



APPENDIX B. CVS



McCallum Environmental Ltd.

Robert McCallum, P.Biol

robert@mccallumenvironmental.com

902-292-0514

YEARS IN PRACTICE

26

ACCREDITATIONS

Alberta Society of Professional Biologists (ASPB), 2001; # 875

EDUCATION

Bachelor of Science, Biology / Environmental Studies, University of Victoria, British Columbia (1994)

ADDITIONAL TRAINING / EDUCATION

- ◆ Project Management Fundamentals (2010)
- ◆ CSTS-09 (2013)
- ◆ Electronic General Safety Orientation – Enform (2015)
- ◆ Petroleum Safety Training 2.0 (2015)
- ◆ ISO 14064-1 Essentials: Greenhouse Gas Inventories
- ◆ ISO 14064-2 Expert – Greenhouse Gas Projects (Carbon Emissions Reduction Expert Course)
- ◆ Standard First Aid AED- CPR A (2018)
- ◆ WHMIS (2017)
- ◆ ASPB Annual Wetland Workshop (2018)
- ◆ GIS Lunch & Learn (2018)
- ◆ Wetland delineation training with Melanie MacDonald, Instructor for Nova Scotia Wetland Delineators course, Fern Hill Institute.
- ◆ Impact Assessment Agency of Canada – