scotia

On: Wildlife Fauna and Habitats

June 13, 2014

John Wile, Consulting Wildlife Biologist

239 Pumping Station Road, Amherst N.S. B4H 3Y3

Phone: 902 667 4268

e-mail: wile2@eastlink.ca

1. Introduction

The consultant was asked to conduct an assessment of wildlife fauna and habitats found within an 18 ha (46 acre) property (PID 55433619) located in Coldbrook, Kings County, Nova Scotia. The Atlantic Canada Conservation Data Centre (ACDC) provided information on recorded significant species and habitats found within a 5 km radius of the property. The Maritime Breeding Bird Atlas (MBBA) was also consulted for historical breeding bird information. Two separate site visits were conducted, one on the evening of May 21, 2014 and the other early the following morning. The field visits were focused on breeding birds, but observation of other fauna species and habitats were noted. Particular attention was paid to search for the significant species and habitats that may be present on the property. Significant species, for the purposes of this report, includes those that are legally listed federally (COSEWIC, SARA) or provincially and also those that are provincially rare (S1-S3S4). The results of those surveys are included in this report as well as comments on the potential impacts of the sand pit expansion project on both the common and at risk species of fauna found or potentially found within the property, based on direct observations or on habitat suitability.

2. Upland Habitats and Land Use Activities

The property is situated within the 90,056 ha Natural Landscape 2: Annapolis Valley, characterized by lowlands that are near sea level (NS Department of Environment). It is also included in the in the 928 km² Annapolis Valley Ecodistrict 610 (NS Department of Natural Resources) where it is described as an area of glaciofluvial outwash resulting in well drained sandy soil. This particular property is situated on very deep deposits of pure sand and is a part of what is described ecologically as "sand barrens". These sand barrens contain somewhat sparse vegetation and little accumulated organic soil, possibly as a result of repeated fires. (DNR Ecodistrict Land Classification). The property itself consists of an existing 3.2 ha (8 acre) sand pit surrounded on the north by young regenerating forest consisting of red maple (*Acer rubrum*), gray birch (*Betula populifolia*), American beech (*Fagus grandifolia*), poplar (*Populus sp.*), as well as both mature and seedling red pine (*Pinus resinosa*) and eastern white pine (*Pinus strobus*). Low shrub barrens are found on the west side of the existing pit dominated by sweet fern (*Myrica asplenifolia*) and other woody and herbaceous shrubs.. A steep slope of more mature trees including hemlock are found along the south and east sides of the existing pit adjacent to the floodplain area.

From a landscape perspective, the property is situated in a developed and disturbed area with highway 101 adjacent to the north and another very large sand mining operation to the south. Larger stands of more mature pine dominated forest are found on adjacent properties to the west and rough wooded pasture land is situated on adjacent properties to the east.

3. Wetlands

The only mapped wetland found on the property is a small section of floodplain found on the south east corner associated with the Cornwallis River. Many of the significant species and habitats identified in the ACCDC 5 km search are associated with the large floodplain area. There are no plans to extend the sand pit in the direction of the floodplain area or further on the slope leading to it (pit owner, personal communication, May 23, 2014). No small surface water areas were noted during the site visit and due to the well drained sandy soil and sloped upland and, for the same reason, it is doubtful that there would be small vernal pools in the forested section of the upland that amphibians would use as breeding and egg laying sites. The Kentville Migratory Bird Sanctuary is situated within 5 km of the property and consists of a large floodplain meadow with the Cornwallis River meandering through it.

4. Fauna use of the Property

This section discusses the bird, mammal, reptile, amphibian, fish and invertebrate species and habitats observed on the property during the 2014 site visits. As well, it reviews various data bases for significant species that may potentially be found here and which could be impacted by the pit expansion.

4.1 Survey methods and effort

Most of the field work was directed at conducting breeding bird surveys, with observations of other wildlife fauna made simultaneously. A two hour evening survey was conducted focused mainly on Common Nighthawks or swallow species that might use the property or the airspace above it. Five 10 minute breeding bird point count sites were selected to represent all habitat types present (**Table 1; Figure 1**). Breeding bird point count surveys were conducted in the early morning of May 22, 2014 within 3 hours after sunrise during light wind conditions and no precipitation. The 5 point counts were spaced far enough apart to avoid double counting of birds. A species list of birds and numbers of individuals observed is presented in **table 2**.

