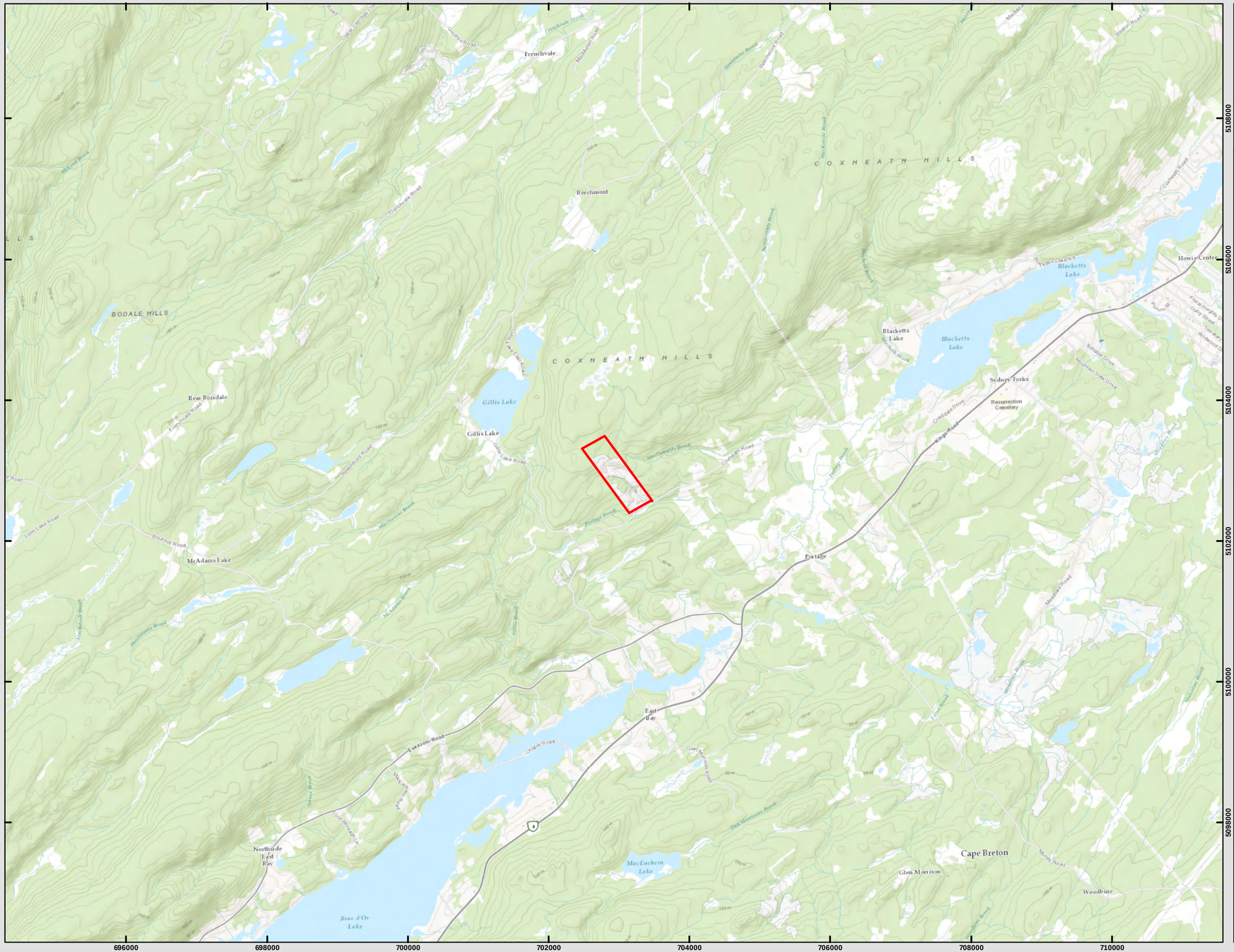
APPENDIX A. FIGURES



ZUTPHEN

FIGURE 1

Gillis Lake Quarry Expansion Project

Project Locator

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 0.5 1 2 Kilometers

1:50,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-15

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Site_Location

ZUTPHEN

FIGURE 2

Gillis Lake Quarry Expansion Project

Study Area

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- NSE Mapped Watercourses
- Quarry Development Area
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 50 100 200 m

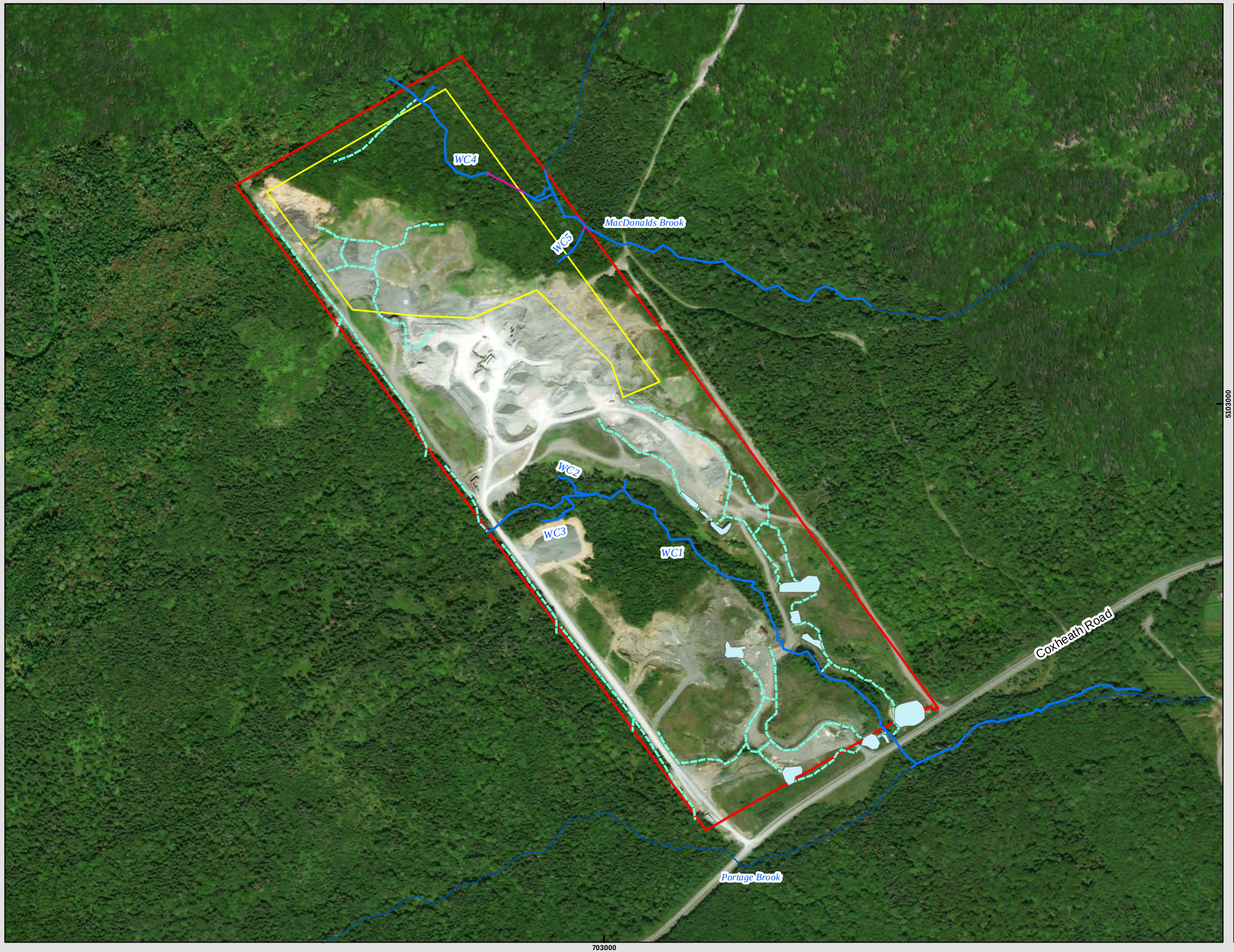
1:5,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Close_Up



ZUTPHEN

FIGURE 3

Gillis Lake Quarry Expansion Project

Water Management

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- No Surface Water Channel
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Field Delineated Drainage
- Settling Ponds
- Quarry Development Area
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 50 100 200 m

1:5,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Water_Management

ZUTPHEN

FIGURE 4

Gillis Lake Quarry Expansion Project

Expected Quarry Development

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Expected Quarry Development
- NSE Mapped Watercourses
- Quarry Development Area
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 50 100 200 m

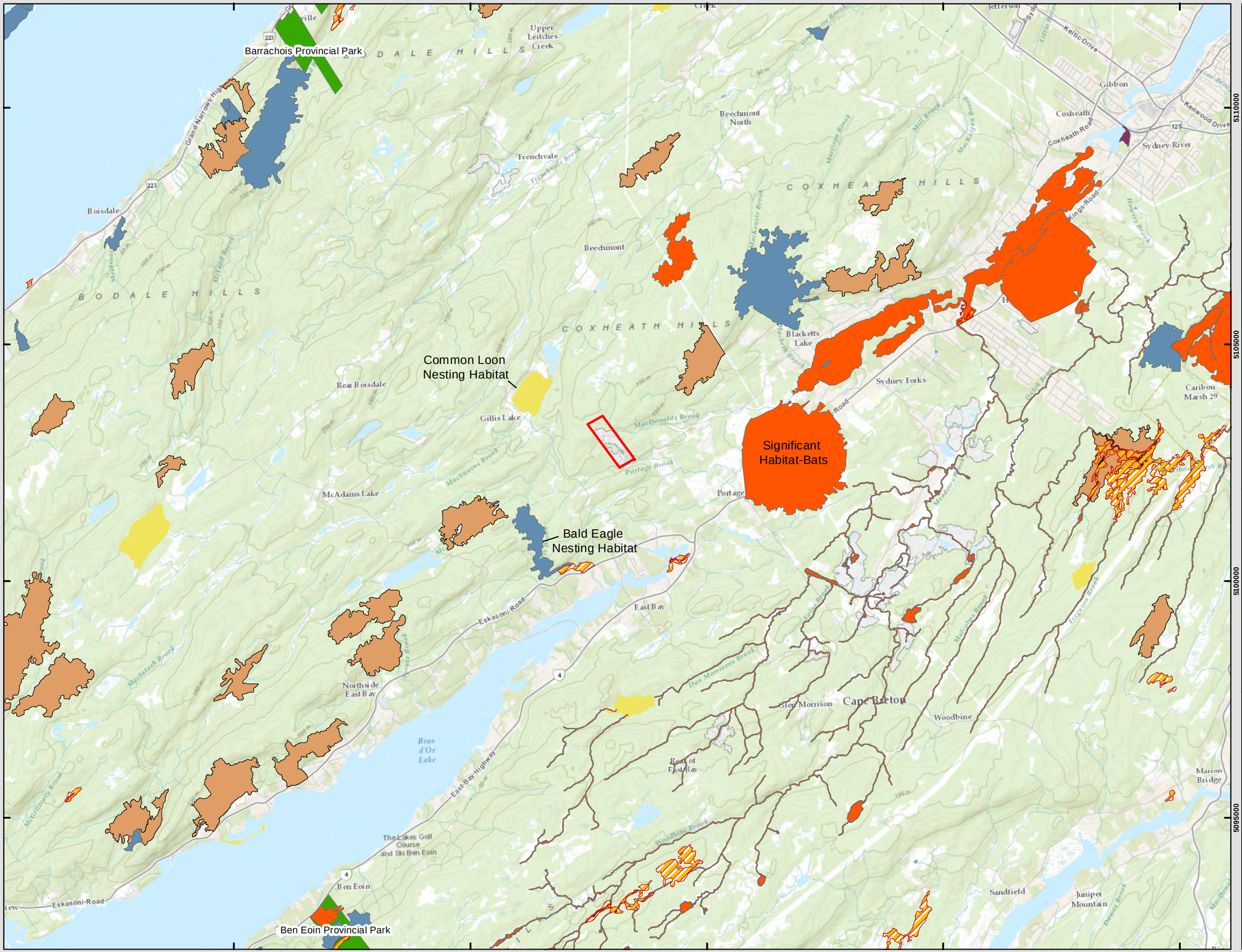
1:5,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-18

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Timeline



Prepared For:

ZUTPHEN

FIGURE 5

Gillis Lake Quarry Expansion Project

Significant Habitat and Conservation Areas

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Wetland of Special Significance
- Deer Wintering
- Migratory Bird
- Other Habitat
- Species at Risk
- Species of Concern
- Designated Protected Area
- Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 900 1,800 3,600 m

1:75,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-15

McCallum Environmental Ltd.

Document Name: Gillis_Lake_Environmental_Constraints

ZUTPHEN

FIGURE 6

Gillis Lake Quarry Expansion Project

Avifauna Surveys

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Avian Point Count Locations
- NSE Mapped Watercourses
- Quarry Development Area
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 50 100 200 m

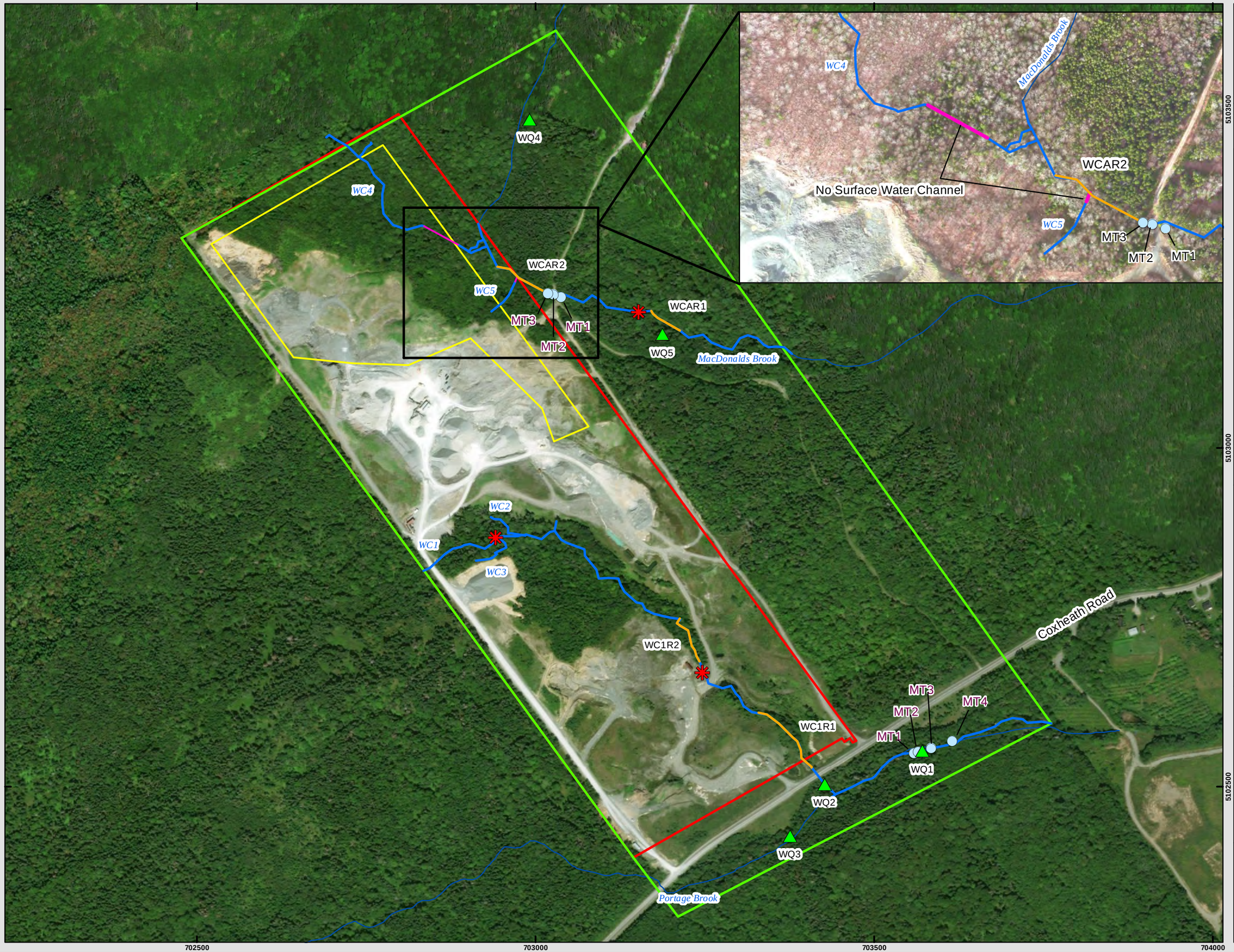
1:5,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Birds



ZUTPHEN

FIGURE 7

Gillis Lake Quarry Expansion Project

Water Quality Sampling and Fishing Locations

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Observed Barriers to Fish Passage
- Surface Water Sampling Location
- Fish Trap
- Electrofishing Reach
- No Surface Water Channel
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Fish Habitat Assessment Area
- Quarry Development Area
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 55 110 220 m

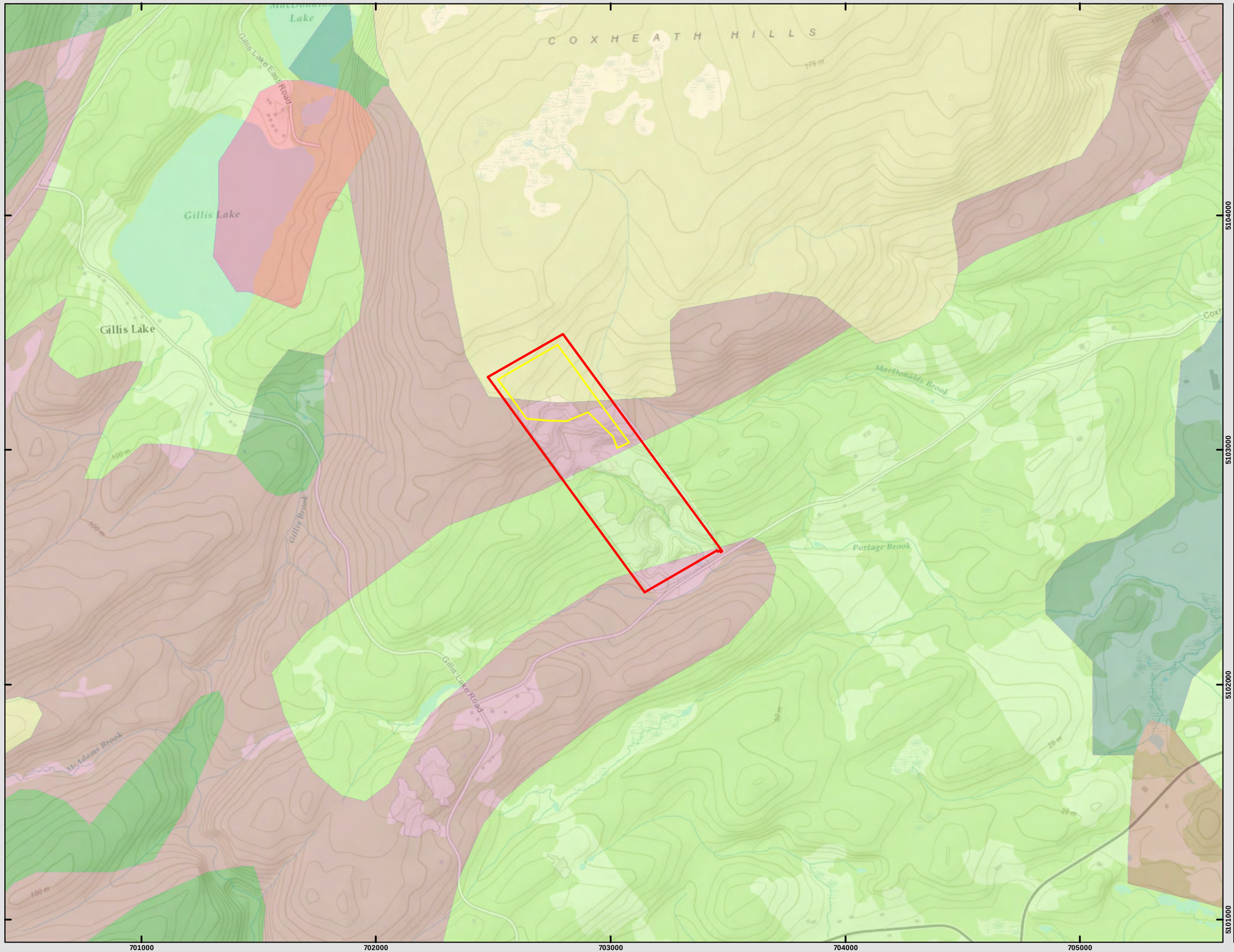
1:5,200 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Fish



ZUTPHEN

FIGURE 8

Gillis Lake Quarry Expansion Project

Surficial Geology

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Study Area (PIDs 15853416 & 15212947)
- Quarry Development Area
- Alluvial Deposits
- Bedrock
- Glaciofluvial Deposits (Kames and Eskers)
- Lakes
- Silty Drumlin (Drumlin Facies)
- Silty Till Plain (Ground Moraine)
- Stony Till Plain (Ground Moraine)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 162.5 325 650 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-18

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Surficial_Geology

ZUTPHEN

FIGURE 9

Gillis Lake Quarry Expansion Project

Bedrock Geology

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Study Area (PIDs 15853416 & 15212947)
- Quarry Development Area
- Coxheath Hills Group
- Horton Group
- Windsor Group (Lower)
- Windsor Group (Middle)
- Windsor Group (Upper)
- none

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 162.5 325 650 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: EP

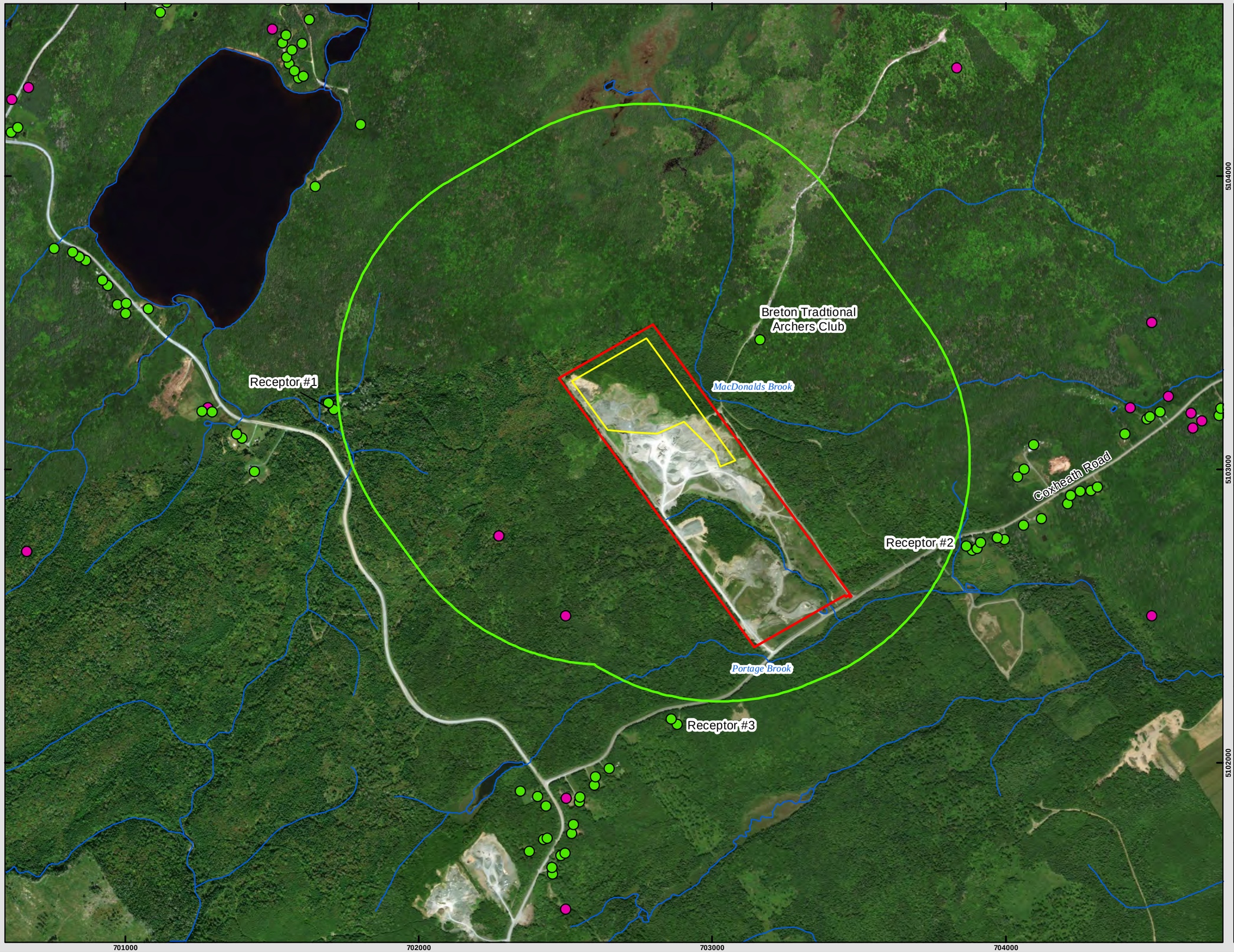
Date: 2019-12-15

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Bedrock_Geology

701000 702000 703000 704000 705000

5104000 5103000 5102000 5101000



ZUTPHEN

FIGURE 10

Gillis Lake Quarry Expansion Project

Receptors

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Wells (NSE Wells Database)
- Buildings
- NSE Mapped Watercourses
- Quarry Development Area 800 m Buffer
- Quarry Development Area
- Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 150 300 600 m