Table 1: Breeding Bird Survey Point Count sites - Coldbrook Sand Pit, May 22, 2014

Point Count #	Coordinates	Location and Habitat Description
1	N 45 04 39.2 W 064 35 09.5	North East corner of property, mixed forest, some mature pine
2	N 45 04 39.1 W 064 35 19.2	North of existing pit, mature pine, second growth hardwood Regenerating mixed forest
3	N 45 04 35.0 W 064 35 26.6	North West corner of property, young maple, birch and poplar stand
4	N 45 04 30.1 W 064 35 28.8	South west corner of property, young deciduous trees, open shrub

		barren
5	N 45 04 30.4 W 064 35 16.1	South East corner of property, mixed young forest and mature poplar, hemlock on slope to river

4.2 Results of 2014 field surveys and data base searches

The property is situated relatively close to areas that are known to contain significant fauna species. The 5 km ACCDC search of historical records lists 30 vertebrate (1 fish, 29 birds) and 10 invertebrate fauna species considered to be rare or significant. While some of these are associated only with freshwater floodplain habitats, others could find the subject property's habitats suitable. The following is a discussion of observed and potential species associated with the property, by major groups.

4.2.1 Birds

Table 2 lists the bird species observed during the evening and early morning breeding bird survey. None of the observed species are currently considered significant or at risk.

Table 2: Bird Species List from May 22, 2014 breeding bird survey

Common Name	Latin Name	Number of Individuals
American Crow	<i>Corvus brachyrhynchus</i>	1
American Goldfinch	<i>Carduelis tristis</i>	2
American Redstart	<i>Setophaga ruticilla</i>	2
American Robin	<i>Turdus migratorius</i>	7
Black-capped Chickadee	<i>Poecile atricapilla</i>	1
Black-throated Green Warbler	<i>Dendroica virens</i>	1
Blue Jay	<i>Cyanocitta cristata</i>	3
Blue-headed Vireo	<i>Vireo solitarius</i>	1
Common Raven	<i>Corvus corax</i>	1
Common Yellowthroat	<i>Geothlypis trichas</i>	3
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	4
Harry Woodpecker	<i>Picoides villosus</i>	1
Mourning Dove	<i>Zenaida macroura</i>	1
Northern Flicker	<i>Colaptes auratus</i>	2
Ovenbird	<i>Seiurus aurocapillus</i>	5
Pileated Woodpecker	<i>Dryocopus pileatus</i>	1
Ring-necked Pheasant	<i>Phasianus colchicus</i>	1
Song Sparrow	<i>Melospiza melodia</i>	3
White-throated Sparrow	<i>Zonotrichia albicollis</i>	5
Yellow-rumped Warbler	<i>Dendroica coronata</i>	1
Total # species: 20		47 individuals

Table 3 lists 29 species of birds that are considered significant and which have ACCDC records, having been seen within 5 km of the property. This table also attempts to describe if the habitat conditions are suitable on the property for any of these species, thereby increasing the possibility of them being present in the proposed expansion part of the property.