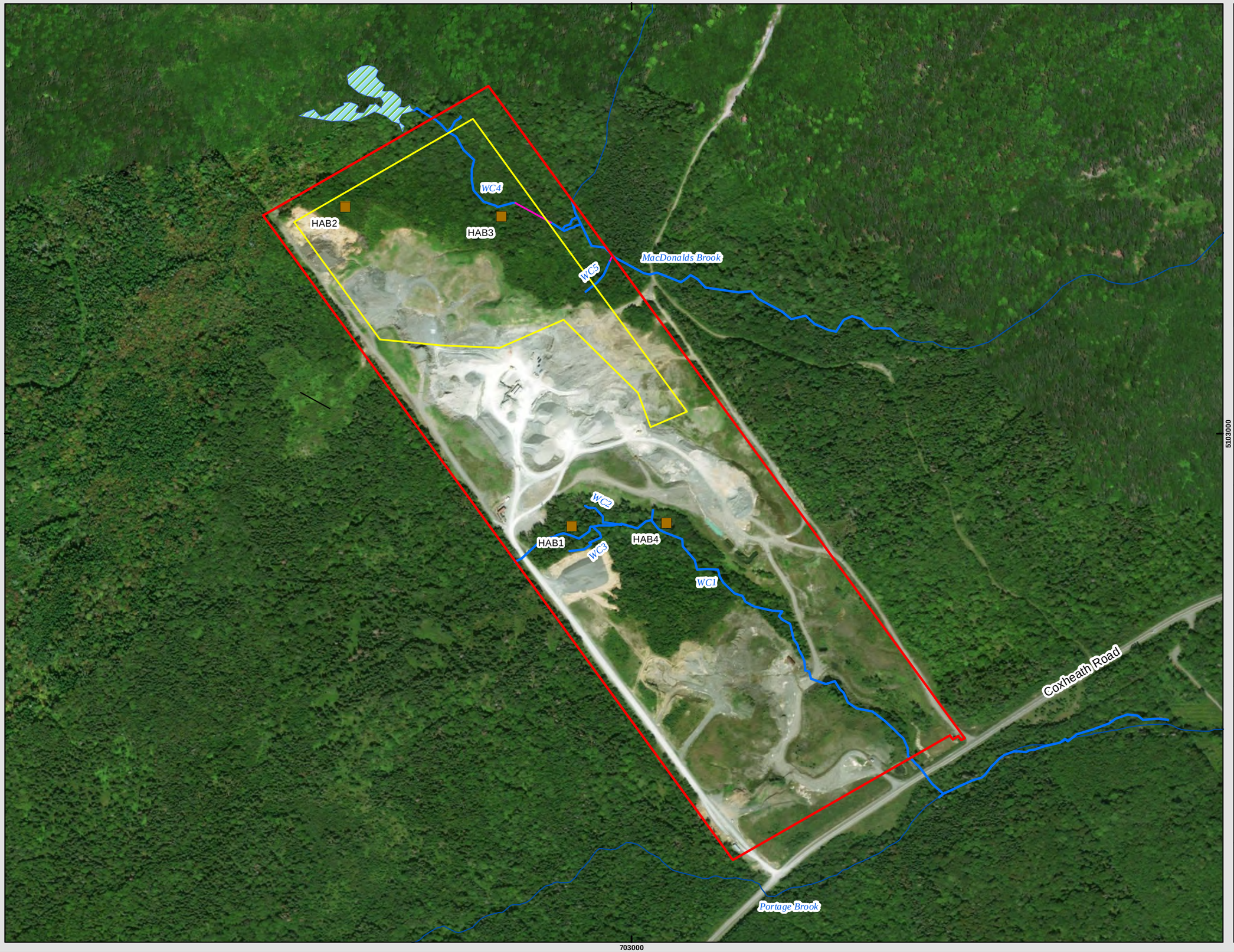
1:12,000 Scale when printed @ 11" x 17"

Drawn By: A. Stoffer

Date: 2019-12-18

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Receptors



ZUTPHEN

FIGURE 11

Gillis Lake Quarry Expansion Project

Habitat Assessment Points

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Habitat Assessment Points
- No Surface Water Channel
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Approximate Wetland Boundary
- Quarry Development Area
- Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 62.5 125 250 m

1:5,000 Scale when printed @ 11" x 17"

Drawn By: A. Stoffer

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_Habitat

ZUTPHEN

FIGURE 12

Gillis Lake Quarry Expansion Project

Local Catchment Areas

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Outfalls
- No Surface Water Channel
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Local Catchment Area
- Quarry Development Area
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 145 290 580 m

1:13,700 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_WC_Results

Outfall Location 3

Outfall Location 2

Outfall Location 1

COXHEATH HILLS

MacDonalds Lake

Gillis Lake East Road

Gillis Lake

MacDonalds Brook

Portage Brook

Gillis Brook

McAdams Brook

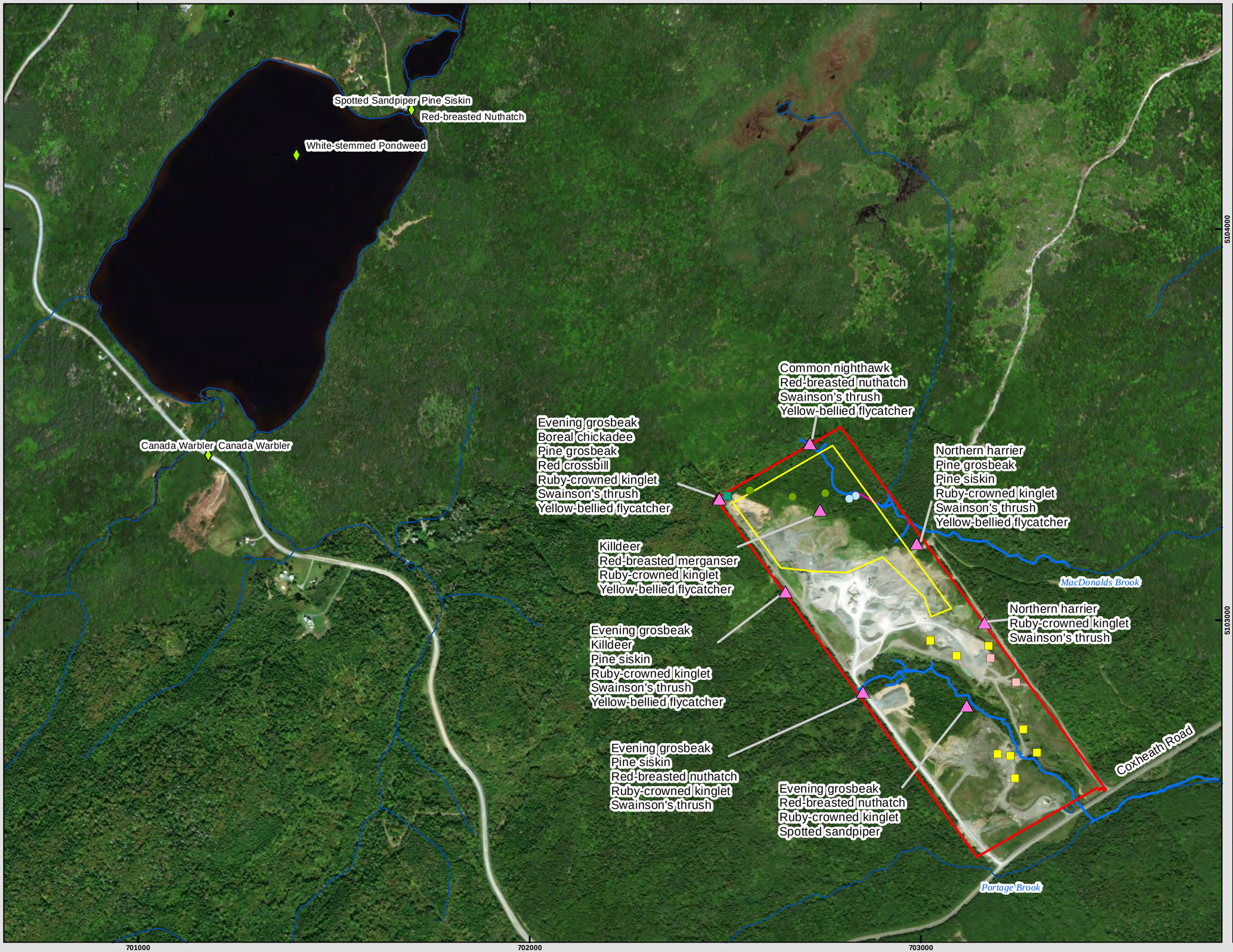
Gillis Lake Road

100 m

175 m

5105000
5104000
5103000
5102000

701000
702000
703000
704000
705000



ZUTPHEN

FIGURE 13

Gillis Lake Quarry Expansion Project

ACCDC Results and SAR/SOCI Observations

Gillis Lake, NS
PIDs 15853416 and 15212947

Legend

- Multiple avifauna species
- Blue felt lichen
- Boreal chickadee
- Loesel's twayblade
- Marsh mermaidweed
- Tree pelt lichen
- Variegated horsetail
- ACCDC Observations
- Quarry Development Area
- No Surface Water Channel
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Study Area (PIDs 15853416 & 15212947)

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 95 190 380 m

1:9,000 Scale when printed @ 11" x 17"

Drawn By: EP

Date: 2019-12-19

McCallum Environmental Ltd.

Document Name: 191215_Gillis_Lake_ACCDC_SAR_SOCI

APPENDIX B. PROJECT TEAM MEMBERS' CVS

McCallum Environmental Ltd.

Andy Walter, BSc. (Hort)
andy@mccallumenvironmental.com
Senior Project Manager

Years in Practice
10

Certifications
Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships
Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Education
- BSc. (Horticulture), Essex University (UK), 2003-2005

Training
- Wetland Functional Assessment Training Workshop, NSE 2013
- Urban Wetland Restoration: A Watershed Approach, 2012
- Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2010;
- Water Management and Wetland Restoration Training Course, 2014;
- Identifying and Delineating Wetlands for Nova Scotia, 2009
- Watercourse Alteration Certification (Nova Scotia Environment) (2008)
- Saint John Ambulance Emergency First Aid, AED, CPR(C). 2016

Summary
Mr. Walter is a trained biologist and wetland specialist, and has extensive experience managing technical biophysical projects within Atlantic Canada. Mr. Walter is knowledgeable in federal, provincial, and municipal environmental regulations and guidelines applicable to Atlantic Canada, and works closely with all necessary regulatory agencies to facilitate project implementation. As senior project manager, Mr. Walter ensures biophysical field programs are tailored to the needs of the client and project, while meeting regulatory standards. Mr. Walter has provided environmental support to the planning process in a wide range of project types including residential development, industrial projects (mining, pit and quarry), transmission line and hydro dam infrastructure and highway construction to name a few. Mr. Walter has managed the environmental processes associated with multiple wind energy developments in Nova Scotia, including compilation of provincial environmental assessment (EA) documents, and implementation of associated EA biophysical field surveys, as well as acquiring pertinent environmental information required for regulatory permitting.

As a trained field biologist, Mr. Walter has completed terrestrial and stream habitat assessments, and flora and fauna surveys, including desktop reviews and characterization of biophysical environments. Mr. Walter also completes numerous fish habitat/watercourse assessments for effects monitoring, watercourse alteration, and HADD authorization projects. Assessments have also included water quality sampling, benthic sampling, and biophysical characterization (channel depth and width, stream velocity, fish habitat assessment) of water bodies.

As a qualified wetland delineator and wetland function evaluator for Atlantic Canada, Andy has completed delineation of hundreds of wetlands. Projects often involve the completion of species at risk assessments, functions assessments, and detailed wetland characterization in support of provincial wetland alteration applications. In addition, Mr. Walter assists in the identification of potential wetland restoration and creation sites for wetland and fish habitat alterations, reviews databases, mapping, and aerial imagery, completes ground truthing and consults with local environmental groups and government to identify potential sites. Following alteration approval, Mr. Walter supervises construction activities for numerous construction projects in wetland habitat ensuring that erosion and sedimentation control measures are implemented prior to construction, and monitors activities during construction to ensure wetland protection measures are effective.

Project Experience
- Managing, and currently in the process of implementing a new wetland functional assessment tool for use in Nova Scotia. This Project included the collection of baseline wetland information across Nova Scotia by completing 120 wetland functional assessments using the Wetland Ecosystem Services Protocol (WESP). Ongoing collaboration with Nova Scotia Environment to support the rolling out of this method to wetland practitioners.
- Management and implementation of a 18 hectare agricultural wetland restoration project in Middle Stewiacke, NS.
- Management and completion of terrestrial habitat mapping, wetland delineation and vegetation surveys in support of EA and regulatory permitting for the South Canoe Wind Project (80MW wind Project in Nova Scotia) 2011-2014.

Andy Walter, BSc. (Hort)
andy@mccallumenvironmental.com
Senior Project Manager

- Management of a multi-faceted avian study in support of a provincial EA at Aulds Cove, NS.
- Completion of six provincial environmental assessments and baseline surveys for community wind projects in Nova Scotia in 2012-2014.
- Terrestrial habitat mapping, wetland delineation and vegetation surveys in support of a 65km distribution transmission line in central Nova Scotia.
- Wetland delineation, species at risk, watercourses and flora surveys at the site of a proposed quarry in Nova Scotia. Subsequent facilitation of wetland alteration permit to alter in excess of 20 hectares of wetland.
- Implemented the passive wetland restoration strategy at a disturbed wetland on NSDNR property. Completed regular monitoring of vegetation, soil, and hydrology conditions and developed project recommendations accordingly (2009-2011).
- Wetland delineation, species at risk, watercourses and flora surveys at the site of a proposed 22km railway line and shipping container terminal in eastern Nova Scotia (2012-2014).
- Completion of wetland delineation and watercourse identification and associated regulatory permitting at multiple developments in Nova Scotia (2009-2016).

Work Experience

Strum Environmental Services Ltd., Nova Scotia 2008-2015

Environmental Specialist/Project Manager- provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial, residential and wind power developments, wetland and watercourse alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, avian studies, and regulatory consultation.

McCallum Environmental Ltd.

Emma Posluns, MSc.
emma@mccallumenvironmental.com

Years in Practice
3

Education

B.Sc. (Geography), University of Victoria, 2005-2009.

M.Sc. (Environmental Science), Memorial University of Newfoundland and Labrador, 2010-2013.

Training

- At-Risk Landbird Identification Workshop, 2018
- Saint John Ambulance Standard First Aid, AED, CPR(C), 2017
- Wildlife Awareness training – 2015
- W.H.M.I.S – 2015
- Geographic Information System (GIS) Training, ESRI – 2013
- Facilitation Skills for Technical Professionals, Dalhousie University – 2017

Summary

Ms. Posluns has been in the environmental consulting profession since 2015. She has worked on both project related and research related field assessments in Nova Scotia.

Ms. Posluns is responsible for completing biophysical assessments, including flora and fauna surveys, avian surveys, aquatic surveys, wetland monitoring and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Ms. Posluns has been responsible for the management of field data for multiple, large-scale initiatives in Nova Scotia, including a provincial infrastructure project and a mining development.

Selected Project Experience

- Conducted migratory bird surveys for a provincial infrastructure project, which included auditory and visual identification of avian species.
- Completed nocturnal owl surveys to gather data on the presence of owl species and location of active nests.
- Surveyed ungulate and other wildlife for a variety of Natural Resource projects.
- Delineated wetlands, completed watercourse identification and vegetation assessments for two large-scale developments in Nova Scotia in 2016 and 2017.
- Collaborated with communities, local resource users, and First Nations to implement solutions.
- Coordinated spatial data organization, performed GIS analysis, and created dynamic maps for a variety of projects.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Environmental Scientist:
June 2017-Present

- Completing avian surveys and other biophysical assessments, with emphasis on species at risk.
- Completing wetland and watercourse delineations and assessments and coordinating data management and Geographical Information Systems (GIS).
- Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications.
- Preparing Phase 1 Environmental Site Assessments.

McCallum Environmental Ltd.

Emma Posluns, MSc.
emma@mccallumenvironmental.com

CBCL LTD., Halifax, Nova Scotia
Environmental Scientist
September 2015 – April 2017.

- Completed migratory bird point count surveys and nocturnal owl surveys, while efficiently and effectively following protocols.
- Created GIS maps for over 20 projects, including six 100-page map books, effectively visualizing contaminated sites, ecologically sensitive habitats, and urban development.
- Aerially interpreted and delineated wetlands.
- Conducted species at risk background searches and field visits.
- Prepared reports for a variety of assessments, including permit applications and Environmental Management Plans.
- Assisted with marine water quality sampling.

OceanCanada Partnership, Halifax, Nova Scotia
Environmental Scientist
September 2015 – April 2017.

- Facilitated community meetings and provided expertise to help a group with local area development planning.
- Conducted interviews and community-wide surveys of a rural fishing village to create a database of local assets.
- Summarized findings of community assets into an accessible written document.
- Lead a marine-monitoring program in an ecologically sensitive bay, coordinating 15 volunteers in fieldwork, identifying and assessing eelgrass health and distribution, sample collection, and data entry.
- Investigated social, ecological, and economic changes within coastal communities to make suggestions on future development.

Saint Mary's University, Halifax, Nova Scotia
Professor of Geography
August 2015 – April 2016.

- Explained technical environmental information clearly and concisely to Canadian and International students, ensuring all students had a supportive learning atmosphere.
- Designed new course material that engaged students and enhanced their learning experience.
- Worked with students one-on-one to solve conflicts.

Regional District of North Okanagan, Vernon, British Columbia
Water Sustainability Coordinator
2013 – 2014.

- Worked under the BC Water Act, and maintained a comprehensive understanding of provincial and local policy, regulations, and bylaws.
- Compiled and analysed large datasets, assessing trends, and informing local policy.
- Effectively communicated with team members.

McCallum Environmental Ltd.

John R Gallop, BSc., B.I.T.
john@mccallumenvironmental.com

Years in Practice
5

Education

B.Sc. (Honours, Biology), Waterloo University, 2009-2011.

Training

- Saint John Ambulance Standard First Aid, AED, CPR(C), 2015
- Wildlife Awareness training and ATV training – 2015
- W.H.M.I.S – 2015
- H2S Alive - 2015

Summary

Mr. Gallop has been in the environmental consulting profession since 2011. He has worked on both project related and research related field assessments in Nova Scotia, Alberta and Saskatchewan.

Mr. Gallop is responsible for completing biophysical assessments, including flora and fauna surveys, aquatic surveys (wetlands, watercourses and fish surveys), avian surveys, and species at risk evaluations, primarily for clients in the energy sector, mining sector, and commercial development sector. Mr. Gallop has been responsible for the implementation of 5 environmental baseline programs for mining, quarry development and energy sector development projects in Nova Scotia and Saskatchewan in advance of environmental assessment registration.

Selected Project Experience

- Completion of migratory bird surveys for a large scale renewable energy project.
- Completion of ungulate and other wildlife surveys for a variety of Natural Resource projects.
- Completion of environmental baseline surveys for the federal environmental assessment process for proposed development of two gold mines in eastern Nova Scotia in 2016-2018 across 2500 hectares of landscape in Nova Scotia
    - Wetland delineation and functional assessment
    - Fish habitat surveys and electrofishing
    - Rare plant surveys
    - Wildlife surveys
    - Avian surveys
    - Lichen surveys
- Completion of wetland delineation, watercourse identification and vegetation assessments of two large scale developments in Saskatchewan and Nova Scotia in 2015 and 2016.
- Responsible for collecting baseline data for the calibration of the Wetland Ecosystems Services Protocol (WESP) for the Province of Nova Scotia.

McCallum Environmental Ltd.

John R Gallop, BSc., B.I.T.
john@mccallumenvironmental.com

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Biologist and Environmental Specialist:

April 2016-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments and coordinating migratory bird monitoring. Communicating field survey results and methodologies for Environmental Assessments and other Provincial regulatory applications.

Basin Environmental LTD., - Edmonton, Alberta.

Environmental Technologist

September 2014 – February 2016..

- Utilized the Alberta Wetland Classification system to assess wetlands and the Wetland Rapid Evaluation Tool to determine compensation required for impacts to classified wetlands.
- Aerially interpreted and delineated wetlands.
- Conducted species at risk background searches and field visits.
- Conducted pre-disturbance assessments for oil and gas activities, road improvements and residential developments, including: watercourses/waterbodies, soil profiling, vegetation, wildlife, eco-sites and timber volumes.
- Prepared reports for a variety of assessments, including: wetlands, pre-disturbance, bio-physicals, fish habitats for access road watercourse crossings, EAP/EFR supplements and applications.
- Monitored the water quality of horizontal directional drilling on fish bearing permanent watercourses.
- Assisted surveyors and construction engineers on-site in the design of oil and gas well leases and facilities, pipelines and access roads to ensure compliance with EAP Standards and Guidelines.

McCallum Environmental Ltd.

Amber Stoffer, BSc., MREM
amber@mccallumenvironmental.com

Years in Practice
2

Education

B.Sc. (Honours, Biology), University of Ottawa, 2009-2013.

Master of Resource and Environmental Management, Dalhousie University, 2013-2015.

Training

- Fish Habitat Restoration Watercourse Alteration Installer, 2017
- Saint John Ambulance Standard First Aid, AED, CPR(C), 2017
- Marine Emergency Duties – A1, 2014
- W.H.M.I.S – 2013
- PADI Open Water Certified Suba Diver - 2013

Summary

Ms. Stoffer has worked in environmental consulting and research since 2014. She has worked on both project related and research related field assessments in Nova Scotia and Quebec.

Experience

McCallum Environmental Ltd. - Halifax, Nova Scotia

Junior Environmental Scientist:
July 2017-Present

Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk. Completing wetland and watercourse delineations and assessments. Communicating field survey results and methodologies for environmental assessments and other provincial regulatory applications.

Tasks:

- Flora and fauna field surveys
- Species at risk assessments
- Watercourse and wetland identification and assessment
- Wetland delineation
- Reporting of methodology and results for environmental assessment
- Provincial regulatory applications
- Construction monitoring
- GIS

Clean Annapolis River Project – Annapolis Royal, Nova Scotia

Project Leader and Fisheries Technician:
July 2016 – July 2017

Led the planning, coordination, and implementation of fish passage and in-stream restoration work within the Annapolis River watershed. Conducted data collection through field surveys, ecological monitoring, and stakeholder consultation.

Tasks:

- In-stream and culvert restoration
- Fish habitat, water quality, and fish passage assessments
- Watershed management planning
- Staff and student training
- Community and stakeholder engagement

McCallum Environmental Ltd.

Amber Stoffer, BSc., MREM
amber@mccallumenvironmental.com

Stantec – Dartmouth, Nova Scotia

Environmental Scientist:

April – September 2014 (Student Contract)

Conducted and coordinated field studies as part of environmental impact assessments, including on-shore and vessel-based marine mammal surveys. Compiled, processed, and analyzed data for technical reports. Developed project work plans and training documents for field surveys.

Tasks:

- Marine mammal population and habitat utilization surveys
- Statistical analysis using R software
- Reporting of methodology and results for environmental assessment

6 Lakeshore Drive
East Lawrencetown, N.S.
B2Z 1N9

902 483-6693

cpepper@ymail.com

Chris Pepper

Environmental consultant experienced in bird identification, wetland delineation, plant identification and rare lichen assessments.

Experience-Boreal Felt Lichen
Over 3000 hours completing Boreal Felt Lichen surveys for various organizations including Stantec, McCallum Environmental, Strum Environmental, Mersey Tobeatic Research Institute, Northern Pulp, Port Hawkesbury Paper, Nature Conservancy of Canada, Nova Scotia Nature Trust, and others.

Experience-Avian Assessments
Over 4000 hours completing avian assessment surveys in Nova Scotia, Newfoundland and Alberta. Worked for various companies including Strum Environmental, McCallum Environmental, WSP ltd, CBCL ltd, Nature Conservancy of Canada and Canadian Wildlife Service.

Experience-Wetland Delineation
Wetland surveys for various companies including McCallum Environmental, Strum Environmental and others.

Other projects
Conducted Wood Turtle surveys on various rivers in Nova Scotia for CWS-Environment Canada.
Conducted Tern and Seabird surveys on offshore islands for CWS/Env. Canada
Conducted Mainland Moose surveys for several wind farms and various other developments.
Conducted rare plant surveys for several developments.

Training and
Wetland Plant Adaptation and Identification – Fern Hill Institute course July 2012

Wetland Delineation – Fern Hill Institute course July 2012

St. John Ambulance Emergency First Aid CPR "A" and AED

Maintain personal WCB coverage

Volunteer Experience
Nova Scotia Nature Trust – Surveyed several offshore islands on the eastern shore for birds, plants and lichens regarding the 100 Wild Islands project.

Maritime Nocturnal Owl Survey – 2009-present.

Maritime Breeding Bird Atlas – 2009-2010.

Mersey Tobeatic Research Center – Conducting surveys for the endangered Boreal Felt Lichen and other lichens.

Provincial Coordinator for Nova Scotia Migration Count – 2010-2016

Director for Nova Scotia Bird Society – 2009-present.

Active participant in Christmas Bird Counts – 2008-present.

COURTNEY GLEN, M.A.

INTERMEDIATE ARCHAEOLOGIST
DAVIS MACINTYRE & ASSOCIATES LIMITED

Phone: (902) 298-0298
E-mail : Courtney.Glen@eastlink.ca

EDUCATION

2011 - 2012 Master of Arts, Landscape Archaeology – University of York (with distinction)
2006 - 2011 Bachelor of Arts, Anthropology, and Diploma in Forensic Science – Saint Mary's University.

PROFESSIONAL DEVELOPMENT AND CERTIFICATION

- Standard First Aid (October 2016)
- Conflict Resolution Workshop
- Occupational Health and Safety Seminar
- Risk Management and Liability Workshop
- Emergency Response training
- Asbestos Awareness Training (All-Tech)

EMPLOYMENT HISTORY

Senior Archaeologist (2013-Present), Davis MacIntyre & Associates Limited

Duties include directing archaeological resource impact assessments for private, public, and government industries under the Special Places Protection Act; preparation of archaeological reports; records management; artifact processing; archival research; and GIS mapping.

Junior Archaeologist, Davis MacIntyre & Associates Limited (2011-2013)

Duties include assisting in archaeological resource impact assessments for private, public, and government industries under the Special Place Protection Act.

RELEVANT PROJECT AND RESPONSIBILITIES

Courtney Glen is a senior archaeologist at Davis MacIntyre & Associates Limited. She is a graduate of the University of York, UK. Her current duties include directing and assisting in archaeological resource impact assessments for private, public, and government industries under the Special Places Protection Act; preparation of archaeological reports; excavation and field survey; archival research; and GIS mapping for projects in Nova Scotia and Prince Edward Island. She was involved in several archaeological research projects in the United Kingdom including excavation and analysis at Mesolithic and historic period sites, and at precontact and historic period sites in Nova Scotia.

REPRESENTATIVE PROJECTS & CLIENT REFERENCES

1. Project Name: **NSPI Tusket Dam Replacement** (2015-present)
   Client/Contact: Heather Holland, Nova Scotia Power Inc. (PO Box 910, Halifax, NS B3J 2R5) 902-225-9135, Heather.Holland@nspower.ca
   Project Role: Principal archaeological investigator and permit holder for an archaeological resource impact assessment of the proposed replacement of a hydro-electric dam on the Vaughan Reservoir on the Tusket River. The assessment included historic background research, predictive modeling, reconnaissance, development of testing and mitigation protocols, assistance in client consultation with the Archaeology Research Division of Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO-ARD) as well as final reporting.

2. Project Name: **Grafton Street Methodist Burying Ground** (2016-2017)
   Client/Contact: Mac Mackay, Presbyterian Church of Saint David (1544 Grafton Street, Halifax, NS B3J 2G1) 902-471-9312, macmackay@ns.sympatico.ca
   Project Role: Principal archaeological investigator for the archaeological relocation of a historic cemetery in downtown Halifax. The project included the management of historic background research, disinterment of approximately 239 individuals as well as excavation of numerous archaeological features, development of excavation and mitigation protocols, management of the laboratory including the biological-anthropological recording of the remains as well as the burial goods and archaeological artifacts, overseeing the re-interment of remains, assistance in client consultation with the Archaeology Research Division of Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO-ARD) and Mi'kmaq Chiefs, as well as production of a three-volume final report.

VANESSA MCKILLOP

INTERMEDIATE ARCHAEOLOGIST
DAVIS MACINTYRE & ASSOCIATES LIMITED

Phone: (902) 897-7999
E-mail: mckillop.vanessa@gmail.com

EDUCATION

2010 Bachelor of Arts, Major in Anthropology, Minor in History – Saint Mary's University.
2017-Present Master of Arts Candidate, Heritage Resource Management – Simon Fraser University.

PROFESSIONAL DEVELOPMENT AND CERTIFICATION

- Healing Circle (Aboriginal awareness and understanding), Tobique First Nation (2015)
- Standard First Aid CPR C and AED (2015)
- Stantec Off Road Driving and Defensive Driving Qualification (2014)
- Stantec Bear Awareness Training (2014)
- WHIMS & OHS, Nova Scotia Community College, (2007)
- Non-violent Crisis Intervention, Nova Scotia Community College (2007)
- Aboriginal Cultural Awareness, Nova Scotia Community College (2006)
- Stress Management for the Workplace, Nova Scotia Community College (2006)
- Senior Leaders Course CFB Cold Lake; Cold Lake, AB (2001)

PROFESSIONAL MEMBERSHIPS AND AFFILIATIONS

Association of Professional Archaeologists of New Brunswick
Nova Scotia Archaeology Society

RELEVANT PROJECTS AND RESPONSIBILITIES

Vanessa is currently an Intermediate Archaeologist at Davis MacIntyre & Associates Limited. She has been employed in the consulting field since 2010 and has been a part of several Archaeological Resource Impact Assessments (ARIA) in Nova Scotia as well as Archaeological Impact Assessments (AIA) in New Brunswick and Prince Edward Island under the PEI Archaeology Act. Vanessa acted as a Field Supervisor for Stantec Consulting in Fredericton, New Brunswick for the Trans Canada Pipeline Project as well as the Maritime Electric Transmission Line. She has also acted as Senior Archaeological Field Technician at the Debert Palaeo Indian Site Complex and has considerable knowledge and experience in the practical employment of the Standards for Archaeological Impact Assessment and Reporting in Debert and Belmont, Nova Scotia.

REPRESENTATIVE PROJECTS & CLIENT REFERENCES

1. Project name: **Lower Debert Bridge Replacement Project** (2016)
   Client: **WSP Canada Inc.**
   Principal investigator for the archaeological resource impact assessment of the bridge replacement project. Duties included historical background research, predictive modelling, field reconnaissance and testing under the Standards for Archaeological Impact Assessment and Reporting in Debert and Belmont, and final report production.

2. Project name: **McLellan's Brook Quarry Expansion** (2017)
   Client: **McCallum Environmental Ltd.**
   Principle investigator for an archaeological resource impact assessment of the expansion of an existing aggregate quarry in Pictou County. Duties included historic background research, predictive modelling, reconnaissance, development of a mitigation plan for potential archaeological resources, and final report production.

APRIL MACINTYRE, M.A.

PRESIDENT / SENIOR ARCHAEOLOGIST
DAVIS MACINTYRE & ASSOCIATES LIMITED

Phone: (902) 402-4441
E-mail : april@davismacintyre.com

EDUCATION

2005 Master of Arts, Anthropology – Memorial University of Newfoundland.
1999 Bachelor of Arts, Honours in Anthropology – Saint Mary's University.

PROFESSIONAL DEVELOPMENT AND CERTIFICATION

- Accident Investigation Training (2019)
- Hazard Identification, Assessment and Control (2019)
- Emergency First Aid & CPR (November 2018)
- Asbestos Awareness Training (All-Tech, 2016)
- WHMIS Certified (November 2016)

PROFESSIONAL MEMBERSHIPS AND AFFILIATIONS

Research Associate, Nova Scotia Museum (2008-present)
Member of the Canadian Archaeological Association
Member of the Council for Northeast Historical Archaeology
Member of the Society for Historical Archaeology
Past Vice President and Secretary for Nova Scotia Archaeology Society

RELEVANT PROJECTS AND RESPONSIBILITIES

April MacIntyre began a career in cultural resource management with Davis Archaeological Consultants (DAC) upon graduating from Saint Mary's University in 1999 with a Bachelor of Arts, Honors in Anthropology. She was employed as Vice President and senior archaeologist with DAC since 2003 and in 2009, April formed a business partnership with DAC President, Dr. Stephen Davis. Today, she is President and Principal Archaeologist at Davis MacIntyre & Associates Limited. Her specialization is in the historic archaeology of Nova Scotia, particularly as it relates to cultural resource management and policies. April has extensive experience in field and laboratory methods, GIS, as well as in conducting documentary research and is well trained in eighteenth- and nineteenth- century material culture identification and analysis. She has been involved in, and has managed, various historic and precontact archaeological investigations including burial sites throughout Nova Scotia. Throughout her career and numerous archaeological assessment contracts, she has been instrumental in developing policies for archaeological resource management which have become the standard for professional practice in the Province. April is qualified to hold Category A, B and C heritage research permits with the Nova Scotia Department of Communities, Culture and Heritage. She has produced over 400 contractual reports and is actively involved in research and publishing. She is currently a Research Associate at the Nova Scotia Museum where she is researching 18th and 19th century historic material cultural in the urban context of Halifax with an aim to publishing.

REPRESENTATIVE PROJECTS & CLIENT REFERENCES

1. Project name: **Cape Split Trails Development** (Present)
   Client: NS Department of Lands and Forestry
   Project Description: Phase I (complete) and phase II (in progress) archaeological resource impact assessment of approximately 8 kms of new trails at Cape Split Provincial Park including a historic background study, development of an archaeological predictive model and field reconnaissance and final reporting (phase I), as well as ongoing development of a phase II program of shovel testing in consultation with the Departments of Lands and Forestry, Communities, Culture and Heritage and Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO).

2. Project name: **Province House of Nova Scotia (2017-2018)**
   Client: Vollick McKee Petersmann & Associates Ltd.
   Project Description: Phase I/II archaeological resource impact assessment for the rehabilitation of the north and south gardens at Nova Scotia's legislature building. The project included a historic background study, predictive modeling, development of monitoring and mitigation protocols, and follow-through of the protocols to include on-site monitoring and excavation of early Halifax archaeological deposits at the site of Canada's first provincial legislature building.

APPENDIX C. PRIORITY SPECIES, ACCDC, MBBA AND NSCCH REPORT

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
FLORA						
Vaccinium uliginosum	Alpine Bilberry				S3	Wide tolerance of moisture and fertility, but generally acidic soils in Halifax, Digby & Cape Breton
Polygonum viviparum	Alpine Bistort				S1	Damp slopes, gravels or rock. A single community identified near St. Peters, Richmond County.
Comandra umbellata	Bastard's Toadflax				S2	Grows in damp sands, as on headlands, in barrens, dunes and evergreen forests in Antigonish & Cape Breton
Comandra umbellata ssp. umbellata	Bastard's Toadflax				S2	Grows in damp sands, as on headlands, in barrens, dunes and evergreen forests in Antigonish & Cape Breton
Geranium bicknellii	Bicknell's Crane's-bill				S3	Colonizes recently burned or cleared land; recently exposed lakeshores, Sporadic from southern counties to central Nova Scotia.
Polygala sanguinea	Blood Milkwort				S3	Prefers acidic or run-out soil as found in fallow fields or brushlands, scattered through central portion of province.
Galium obtusum ssp. obtusum	Blunt-leaved Bedstraw				S2S3	Swamps, swampy grounds, wet areas of prairies, wet woods and thickets, roadside ditches.
Betula pumila var. renifolia	Bog Birch				S1?	Bogs and meadows amongst alders.
Betula pumila var. pumila	Bog Birch				S3	Bogs and meadows amongst alders.
Salix pedicellaris	Bog Willow				S2	Grows in acidic substrate as in bogs; nutrient-rich marshes and in sphagnous lacustrine habitats.
Juncus bulbosus	Bulbous Rush				S1S2	Found along the edges of fresh water: ditches, ponds canals, and especially in disturbed alkaline conditions on Sable Island and Eastern CB.

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Lilium canadense	Canada Lily				S2	Meadows,floodplains and streamsides. Local; from Kings and Cumberland counties eastward to southern Cape Breton.
Lilium canadense ssp. canadense	Canada Lily				S2	Meadows,floodplains and streamsides.
Polygonum scandens	Climbing False Buckwheat				S3	Grows on low ground in riparian zones, becoming luxuriant after trees are cleared. Uncommon and local from Digby to Richmond counties on the northern side of the province.
Polygonum scandens var. scandens	Climbing False Buckwheat				S3	Grows on low ground in riparian zones, becoming luxuriant after trees are cleared. Uncommon and local from Digby to Richmond counties on the northern side of the province.
Eupatorium dubium	Coastal Plain Joe-pye-weed				S2	Found in wet meadows, damp thickets, shores, and along the roadside. It grows best in full sun but can also grow in semi-shade and enjoys grows well-drained soil that is moisture retentive.
Galium aparine	Common Bedstraw				S2S3	Pastures, fields, ditches and streamsides. Very common throughout.
Humulus lupulus var. lupuloides	Common Hop				S1?	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, shrublands or thickets.
Carex chordorrhiza	Creeping Sedge				S1	Grows in wetlands: bogs, fens and marshes. It has been recently found in the Amherst area of Cumberland county.
Ranunculus sceleratus	Cursed Buttercup				S1S2	Anthropogenic (man-made or disturbed habitats), fresh tidal marshes or flats, marshes, swamps.
Ranunculus sceleratus var. sceleratus	Cursed Buttercup				S1S2	Anthropogenic (man-made or disturbed habitats), fresh tidal marshes or flats, marshes, swamps.
Rudbeckia laciniata	Cut-Leaved Coneflower				S1S2	Floodplain (river or stream floodplains), forests, shores of rivers or lakes, swamps, wetland margins (edges of wetlands).
Rudbeckia laciniata var. gaspereauensis	Cut-Leaved Coneflower				S1S2	Floodplain (river or stream floodplains), forests, shores of rivers or lakes, swamps, wetland margins (edges of wetlands).

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Botrychium dissectum	Cut-leaved Moonwort				S3	Generally in sandy, gravelly, grassy or open soils. Frequent in the southwestern counties, scattered eastward to Cape Breton
Vaccinium caespitosum	Dwarf Bilberry				S3	Cliff or talus slope, disturbed sites, field meadow.
Vaccinium caespitosum var. caespitosum	Dwarf Bilberry				S3	Cliff or talus slope, disturbed sites, field meadow.
Floerkea proserpinacoides	False Mermaidweed				S2	Limited to ravine slopes beneath deciduous forests, riparian forests. Known from several Cape Breton localities, such as Glenora Falls. Reported from Coldbrook and Sheffield Mills, Kings Co., Truro and Antigonish Co.
Carex alopecoidea	Foxtail Sedge				S1	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forests, marshes.
Platanthera hookeri	Hooker's Orchid				S3	Grows in open dry forests of mixed conifers. Scattered in most of the province, local in the southwestern counties. So far absent from the eastern shore.
Galium labradoricum	Labrador Bedstraw				S2	Alkaline soils in wet meadows, bogs. Limited to Cape Breton counties.
Botrychium lanceolatum var. angustisegmentum	Lance-Leaf Grape-Fern				S2S3	Fertile soils on woodland hillsides.
Platanthera macrophylla	Large Round-Leaved Orchid				S2	Grows in deciduous or mixed deciduous forests. Found from Hants Co. through the Cobequids to Cape Breton.
Hypericum majus	Large St John's-wort				S2	Wet or dry open soil. Widely scattered locations. Until recently, only known from Halifax area and Big Baddeck, Victoria County, and thought to be historic.
Pyrola minor	Lesser Pyrola				S3	Characteristic of mature coniferous forests. Scattered north from Digby neck to Kentville and east to Cape Breton.
Carex granularis	Limestone Meadow Sedge				S1	Anthropogenic (man-made or disturbed habitats), meadows and fields, shores of rivers or lakes, wetland margins (edges of wetlands).

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Hordeum brachyantherum	Meadow Barley				S1	Anthropogenic (man-made or disturbed habitats).
Hordeum brachyantherum ssp. brachyantherum	Meadow Barley				S1	Anthropogenic (man-made or disturbed habitats).
Goodyera oblongifolia	Menzies' Rattlesnake-plantain				S3	Found in deciduous upland forests and ravines. So far known only from northern Cape Breton, where it is scattered, in Victoria and Inverness Counties.
Juncus stygius	Moor Rush				S2	Bogs, bog pools and wet moss. Limited to Cape Breton localities, where it may be common but local.
Juncus stygius ssp. americanus	Moor Rush				S2	Bogs, bog pools and wet moss. Limited to Cape Breton localities, where it may be common but local.
Arnica lonchophylla	Northern Arnica				S1	Limited to calcareous gravels, cliff ledges. Rare and known only from Cape Breton: Grand Anse River, Inverness Co.; Big Southwest Brook, Victoria Co. and an unknown site in Richmond Co.
Arnica lonchophylla ssp. lonchophylla	Northern Arnica				S1	Limited to calcareous gravels, cliff ledges. Rare and known only from Cape Breton: Grand Anse River, Inverness Co.; Big Southwest Brook, Victoria Co. and an unknown site in Richmond Co.
Betula borealis	Northern Birch				S2	Bogs and wooded swamps.
Viola nephrophylla	Northern Bog Violet				S2	Cool, mossy sites: bogs, streamsides and wet woods. Rare in Shelburne Co., Colchester and Cumberland counties northward. Generally a northern ranging species within NS.
Lycopodium complanatum	Northern Clubmoss				S3S4	Open woodlands, thickets, heathland and rocky slopes;
Galium kamtschaticum	Northern Wild Licorice				S3	Fertile deciduous forests and ravines. Associated in the north with fir-birch boreal forest. Known only from Cape Breton.
Platanthera flava var. herbiola	Pale Green Orchid				S2	Anthropogenic (man-made or disturbed habitats), floodplain (river or stream floodplains), forest edges, forests, fresh tidal marshes or flats, grassland, meadows and fields, riverine (in rivers or streams), shrublands or thickets, swamps, wetland margins (edges of wetlands), woodlands.

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Impatiens pallida	Pale Jewelweed				S2	Alluvial soils as along intervales and in thickets. Uncommon from Kings Co,.Isle Haute, to northern Cape Breton and more frequent eastward.
Carex pensylvanica	Pennsylvania Sedge				S1?	Grows in dry, rocky soils as in dry open woodlands. Scattered from Annapolis and Lunenburg counties to Northern Cape Breton.
Polygonum pensylvanicum	Pennsylvania Smartweed				S3	Frequently seen in roadside ditches, edges of cultivated fields and along dyked marshes. Generally northern, from Annapolis and Queens to Cape Breton counties.
Carex plantaginea	Plantain-Leaved Sedge				S1	Forests.
Crataegus submollis	Quebec Hawthorn				S2?	Edges of fields and thickets, Antigonish and Lunenburg Co. to Cape Breton
Antennaria rosea	Rosy Pussytoes				S1	Dry, open places, meadows, and open woods. It has very recently been confirmed at Cape d'Or.
Antennaria rosea ssp. arida	Rosy Pussytoes				S1	Dry, open places, meadows, and open woods. It has very recently been confirmed at Cape d'Or.
Carex rosea	Rosy Sedge				S3	Grows in dry soils beneath deciduous forests and thickets. Common from Annapolis Co. to northern Cape Breton.
Plantago rugelii	Rugel's Plantain				S3	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
Plantago rugelii var. rugelii	Rugel's Plantain				S3	Anthropogenic (man-made or disturbed habitats), grassland, meadows and fields.
Spiranthes lucida	Shining Ladies'-Tresses				S2	Saturated, calcareous, usually gravelly or sandy soils. Typical habitats include stream and river banks or floodplain terraces, fens, and old quarries or gravel pits. Rare and Local. Yarmouth Shore and in coastal Pictou county. Single collection in Cape Breton.
Cypripedium reginae	Showy Lady's-Slipper				S2	Bog, swamp. Widely scattered localities in province.

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Carex argyrantha	Silvery-flowered Sedge				S3S4	Sandy soils in thickets and clearings. Patchy distribution from Annapolis and Cumberland counties to Northern Cape Breton.
Agalinis paupercula	Small-flowered Agalinis				S1	Meadows and fields, shores of rivers or lakes, wetland margins.
Luzula parviflora	Small-flowered Woodrush				S3S4	Alluvial soils in intervale forests and rocky streambeds. Scattered in Northern Cape Breton and west to coastal areas of Cumberland Co.
Carex tenuiflora	Sparse-Flowered Sedge				S1	Fen and mixed wood forest. Little Harbour, Richmond Co.
Halenia deflexa ssp. brentoniana	Spurred Gentian				S1?	Forest edge, forests, meadows and fields.
Veronica serpyllifolia ssp. humifusa	Thyme-Leaved Speedwell				S2S3	Moist soils, fields and roadsides. Common throughout.
Equisetum variegatum	Variegated Horsetail				S3	Wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.
Equisetum variegatum var. variegatum	Variegated Horsetail				S3	Wetlands or wet seeps. Wide ranging in NS, with disjunct localities: Halifax County, Cumberland Co., Victoria Co.
Lysimachia quadrifolia	Whorled Yellow Loosestrife				S1	Disturbed habitat, grassland, woodlands.
Carex wiegandii	Wiegand's Sedge				S3	Treed bogs, bogs, conifer and alder thickets. Cape Breton Island, Shelburne Co.
Allium schoenoprasum	Wild Chives				S2	Disturbed habitats, floodplain, meadows and fields, ridges or ledges, shores of rivers and lakes.
Allium schoenoprasum var. sibiricum	Wild Chives				S2	Disturbed habitats, floodplain, meadows and fields, ridges or ledges, shores of rivers and lakes.

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Fragaria vesca	Woodland Strawberry				S3S4	Shady forests and ravines. Brier Island to Kings and Cumberland counties. To northern Cape Breton.
Fragaria vesca ssp. americana	Woodland Strawberry				S3S4	Shady forests and ravines. Brier Island to Kings and Cumberland counties. To northern Cape Breton.
Juncus subcaudatus	Woods-Rush				S3	Conifer woods and spruce swamps, where substrate is soggy. Yarmouth to Kings and Halifax Counties. Richmond County.
Juncus subcaudatus var. planisepalus	Woods-Rush				S3	Conifer woods and spruce swamps, where substrate is soggy. Yarmouth to Kings and Halifax Counties. Richmond County.
Cypripedium parviflorum	Yellow Lady's-slipper				S2S3	Occasionally under mixed deciduous trees.
Caltha palustris	Yellow Marsh Marigold				S2	Open or treed swamps, alder marshes and meadows. Northumberland coastal plain: Mabou, Northeast Margaree, Margaree River, Terre Noir. St. Joseph-du-Moine, Cheticamp, Pleasant Bay area, all Inverness county. North shore of Merigomish Island, Pictou County. Kings county represents introductions.
Caltha palustris var. palustris	Yellow Marsh Marigold				S2	Open or treed swamps, alder marshes and meadows. Northumberland coastal plain: Mabou, Northeast Margaree, Margaree River, Terre Noir. St. Joseph-du-Moine, Cheticamp, Pleasant Bay area, all Inverness county. North shore of Merigomish Island, Pictou County. Kings county represents introductions.
Utricularia ochroleuca	Yellowish-white Bladderwort				S1	Rooted free floating plant.
FAUNA						
Alosa pseudoharengus	Alewife				S3	Alewife are anadromous fish that travel from the marine environment to freshwater to spawn. In the Maritimes, spawning occurs in lakes or slow-moving portions of rivers in late spring. Alewife are found mostly in larger rivers.
Anguilla rostrata	American Eel		Threatened		S2	Move from salt water into fresh water when quite young and spend their adult life in fresh water returning to spawn in tropical oceans up to several decades later. Widely distributed in

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						freshwaters, estuaries and coastal marine waters connected to the Atlantic Ocean. Although small streams may be critical to the persistence of eels in a watershed, they may use these streams only once or twice a year, while moving to and from more preferred habitats.
Culaea inconstans	Brook Stickleback				S3	This species generally occupies cool, clear, heavily weeded, spring-fed creeks, small rivers, lakes, and ponds, usually in shallow, quiet to flowing pools and backwaters over sand or mud. Sometimes it burrows into soft bottoms. Occasionally this fish can be found in brackish water. In a lake in Manitoba, adults were most abundant at the outer margin of emergent vegetation. Eggs are deposited in a nest made of plant material by the male just above the bottom in shallow water.
Salmo salar pop. 4	Atlantic Salmon – Eastern Cape Breton pop.				S1	Found in freshwater rivers and streams that are clear, cool, and well oxygenated, with gravel, cobble, or boulder bottoms.
Salvelinus fontinalis	Brook Trout				S3	Brook Trout are known to inhabit a wide range of cool, freshwater environments, from small headwater streams to large lakes. Spawning sites are usually near groundwater upwelling or spring seeps and within a lake or stream with a gravel substrate
Lynx canadensis	Canadian Lynx		Not at Risk	Endangered	S1	Prefers old growth boreal forests with dense undercover, but the lynx will live in other habitats where undercover and prey numbers are adequate. They are often found in regenerating forests after a fire - where the snowshoe hare population has increased. When prey is scarce in the forested areas, the lynx will venture on to the tundra for food.
Perimyotis subflavus	Eastern Pipistrelle	Endangered	Endangered	Endangered	S1	Prefers partly open country with large trees and woodland edges. Avoids deep woods and open fields. Probably roosts in the summer in tree foliage and occasionally in buildings; may use cave as night roost between foraging forays. Usually hibernates in caves and mines with high humidity. Generally, maternity colonies utilize manmade structures or tree cavities; often in open sites that would not be tolerated by most other bats
Lasiurus borealis	Eastern Red Bat				S1S2B, S1M	The red bat lives in forests, forest edges and hedgerows. It roosts among foliage, usually in deciduous trees, but it will sometimes roost in coniferous trees.