Table 3 Habitat suitability for significant species of birds

Common Name (ACCDC 5 km search)	Required or preferred Habitats ¹	Habitats present on proposed expansion section of property
American Bittern	freshwater Wetlands	no
Baltimore Oriole	mature deciduous and urban forests	no
Bank Swallow	eroding shorelines and cliffs	possibly in pit faces; none observed
Barn Swallow	open areas near water	no
Bay-breasted Warbler	old mixed wood forest	no
Bobolink	grasslands	no
Brown Thrasher	dense shrub and mixed forest edges	yes
Brown-headed Cowbird	pastures and fields	no
Canada Warbler	mixed species forests with understory	yes
Cliff Swallow	open fields and pastures near water	no
Common Nighthawk	pine barrens, clear cuts, burned over areas	yes
Eastern Bluebird	open fields and woodland edges	no
Eastern Kingbird	shrub forests near water	no
Eastern Phoebe	Urban forests and edges	no
Eastern Wood-Pewee	mature deciduous forest	no
Gray Catbird	dense undergrowth and second growth forests, hedge rows	yes
Killdeer	breeds on land with cobble stone	no
Northern Cardinal	dense urban forest and vines	no
Northern Goshawk	more abundant in larger forest tracts	no
Olive-sided Flycatcher	cut over forest edges, open areas in forests	yes
Pine Siskin	mixed forest near weedy fields	no
Red-breasted Merganser	tidal and fresh water	no
Rose-breasted Grosbeak	regenerating woodlands and edges	yes
Scarlet Tanager	large undisturbed mixed forest	no
Spotted Sandpiper	shorelines of fresh and salt water	no
Tennessee Warbler	boreal forest	no
Vesper Sparrow	fields and low shrub areas	Yes (marginal)
Wilson's Snipe	wet fields and pastures	no
Yellow-bellied Flycatcher	boreal forest and bogs	no

¹ Cornell University <http://www.allaboutbirds.org/guide/search>

Note that the Peregrine Falcon is excluded from the list, but is included in the ACCDC report as a bird species that may be present. The property would not support breeding Peregrines, but they maybe seen there by chance as they migrate or forage in the area.

4.2.2 Mammals

While no significant mammal species were recorded in the ACCDC 5 km search, the property seems to be suitable habitat for some of the province's common terrestrial mammal species including: White-tailed Deer (*Odocoileus virginianus*), Porcupine (*Erithizon dorsatum*), Raccoon (*Procyon lotor*), Snowshoe Hare (*Lepus americanus*), Red Squirrel (*Tamiasciurus hudsonicus*), Eastern Chipmunk (*Tamias striatus*), Red Fox (*Vulpes vulpes*), Eastern Coyote (*Canis latrans*), Black Bear (*Ursus americanus*), and Red-backed Vole (*Myodes rutilus*). None of these mammal species would be totally dependent upon the habitats found on the property for all their life cycle requirements. The aquatic or semi aquatic mammals would only be found on the floodplain section of the property.

4.2.3 Reptiles

No significant reptile species are recorded in the ACCDC data search and no reptiles were observed during the survey periods. However it should be noted that the temperatures at that time were only about 5 C, which probably limits cold blooded reptile activity to a great degree. Turtles may be present on the floodplain section of the property, but not likely to be found on the upland habitats. The ACCDC report suggests that Wood Turtles may be present within 5 km of the property, but could not disclose the location. Again this would most likely be on the floodplain and not on the upland part of the property. Turtles do prefer sandy soil sites near water as egg laying areas and those conditions do exist on the south eastern edge of this property.

4.2.4 Amphibians It is not likely that the upland habitats found on this sandy well drained soil and young forest stands with little organic material would be attractive to amphibians, although some of the forest dwelling species such as Wood Frogs and salamanders may find parts of the steep sloped and moister habitats next to the floodplain somewhat attractive. No frog or toad calls were heard during the evening survey, although temperatures were low. It is highly possible that Spring Peepers and American Toads both would use the floodplain wetland habitats on the property as breeding habitat. No significant amphibian species are listed on the ACCDC search.

4.2.5 Fish

The endangered Atlantic Salmon, Inner Bay of Fundy population is recorded in the Cornwallis River within 5 km of the property, however No fish habitat is present on the property itself.

4.2.6 Invertebrates

No invertebrate fauna were observed on the property during the May 21- 22, 2014 survey periods. Cool temperatures (5 to 7 C) along with the evening and early morning timing of the surveys would reduce the opportunity to observe these species, consisting mainly of butterflies and dragonflies in their adult flying form. The ACCDC search does identify 10 species of invertebrates within 5 km of the property. Some of these are associated only with wetlands and flowing water habitats and so would not be present on the upland part of the property itself. However a few species of butterflies that would spend at least a part of their adult lifecycle in open or forested habitats could be found occasionally on the property. Of these, the Mustard White (*Pieris oleracea*) has been observed close to the property and could potentially be seen there under the right conditions. The lack of flowering shrubs and herbaceous plants would reduce the potential for the more common butterfly species from being present to some degree.