Priority Species List
Gillis Lake Quarry Expansion Project

McCallum Environmental Ltd.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Pekania pennanti	Fisher				S3	Fishers inhabit upland and lowland forests, including coniferous, mixed, and deciduous forests. They occur primarily in dense coniferous or mixed forests, including early successional forest with dense overhead cover. Fishers commonly use hardwood stands in summer but prefer coniferous or mixed forests in winter. They generally avoid areas with little forest cover or significant human disturbance. Cape Breton Population is provincially endangered.
Lasiurus cinereus	Hoary Bat				S1S2B, S1M	Hoary bats are thought to be rare in Nova Scotia. Insectivorous, migratory. Poorly known. Authorities disagree as to the bat's preference for coniferous versus broadleaf trees. Hoary bats are thought to prefer trees at the edge of clearings, but have been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks.
Myotis lucifugus	Little Brown Myotis	Endangered	Endangered	Endangered	S1	For Myotis lucifugus, the maternity colonies often exist in warm sites that facilitate pup growth rates, such as attics of buildings and under bridges, in rock crevices, or in cavities of canopy trees in forests. Males roost during daytime in a wide variety of structures, including buildings and bridges (mainly M. lucifugus), rock crevices, behind flaking bark, and within tree cavities, often at many different sites during the summer. Myotis species generally roost in tall, large-diameter snags that are in the early to middle stages of decay and located in open areas within mature-overmature forest.Myotis lucifugus congregates in caves and abandoned mines used for hibernation through the winter. About 16 hibernation sites are known in Nova Scotia.
Sorex dispar	Long-tailed Shrew				S2	Mountainous, forested areas (deciduous or evergreen) with loose talus. Rocky damp areas with deep crevices covered by leaf mold and roots are preferred. May occur along small mountain streams. Will use artificial talus created by road construction and pit mines. Trapping results reported by Richmond and Grimm suggest that Long-tailed Shrews spend most of their time in the labyrinth of spaces between rocks about a foot beneath the surface. Nest sites are usually associated with natural subterranean tunnels among boulder crevices.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Sorex maritimensis	Maritime Shrew				S3	The maritime shrew is most often found in marshes and wet meadows. It is only found in two provinces in Canada: New Brunswick and Nova Scotia.
Myotis septentrionalis	Northern Long-eared Myotis	Endangered	Endangered	Endangered	S1	Found in many regions of Canada. Although there are numerous records of its presence in eastern Canada and the United States, it has only been recorded sporadically in the west. This particular type of bat has two habitats: a winter hibernation habitat as well as a summer roosting and foraging habitat. The Northern Long-eared Bat hibernates in caves or abandoned mines during the cold winter months. During the summer months the Bats commonly use crevices behind peeling bark or cavities in partially-decayed trees as summer day roosts. Within thick forests, summer activity may be focused along watercourses and small ponds.
Microtus chrotorrhinus	Rock Vole				S2	Optimal habitat for the rock vole is ferns/mossy debris near flowing water in coniferous forests. It also occupies deciduous forest/spruce clearcuts (mainly recent cuts), forest ecotones, grassy balds near forest, and sterile-looking rocky road fills. Occupies shallow burrows and runways. Nests probably are placed under logs or in similar protected sites. They are made of moss with a lining of grass and have multiple entrance tunnels. Breeding season is from March to mid-October.
Synaptomys cooperi	Southern Bog Lemming				S3	The southern bog lemming is rarely found in bogs in Nova Scotia; generally rare and very local in forest habitats, especially rocky ones, except on periphery of Cape Breton Highlands where it is fairly common on forested talus slopes.
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	Threatened	S2	Lives along permanent streams during much of each year, but in summer may roam widely overland and can be found in a variety of terrestrial habitats adjacent to streams, from deciduous woods, cultivated fields, and woodland bogs, to marshy pastures. Use of woodland bogs and marshy fields is most common in the northern part of the range.
AVIFAUNA						
Falco sparverius	American Kestrel				S3B	American Kestrels favor open areas with short ground vegetation and sparse trees. Observed in meadows, grasslands, deserts, parks, farm fields, cities, and suburbs. The southeastern U.S. form breeds in unusual longleaf pine sandhill habitat. When breeding,

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						kestrels need access to at least a few trees or structures that provide appropriate nesting cavities. American Kestrels are attracted to many habitats modified by humans, including pastures and parkland, and are often found near areas of human activity including towns and cities.
Icterus galbula	Baltimore Oriole				S2S3B	The Baltime Oriole is an adaptable species (found breeding in diverse habitats), but typically favors woodland edge (especially riparian) and open areas with scattered trees; strong preference for deciduous over coniferous trees. During spring and fall migration, it is found in variety of habitats, but generally favors open woodlands, woodland margins, hedgerows, and urban parks.
Riparia riparia	Bank Swallow	Threatened	Threatened	Endangered	S2S3B	The Bank Swallow breeds wherever suitable nesting sites in banks and cliffs are available. Nesting colonies are usually found near open areas, and often close to water. Bank Swallows will also nest in artificial banks, such as road cuttings and gravel pits. Found in all regions of the Maritimes, but scarce in many inland forested areas.
Hirundo rustica	Barn Swallow	Threatened	Threatened	Endangered	S2S3B	In the Maritimes the Barn Swallow breeds everywhere there are buildings and other structures that provide sheltered, dry nest-sites, even nesting on isolated cabins in deep woodland and on fishing shacks on offshore islands. A recent innovation, in remote logging areas with no alternatives, has been their basing nests on bolt-heads low in the sides of large corrugated metal culverts. However, nests in natural situations, in caves or under overhanging cliffs, usually close to water, are very rare.
Dendroica castanea	Bay-breasted Warbler				S3S4B	The Bay-breasted Warbler is one of the less widespread warblers, breeding in a narrow band across the closed boreal forests from northeast British Columbia to western Newfoundland, and south just into the U.S.A. Although during migrations and while foraging it is often seen in mixed stands, this bird nests only in conifers. Reaching highest densities in Balsam Fir forest infested with spruce budworm.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Picoides arcticus	Black-backed Woodpecker				S3S4	In the Maritimes, the Black-backed Woodpecker is widely but thinly distributed in conifer forests throughout, becoming more common farther north. The Black-backed Woodpecker is very local in southwest Nova Scotia. These birds forage on trees damaged by forest insects, especially bark beetles, and their characteristic flaking-off of bark fragments in search of food can be an aid in detecting them. Nests here are often in quite open situations, such as cut-over areas, open jack pine stands, and the edges of woodland gardens.
Coccyzus erythropthalmus	Black-billed Cuckoo				S3B	In the northern parts of its range, the black-billed cuckoo's numbers vary greatly from year to year in response to outbreaks of both the forest and orchard species of tent caterpillars, on which it feeds. It is associated with open woodland and forest edge and nests in small trees and tall shrubs.
Dendroica striata	Blackpoll Warbler				S3S4B	In the Maritimes, the blackpoll warbler breeds mainly in cool, damp spruce forests. During spring and fall migration, it uses a variety of habitats, although often partial to spruces, even when they are only a small component of the habitat.
Poecile hudsonica	Boreal Chickadee				S3	The Boreal chickadee prefers conifer, and especially spruce, forests all across the northern regions of Canada. Boreal Chickadees are found in all parts of the Maritimes. Most are residents, but some wander after breeding season.
Aegolius funereus	Boreal Owl		Not at Risk		S2?B	The Boreal owl breeds across the boreal forests of North America and Eurasia, and nests in woodpecker holes and other tree cavities. In Nova Scotia, the only breeding records are from Cape Breton island.
Wilsonia canadensis	Canada Warbler	Threatened	Threatened	Endangered	S3B	In Nova Scotia, the Canada warbler has only been found sparsely on Cape Breton Island and in the extreme southwest of the province. They are less predictable from habitat than most warblers, they are usually found in dense understory vegetation of mature to mid-aged mixed forest, most closely associated with broad-leafed trees and shrubs, but with conifers usually present

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						too.
Dendroica tigrina	Cape May Warbler				S2B	In summer, the Cape May warbler is found in northern conifer forests. One of several warbler species that attain high densities during spruce budwork outbreaks, but is more usual in mature spruces than in balsam fir stands. Activity is mostly at the tops of tall spruces. Rarely observed in the southwest of Nova Scotia due to unsuitable habitat.
Chaetura pelagica	Chimney Swift	Threatened	Threatened	Endangered	S2B,S1M	The chimney swift is most often seen on the wing and while entering their nesting places; these are often in chimneys or old cabins in the forest, but most swifts originally nested, and still nest in hollow trees.
Chordeiles minor	Common Nighthawk	Threatened	Special Concern	Threatened	S2B	Common nighthawks nest on sparsely vegetated or bare ground in open "wastelands" such as pine barrens, forest cut-overs, or burns, and secondarily on flat roofs of buildings.
Accipiter cooperii	Cooper's Hawk		Not at Risk		S1?B	The Cooper's hawk is a bird of broad-leafed and mixed woodlands, often hunting along wood-edges in settled areas.
Sialia sialis	Eastern Bluebird		Not at Risk		S3B	The Eastern bluebird nests in woodpecker holes, as well as nest-boxes. They forage in open areas of low vegetation with scattered trees for nesting.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Tyrannus tyrannus	Eastern Kingbird				S3B	In its breeding range, the eastern kingbird uses open environments; usually breeds in fields with scattered shrubs and trees, orchards, along shelterbelts, and especially along woodland edges in forested regions. A "savannah species", but given suitable nest sites and perches, will nest in many other habitats—e.g., desert riparian, quaking aspen (Populus tremuloides) parkland, recently burned forest, beaver ponds, golf courses and forested river valleys, and urban environments with tall trees and scattered open spaces. Also appears drawn to water; often nests densely in trees that overhang water or in dead, standing snags surrounded by water.
Contopus virens	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	The eastern wood-peewee is a bird of openings and edges more than of closed forest, in the Maritimes, and they readily use well-spaced shade trees in rural and urban settlements. Associated with broad-leafed trees.
Dumetella carolinensis	Gray Catbird				S3B	The gray catbird inhabits shrubbery in both upland and river-edge situations, mostly in areas where tree cover is of broad-leafed species. The Maritimes are at the northeast edge of its range, and catbirds are nearly absent in upland areas of northern New Brunswick, in Prince Edward Island and Cape Breton Island, as well as in regions with extensive conifer forest cover.
Perisoreus canadensis	Gray Jay				S3	Winters in the understory of tropical forests.
Asio otus	Long-eared Owl				S2S3	The long-eared owl frequents woodlands large or small, dense or open, conifer or broad-leafed, at all seasons, but it also forages over open areas.
Accipiter gentilis	Northern Goshawk		Not at Risk		S3S4	Though it is more generally found in the boreal forest region, likely because less often disturbed there, the Northern goshawk is also widespread in more temperate habitats. It nests in most forest types found throughout its geographic range. In eastern deciduous forests, Goshawks prefer nesting in mature, mixed hardwood–hemlock stands of birch (Betula sp.), beech (Fagus sp.), maple (Acer sp.), and eastern hemlock. Found scattered throughout the forests of the Maritimes. Hunts in diverse habitats ranging from

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						open-sage steppes to dense forests, including riparian areas.
Mimus polyglottos	Northern Mockingbird				S1B	The Northern mockingbird uses open habitats with scattered shrubs and small trees. In the East, typical habitats are parkland, cultivated lands, and early successional habitat at low elevations. Throughout its range found in suburban and urban habitats such as gardens and cemeteries, especially favoring mowed lawns adjacent to bare areas (e.g. concrete, asphalt, and sidewalks) with access to shrubs or hedges for cover and nesting. Absent from the interior of all forested habitat but frequents forest edge. Found in the same habitat year-round.
Contopus cooperi	Olive-sided Flycatcher	Threatened	Special Concern	Threatened	S2B	The olive-sided flycatcher is found in open woodlands and other places where scattered trees remain after cutting or fire in forested regions. Found throughout the Martimes, but not abundantly.
Vireo philadelphicus	Philadelphia Vireo				S2?B	This Philadelphia vireo is found mainly in broad-leafed trees, in pure or mixed woods, but it sings and forages more often in young stands and in the sub-canopy. Breeding has never been proven in Nova Scotia.
Pinicola enucleator	Pine Grosbeak				S2S3B,S5N	In the Maritimes, the pine grosbeak approaches the southern limit of its range, they are found generally in Nova Scotia. In general they avoid warmer, hardwood-dominated regions.
Carduelis pinus	Pine Siskin				S2S3	The pine siskin is primarily founf in open coniferous forests. Also breeds in ornamental conifers in parks, cemeteries, and the like, and in mixed coniferous-deciduous and even deciduous tree associations. May forage in trees, shrubs, and grassy areas.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Loxia curvirostra	Red Crossbill				S3S4	Red Crossbills are found in mature coniferous forests.
Pheucticus ludovicianus	Rose-breasted Grosbeak				S2S3B	Rose-breasted grosbeaks use a wide variety of habitats, including deciduous and mixed wooded uplands and lowlands; often at shrubby ecotones at the edge of woods at streams, ponds, marshes, roads, or pastures. Also commonly uses second-growth woodlands and well-vegetated suburban areas, parks, gardens, and orchards. Exhibits a preference for mesic woodlands, swamp forests, riparian corridors; avoids dry oak (Quercus spp.) woodlands. Uses a wide variety of habitats during spring and fall migration.
Regulus calendula	Ruby-crowned Kinglet				S3S4B	Ruby-crowned Kingelts prefer spruce-fir forests, however they also live in mixed wood forests, isolated trees in meadows, coniferous and decidious forests, mountain-shrub habitat, and floodplain forests of oak, pine, spruce or aspen.
Piranga olivacea	Scarlet Tanager				S2B	The scarlet tanager inhabits a wide variety of deciduous and mixed deciduous-coniferous forest types. Prefers mature forest, especially where oaks (Quercus spp.) are common, but may occur in young successional woodlands. Occasionally occurs in extensive plantings of shade trees in suburban areas, parks, and cemeteries.
Vermivora peregrina	Tennessee Warbler				S3S4B	In its breeding range, the Tennessee warbler is associated with Boreal zone in deciduous, mixed, and coniferous forests from near sea level to 450 m. Associated with open areas that contain grasses, dense shrubs, and scattered clumps of young deciduous trees.
Catharus fuscescens	Veery				S3S4B	Veeries breed in rich deciduous woodland and forest with well-developed understory across northern North America. Wintering birds select the same habitat structure in the tropics. On migration, you might encounter the species in nearly any woodlot or other treed habitat.

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Pooecetes gramineus	Vesper Sparrow				S2B	The vesper sparrow is considered a moderate habitat generalist, breeding in dry, open habitats with short, sparse, and patchy herbaceous vegetation; some bare ground; and low to moderate shrub or tall forb cover. Generally avoids wet areas with tall, dense vegetation. Occupies a broad range of grassland habitat types, including native prairie, semidesert grasslands, montane and desert shrublands, sagebrush steppe, montane meadows, old fields, pastures, haylands, reclaimed surface mines, weedy fencelines, croplands, weedy roadsides, and woodland edges with scattered trees and shrubs. Probably requires song perches, such as fences, shrubs, crop residue, tall weeds, woodlands bordering fields. During spring and fall migration, it uses Pastures and weeds bordering cultivated fields and roadsides, hedgerows, and barren to overgrown fields. Throughout much of range, commonly found near grassy or weedy ditches and fencerows, since fields are still barren upon arrival in early spring.
Vireo gilvus	Warbling Vireo				S1B	Throughout range, shows a strong association with mature mixed deciduous woodlands especially along streams, ponds, marshes, and lakes but sometimes in upland areas away from water. Also found in young deciduous stands that emerge after a clear-cut. Other habitats include urban parks and gardens, orchards, farm fencerows, campgrounds, deciduous patches in pine forests, mixed hardwood forests, and, rarely, pure coniferous forests. During spring and fall migration, it appears to use a wide variety of forested (similar to breeding) and shrubby habitats and can be found in trees of urban areas.
Gallinago delicata	Wilson's Snipe				S3B	The Wilson's snipe breeds in sedge bogs, fens, willow (Salix spp.) and alder (Alnus spp.) swamps, and marshy edges of ponds, rivers, and brooks. Requires soft organic soil rich in food organisms just below surface, with clumps of vegetation offering both cover and good view of approaching predators. Avoids marshes with tall, dense vegetation (cattails [Typha], reeds [Phragmites], etc.). In Canada, they use four primary types of breeding habitat: sedge bogs, fens, swamps, and pond and river edges. During spring and fall migration, they use marshes (including cattails), swamps, wet meadows, wet pastures, wet fallow fields, and marshy edges of streams and ditches. As during the breeding season, they require wet organic soils rich in food

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						with clumps of cover.
Wilsonia pusilla	Wilson's Warbler				S3B	Western montane, northern, and northeastern populations of Wilson's warbler are restricted to mesic shrub thickets of riparian habitats, edges of beaver ponds, lakes, bogs, and overgrown clear-cuts of montane and boreal zone; may reach into alpine zone. During spring and fall migration, occurs in most deciduous shrub habitats, but primarily riparian shrub understory. Also found in most other woodlands, suburban habitats, agricultural areas, desert scrub, and montane forests.
Hylocichla mustelina	Wood Thrush	Threatened	Threatened		SUB	The wood thrush breeds in the interior and edges of deciduous and mixed forests, especially well-developed, upland, mesic ones. Key elements of breeding sites include: trees >16 m in height, high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter. Habitat use during spring and fall migration is poorly documented, in fall probably uses second-growth and forest-edge habitats with fruit. No data for spring transients to suggest deviation from breeding season habitats.
Empidonax flaviventris	Yellow-bellied Flycatcher				S3S4B	The yellow-bellied flycatcher is a characteristic breeding bird of Canadian boreal conifer forests and peatlands. It nests in typically cool, moist conifer or mixed forests, bogs, swamps, and muskegs; landscapes often flat or poorly drained. Breeding habitat is usually well stratified, with open canopy, saplings and seedlings, shrubs, and abundant, thick moss cover. Shade is provided by conifer trees and saplings, as well as layers of shrubs, ferns, and herbs; undergrowth is usually dense.
Falco sparverius	American Kestrel				S3B	American Kestrels favor open areas with short ground vegetation and sparse trees. Observed in meadows, grasslands, deserts, parks, farm fields, cities, and suburbs. The southeastern U.S. form breeds in unusual longleaf pine sandhill habitat. When breeding, kestrels need access to at least a few trees or structures that provide appropriate nesting cavities. American Kestrels are attracted to many habitats modified by humans, including pastures

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						and parkland, and are often found near areas of human activity including towns and cities.
Charadrius vociferus	Killdeer				S3B	The killdeer is found throughout Nova Scotia, but scarce on the Atlantic slope and on Cape Breton Island. Breed in farmlands, gravel pits, forest clear-cut areas, and open lands along the coast.
Actitis macularius	Spotted Sandpiper				S3S4B	In the Maritimes, the most familiar habitat of the spotted sandpiper is open, gravelly shores and rivers, streams, and lakes, but they also breed around pools in other open habitats, near the sea-coasts and on islands, in gravel pits and quarries, and even in farmland. In the Maritimes, they are found sparsely in forested regions, with the most obvious gaps in headwater areas between river systems. During spring and fall migration, they occur anywhere there is water, but typically prefer freshwater habitat such as lakes, rivers, and marshes over estuaries.
LICHENS						
Peltigera collina	Tree Pelt Lichen				S2?	This species is typically found on the bark of hardwood species, often being present mid-way up the tree and in proximity to watercourses and/or wetlands.
Pectenia plumbea	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	Typically grows on mature red maple on the edge of swamps, lakes and rivers.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Sclerophora peronella (Nova Scotia pop.)	Frosted Glass-whiskers Lichen	Special Concern	Special Concern		S1?	Prefers mature hardwood forests. Typically found in the cavities of mature red maple and yellow birch. Found in both upland and wetland habitats.
Heterodermia speciosa	Powdered Fringe Lichen				S3	Prefers mature hardwood forests. Found on bark of red maple, sugar maple, in upland habitats and the margins of wetlands.
Heterodermia neglecta	Fringe Lichen				S3S4	Prefers mature hardwood and conifer forests.
Heterodermia squamulosa	Scaly Fringe Lichen				S3	Found in rich, tolerant hardwood forests.
Collema tenax	Soil Tarpaper Lichen				S3	Found growing on rocks and soils enriched with calcium.
Collema nigrescens	Blistered Tarpaper Lichen				S3	Often found in intact, hardwood forests, and on forest edges (i.e. cut blocks).
Anaptychia palmulata	Shaggy Fringed Lichen				S3S4	Often associated in mature, tolerant hardwood forests. Typically found growing on the bark of red maple, yellow birch, and sugar maple. Found in both upland and wetland habitats.

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
INVERTEBRATES						
Gomphus ventricosus	Skillet Clubtail				S1	In the Northeast, the larvae inhabit large rivers where they burrow in the soft mud of deep pools.
Neurocordulia michaeli	Broadtailed Shadowdragon				A1	Clean medium to large forested rivers.
Somatochlora albicincta	Ringed Emerald				S1	Pond breeding- range 3km from pond.
Polygonia satyrus	Satyr Comma				S1?	Apparently much like P. COMMA generally near trees but probably can breed in almost any setting with nettles. It is primarily a boreal forest and woodland species often near streams.
Stylurus scudderi	Zebra Clubtail				S1S2	Clean rivers and streams with sand or sand and cobble bottoms and moderate current in wooded landscape; usually much gravel and at least scattered rocks.
Epitheca princeps	Prince Baskettail				S2	Pond breeding- range 3km from pond.
Somatochlora septentrionalis	Muskeg Emerald				S2	Pond breeding- range 3km from pond.
Somatochlora williamsoni	Williamson's Emerald				S2	Pond breeding- range 3km from pond.
Amblyscirtes hegon	Pepper and Salt Skipper				S2S3	Found on the edges of forests and streams. Larvae found feeding on a variety of grass species.
Euphydryas phaeton	Baltimore Checkerspot				S2S3	Found in fresh-water marshes, wet roadsides and meadows. Larvae found feeding on Turtlehead (Chelone glabra) and has been reported to feed on beardtongue (Penstemon digitalis).
Satyrium liparops	Striped Hairstreak				S2S3	Found in deciduous forest edges, gardens and roadsides. Larvae found feeding off of members of the Rosaceae family such as plum and cherries (Prunus spp.). Occurrences with Oak (Quercus spp.), Willow (Salix spp.) and Blueberry (Vaccinium spp.).

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Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
Gomphus descriptus	Harpoon Clubtail				S2S3	Tiver- breeding dragonfly. 5 km range.
Ophiogomphus aspersus	Brook Snaketail				S2S3	Even minor increases in the silt or mud content in streams can alter dissolved oxygen levels and harm or kill snaketail larvae. Like most odonates, snaketails also need undisturbed fields and wooded uplands adjacent to breeding waters. It is here that critical foraging and breeding occurs. This species inhabits clean, relatively quiet or slow moving streams with an abundance of sandy sediments.
Ophiogomphus mainensis	Maine Snaketail				S2S3	Streams and small rivers.
Boyeria grafiana	Ocellated Darner				S3	Prefers swiftly flowing rocky forest streams and rivers; also rocky-shored lakes.
Gomphaeschna furcillata	Harlequin Darner				S3	Pond breeding- range 3km from pond.
Somatochlora tenebrosa	Clamp-Tipped Emerald				S3	River- breeding dragonfly. 5 km range.
Polygonia interrogationis	Question Mark				S3B	Usually found near woodland linear disturbances such as trail and roads as well as in wood city parks. Larvae found feeding off of Nettles (urtica sp.), Elms and Hops (humulus sp.).
Amblyscirtes vialis	Common Roadside-Skipper				S3S4	Found in trails, roads in wooded areas and often near streams. Larvae are found feeding off of a variety of grass species.
Polygonia progne	Grey Comma				S3S4	Found in woods and aspen parklands. Larvae found feeding on currants and gooseberries (Ribes sp.) and sometimes Elm (ulmus).
Lanthus parvulus	Northern Pygmy Clubtail				S3S4	Lotic. Overall habitat is clear streams and brooks with strong current over clean gravel, cobbles or bedrock, on comparatively unproductive soils ("trout stream"). Landform required to promote

Scientific Name	Common Name	SARA	COSEWIC	NSESA	S-Rank	Habitat Requirements
						a strong current in small running waters generally has moderate to considerable relief, from hills to mountains. The microhabitat (sub-EO) is areas proximal to surface-breaking structure such as cobbles, boulders or deadwood in full current and proximal to sun-lit marginal vegetation

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada atlantique

DATA REPORT 6187: Gillis Lake, NS

Prepared 31 August 2018
by J. Churchill, Data Manager

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Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) 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 AC CDC 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 AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC 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 AC CDC 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
GillisLkNS_6187ob.xls	All Rare and legally protected *Flora and Fauna* in your study area
GillisLkNS_6187ob100km.xls	A list of Rare and legally protected *Flora and Fauna* within 100 km of your study area
GillisLkNS_6187ma.xls	All *Managed Areas* in your study area
GillisLkNS_6187sa.xls	All *Significant Natural Areas* in your study area

1.2 RESTRICTIONS

The AC CDC 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 AC CDC 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 AC CDC 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) AC CDC data responses are restricted to the data in our Data System at the time of the data request.
e) 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) AC CDC 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 AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying DataDictionary provides metadata for the data provided.

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

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney, Senior Scientist, Executive Director
Tel: (506) 364-2658
sean.blaney@accdc.ca

Animals (Fauna)
John Klymko, Zoologist
Tel: (506) 364-2660
john.klymko@accdc.ca

Plant Communities
Sarah Robinson, Community Ecologist
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sarah.robinson@accdc.ca

Data Management, GIS
James Churchill, Data Manager
Tel: (902) 679-6146
james.churchill@accdc.ca

Billing
Jean Breau
Tel: (506) 364-2657
jean.breau@accdc.ca

Questions on the biology of Federal Species at Risk can be directed to AC CDC: (506) 364-2658, 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 Hubert Askanas, Energy and Resource Development: (506) 453-5873.

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 Donna Hurlburt, NS DLF: (902) 679-6146. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Duncan Bayne
(902) 648-3536
Duncan.Bayne@novascotia.ca

Western: Jason Power
(902) 634-7555
Jason.Power@novascotia.ca

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(902) 563-3370
Terrance.Power@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

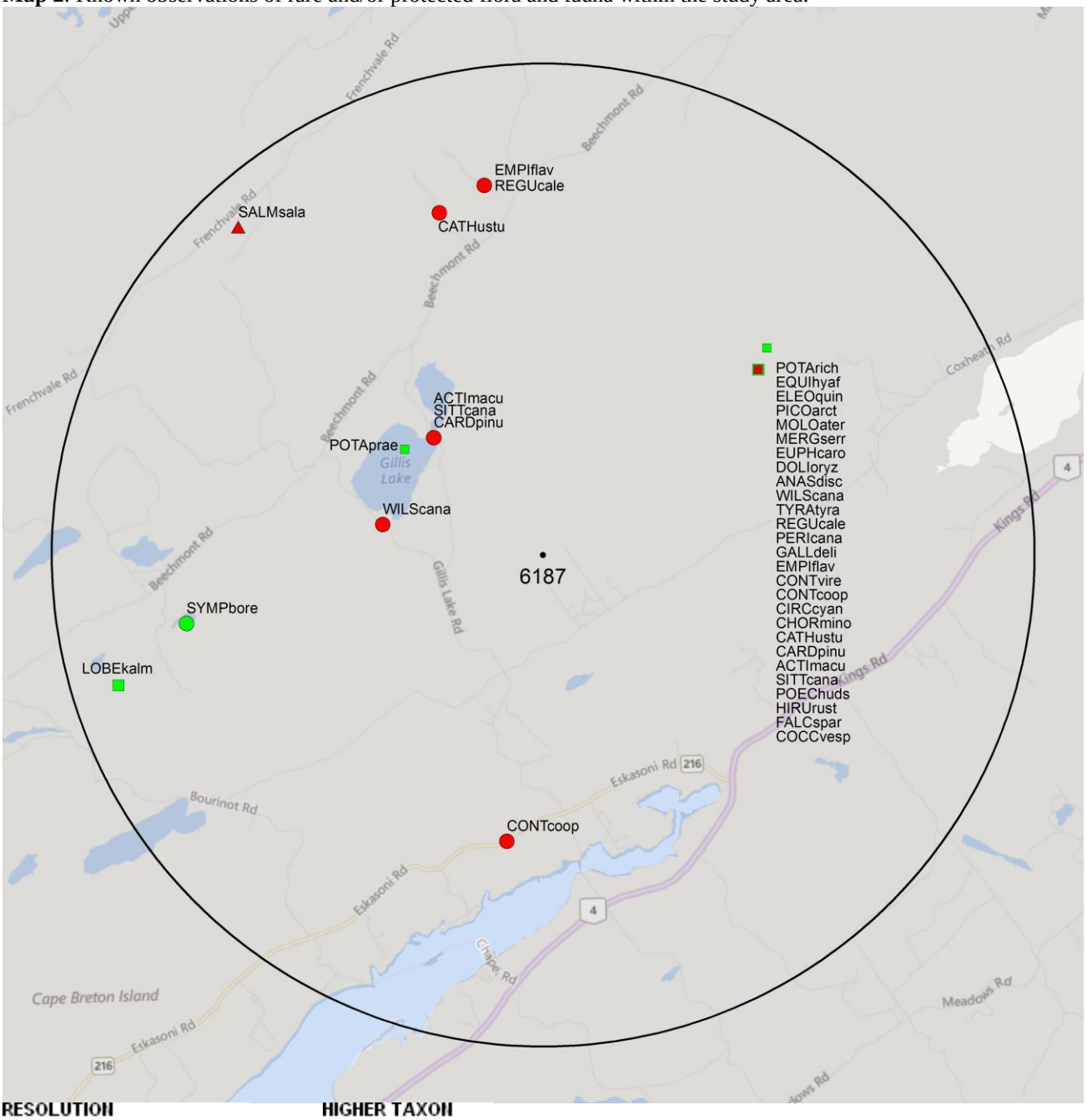
2.1 FLORA

The study area contains 7 records of 6 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 53 records of 25 vertebrate, no records of invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within the study area.



RESOLUTION

- 4.7 within 50s of kilometers
- 4.0 within 10s of kilometers
- 3.7 within 5s of kilometers
- 3.0 within kilometers
- 2.7 within 500s of meters
- 2.0 within 100s of meters
- 1.7 within 10s of meters

HIGHER TAXON

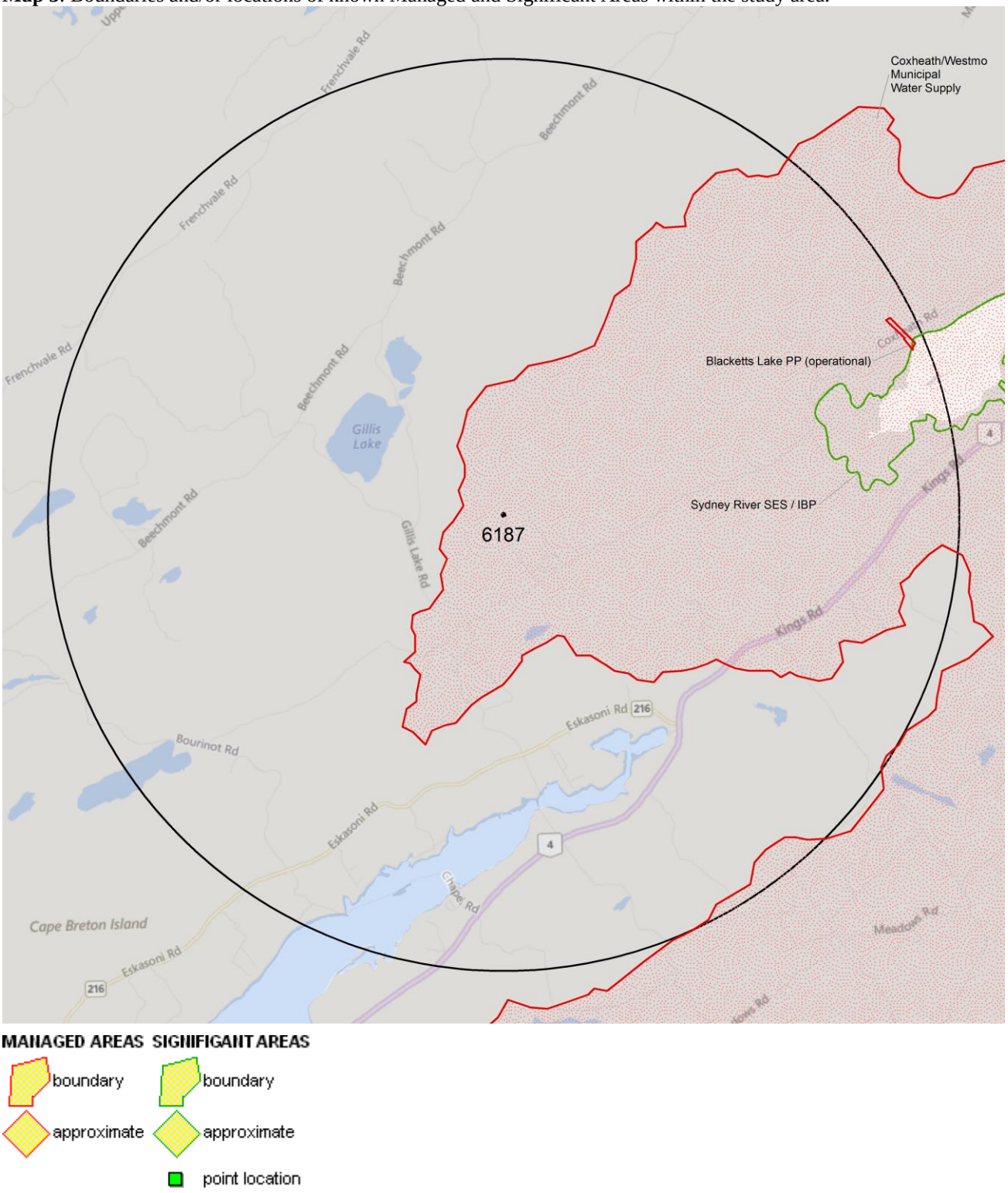
- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

3.1 MANAGED AREAS
The GIS scan identified 2 managed areas in the vicinity of the study area (Map 3 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 3 and attached file: *sa*.xls).

Map 3: Boundaries and/or locations of known Managed and Significant Areas within the study area.



4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the study 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 (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
P	*Lobelia kalmii*	Brook Lobelia				S2	2 May Be At Risk	2	4.5 ± 1.0
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S2	3 Sensitive	1	2.9 ± 7.0
P	*Potamogeton richardsonii*	Richardson's Pondweed				S2	2 May Be At Risk	1	3.1 ± 7.0
P	*Symphyotrichum boreale*	Boreal Aster				S2?	3 Sensitive	1	3.7 ± 0.0
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3	3 Sensitive	1	1.8 ± 5.0
P	*Equisetum hyemale var. affine*	Common Scouring-rush				S3S4	4 Secure	1	2.9 ± 10.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Hirundo rustica*	Barn Swallow	Threatened	Threatened	Endangered	S2S3B	1 At Risk	2	2.9 ± 7.0
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	4	1.7 ± 0.0
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Vulnerable	S3S4B	3 Sensitive	1	2.9 ± 7.0
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	2 May Be At Risk	1	2.9 ± 7.0
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S2B	1 At Risk	1	2.9 ± 7.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S2B	1 At Risk	2	2.9 ± 0.0
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	3 Sensitive	2	2.9 ± 7.0
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern		Vulnerable	S3S4B,S3N	4 Secure	3	2.9 ± 7.0
A	*Circus cyaneus*	Northern Harrier	Not At Risk			S3S4B	4 Secure	1	2.9 ± 7.0
A	*Salmo salar*	Atlantic Salmon				S1	2 May Be At Risk	1	4.6 ± 1.0
A	*Molothrus ater*	Brown-headed Cowbird				S2B	4 Secure	1	2.9 ± 7.0
A	*Carduelis pinus*	Pine Siskin				S2S3	3 Sensitive	3	1.6 ± 0.0
A	*Perisoreus canadensis*	Gray Jay				S3	3 Sensitive	1	2.9 ± 7.0
A	*Poecile hudsonica*	Boreal Chickadee				S3	3 Sensitive	2	2.9 ± 7.0
A	*Sitta canadensis*	Red-breasted Nuthatch				S3	4 Secure	5	1.6 ± 0.0
A	*Falco sparverius*	American Kestrel				S3B	4 Secure	2	2.9 ± 7.0
A	*Gallinago delicata*	Wilson's Snipe				S3B	3 Sensitive	4	2.9 ± 7.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	3 Sensitive	1	2.9 ± 7.0
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	3 Sensitive	1	2.9 ± 7.0
A	*Anas discors*	Blue-winged Teal				S3S4B	2 May Be At Risk	1	2.9 ± 7.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B	3 Sensitive	5	1.6 ± 0.0
A	*Empidonax flaviventris*	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	2	2.9 ± 7.0
A	*Regulus calendula*	Ruby-crowned Kinglet				S3S4B	3 Sensitive	3	2.9 ± 7.0
A	*Catharus ustulatus*	Swainson's Thrush				S3S4B	4 Secure	3	2.9 ± 7.0
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5N	4 Secure	1	2.9 ± 7.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting your study area are indicated below with "YES".

Nova Scotia

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
Fraxinus nigra	Black Ash		Threatened	No
Emydoidea blandingii	*Blanding's Turtle - Nova Scotia pop.*	Endangered	Vulnerable	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
Bat Hibernaculum		**[Endangered][1]**	**[Endangered][1]**	**YES**

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NS Endangered Species Act.

4.4 SOURCE BIBLIOGRAPHY

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

# recs	CITATION
40	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
12	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
4	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
2	NS DOE. Protected Areas
2	Staff, DNR 2007. Restricted & Limited Use Land Database (RLUL).
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.
1	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
1	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/. 582 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 13460 records of 123 vertebrate and 433 records of 44 invertebrate fauna; 6732 records of 282 vascular, 1079 records of 116 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs. All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are 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 (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	34	4.2 ± 0.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B	1 At Risk	229	21.6 ± 0.0	NS
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S2M	1 At Risk	131	22.6 ± 0.0	NS
A	*Rangifer tarandus pop. 2*	Woodland Caribou (Atlantic-Gasp├⌐sie pop.)	Endangered	Endangered	Extirpated	SX	0.1 Extirpated	1	66.9 ± 0.0	NS
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	1 At Risk	1	83.2 ± 0.0	NS
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Special Concern	Endangered	S1S2B	1 At Risk	249	12.3 ± 7.0	NS
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	3 Sensitive	67	14.9 ± 0.0	NS
A	*Acipenser oxyrinchus*	Atlantic Sturgeon	Threatened			S2	2 May Be At Risk	1	20.6 ± 0.0	NS
A	*Anguilla rostrata*	American Eel	Threatened			S2	4 Secure	2	29.2 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2B,S1M	1 At Risk	47	8.0 ± 7.0	NS
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened	Endangered	S2S3B	2 May Be At Risk	174	11.3 ± 7.0	NS
A	*Hirundo rustica*	Barn Swallow	Threatened	Threatened	Endangered	S2S3B	1 At Risk	268	2.9 ± 7.0	NS
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Endangered	S3B	1 At Risk	97	1.7 ± 0.0	NS
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Vulnerable	S3S4B	3 Sensitive	102	2.9 ± 7.0	NS
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Vulnerable	S1B,SNAM	3 Sensitive	4	45.8 ± 0.0	NS
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern		S1N	1 At Risk	1	25.4 ± 16.0	NS
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern		S1S2B	2 May Be At Risk	5	34.2 ± 0.0	NS
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	2 May Be At Risk	104	2.9 ± 7.0	NS
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S2B	1 At Risk	54	2.9 ± 7.0	NS
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S2B	1 At Risk	327	2.9 ± 7.0	NS
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S2N	1 At Risk	7	45.8 ± 0.0	NS
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern			S2S3M	3 Sensitive	1	38.7 ± 0.0	NS
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	3 Sensitive	2	11.3 ± 10.0	NS
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	3 Sensitive	90	2.9 ± 7.0	NS
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern		Vulnerable	S3S4B,S3N	4 Secure	145	2.9 ± 7.0	NS
A	*Tryngites subruficollis*	Buff-breasted Sandpiper	Special Concern			SNA	8 Accidental	23	22.6 ± 0.0	NS
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S1	1 At Risk	196	10.0 ± 1.0	NS
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1?B	5 Undetermined	1	12.3 ± 7.0	NS
A	*Sorex dispar*	Long-tailed Shrew	Not At Risk	Special Concern		S2	3 Sensitive	21	22.8 ± 1.0	NS
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S2?B	5 Undetermined	11	30.2 ± 7.0	NS
A	*Globicephala melas*	Long-finned Pilot Whale	Not At Risk			S2S3		6	81.2 ± 1.0	NS
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	4 Secure	17	23.0 ± 0.0	NS
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	3 Sensitive	354	8.0 ± 7.0	NS
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	3 Sensitive	7	33.3 ± 7.0	NS
A	*Buteo lagopus*	Rough-legged Hawk	Not At Risk			S3N	4 Secure	1	84.2 ± 0.0	NS
A	*Accipiter gentilis*	Northern Goshawk	Not At Risk			S3S4	4 Secure	64	8.4 ± 7.0	NS
A	*Circus cyaneus*	Northern Harrier	Not At Risk			S3S4B	4 Secure	151	2.9 ± 7.0	NS
A	*Ammodramus nelsoni*	Nelson's Sparrow	Not At Risk			S3S4B	4 Secure	45	29.2 ± 7.0	NS
A	*Morone saxatilis*	Striped Bass	E,E,SC			S2S3	2 May Be At Risk	6	20.6 ± 0.0	NS
A	*Martes americana*	American Marten			Endangered	S1	1 At Risk	32	25.1 ± 0.0	NS
A	*Alces americanus*	Moose			Endangered	S1	1 At Risk	2	61.2 ± 0.0	NS
A	*Salmo salar*	Atlantic Salmon				S1	2 May Be At Risk	73	4.6 ± 1.0	NS
A	*Picoides dorsalis*	American Three-toed Woodpecker				S1?	5 Undetermined	6	47.8 ± 7.0	NS
A	*Uria aalge*	Common Murre				S1?B,S5N	4 Secure	3	36.9 ± 0.0	NS
A	*Anas acuta*	Northern Pintail				S1B	2 May Be At Risk	4	37.9 ± 0.0	NS
A	*Haematopus palliatus*	American Oystercatcher				S1B	5 Undetermined	7	91.6 ± 7.0	NS
A	*Mimus polyglottos*	Northern Mockingbird				S1B	4 Secure	13	17.0 ± 7.0	NS
A	*Vireo gilvus*	Warbling Vireo				S1B	5 Undetermined	6	57.5 ± 7.0	NS
A	*Calidris minutilla*	Least Sandpiper				S1B,S3M	4 Secure	209	18.1 ± 0.0	NS
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S3S4M	4 Secure	276	18.1 ± 0.0	NS
A	*Pluvialis dominica*	American Golden-Plover				S1S2M	3 Sensitive	73	22.6 ± 0.0	NS
A	*Limosa haemastica*	Hudsonian Godwit				S1S2M	3 Sensitive	92	22.6 ± 0.0	NS
A	*Microtus chrotorrhinus*	Rock Vole				S2	4 Secure	26	39.0 ± 0.0	NS
A	*Vireo philadelphicus*	Philadelphia Vireo				S2?B	5 Undetermined	9	8.0 ± 7.0	NS
A	*Anas clypeata*	Northern Shoveler				S2B	2 May Be At Risk	1	23.4 ± 0.0	NS
A	*Anas strepera*	Gadwall				S2B	2 May Be At Risk	1	23.9 ± 0.0	NS
A	*Empidonax traillii*	Willow Flycatcher				S2B	3 Sensitive	1	48.5 ± 0.0	NS
A	*Dendroica tigrina*	Cape May Warbler				S2B	3 Sensitive	42	17.9 ± 7.0	NS
A	*Piranga olivacea*	Scarlet Tanager				S2B	5 Undetermined	1	51.1 ± 7.0	NS
A	*Pooecetes gramineus*	Vesper Sparrow				S2B	2 May Be At Risk	8	34.0 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Molothrus ater*	Brown-headed Cowbird				S2B	4 Secure	16	2.9 ± 7.0	NS
A	*Alca torda*	Razorbill				S2B,S4N	3 Sensitive	52	32.0 ± 7.0	NS
A	*Bucephala clangula*	Common Goldeneye				S2B,S5N	4 Secure	57	21.4 ± 7.0	NS
A	*Phalacrocorax carbo*	Great Cormorant				S2S3	3 Sensitive	276	21.8 ± 7.0	NS
A	*Asio otus*	Long-eared Owl				S2S3	2 May Be At Risk	9	18.2 ± 7.0	NS
A	*Carduelis pinus*	Pine Siskin				S2S3	3 Sensitive	193	1.6 ± 0.0	NS
A	*Rallus limicola*	Virginia Rail				S2S3B	5 Undetermined	3	66.0 ± 7.0	NS
A	*Tringa semipalmata*	Willet				S2S3B	2 May Be At Risk	344	22.6 ± 0.0	NS
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B	2 May Be At Risk	93	14.2 ± 7.0	NS
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S2S3B	3 Sensitive	56	17.0 ± 7.0	NS
A	*Icterus galbula*	Baltimore Oriole				S2S3B	2 May Be At Risk	1	91.5 ± 7.0	NS
A	*Pinicola enucleator*	Pine Grosbeak				S2S3B,S5N	2 May Be At Risk	161	8.0 ± 7.0	NS
A	*Numenius phaeopus hudsonicus*	Hudsonian Whimbrel				S2S3M	3 Sensitive	152	22.6 ± 0.0	NS
A	*Calidris melanotos*	Pectoral Sandpiper				S2S3M	4 Secure	72	18.1 ± 0.0	NS
A	*Phalaropus fulicarius*	Red Phalarope				S2S3M	3 Sensitive	1	22.6 ± 0.0	NS
A	*Perisoreus canadensis*	Gray Jay				S3	3 Sensitive	267	2.9 ± 7.0	NS
A	*Poecile hudsonica*	Boreal Chickadee				S3	3 Sensitive	513	2.9 ± 7.0	NS
A	*Sitta canadensis*	Red-breasted Nuthatch				S3	4 Secure	379	1.6 ± 0.0	NS
A	*Alosa pseudoharengus*	Alewife				S3	3 Sensitive	50	7.4 ± 0.0	NS
A	*Salvelinus fontinalis*	Brook Trout				S3	3 Sensitive	65	13.7 ± 0.0	NS
A	*Synaptomys cooperi*	Southern Bog Lemming				S3	4 Secure	10	39.0 ± 0.0	NS
A	*Pekania pennanti*	Fisher				S3	3 Sensitive	1	57.7 ± 0.0	NS
A	*Calidris maritima*	Purple Sandpiper				S3?N	3 Sensitive	17	18.1 ± 0.0	NS
A	*Falco sparverius*	American Kestrel				S3B	4 Secure	155	2.9 ± 7.0	NS
A	*Charadrius vociferus*	Killdeer				S3B	3 Sensitive	114	12.1 ± 7.0	NS
A	*Gallinago delicata*	Wilson's Snipe				S3B	3 Sensitive	285	2.9 ± 7.0	NS
A	*Sterna paradisaea*	Arctic Tern				S3B	2 May Be At Risk	83	29.7 ± 0.0	NS
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	2 May Be At Risk	5	12.3 ± 7.0	NS
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	3 Sensitive	47	2.9 ± 7.0	NS
A	*Dumetella carolinensis*	Gray Catbird				S3B	2 May Be At Risk	61	14.2 ± 7.0	NS
A	*Wilsonia pusilla*	Wilson's Warbler				S3B	3 Sensitive	74	8.0 ± 7.0	NS
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S3S4M	3 Sensitive	446	6.1 ± 0.0	NS
A	*Oceanodroma leucorhoa*	Leach's Storm-Petrel				S3B,S5M	4 Secure	20	31.3 ± 1.0	NS
A	*Rissa tridactyla*	Black-legged Kittiwake				S3B,S5N	3 Sensitive	89	28.6 ± 7.0	NS
A	*Fratercula arctica*	Atlantic Puffin				S3B,S5N	3 Sensitive	34	32.0 ± 7.0	NS
A	*Pluvialis squatarola*	Black-bellied Plover				S3M	4 Secure	313	22.2 ± 0.0	NS
A	*Tringa flavipes*	Lesser Yellowlegs				S3M	4 Secure	170	18.1 ± 0.0	NS
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4 Secure	142	18.1 ± 0.0	NS
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	3 Sensitive	240	18.1 ± 0.0	NS
A	*Calidris fuscicollis*	White-rumped Sandpiper				S3M	4 Secure	158	18.1 ± 0.0	NS
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	4 Secure	160	22.2 ± 0.0	NS
A	*Calidris alba*	Sanderling				S3M,S2N	4 Secure	159	22.2 ± 0.0	NS
A	*Somateria mollissima*	Common Eider				S3S4	4 Secure	150	14.0 ± 0.0	NS
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	3 Sensitive	48	2.9 ± 7.0	NS
A	*Loxia curvirostra*	Red Crossbill				S3S4	4 Secure	22	8.0 ± 7.0	NS
A	*Sorex palustris*	American Water Shrew				S3S4	4 Secure	13	79.5 ± 1.0	NS
A	*Botaurus lentiginosus*	American Bittern				S3S4B	3 Sensitive	44	12.3 ± 7.0	NS
A	*Anas discors*	Blue-winged Teal				S3S4B	2 May Be At Risk	54	2.9 ± 7.0	NS
A	*Actitis macularius*	Spotted Sandpiper				S3S4B	3 Sensitive	483	1.6 ± 0.0	NS
A	*Empidonax flaviventris*	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	468	2.9 ± 7.0	NS
A	*Regulus calendula*	Ruby-crowned Kinglet				S3S4B	3 Sensitive	1143	2.9 ± 7.0	NS
A	*Catharus fuscescens*	Veery				S3S4B	4 Secure	72	12.3 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Catharus ustulatus*	Swainson's Thrush				S3S4B	4 Secure	679	2.9 ± 7.0	NS
A	*Vermivora peregrina*	Tennessee Warbler				S3S4B	3 Sensitive	107	8.0 ± 7.0	NS
A	*Dendroica castanea*	Bay-breasted Warbler				S3S4B	3 Sensitive	106	14.6 ± 7.0	NS
A	*Dendroica striata*	Blackpoll Warbler				S3S4B	3 Sensitive	177	8.0 ± 7.0	NS
A	*Passerella iliaca*	Fox Sparrow				S3S4B	4 Secure	257	21.0 ± 0.0	NS
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5N	4 Secure	112	2.9 ± 7.0	NS
A	*Bucephala albeola*	Bufflehead				S3S4N	4 Secure	4	37.2 ± 1.0	NS
A	*Leucophaeus atricilla*	Laughing Gull				SHB	4 Secure	1	92.9 ± 0.0	NS
A	*Eremophila alpestris*	Horned Lark				SHB,S4S5N	4 Secure	2	25.2 ± 7.0	NS
A	*Morus bassanus*	Northern Gannet				SHB,S5M	4 Secure	42	25.2 ± 0.0	NS
A	*Aythya americana*	Redhead				SHB,SNAM	4 Secure	2	38.3 ± 15.0	NS
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Endangered	S2B	3 Sensitive	12	20.7 ± 0.0	NS
I	*Lampsilis cariosa*	Yellow Lampmussel	Special Concern	Special Concern	Threatened	S1	1 At Risk	37	5.0 ± 0.0	NS
I	*Bombus terricola*	Yellow-banded Bumblebee	Special Concern		Vulnerable	S3	3 Sensitive	3	20.9 ± 0.0	NS
I	*Quedius spelaeus*	Spelean Rove Beetle				S1		1	32.6 ± 1.0	NS
I	*Papilio brevicauda bretonensis*	Short-tailed Swallowtail				S1	1 At Risk	26	26.9 ± 0.0	NS
I	*Somatochlora albicincta*	Ringed Emerald				S1	2 May Be At Risk	7	59.2 ± 0.0	NS
I	*Somatochlora brevicincta*	Quebec Emerald				S1	2 May Be At Risk	7	87.2 ± 0.0	NS
I	*Leucorrhinia patricia*	Canada Whiteface				S1	2 May Be At Risk	1	63.1 ± 0.0	NS
I	*Coenagrion interrogatum*	Subarctic Bluet				S1	2 May Be At Risk	2	38.9 ± 0.0	NS
I	*Leptodea ochracea*	Tidewater Mucket				S1	3 Sensitive	17	5.3 ± 1.0	NS
I	*Lycaena dorcas*	Dorcas Copper				S1?	6 Not Assessed	24	37.7 ± 0.0	NS
I	*Polygonia satyrus*	Satyr Comma				S1?	3 Sensitive	1	18.6 ± 1.0	NS
I	*Strymon melinus*	Grey Hairstreak				S1S2	4 Secure	1	65.1 ± 0.0	NS
I	*Nymphalis l-album*	Compton Tortoiseshell				S1S2	4 Secure	1	51.0 ± 1.0	NS
I	*Haematopota rara*	Shy Cleg				S1S3	5 Undetermined	2	56.9 ± 0.0	NS
I	*Lycaena dospassosi*	Salt Marsh Copper				S2	1 At Risk	1	80.5 ± 0.0	NS
I	*Boloria chariclea grandis*	Purple Lesser Fritillary				S2	3 Sensitive	9	34.8 ± 1.0	NS
I	*Aglais milberti milberti*	Milbert's Tortoise Shell				S2	4 Secure	1	29.3 ± 1.0	NS
I	*Somatochlora septentrionalis*	Muskeg Emerald				S2	3 Sensitive	28	42.9 ± 1.0	NS
I	*Somatochlora williamsoni*	Williamson's Emerald				S2	2 May Be At Risk	10	29.8 ± 0.0	NS
I	*Margaritifera margaritifera*	Eastern Pearlshell				S2	3 Sensitive	74	5.4 ± 0.0	NS
I	*Pantala hymenaea*	Spot-Winged Glider				S2?B	3 Sensitive	3	41.3 ± 0.0	NS
I	*Thorybes pylades*	Northern Cloudywing				S2S3	3 Sensitive	1	42.9 ± 0.0	NS
I	*Euphydryas phaeton*	Baltimore Checkerspot				S2S3	4 Secure	7	29.3 ± 1.0	NS
I	*Gomphus descriptus*	Harpoon Clubtail				S2S3	3 Sensitive	16	63.4 ± 0.0	NS
I	*Ophiogomphus aspersus*	Brook Snaketail				S2S3	2 May Be At Risk	5	70.4 ± 0.0	NS
I	*Somatochlora forcipata*	Forcipate Emerald				S2S3	2 May Be At Risk	9	30.8 ± 1.0	NS
I	*Alasmidonta undulata*	Triangle Floater				S2S3	4 Secure	2	75.9 ± 0.0	NS
I	*Iphthiminus opacus*	a Darkling Beetle				S3		1	64.4 ± 0.0	NS
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	4 Secure	2	78.6 ± 0.0	NS
I	*Polygonia faunus*	Green Comma				S3	4 Secure	13	38.3 ± 0.0	NS
I	*Oeneis jutta*	Jutta Arctic				S3	2 May Be At Risk	10	36.7 ± 0.0	NS
I	*Aeshna clepsydra*	Mottled Darner				S3	4 Secure	1	88.6 ± 0.0	NS
I	*Boyeria grafiana*	Ocellated Darner				S3	3 Sensitive	1	18.8 ± 1.0	NS
I	*Gomphaeschna furcillata*	Harlequin Darner				S3	3 Sensitive	3	63.4 ± 0.0	NS
I	*Somatochlora*	Clamp-Tipped Emerald				S3	4 Secure	2	29.1 ± 0.0	NS