5. Potential Impacts on Wildlife Including Migratory Birds

The proposed sand pit expansion will remove existing young regenerating forest and open low shrub habitats. These habitats are currently being used by common breeding bird species as noted in **table 2**. These birds were heard singing on territory in late May indicating the strong possibility that nearby nesting will occur. An adult Song Sparrow was seen carrying food to its nest site in the shrub habitat west of the existing pit, a confirmed breeding indicator. Based on habitat preference and the fact that they have been recorded as having been seen with 5 km of the property, there is the possibility that significant bird species could use the property. **Table 3** identifies the following significant species as having potential to be found on the property: Barn Swallow, Brown Thrasher, Canada Warbler, Common Nighthawk, Gray Catbird, Vesper Sparrow, Rose-breasted Grosbeak and Olive-sided Flycatcher. Bank Swallows sometimes nest in the face of sand cliffs, both natural and man made such as in an abandoned sand or gravel pit. However no bank burrows were seen at this site during the survey period and may not use the site possibly due to disturbance. Common Nighthawks nest in open barren areas, such as is present here, but may avoid the area due to human activity. Other birds that prefer a young regenerating deciduous forest with a thick undergrowth, such as the Brown Thrasher and Gray Catbird would find this suitable habitat. Habitat for significant mammal, amphibian, reptile, fish and invertebrate fauna does not seem to be present to any great degree on the upland portion of the property.

The expansion of the proposed sand pit and associated habitat loss would force breeding bird and common mammal species to re-locate to nearby similar habitats. It is not likely that this proposal would have any landscape level impacts, since it does not appear to be a part of any travel corridor for wider ranging mammal species. The human activity and disturbance associated with a pit of any kind can impact wildlife use. Given that there is a much larger sand mining operation adjacent to this and the 101 Highway, human disturbance is already a factor here.

6. Mitigating Actions

The proposed expansion of the existing sand pit will remove tree and shrub habitats that are now used by common breeding song birds, forcing them to relocate to similar undisturbed habitats. To minimize the impact on nesting during construction, it is recommended that tree removal not take place during the prime nesting period, which is May 1st to July 31st.

The ecologically sensitive floodplain wetland component of the property is to be avoided in the expansion of the sand pit. To further reduce impacts of fauna use of the wetland, the treed slope adjacent to the wetland should also remain intact as a buffer to the wetland. Wood Turtles could potentially be found in the wetland, but could also be found using the adjacent sloped upland as a basking area, given its southern exposure. It is doubtful that wood turtles would intentionally use the sand pit itself for any reason.

References:

Texts and Reports

Atlantic Canada Conservation Data Centre: Data Report 5198, Coldbrook, N.S.

Erskine, Anthony J. *Atlas of Breeding Birds of the Maritime Provinces*, 1992 Crown Copyright, Province of Nova Scotia

Tufts, Robie W. *The Birds of Nova Scotia*, 1962, 1973, The Nova Scotia Museum

Web sites:

Cornell University: <http://www.allaboutbirds.org>

Maritime Breeding Bird Atlas Square Summary: <http://www.mba-aom.ca/jsp/squareinfo.jsp>

Natureserve Explorer: <http://explorer.natureserve.org/>

Nova Scotia Department of Environment, Protected Areas, Natural Landscapes Report:
<http://www.mba-aom.ca/maps/pdf/20LP46.pdf>; <http://www.mba-aom.ca/maps/pdf/20LP56.pdf>.

Nova Scotia Department of Natural Resources Ecological Land Classification:
<http://www.novascotia.ca/natr/forestry/ecological/pdf/ELCrevised2.pdf>

The Butterflies of Nova Scotia: <http://novascotiabutterflies.ca/>

Figure 1: Location of Breeding Bird Point Count Sites



May 22, 2014 Images of Habitat Features associated with the proposed sand pit expansion



Proposed expansion area looking north east from existing sand pit road



North side of existing sand pit



Looking south over proposed expansion area of low shrub meadow west of existing sand pit



Young regenerating forest area north west of existing sand pit