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	tenebrosa									
I	*Nannothemis bella*	Elfin Skimmer				S3	4 Secure	3	82.6 ± 0.0	NS
I	*Sympetrum danae*	Black Meadowhawk				S3	3 Sensitive	14	16.7 ± 1.0	NS
I	*Enallagma vernale*	Vernal Bluet				S3	5 Undetermined	9	34.2 ± 0.0	NS
I	*Amphiagrion saucium*	Eastern Red Damsel				S3	4 Secure	25	18.3 ± 1.0	NS
I	*Polygonia interrogationis*	Question Mark				S3B	4 Secure	10	27.9 ± 0.0	NS
I	*Polygonia progne*	Grey Comma				S3S4	4 Secure	10	25.1 ± 0.0	NS
I	*Lanthus parvulus*	Northern Pygmy Clubtail				S3S4	4 Secure	16	31.6 ± 0.0	NS
I	*Lampsilis radiata*	Eastern Lampmussel				S3S4	3 Sensitive	5	5.0 ± 0.0	NS
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	1 At Risk	261	22.4 ± 0.0	NS
N	*Pannaria lurida*	Veined Shingle Lichen	Threatened		Threatened	S1S2	2 May Be At Risk	1	41.8 ± 0.0	NS
N	*Sclerophora peronella (Nova Scotia pop.)*	Frosted Glass-whiskers Lichen - Nova Scotia pop.	Special Concern	Special Concern		S1?		5	31.0 ± 0.0	NS
N	*Degelia plumbea*	BluDegelia plumbeae Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	4 Secure	66	13.2 ± 0.0	NS
N	*Cladonia brevis*	Short Peg Lichen				S1		1	57.3 ± 0.0	NS
N	*Peltigera lepidophora*	Scaly Pelt Lichen				S1	2 May Be At Risk	2	39.5 ± 0.0	NS
N	*Gowardia nigricans*	Gray Witch's Beard Lichen				S1	6 Not Assessed	1	68.4 ± 1.0	NS
N	*Cavernularia hultenii*	Powdered Honeycomb Lichen				S1	2 May Be At Risk	1	45.2 ± 1.0	NS
N	*Metacalypogeia schusterana*	Schuster's Pouchwort				S1?	5 Undetermined	1	23.6 ± 0.0	NS
N	*Moerckia hibernica*	Irish Ruffwort				S1?		1	23.6 ± 0.0	NS
N	*Brachythecium erythrorrhizon*	Taiga Ragged Moss				S1?		2	24.7 ± 0.0	NS
N	*Calliergon richardsonii*	Richardson's Spear Moss				S1?		1	85.9 ± 0.0	NS
N	*Conardia compacta*	Coast Creeping Moss				S1?	3 Sensitive	2	66.1 ± 5.0	NS
N	*Dicranum acutifolium*	Sharp-leaved Broom Moss				S1?		1	79.0 ± 0.0	NS
N	*Dicranum elongatum*	Long-forked Broom Moss				S1?	3 Sensitive	3	84.8 ± 0.0	NS
N	*Dicranum groenlandicum*	Mountain Broom Moss				S1?	3 Sensitive	1	84.8 ± 0.0	NS
N	*Entodon concinnus*	Lime Entodon Moss				S1?	3 Sensitive	2	83.4 ± 0.0	NS
N	*Grimmia laevigata*	a Moss				S1?	3 Sensitive	2	82.1 ± 0.0	NS
N	*Grimmia pilifera*	a Moss				S1?	3 Sensitive	2	83.4 ± 0.0	NS
N	*Hygrohypnum smithii*	Smith's Brook Moss				S1?	3 Sensitive	1	84.0 ± 0.0	NS
N	*Orthothecium strictum*	Shiny Erect-capsule Moss				S1?	3 Sensitive	2	83.4 ± 0.0	NS
N	*Paludella squarrosa*	Tufted Fen Moss				S1?	3 Sensitive	1	34.1 ± 5.0	NS
N	*Seligeria recurvata*	a Moss				S1?	3 Sensitive	1	85.2 ± 1.0	NS
N	*Seligeria tristichoides*	a Moss				S1?	3 Sensitive	1	85.2 ± 1.0	NS
N	*Timmia norvegica*	a moss				S1?	3 Sensitive	1	78.3 ± 50.0	NS
N	*Syntrichia ruralis*	a Moss				S1?	3 Sensitive	1	37.3 ± 1.0	NS
N	*Ulota curvifolia*	a Moss				S1?	3 Sensitive	1	82.1 ± 0.0	NS
N	*Plagiomnium ellipticum*	Marsh Leafy Moss				S1?	2 May Be At Risk	1	84.4 ± 2.0	NS
N	*Sanionia orthothecioides*	Coastal Hook Moss				S1?	5 Undetermined	1	50.1 ± 0.0	NS
N	*Flavocetraria nivalis*	Crinkled Snow Lichen				S1?	3 Sensitive	1	68.1 ± 0.0	NS
N	*Parmeliella parvula*	Poor-man's Shingles Lichen				S1?	2 May Be At Risk	6	39.0 ± 0.0	NS
N	*Buxbaumia minakatae*	Hump-Backed Elves				S1S2	3 Sensitive	2	31.4 ± 100.0	NS
N	*Ctenidium molluscum*	Mollusc Ctenidium moss				S1S2		1	79.8 ± 1.0	NS
N	*Dicranodontium denudatum*	Beaked Bow Moss				S1S2	3 Sensitive	3	83.4 ± 0.0	NS
N	*Dicranoweisia crispula*	Mountain Thatch Moss				S1S2	3 Sensitive	1	75.9 ± 0.0	NS
N	*Didymodon ferrugineus*	a moss				S1S2	3 Sensitive	3	87.4 ± 3.0	NS
N	*Hygrohypnum montanum*	a Moss				S1S2	3 Sensitive	2	78.8 ± 0.0	NS
N	*Hypnum pratense*	Meadow Plait Moss				S1S2	3 Sensitive	1	88.1 ± 1.0	NS

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N	*Mnium thomsonii*	Thomson's Leafy Moss				S1S2	3 Sensitive	2	87.7 ± 0.0	NS
N	*Plagiobryum zieri*	a Moss				S1S2	3 Sensitive	6	83.4 ± 0.0	NS
N	*Platydictya confervoides*	a Moss				S1S2	3 Sensitive	1	14.7 ± 3.0	NS
N	*Seligeria calcarea*	Chalk Brittle Moss				S1S2	3 Sensitive	2	87.7 ± 0.0	NS
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S1S2		2	59.3 ± 0.0	NS
N	*Tetrodontium brownianum*	Little Georgia				S1S2	3 Sensitive	1	79.0 ± 0.0	NS
N	*Hamatocaulis vernicosus*	a Moss				S1S2	3 Sensitive	2	63.2 ± 0.0	NS
N	*Schistidium trichodon*	a Moss				S1S2	3 Sensitive	2	87.4 ± 3.0	NS
N	*Massalongia carnosa*	Rockmoss Rosette Lichen				S1S2	2 May Be At Risk	1	95.6 ± 2.0	NS
N	*Anacamptodon splachnoides*	a Moss				S2?	3 Sensitive	2	73.5 ± 1.0	NS
N	*Anomodon viticulosus*	a Moss				S2?	3 Sensitive	7	87.4 ± 3.0	NS
N	*Atrichum angustatum*	Lesser Smoothcap Moss				S2?	3 Sensitive	2	22.3 ± 30.0	NS
N	*Bryum algovicum*	a Moss				S2?	3 Sensitive	2	79.9 ± 0.0	NS
N	*Campylium polygamum*	a Moss				S2?	5 Undetermined	1	88.0 ± 2.0	NS
N	*Campylium radicale*	Long-stalked Fine Wet Moss				S2?	5 Undetermined	2	65.8 ± 0.0	NS
N	*Fontinalis hypnoides*	a moss				S2?	5 Undetermined	2	84.0 ± 1.0	NS
N	*Fontinalis sullivantii*	a Moss				S2?	3 Sensitive	1	31.4 ± 100.0	NS
N	*Grimmia anomala*	Mountain Forest Grimmia				S2?	3 Sensitive	3	60.7 ± 0.0	NS
N	*Hygrohypnum bestii*	Best's Brook Moss				S2?	3 Sensitive	2	86.7 ± 0.0	NS
N	*Kiaeria blyttii*	Blytt's Fork Moss				S2?	3 Sensitive	8	78.8 ± 0.0	NS
N	*Kiaeria starkei*	Starke's Fork Moss				S2?	3 Sensitive	6	78.8 ± 0.0	NS
N	*Orthotrichum anomalum*	Anomalous Bristle Moss				S2?	3 Sensitive	1	82.1 ± 0.0	NS
N	*Philonotis marchica*	a Moss				S2?	5 Undetermined	2	87.4 ± 3.0	NS
N	*Platydictya jungermannioides*	False Willow Moss				S2?	3 Sensitive	4	81.3 ± 0.0	NS
N	*Pseudoleskea patens*	Patent Leskea Moss				S2?	3 Sensitive	5	67.8 ± 0.0	NS
N	*Pseudoleskea stenophylla*	Narrow-leaved Leskea Moss				S2?	3 Sensitive	7	84.4 ± 0.0	NS
N	*Racomitrium affine*	a Moss				S2?	5 Undetermined	2	79.0 ± 0.0	NS
N	*Rhytidium rugosum*	Wrinkle-leaved Moss				S2?	3 Sensitive	4	83.4 ± 0.0	NS
N	*Saelania glaucescens*	Blue Dew Moss				S2?	3 Sensitive	1	80.6 ± 0.0	NS
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2?	3 Sensitive	7	44.5 ± 0.0	NS
N	*Seligeria donniana*	Donian Beardless Moss				S2?	3 Sensitive	3	87.7 ± 0.0	NS
N	*Sematophyllum marylandicum*	a Moss				S2?	3 Sensitive	5	69.3 ± 1.0	NS
N	*Sphagnum subnitens*	Lustrous Peat Moss				S2?	3 Sensitive	1	88.1 ± 5.0	NS
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S2?	3 Sensitive	2	84.1 ± 0.0	NS
N	*Tortella fragilis*	Fragile Twisted Moss				S2?	3 Sensitive	7	23.5 ± 0.0	NS
N	*Anomobryum filiforme*	a moss				S2?		5	78.3 ± 50.0	NS
N	*Cyrtomnium hymenophylloides*	Short-pointed Lantern Moss				S2?	3 Sensitive	6	36.5 ± 0.0	NS
N	*Platylomella lescurii*	a Moss				S2?	3 Sensitive	2	84.6 ± 1.0	NS
N	*Nephroma arcticum*	Arctic Kidney Lichen				S2?	2 May Be At Risk	2	34.9 ± 0.0	NS
N	*Peltigera collina*	Tree Pelt Lichen				S2?	3 Sensitive	16	23.3 ± 0.0	NS
N	*Platydictya subtilis*	Bark Willow Moss				S2S3	3 Sensitive	1	67.8 ± 0.0	NS
N	*Tetraplodon mnioides*	Entire-leaved Nitrogen Moss				S2S3	4 Secure	9	84.1 ± 0.0	NS
N	*Limprichtia revolvens*	a Moss				S2S3	3 Sensitive	8	59.2 ± 0.0	NS
N	*Cetraria muricata*	Spiny Heath Lichen				S2S3	5 Undetermined	4	66.9 ± 1.0	NS
N	*Fuscopannaria leucosticta*	Rimmed Shingles Lichen				S2S3	2 May Be At Risk	1	11.3 ± 0.0	NS

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N	*Leptogium tenuissimum*	Birdnest Jellyskin Lichen				S2S3	6 Not Assessed	1	39.5 ± 0.0	NS
N	*Racodium rupestre*	Rockhair Lichen				S2S3	5 Undetermined	1	39.6 ± 0.0	NS
N	*Usnea mutabilis*	Bloody Beard Lichen				S2S3	3 Sensitive	1	69.5 ± 0.0	NS
N	*Collema tenax*	Soil Tarpaper Lichen				S3		2	39.5 ± 0.0	NS
N	*Sticta fuliginosa*	Peppered Moon Lichen				S3	3 Sensitive	3	31.3 ± 0.0	NS
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	4 Secure	31	23.3 ± 0.0	NS
N	*Heterodermia speciosa*	Powdered Fringe Lichen				S3	4 Secure	1	39.9 ± 0.0	NS
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S3	3 Sensitive	1	38.2 ± 0.0	NS
N	*Leptogium lichenoides*	Tattered Jellyskin Lichen				S3	2 May Be At Risk	2	39.5 ± 0.0	NS
N	*Nephroma bellum*	Naked Kidney Lichen				S3	3 Sensitive	1	34.9 ± 0.0	NS
N	*Platismatia norvegica*	Oldgrowth Rag Lichen				S3	4 Secure	129	11.7 ± 0.0	NS
N	*Moelleropsis nebulosa*	Blue-gray Moss Shingle Lichen				S3	4 Secure	9	26.6 ± 0.0	NS
N	*Calliergon giganteum*	Giant Spear Moss				S3?	3 Sensitive	1	44.5 ± 0.0	NS
N	*Drummondia prorepens*	a Moss				S3?	3 Sensitive	5	76.9 ± 2.0	NS
N	*Anomodon tristis*	a Moss				S3?	3 Sensitive	2	77.3 ± 0.0	NS
N	*Mnium stellare*	Star Leafy Moss				S3?	5 Undetermined	2	24.7 ± 0.0	NS
N	*Cladonia pocillum*	Rosette Pixie-cup Lichen				S3?	3 Sensitive	1	94.3 ± 1.0	NS
N	*Anomodon rugelii*	Rugel's Anomodon Moss				S3S4	3 Sensitive	1	89.3 ± 0.0	NS
N	*Dicranella varia*	a Moss				S3S4	5 Undetermined	2	57.9 ± 0.0	NS
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	4 Secure	10	77.1 ± 0.0	NS
N	*Encalypta procera*	Slender Extinguisher Moss				S3S4	4 Secure	4	33.3 ± 0.0	NS
N	*Myurella julacea*	Small Mouse-tail Moss				S3S4	3 Sensitive	4	83.4 ± 0.0	NS
N	*Sphagnum lindbergii*	Lindberg's Peat Moss				S3S4	4 Secure	1	41.2 ± 0.0	NS
N	*Splachnum ampullaceum*	Cruet Dung Moss				S3S4	4 Secure	2	77.9 ± 0.0	NS
N	*Thamnobryum alleghaniense*	a Moss				S3S4	3 Sensitive	6	79.8 ± 1.0	NS
N	*Schistidium agassizii*	Elf Bloom Moss				S3S4	4 Secure	4	56.1 ± 2.0	NS
N	*Hylocomiastrum pyrenaicum*	a Feather Moss				S3S4	3 Sensitive	1	61.4 ± 3.0	NS
N	*Arctoparmelia incurva*	Finger Ring Lichen				S3S4	4 Secure	3	68.4 ± 1.0	NS
N	*Hypogymnia vittata*	Slender Monk's Hood Lichen				S3S4	4 Secure	34	11.7 ± 0.0	NS
N	*Cladonia floerkeana*	Gritty British Soldiers Lichen				S3S4	5 Undetermined	3	18.7 ± 0.0	NS
N	*Leptogium acadiense*	Acadian Jellyskin Lichen				S3S4		1	11.7 ± 0.0	NS
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	4 Secure	256	25.9 ± 0.0	NS
N	*Heterodermia neglecta*	Fringe Lichen				S3S4	4 Secure	5	43.9 ± 0.0	NS
P	*Juncus caesariensis*	New Jersey Rush	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	239	20.1 ± 0.0	NS
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	13	14.3 ± 0.0	NS
P	*Floerkea proserpinacoides*	False Mermaidweed	Not At Risk			S2	3 Sensitive	19	57.5 ± 0.0	NS
P	*Salix candida*	Sage Willow			Endangered	S1	2 May Be At Risk	42	70.0 ± 0.0	NS
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S1	1 At Risk	2	37.3 ± 0.0	NS
P	*Acer saccharinum*	Silver Maple				S1	5 Undetermined	1	16.0 ± 0.0	NS
P	*Sanicula odorata*	Clustered Sanicle				S1	2 May Be At Risk	6	33.5 ± 1.0	NS
P	*Arnica lonchophylla*	Northern Arnica				S1	2 May Be At Risk	11	67.8 ± 7.0	NS
P	*Artemisia campestris var. borealis*	Field Wormwood				S1	2 May Be At Risk	1	98.9 ± 0.0	NS
P	*Artemisia campestris ssp. borealis*	Field Wormwood				S1	2 May Be At Risk	1	98.8 ± 0.0	NS
P	*Bidens hyperborea*	Estuary Beggarticks				S1	2 May Be At Risk	2	66.0 ± 7.0	NS
P	*Prenanthes racemosa*	Glaucous Rattlesnakeroot				S1	2 May Be At Risk	1	24.2 ± 3.0	NS
P	*Betula glandulosa*	Glandular Birch				S1	2 May Be At Risk	5	64.4 ± 7.0	NS
P	*Barbarea orthoceras*	American Yellow Rocket				S1	2 May Be At Risk	4	78.8 ± 0.0	NS
P	*Cardamine pratensis var. angustifolia*	Cuckoo Flower				S1	2 May Be At Risk	5	64.1 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Draba glabella*	Rock Whitlow-Grass				S1	2 May Be At Risk	3	82.2 ± 0.0	NS
P	*Draba norvegica var. clivicola*	Norwegian Whitlow-Grass				S1	2 May Be At Risk	8	60.5 ± 2.0	NS
P	*Silene acaulis var. exscapa*	Moss Campion				S1	2 May Be At Risk	1	98.8 ± 0.0	NS
P	*Stellaria crassifolia*	Fleshy Stitchwort				S1	2 May Be At Risk	1	58.1 ± 2.0	NS
P	*Suaeda maritima ssp. richii*	White Sea-blite				S1	5 Undetermined	1	94.1 ± 0.0	NS
P	*Diapensia lapponica*	Diapensia				S1	2 May Be At Risk	1	70.5 ± 0.0	NS
P	*Vaccinium ovalifolium*	Oval-leaved Bilberry				S1	2 May Be At Risk	9	89.0 ± 0.0	NS
P	*Pinguicula vulgaris*	Common Butterwort				S1	2 May Be At Risk	6	70.5 ± 1.0	NS
P	*Utricularia ochroleuca*	Yellowish-white Bladderwort				S1	5 Undetermined	1	50.5 ± 1.0	NS
P	*Oxyria digyna*	Mountain Sorrel				S1	2 May Be At Risk	8	82.2 ± 0.0	NS
P	*Polygonum viviparum*	Alpine Bistort				S1	2 May Be At Risk	2	59.4 ± 1.0	NS
P	*Montia fontana*	Water Blinks				S1	2 May Be At Risk	2	90.3 ± 1.0	NS
P	*Anemone multifida*	Cut-leaved Anemone				S1	2 May Be At Risk	4	81.3 ± 1.0	NS
P	*Anemone parviflora*	Small-flowered Anemone				S1	2 May Be At Risk	1	99.2 ± 0.0	NS
P	*Potentilla pensylvanica var. litoralis*	Pennsylvania Cinquefoil				S1	0.1 Extirpated	4	85.2 ± 1.0	NS
P	*Salix uva-ursi*	Bearberry Willow				S1	2 May Be At Risk	1	98.8 ± 0.0	NS
P	*Salix vestita*	Hairy Willow				S1	2 May Be At Risk	1	83.5 ± 0.0	NS
P	*Saxifraga aizoides*	Yellow Mountain Saxifrage				S1	2 May Be At Risk	9	80.0 ± 3.0	NS
P	*Saxifraga cernua*	Nodding Saxifrage				S1	2 May Be At Risk	4	99.2 ± 0.0	NS
P	*Saxifraga oppositifolia*	Purple Mountain Saxifrage				S1	2 May Be At Risk	4	83.5 ± 0.0	NS
P	*Agalinis paupercula var. borealis*	Small-flowered Agalinis				S1		1	64.6 ± 0.0	NS
P	*Pedicularis palustris*	Marsh Lousewort				S1	2 May Be At Risk	3	44.3 ± 0.0	NS
P	*Scrophularia lanceolata*	Lance-leaved Figwort				S1	5 Undetermined	1	26.4 ± 1.0	NS
P	*Carex granularis*	Limestone Meadow Sedge				S1	2 May Be At Risk	21	44.3 ± 0.0	NS
P	*Carex gynocrates*	Northern Bog Sedge				S1	2 May Be At Risk	16	50.7 ± 0.0	NS
P	*Carex haydenii*	Hayden's Sedge				S1	2 May Be At Risk	1	66.2 ± 0.0	NS
P	*Carex rariflora*	Loose-flowered Alpine Sedge				S1	2 May Be At Risk	14	34.8 ± 5.0	NS
P	*Carex saxatilis*	Russet Sedge				S1	2 May Be At Risk	7	72.3 ± 7.0	NS
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S1	2 May Be At Risk	2	58.4 ± 0.0	NS
P	*Carex viridula var. elatior*	Greenish Sedge				S1	2 May Be At Risk	54	36.2 ± 0.0	NS
P	*Eleocharis erythropoda*	Red-stemmed Spikerush				S1	2 May Be At Risk	6	26.2 ± 0.0	NS
P	*Rhynchospora capillacea*	Slender Beakrush				S1	2 May Be At Risk	8	33.6 ± 1.0	NS
P	*Blysmus rufus*	Red Bulrush				S1	2 May Be At Risk	6	78.3 ± 1.0	NS
P	*Iris prismatica*	Slender Blue Flag				S1	2 May Be At Risk	2	36.1 ± 0.0	NS
P	*Luzula spicata*	Spiked Woodrush				S1	2 May Be At Risk	13	98.8 ± 0.0	NS
P	*Triantha glutinosa*	Sticky False-Asphodel				S1	2 May Be At Risk	15	70.4 ± 0.0	NS
P	*Bromus latiglumis*	Broad-Glumed Brome				S1	2 May Be At Risk	11	79.2 ± 0.0	NS
P	*Elymus wiegandii*	Wiegand's Wild Rye				S1	2 May Be At Risk	9	19.0 ± 1.0	NS
P	*Elymus hystrix var. bigeloviana*	Spreading Wild Rye				S1	2 May Be At Risk	1	37.3 ± 4.0	NS
P	*Festuca altaica*	Northern Rough Fescue				S1	2 May Be At Risk	3	99.9 ± 0.0	NS
P	*Hordeum brachyantherum*	Meadow Barley				S1	2 May Be At Risk	2	62.1 ± 0.0	NS
P	*Phleum alpinum*	Alpine Timothy				S1	2 May Be At Risk	11	61.2 ± 0.0	NS
P	*Torreyochloa pallida var. pallida*	Pale False Manna Grass				S1	0.1 Extirpated	2	37.8 ± 1.0	NS
P	*Trisetum melicoides*	Purple False Oats				S1	2 May Be At Risk	4	37.9 ± 4.0	NS
P	*Sparganium androcladum*	Branching Bur-Reed				S1	2 May Be At Risk	2	38.4 ± 0.0	NS

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P	*Adiantum pedatum*	Northern Maidenhair Fern				S1	2 May Be At Risk	1	93.6 ± 0.0	NS
P	*Equisetum palustre*	Marsh Horsetail				S1	2 May Be At Risk	8	81.7 ± 0.0	NS
P	*Botrychium lunaria*	Common Moonwort				S1	2 May Be At Risk	3	37.6 ± 1.0	NS
P	*Halenia deflexa ssp. brentoniana*	Spurred Gentian				S1?	5 Undetermined	3	35.6 ± 0.0	NS
P	*Epilobium lactiflorum*	White-flowered Willowherb				S1?	2 May Be At Risk	1	82.3 ± 5.0	NS
P	*Spiraea septentrionalis*	Northern Meadowsweet				S1?	2 May Be At Risk	5	69.4 ± 0.0	NS
P	*Schoenoplectus robustus*	Sturdy Bulrush				S1?	5 Undetermined	2	29.3 ± 5.0	NS
P	*Dichanthelium acuminatum var. lindheimeri*	Woolly Panic Grass				S1?	5 Undetermined	1	74.7 ± 1.0	NS
P	*Huperzia selago*	Northern Firmoss				S1?	2 May Be At Risk	2	45.2 ± 2.0	NS
P	*Fraxinus nigra*	Black Ash			Threatened	S1S2	1 At Risk	88	8.1 ± 0.0	NS
P	*Arabis hirsuta var. pycnocarpa*	Western Hairy Rockcress				S1S2	2 May Be At Risk	9	15.3 ± 0.0	NS
P	*Cornus suecica*	Swedish Bunchberry				S1S2	3 Sensitive	30	34.7 ± 0.0	NS
P	*Anemone virginiana var. alba*	Virginia Anemone				S1S2	3 Sensitive	9	37.9 ± 0.0	NS
P	*Ranunculus sceleratus*	Cursed Buttercup				S1S2	2 May Be At Risk	6	41.6 ± 0.0	NS
P	*Parnassia palustris var. parviflora*	Marsh Grass-of-Parnassus				S1S2	2 May Be At Risk	16	21.6 ± 0.0	NS
P	*Carex livida var. radicaulis*	Livid Sedge				S1S2	2 May Be At Risk	27	33.8 ± 0.0	NS
P	*Juncus alpinoarticulatus ssp. nodulosus*	Richardson's Rush				S1S2	2 May Be At Risk	13	35.1 ± 0.0	NS
P	*Juncus bulbosus*	Bulbous Rush				S1S2	5 Undetermined	12	24.9 ± 0.0	NS
P	*Platanthera huronensis*	Fragrant Green Orchid				S1S2	5 Undetermined	4	7.3 ± 100.0	NS
P	*Calamagrostis stricta ssp. stricta*	Slim-stemmed Reed Grass				S1S2	3 Sensitive	1	33.6 ± 1.0	NS
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1S2	2 May Be At Risk	24	78.7 ± 0.0	NS
P	*Festuca subverticillata*	Nodding Fescue				S1S2	2 May Be At Risk	80	95.2 ± 0.0	NS
P	*Festuca prolifera*	Proliferous Fescue				S1S2	3 Sensitive	7	73.0 ± 1.0	NS
P	*Sparganium hyperboreum*	Northern Burreed				S1S2	3 Sensitive	14	33.8 ± 0.0	NS
P	*Cryptogramma stelleri*	Steller's Rockbrake				S1S2	2 May Be At Risk	18	58.5 ± 0.0	NS
P	*Woodsia alpina*	Alpine Cliff Fern				S1S2	2 May Be At Risk	11	39.8 ± 2.0	NS
P	*Selaginella selaginoides*	Low Spikemoss				S1S2	2 May Be At Risk	6	57.6 ± 0.0	NS
P	*Carex vacillans*	Estuarine Sedge				S1S3	5 Undetermined	3	92.7 ± 0.0	NS
P	*Conioselinum chinense*	Chinese Hemlock-parsley				S2	3 Sensitive	3	84.7 ± 0.0	NS
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2	2 May Be At Risk	18	58.1 ± 0.0	NS
P	*Erigeron philadelphicus*	Philadelphia Fleabane				S2	3 Sensitive	7	20.1 ± 1.0	NS
P	*Solidago multiradiata*	Multi-rayed Goldenrod				S2	2 May Be At Risk	13	44.3 ± 0.0	NS
P	*Symphyotrichum ciliolatum*	Fringed Blue Aster				S2	3 Sensitive	1	63.6 ± 7.0	NS
P	*Impatiens pallida*	Pale Jewelweed				S2	3 Sensitive	9	27.9 ± 7.0	NS
P	*Caulophyllum thalictroides*	Blue Cohosh				S2	2 May Be At Risk	15	58.1 ± 0.0	NS
P	*Betula borealis*	Northern Birch				S2	3 Sensitive	10	36.8 ± 0.0	NS
P	*Arabis drummondii*	Drummond's Rockcress				S2	3 Sensitive	8	14.4 ± 1.0	NS
P	*Cardamine parviflora var. arenicola*	Small-flowered Bittercress				S2	3 Sensitive	10	34.3 ± 1.0	NS
P	*Draba arabisans*	Rock Whitlow-Grass				S2	3 Sensitive	23	37.9 ± 4.0	NS
P	*Lobelia kalmii*	Brook Lobelia				S2	2 May Be At Risk	95	4.5 ± 1.0	NS

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P	*Stellaria humifusa*	Saltmarsh Starwort				S2	3 Sensitive	5	35.8 ± 0.0	NS
P	*Stellaria longifolia*	Long-leaved Starwort				S2	3 Sensitive	1	79.3 ± 0.0	NS
P	*Chenopodium rubrum*	Red Pigweed				S2	2 May Be At Risk	3	15.7 ± 0.0	NS
P	*Hudsonia ericoides*	Pinebarren Golden Heather				S2	3 Sensitive	3	86.1 ± 1.0	NS
P	*Hypericum majus*	Large St John's-wort				S2	3 Sensitive	2	34.2 ± 0.0	NS
P	*Crassula aquatica*	Water Pygmyweed				S2	3 Sensitive	8	31.1 ± 0.0	NS
P	*Oxytropis campestris var. johannensis*	Field Locoweed				S2	2 May Be At Risk	6	81.2 ± 7.0	NS
P	*Myriophyllum verticillatum*	Whorled Water Milfoil				S2	3 Sensitive	6	39.6 ± 0.0	NS
P	*Utricularia resupinata*	Inverted Bladderwort				S2	3 Sensitive	1	41.8 ± 0.0	NS
P	*Oenothera fruticosa ssp. glauca*	Narrow-leaved Evening Primrose				S2	5 Undetermined	1	61.8 ± 1.0	NS
P	*Rumex salicifolius var. mexicanus*	Triangular-valve Dock				S2	3 Sensitive	13	15.7 ± 0.0	NS
P	*Primula mistassinica*	Mistassini Primrose				S2	3 Sensitive	15	69.3 ± 1.0	NS
P	*Anemone canadensis*	Canada Anemone				S2	2 May Be At Risk	9	78.3 ± 1.0	NS
P	*Anemone quinquefolia*	Wood Anemone				S2	3 Sensitive	4	45.6 ± 1.0	NS
P	*Anemone virginiana*	Virginia Anemone				S2	3 Sensitive	8	73.6 ± 0.0	NS
P	*Caltha palustris*	Yellow Marsh Marigold				S2	3 Sensitive	32	26.4 ± 2.0	NS
P	*Galium labradoricum*	Labrador Bedstraw				S2	3 Sensitive	89	13.1 ± 0.0	NS
P	*Salix pedicellaris*	Bog Willow				S2	3 Sensitive	12	67.3 ± 0.0	NS
P	*Comandra umbellata*	Bastard's Toadflax				S2	2 May Be At Risk	20	23.2 ± 7.0	NS
P	*Saxifraga paniculata ssp. neogaea*	White Mountain Saxifrage				S2	3 Sensitive	23	36.7 ± 0.0	NS
P	*Viola nephrophylla*	Northern Bog Violet				S2	3 Sensitive	11	55.8 ± 0.0	NS
P	*Carex atratiformis*	Scabrous Black Sedge				S2	3 Sensitive	23	37.9 ± 1.0	NS
P	*Carex bebbii*	Bebb's Sedge				S2	3 Sensitive	25	15.2 ± 0.0	NS
P	*Carex capillaris*	Hairlike Sedge				S2	3 Sensitive	21	74.1 ± 1.0	NS
P	*Carex castanea*	Chestnut Sedge				S2	2 May Be At Risk	24	36.5 ± 7.0	NS
P	*Carex comosa*	Bearded Sedge				S2	3 Sensitive	1	72.9 ± 1.0	NS
P	*Carex hystericina*	Porcupine Sedge				S2	2 May Be At Risk	36	15.2 ± 0.0	NS
P	*Carex scirpoidea*	Scirpuslike Sedge				S2	3 Sensitive	16	37.4 ± 10.0	NS
P	*Carex tenera*	Tender Sedge				S2	3 Sensitive	1	93.6 ± 3.0	NS
P	*Carex tuckermanii*	Tuckerman's Sedge				S2	3 Sensitive	2	34.1 ± 0.0	NS
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S2	3 Sensitive	31	2.9 ± 7.0	NS
P	*Vallisneria americana*	Wild Celery				S2	2 May Be At Risk	2	19.9 ± 10.0	NS
P	*Juncus stygius ssp. americanus*	Moor Rush				S2	3 Sensitive	38	32.6 ± 0.0	NS
P	*Allium schoenoprasum*	Wild Chives				S2	2 May Be At Risk	1	16.1 ± 0.0	NS
P	*Allium schoenoprasum var. sibiricum*	Wild Chives				S2	2 May Be At Risk	8	14.6 ± 7.0	NS
P	*Lilium canadense*	Canada Lily				S2	2 May Be At Risk	14	46.8 ± 1.0	NS
P	*Cypripedium parviflorum var. pubescens*	Yellow Lady's-slipper				S2	3 Sensitive	10	24.4 ± 0.0	NS
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	3 Sensitive	19	21.7 ± 0.0	NS
P	*Cypripedium reginae*	Showy Lady's-Slipper				S2	2 May Be At Risk	327	6.6 ± 0.0	NS
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S2	3 Sensitive	1	86.2 ± 0.0	NS
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	2 May Be At Risk	26	37.0 ± 5.0	NS
P	*Piptatherum canadense*	Canada Rice Grass				S2	3 Sensitive	1	62.6 ± 0.0	NS
P	*Piptatherum pungens*	Slender Rice Grass				S2	3 Sensitive	1	31.9 ± 10.0	NS

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P	*Potamogeton friesii*	Fries' Pondweed				S2	2 May Be At Risk	7	71.7 ± 0.0	NS
P	*Potamogeton richardsonii*	Richardson's Pondweed				S2	2 May Be At Risk	9	3.1 ± 7.0	NS
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S2	2 May Be At Risk	27	37.9 ± 0.0	NS
P	*Dryopteris fragrans var. remotiuscula*	Fragrant Wood Fern				S2	3 Sensitive	13	39.0 ± 1.0	NS
P	*Polystichum lonchitis*	Northern Holly Fern				S2	3 Sensitive	32	41.9 ± 7.0	NS
P	*Woodsia glabella*	Smooth Cliff Fern				S2	3 Sensitive	24	27.9 ± 7.0	NS
P	*Symphyotrichum boreale*	Boreal Aster				S2?	3 Sensitive	57	3.7 ± 0.0	NS
P	*Rumex maritimus var. persicarioides*	Peach-leaved Dock				S2?	2 May Be At Risk	1	38.6 ± 0.0	NS
P	*Crataegus submollis*	Quebec Hawthorn				S2?	5 Undetermined	3	91.9 ± 3.0	NS
P	*Eleocharis ovata*	Ovate Spikerush				S2?	3 Sensitive	1	15.5 ± 0.0	NS
P	*Scirpus pedicellatus*	Stalked Bulrush				S2?	3 Sensitive	3	78.8 ± 0.0	NS
P	*Hieracium robinsonii*	Robinson's Hawkweed				S2S3	3 Sensitive	43	36.7 ± 1.0	NS
P	*Iva frutescens ssp. oraria*	Big-leaved Marsh-elder				S2S3	3 Sensitive	1	37.5 ± 4.0	NS
P	*Senecio pseudoarnica*	Seabeach Ragwort				S2S3	3 Sensitive	11	11.5 ± 0.0	NS
P	*Betula michauxii*	Michaux's Dwarf Birch				S2S3	3 Sensitive	11	43.0 ± 7.0	NS
P	*Sagina nodosa*	Knotted Pearlwort				S2S3	4 Secure	1	93.1 ± 5.0	NS
P	*Hypericum dissimulatum*	Disguised St John's-wort				S2S3	3 Sensitive	1	5.3 ± 2.0	NS
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S2S3	3 Sensitive	78	43.7 ± 0.0	NS
P	*Shepherdia canadensis*	Soapberry				S2S3	3 Sensitive	242	15.3 ± 1.0	NS
P	*Empetrum eamesii ssp. atropurpureum*	Pink Crowberry				S2S3	3 Sensitive	10	65.1 ± 7.0	NS
P	*Empetrum eamesii ssp. eamesii*	Pink Crowberry				S2S3	3 Sensitive	7	65.1 ± 7.0	NS
P	*Chamaesyce polygonifolia*	Seaside Spurge				S2S3	3 Sensitive	6	34.8 ± 1.0	NS
P	*Halenia deflexa*	Spurred Gentian				S2S3	3 Sensitive	43	32.3 ± 5.0	NS
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	3 Sensitive	2	15.7 ± 1.0	NS
P	*Polygonum buxiforme*	Small's Knotweed				S2S3	5 Undetermined	1	71.4 ± 7.0	NS
P	*Polygonum raii*	Sharp-fruited Knotweed				S2S3	5 Undetermined	14	15.7 ± 1.0	NS
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S2S3	5 Undetermined	4	23.6 ± 7.0	NS
P	*Potentilla canadensis*	Canada Cinquefoil				S2S3	3 Sensitive	2	41.6 ± 0.0	NS
P	*Galium aparine*	Common Bedstraw				S2S3	3 Sensitive	8	98.4 ± 0.0	NS
P	*Salix pellita*	Satiny Willow				S2S3	3 Sensitive	7	12.3 ± 7.0	NS
P	*Veronica serpyllifolia ssp. humifusa*	Thyme-Leaved Speedwell				S2S3	3 Sensitive	35	16.0 ± 0.0	NS
P	*Carex adusta*	Lesser Brown Sedge				S2S3	3 Sensitive	6	72.3 ± 7.0	NS
P	*Carex hirtifolia*	Pubescent Sedge				S2S3	3 Sensitive	4	43.0 ± 0.0	NS
P	*Eriophorum gracile*	Slender Cottongrass				S2S3	3 Sensitive	8	67.5 ± 0.0	NS
P	*Juncus trifidus*	Highland Rush				S2S3	3 Sensitive	31	44.1 ± 0.0	NS
P	*Coeloglossum viride var. virescens*	Long-bracted Frog Orchid				S2S3	2 May Be At Risk	27	82.7 ± 1.0	NS
P	*Cypripedium parviflorum*	Yellow Lady's-slipper				S2S3	3 Sensitive	84	6.4 ± 1.0	NS
P	*Poa glauca*	Glaucous Blue Grass				S2S3	3 Sensitive	41	29.6 ± 1.0	NS
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S2S3	3 Sensitive	7	35.2 ± 0.0	NS
P	*Stuckenia filiformis ssp. alpina*	Thread-leaved Pondweed				S2S3	3 Sensitive	36	21.4 ± 7.0	NS
P	*Botrychium lanceolatum var. angustisegmentum*	Lance-Leaf Grape-Fern				S2S3	3 Sensitive	10	34.5 ± 1.0	NS

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P	*Botrychium simplex*	Least Moonwort				S2S3	3 Sensitive	9	45.9 ± 3.0	NS
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	3 Sensitive	1	14.8 ± 5.0	NS
P	*Angelica atropurpurea*	Purple-stemmed Angelica				S3	4 Secure	37	27.7 ± 0.0	NS
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	3 Sensitive	135	20.7 ± 0.0	NS
P	*Erigeron hyssopifolius var. hyssopifolius*	Daisy Fleabane				S3	3 Sensitive	1	21.0 ± 0.0	NS
P	*Hieracium paniculatum*	Panicled Hawkweed				S3	4 Secure	1	99.5 ± 0.0	NS
P	*Megalodonta beckii*	Water Beggarticks				S3	4 Secure	6	5.8 ± 1.0	NS
P	*Packera paupercula*	Balsam Groundsel				S3	4 Secure	129	20.6 ± 0.0	NS
P	*Betula pumila*	Bog Birch				S3	3 Sensitive	52	50.5 ± 2.0	NS
P	*Betula pumila var. pumila*	Bog Birch				S3	3 Sensitive	5	70.6 ± 0.0	NS
P	*Campanula aparinoides*	Marsh Bellflower				S3	3 Sensitive	2	58.2 ± 5.0	NS
P	*Minuartia groenlandica*	Greenland Stitchwort				S3	3 Sensitive	1	84.3 ± 0.0	NS
P	*Viburnum edule*	Squashberry				S3	3 Sensitive	85	61.2 ± 0.0	NS
P	*Empetrum eamesii*	Pink Crowberry				S3	3 Sensitive	38	66.4 ± 0.0	NS
P	*Vaccinium boreale*	Northern Blueberry				S3	3 Sensitive	63	30.9 ± 1.0	NS
P	*Vaccinium caespitosum*	Dwarf Bilberry				S3	4 Secure	28	28.2 ± 7.0	NS
P	*Vaccinium uliginosum*	Alpine Bilberry				S3	3 Sensitive	51	39.6 ± 0.0	NS
P	*Bartonia virginica*	Yellow Bartonia				S3	4 Secure	1	58.0 ± 0.0	NS
P	*Proserpinaca palustris*	Marsh Mermaidweed				S3	4 Secure	25	5.8 ± 2.0	NS
P	*Proserpinaca palustris var. crebra*	Marsh Mermaidweed				S3	4 Secure	24	36.1 ± 0.0	NS
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	36	24.0 ± 0.0	NS
P	*Decodon verticillatus*	Swamp Loosestrife				S3	4 Secure	4	58.4 ± 7.0	NS
P	*Epilobium hornemannii*	Hornemann's Willowherb				S3	4 Secure	107	46.5 ± 6.0	NS
P	*Epilobium strictum*	Downy Willowherb				S3	3 Sensitive	15	31.8 ± 0.0	NS
P	*Polygala sanguinea*	Blood Milkwort				S3	3 Sensitive	1	45.5 ± 7.0	NS
P	*Polygonum pensylvanicum*	Pennsylvania Smartweed				S3	4 Secure	9	58.8 ± 3.0	NS
P	*Polygonum scandens*	Climbing False Buckwheat				S3	3 Sensitive	7	78.9 ± 0.0	NS
P	*Plantago rugelii*	Rugel's Plantain				S3	4 Secure	3	51.9 ± 0.0	NS
P	*Primula laurentiana*	Laurentian Primrose				S3	4 Secure	1	49.5 ± 7.0	NS
P	*Samolus valerandi ssp. parviflorus*	Seaside Brookweed				S3	3 Sensitive	11	34.6 ± 0.0	NS
P	*Pyrola asarifolia*	Pink Pyrola				S3	4 Secure	84	23.7 ± 0.0	NS
P	*Pyrola minor*	Lesser Pyrola				S3	3 Sensitive	31	20.7 ± 0.0	NS
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	4 Secure	81	18.5 ± 0.0	NS
P	*Rhamnus alnifolia*	Alder-leaved Buckthorn				S3	4 Secure	459	6.5 ± 0.0	NS
P	*Agrimonia gryposepala*	Hooked Agrimony				S3	4 Secure	173	6.8 ± 0.0	NS
P	*Amelanchier stolonifera*	Running Serviceberry				S3	4 Secure	5	14.6 ± 1.0	NS
P	*Galium kamtschaticum*	Northern Wild Licorice				S3	4 Secure	64	36.7 ± 5.0	NS
P	*Geocaulon lividum*	Northern Comandra				S3	4 Secure	28	36.5 ± 7.0	NS
P	*Limosella australis*	Southern Mudwort				S3	4 Secure	8	16.1 ± 5.0	NS
P	*Lindernia dubia*	Yellow-seeded False Pimperel				S3	4 Secure	2	79.5 ± 0.0	NS
P	*Laportea canadensis*	Canada Wood Nettle				S3	3 Sensitive	14	59.5 ± 0.0	NS
P	*Verbena hastata*	Blue Vervain				S3	4 Secure	1	58.8 ± 0.0	NS
P	*Carex cryptolepis*	Hidden-scaled Sedge				S3	4 Secure	17	6.8 ± 0.0	NS
P	*Carex eburnea*	Bristle-leaved Sedge				S3	3 Sensitive	178	20.6 ± 0.0	NS
P	*Carex rosea*	Rosy Sedge				S3	4 Secure	4	37.2 ± 5.0	NS
P	*Carex tribuloides*	Blunt Broom Sedge				S3	4 Secure	8	18.0 ± 0.0	NS
P	*Carex wiegandii*	Wiegand's Sedge				S3	3 Sensitive	64	29.4 ± 0.0	NS
P	*Carex foenea*	Fernald's Hay Sedge				S3	4 Secure	7	37.0 ± 0.0	NS
P	*Eleocharis nitida*	Quill Spikerush				S3	4 Secure	2	49.5 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Elodea canadensis*	Canada Waterweed				S3	4 Secure	8	61.5 ± 0.0	NS
P	*Juncus subcaudatus var. planisepalus*	Woods-Rush				S3	3 Sensitive	9	32.5 ± 2.0	NS
P	*Juncus dudleyi*	Dudley's Rush				S3	4 Secure	63	34.5 ± 0.0	NS
P	*Goodyera oblongifolia*	Menzies' Rattlesnake-plantain				S3	3 Sensitive	54	30.4 ± 0.0	NS
P	*Goodyera repens*	Lesser Rattlesnake-plantain				S3	3 Sensitive	21	11.5 ± 0.0	NS
P	*Listera australis*	Southern Twayblade				S3	4 Secure	45	39.7 ± 0.0	NS
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	4 Secure	16	31.0 ± 1.0	NS
P	*Platanthera hookeri*	Hooker's Orchid				S3	4 Secure	6	52.6 ± 0.0	NS
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3	4 Secure	17	22.5 ± 3.0	NS
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S3	4 Secure	4	34.6 ± 0.0	NS
P	*Alopecurus aequalis*	Short-awned Foxtail				S3	4 Secure	16	25.0 ± 0.0	NS
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	4 Secure	15	59.0 ± 7.0	NS
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3	3 Sensitive	13	1.8 ± 5.0	NS
P	*Potamogeton zosteriformis*	Flat-stemmed Pondweed				S3	3 Sensitive	12	30.2 ± 0.0	NS
P	*Sparganium natans*	Small Burreed				S3	4 Secure	20	13.5 ± 0.0	NS
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3	4 Secure	43	14.4 ± 2.0	NS
P	*Asplenium trichomanes-ramosum*	Green Spleenwort				S3	3 Sensitive	36	14.0 ± 0.0	NS
P	*Equisetum pratense*	Meadow Horsetail				S3	3 Sensitive	53	42.5 ± 0.0	NS
P	*Equisetum variegatum*	Variegated Horsetail				S3	4 Secure	46	14.5 ± 2.0	NS
P	*Isoetes acadiensis*	Acadian Quillwort				S3	3 Sensitive	9	18.9 ± 5.0	NS
P	*Lycopodium sitchense*	Sitka Clubmoss				S3	4 Secure	11	25.2 ± 1.0	NS
P	*Huperzia appalachiana*	Appalachian Fir-Clubmoss				S3	3 Sensitive	31	37.6 ± 4.0	NS
P	*Botrychium dissectum*	Cut-leaved Moonwort				S3	4 Secure	3	14.8 ± 5.0	NS
P	*Polypodium appalachianum*	Appalachian Polypody				S3	5 Undetermined	6	35.5 ± 0.0	NS
P	*Asclepias incarnata ssp. pulchra*	Swamp Milkweed				S3?	5 Undetermined	57	24.5 ± 0.0	NS
P	*Lycopodium sabinifolium*	Ground-Fir				S3?	4 Secure	8	43.4 ± 5.0	NS
P	*Atriplex franktonii*	Frankton's Saltbush				S3S4	4 Secure	8	15.7 ± 0.0	NS
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	4 Secure	5	25.7 ± 1.0	NS
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	4 Secure	15	24.5 ± 0.0	NS
P	*Sanguinaria canadensis*	Bloodroot				S3S4	4 Secure	112	16.0 ± 0.0	NS
P	*Rumex maritimus*	Sea-Side Dock				S3S4		1	92.3 ± 0.0	NS
P	*Fragaria vesca ssp. americana*	Woodland Strawberry				S3S4	4 Secure	67	13.7 ± 0.0	NS
P	*Salix petiolaris*	Meadow Willow				S3S4	4 Secure	8	32.6 ± 0.0	NS
P	*Carex argyrantha*	Silvery-flowered Sedge				S3S4	4 Secure	3	25.3 ± 0.0	NS
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	4 Secure	4	58.9 ± 0.0	NS
P	*Triglochin gaspensis*	Gasp ├╴ Arrowgrass				S3S4	5 Undetermined	6	35.9 ± 0.0	NS
P	*Juncus acuminatus*	Sharp-Fruit Rush				S3S4	4 Secure	5	47.2 ± 4.0	NS
P	*Luzula parviflora*	Small-flowered Woodrush				S3S4	4 Secure	70	30.9 ± 1.0	NS
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	4 Secure	16	8.9 ± 0.0	NS
P	*Panicum tuckermanii*	Tuckerman's Panic Grass				S3S4	4 Secure	1	63.8 ± 0.0	NS
P	*Trisetum spicatum*	Narrow False Oats				S3S4	4 Secure	34	34.6 ± 5.0	NS
P	*Cystopteris bulbifera*	Bulblet Bladder Fern				S3S4	4 Secure	355	13.7 ± 0.0	NS
P	*Equisetum hyemale var. affine*	Common Scouring-rush				S3S4	4 Secure	44	2.9 ± 10.0	NS
P	*Equisetum scirpoides*	Dwarf Scouring-Rush				S3S4	4 Secure	78	14.1 ± 0.0	NS
P	*Lycopodium complanatum*	Northern Clubmoss				S3S4	4 Secure	9	13.9 ± 5.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Schizaea pusilla*	Little Curlygrass Fern				S3S4	4 Secure	35	31.5 ± 5.0	NS
P	*Viola canadensis*	Canada Violet				SH	0.1 Extirpated	1	73.9 ± 0.0	NS
P	*Poa alpina*	Alpine Blue Grass				SH	0.1 Extirpated	2	35.4 ± 0.0	NS
P	*Botrychium minganense*	Mingan Moonwort				SH	0.1 Extirpated	1	29.1 ± 1.0	NS

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

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ATLAS DES OISEAUX NICHEURS DES MARITIMES
BREEDING BIRD ATLAS

Square Summary (20QS00)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
17	20	24	61	28	11	45	84	50	46.1	11	1

Region summary (#25: East Cape Breton Island)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
68	55	67	141	151	723	255

Target number of point counts in this square: 12 road side, 3 off road (1 in Mature coniferous, 2 in Mature deciduous). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Canada Goose		NY	1	41	Northern Goshawk			7	22	Belted Kingfisher	NB	P	23	80
Wood Duck	H	FY	12	28	Broad-winged Hawk			7	14	Yellow-bellied Sapsucker		S	7	32
American Wigeon ‡			0	19	Red-tailed Hawk	H		16	50	Downy Woodpecker			20	71
American Black Duck	FL	NE	52	85	Sora		S	7	23	Hairy Woodpecker		P	9	70
Mallard		NE	7	35	Piping Plover †			3	1	Black-back Woodpecker	NE		9	11
Mallard x Am. Black Duck			0	8	Killdeer			7	17	Northern Flicker		FY	34	89
Blue-winged Teal	FL		12	11	Spotted Sandpiper	H	FY	45	76	Pileated Woodpecker	H		7	31
Northern Pintail ‡			1	1	Greater Yellowlegs †			0	7	American Kestrel	NE	T	14	46
Green-winged Teal	FL	FY	10	47	Willet			10	22	Merlin		H	1	40
Ring-necked Duck	FL	FY	36	70	Wilson's Snipe	H	T	40	55	Olive-sided Flycatcher †		S	12	49
Common Eider §			5	20	American Woodcock	H	T	20	55	Eastern Wood-Pewee		CF	3	16
Common Goldeneye ‡			0	2	Black-legged Kittiwake ‡§			9	13	Yellow-bellied Flycatcher	H	S	21	71
Hooded Merganser ‡	FL		1	4	Herring Gull §			45	58	Alder Flycatcher	H	NB	49	89
Common Merganser			12	28	Great Black-backed Gull §			45	53	Least Flycatcher		CF	25	49
Red-breast Merganser	FL		9	40	Common Tern §			25	44	Eastern Phoebe ‡			3	1
Ring-necked Pheasant		FY	1	20	Arctic Tern ‡§			3	10	Eastern Kingbird		S	14	14
Ruffed Grouse	FL	FY	20	68	Razorbill ‡§			1	7	Blue-headed Vireo		CF	36	83
Spruce Grouse			5	11	Black Guillemot §			9	28	Philadelphia Vireo ‡			1	0
Common Loon	NE	H	34	65	Atlantic Puffin ‡§			1	2	Red-eyed Vireo	T	CF	40	79
Pied-billed Grebe ‡		FY	1	8	Rock Pigeon	NY	H	10	37	Gray Jay		FY	23	55
Leach's Storm-Petrel ‡§			1	5	Mourning Dove		T	7	71	Blue Jay	T	FY	36	83
Double-crest Cormorant §			36	53	Great Horned Owl		S	16	40	American Crow	NE	FY	61	97
Great Cormorant ‡§			23	22	Barred Owl	H	S	5	47	Common Raven	T	FY	45	89
American Bittern			5	16	Short-eared Owl †			5	1	Tree Swallow	NE	FY	50	82
Great Blue Heron §		H	34	55	Boreal Owl †			3	1	Bank Swallow §			23	34
Osprey	ON	H	27	50	North Saw-whet Owl			3	31	Cliff Swallow §			7	19
Bald Eagle ¤	NY	H	52	79	Common Nighthawk †		H	12	20	Barn Swallow	NE	H	49	64
Northern Harrier		H	20	52	Chimney Swift †			10	4	Black-capp Chickadee	NY	FY	47	89
Sharp-shinned Hawk		H	9	23	Ruby-thr Hummingbird	T	D	10	77	Boreal Chickadee	T	FY	32	80

next page >>

Maritimes Breeding Bird Atlas - Summary Sheet for Square 20QS00 (page 2 of 2)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Red-breast Nuthatch	NY	S	32	74	Yellow Warbler	H	CF	47	86	American Goldfinch	T	FY	50	85
White-breast Nuthatch	H		3	4	Chestn-sided Warbler		CF	12	25	Evening Grosbeak	T	H	9	16
Brown Creeper			1	23	Blackpoll Warbler			23	19	House Sparrow	T	AE	36	29
Winter Wren		S	9	46	Black-thr Blue Warbler	H		9	7					
Golden-crown Kinglet		A	41	77	Palm Warbler			25	61					
Ruby-crown Kinglet		S	41	86	Yellow-rumped Warbler	T	NB	50	91					
Eastern Bluebird †			0	2	Black-thr Green Warbler	T	S	16	61					
Veery	H		16	17	Canada Warbler †		T	9	23					
Bicknell's Thrush †	H		14	0	Wilson's Warbler			12	14					
Swainson's Thrush		S	43	70	Chipping Sparrow	T		30	25					
Hermit Thrush		S	47	86	Savannah Sparrow		S	49	85					
American Robin	NY	CF	60	94	Nelson's Sh.-tail Sparrow			5	17					
Gray Catbird	H		5	20	Fox Sparrow			7	13					
Northern Mockingbird †			5	0	Song Sparrow	NY	FY	58	97					
European Starling	NY	FY	52	80	Lincoln's Sparrow		CF	38	70					
Cedar Waxwing		D	23	77	Swamp Sparrow		FY	32	76					
Ovenbird		T	20	62	White-throat Sparrow		FY	49	92					
North Waterthrush		S	10	8	Dark-eyed Junco	NY	NY	52	88					
Black-white Warbler	T	CF	40	82	Rose-breast Grosbeak			5	2					
Tennessee Warbler			45	17	Bobolink	T		27	23					
Nashville Warbler		S	34	67	Red-wing Blackbird	FL	FY	38	62					
Mourning Warbler		CF	14	61	Rusty Blackbird †	T		29	11					
Common Yellowthroat	T	FY	49	95	Common Grackle	T	FY	49	82					
American Redstart	T	CF	43	79	Brown-head Cowbird ‡	T		7	1					
Cape May Warbler ‡			3	8	Pine Grosbeak	H		21	19					
Northern Parula		CF	29	68	Purple Finch	T	FY	29	82					
Magnolia Warbler	T	S	50	86	Red Crossbill †			14	7					
Bay-breasted Warbler			9	20	White-winged Crossbill			25	14					
Blackburnian Warbler		CF	18	55	Pine Siskin		FY	38	43					

This list includes all species found during the Maritimes Breeding Bird Atlas (1st atlas: 1986-1990, 2nd atlas: 2006-2010) in the region #25 (East Cape Breton Island). Underlined species are those that you should try to add to this square (20QS00). They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. "Code" is the code for the highest breeding evidence for that species in square 20QS00 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #25). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), † (rare in the Maritimes) or ¤ (rare in the Maritimes, documentation only required for confirmed records). Current as of 18/11/2019. An up-to-date version of this sheet is available from http://www.mba-aom.ca/jsp/summaryform.jsp?squareID=20QS00?lang=en

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NOVA SCOTIA

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September 16, 2019

Courtney Glen
Davis MacIntyre and Associates Limited
109 John Stewart Drive
Dartmouth, Nova Scotia B2W 4J7

Dear Courtney Glen:

RE: Heritage Research Permit Report
A2019NS030 – Gillis Lake Quarry Expansion

We have received and reviewed your report on work conducted under the terms of Heritage Research Permit A2019NS030 for the archaeological resource impact assessment of the Gillis Lake Quarry expansion project in Cape Breton County.

The report details the ARIA of the proposed Gillis Lake Quarry expansion project area at Gillis Lake, southwest of Sydney River, Cape Breton County by Davis MacIntyre & Associates, in April 2019. The assessment included background and historical research, a review of Indigenous land use, a review of paleoecology, an exercise in predictive modelling and field reconnaissance, including the review of exposed soils, eroding banks, gravel and pushpiles. No archaeological sites or deposits were observed or recorded. No areas of elevated archaeological potential were identified within the planned expansion area.

The reporter determined that most of the study area consists of an existing quarry that has been extensively impacted however the plans for expansion include two treed areas that are less disturbed (Area 1 and Area 2, Figure 3.4-1). Generally, field reconnaissance encountered a landscape that was, in areas, hummocky and wet with insubstantial or non-navigable watercourses with steep and sheer sides, and there is a particularly steep ravine in Area 2. The soils are generally thin and rocky and exhibit disturbances from logging and quarry activity.

Results of the historic background research and predictive modelling indicated that the Mi'kmaq and their ancestors have occupied the general Gillis Lake area for thousands of years. However, the field reconnaissance found that the study area is of low archaeological potential for both Mi'kmaq and Euro-Canadian resources. The reporter therefore recommends no further mitigation. However, in the unlikely event that archaeological resources are encountered during ground disturbance activities, it is recommended that all activity stop, and the Coordinator of Special Places be contacted. Should the impact area be modified to expand beyond what has been assessed here, it is recommended that an ARIA be conducted in these new areas.

CCH Staff agrees with the recommendations and finds the report acceptable as submitted. Please do not hesitate to contact me should you have any questions or concerns.

Sincerely,

Sean Weseloh McKeane
Coordinator, Special Places

cc: Jeff Bonazza, McCallum Environmental Ltd.

APPENDIX D. VEGETATION LIST

VASCULAR PLANT LIST

Scientific Name	Common Name	SRank
Abies balsamea	Balsam Fir	S5
Acer pensylvanicum	Striped Maple	S5
Acer rubrum	Red Maple	S5
Acer saccharum	Sugar Maple	S4S5
Acer spicatum	Mountain Maple	S5
Actaea pachypoda	White Baneberry	S4
Actaea rubra	Red Baneberry	S5
Agrotsis capillaris	Colonial Bent Grass	SNA
Agrostis scabra	Rough Bent Grass	S5
Alisma triviale	Northern Water Plantain	S5
Alnus incana	Speckled Alder	S5
Anaphalis margarita	Pearly Everlasting	S5
Antennaria howellii	Howell's Pussytoes	S4
Anthemis arvensis	Field Chamomile	SNA
Anthoxanthum odoratum	Large Sweet Vernal Grass	SNA
Aralia nudicaulus	Wild Sarsaparilla	S5
Artemisia vulgaris	Common Wormwood	SNA
Athyrium filix-femina	Common Lady Fern	S5
Betula alleghaniensis	Yellow Birch	S5
Betula papyrifera	Paper Birch	S5
Bidens frondosa	Devil's Beggarticks	S5
Carex brunnescens	Brownish Sedge	S5
Carex communis	Fibrous-Root Sedge	S5
Carex crinita	Fringed Sedge	S5
Carex debilis	White-edged Sedge	S5
Carex flava	Yellow Sedge	S5
Carex gracillima	Graceful Sedge	S4S5
Carex leptalea	Bristly-stalked Sedge	S5
Carex pallescens	Pale Sedge	S5
Carex pedunculata	Long-stalked Sedge	S4
Carex pseudocyperinus	Cyperuslike Sedge	S4S5
Carex scoparia	Broom Sedge	S5
Carex stipata	Awl-fruited Sedge	S5
Carex trisperma	Three-seeded Sedge	S5
Centaurea nigra	Black Knapweed	SNA
Circaea alpina	Small Enchanter's Nightshade	S5
Cirsium vulgare	Bull Thistle	SNA
Clintonia borealis	Yellow Bluebead Lily	S5
Coptis trifolia	Goldthread	S5
Corallorhiza maculata	Spotted Coralroot	S4
Cornus canadensis	Bunchberry	S5
Dactylis glomerata	Orchard Grass	SNA
Danthonia spicata	Poverty Oat Grass	S5
Daucus carota	Queen Anne's Lace	SNA
Dennstaedtia punctilobula	Eastern Hay-Scented Fern	S5
Deparia acrostichoides	Silvery Glade Fern	S4
Dianthus armeria	Deptford Pink	SNA
Doellengeria umbellata	Hairy Flat-top White Aster	S5
Dryopteris campyloptera	Mountain Wood Fern	S5
Dryopteris intermedia	Evergreen Wood Fern	S5

Scientific Name	Common Name	SRank
Elaeagnus umbellata	Autumn Olive	SNA
Eleocharis acicularis	Needle Spikerush	S5
Eleocharis palustris	Common Spikerush	S5
Eleocharis tenuis	Slender Spikerush	S5
Epilobium ciliatum	Northern Willowherb	S5
Epipactis helleborine	Helleborine	SNA
Equisetum arvense	Field Horsetail	S5
Equisetum fluviatile	Water Horsetail	S5
Equisitum variegatum	Variegated Horsetail	S3
Erigeron annuus	Annual Fleabane	S4S5
Erigeron strigosus	Rough Fleabane	S5
Eupatorium perfoliatum	Common Boneset	S5
Euphrasia nemorosa	Common Eyebright	S5
Eutrochium maculatum	Spotted Joe Pye Weed	S5
Fagus grandifolia	American Beech	S5
Festuca filiformis	Hair Fescue	SNA
Festuca trachyphylla	Hard Fescue	SNA
Fragaria virginiana	Wild Strawberry	S5
Fraxinus americana	White Ash	S5
Galeopsis tetrahit	Common Hemp-nettle	SNA
Galium palustre	Common Marsh Bedstraw	S5
Galium triflorum	Three-flowered Bedstraw	S5
Gaultheria hispidula	Creeping Snowberry	S5
Glyceria melicaria	Slender Manna Grass	S4
Glyceria striata	Slender Manna Grass	S5
Gnaphalium uliginosum	Marsh Cudweed	SNA
Gymnocarpium dryopteris	Common Oak Fern	S5
Hieracium lachenalii	Common Hawkweed	SNA
Hieracium murorum	Wall Hawkweed	SNA
Huperzia lucidula	Shining Firmoss	S5
Hypericum canadense	Northern St John's-Wort	S5
Hypericum perforatum	Common St. John's-wort	SNA
Ilex mucronata	Mountain Holly	S5
Impatiens capensis	Spotted Jewelweed	S5
Juncus brevicaudatus	Narrow-Panicled Rush	S5
Juncus canadensis	Canada Rush	S5
Juncus effusus	Soft Rush	S5
Juncus pelocarpus	Brown-Fruited Rush	S5
Juncus tenuis	Slender Rush	S5
Lactuca biennis	Tall Blue Lettuce	S5
Leucanthemum vulgare	Oxeye Daisy	SNA
Linnaea borealis	Twinflower	S5
Liparis loeselii	Loesel's Twayblade	S3S4
Lobelia inflata	Inflated Lobelia	S5
Lonicera canadensis	Canada Fly Honeysuckle	S5
Lotus corniculatus	Garden Bird's-foot Trefoil	SNA
Lupinus polyphyllus	Large-Leaved Lupine	SNA
Lycopodium annotinum	Stiff Clubmoss	S5
Lycopodium clavatum	Running Clubmoss	S5
Lycopodium dendrodium	Round-branched Tree-clubmoss	S5
Lycopus uniflorus	Northern Water Horehound	S5
Lysimachia borealis	Northern Starflower	S5

Scientific Name	Common Name	SRank
Lythrum salicaria	Purple Loosestrife	SNA
Maianthemum canadensis	Wild Lily-of-The-Valley	S5
Matricaria discoidea	Pineapple Weed	SNA
Medicago sativa	Alfalfa	SNA
Melilotus albus	White Sweet-clover	SNA
Mentha canadensis	Canadian Mint	S5
Mitchella repens	Partridgeberry	S5
Mitella nuda	Naked Bishop's-Cap	S4S5
Monotropa uniflora	Convulsion-Root	S5
Muhlenbergia uniflora	Bog Muhly	S5
Myosotis laxa	Small Forget-Me-Not	S5
Nabalus altissimus	Tall Rattlesnakeroot	S5
Oclemena acuminata	Whorled Wood Aster	S5
Oenothera perrennis	Hairy Evening Primrose	S5
Onoclea sensibilis	Sensitive Fern	S5
Osmunda Claytonia	Interrupted Fern	S5
Osmunda regalis	Royal Fern	S5
Osmundastrum cinnamomea	Cinnamon Fern	S5
Oxalis Montana	Common Wood Sorrel	S5
Oxalis stricta	European Wood Sorrel	S5
Persicaria lapathifolia	Pale Smartweed	S5
Phalaris arundinacea	Reed Canary Grass	S5
Phegopteris connectilis	Northern Beech Fern	S5
Phleum pratense	Common Timothy	SNA
Picea glauca	White Spruce	S5
Picea rubens	Red Spruce	S5
Pinus strobus	Eastern White Pine	S5
Pinus sylvestrus	Scotch Pine	SNA
Plantago major	Common Plantain	SNA
Platanthera aquilonis	Tall Northern Green Orchid	S4
Poa annua	Annual Blue Grass	SNA
Poa compressa	Canada Blue Grass	SNA
Poa pratensis	Kentucky Blue Grass	S5
Poa salutensis	Weak Blue Grass	S5
Polystichum acrostichoides	Christmas Fern	S5
Polystichum braunii	Braun's Holly Fern	S4
Populus tremuloides	Trembling Aspen	S5
Potamogeton alpinus	Alpine Pondweed	S4
Potentilla norvegica	Rough Cinquefoil	S5
Potentilla simplex	Old Field Cinquefoil	S5
Proserpinaca palustris var. creba	Marsh Mermaidweed	S3
Prunella vulgaris	Common Self-heal	S5
Prunus virginiana	Chokecherry	S5
Pteridium aquilinum	Bracken Fern	S5
Pyrola elliptica	Shinleaf	S5
Ranunculus recurvatus	Hooked Buttercup	S4
Ranunculus repens	Creeping Buttercup	SNA
Ribes lacustre	Bristly Black Currant	S5
Rosa multiflora	Multiflora Rose	SNA
Rubus pubescens	Dwarf Red Raspberry	S5
Salix discolour	Pussy Willow	S5
Salix viminalis	Basket Willow	SNA

Scientific Name	Common Name	SRank
Scirpus atrocinctus	Black-girdled Bulrush	S5
Scirpus cyperinus	Common Woolly Bulrush	S5
Scirpus hattorianus	Mosquito Bulrush	S5
Scutellaria lateriflora	Mad-dog Skullcap	S5
Senecio viscosus	Sticky Ragwort	SNA
Setaria viridis	Green Foxtail	SNA
Sisyrinchium montanum	Mountain Blue-eyed-grass	S5
Solidago canadensis	Canada Goldenrod	S4S5
Solidago flexicaulis	Zigzag Goldenrod	S5
Solidago gigantea	Giant Goldenrod	S5
Solidago juncea	Early Goldenrod	S5
Solidago puberula	Downy Goldenrod	S5
Solidago rugosa	Rough-stemmed Goldenrod	S5
Sonchus asper	Prickly Sow Thistle	SNA
Sorbus americana	American Mountain Ash	S5
Spiraea alba	White Meadowsweet	S5
Symphyotrichum lateriflorum	Calico Aster	S5
Symphiotrichum novi-belgii	New York Aster	S5
Taxus canadensis	Canada Yew	S4S5
Thelypteris noveboracensis	New York Fern	S5
Trientalis borealis	Northern Starflower	S5
Trifolium arvense	Rabbit's-foot Clover	SNA
Trifolium campestre	Low Hop Clover	SNA
Trifolium pratense	Red Clover	SNA
Trillium cernuum	Nodding Trillium	S4
Tsuga canadensis	Eastern Hemlock	S4S5
Tussilago farfara	Coltsfoot	SNA
Typha latifolia	Broad-leaved Cattail	S5
Verbascum thapsus	Common Mullein	SNA
Veronica officinalis	Common Speedwell	SNA
Veronica serpyllfolia	Thyme-Leaved Speedwell	SNA
Viburnum nudum	Northern Wild Raisin	S5
Vicia cracca	Tufted Vetch	SNA
Viola cucullata	Marsh Blue Violet	S5
Viola macloskeyi	Small White Violet	S5
Viola sororia	Woolly Blue Violet	S5

Note: Scientific names used are in accordance to the latest ACCDC species list retrieved in November 2019. Scientific names may no longer be in use, however, for consistency in this report, species names in the ACCDC species list are used.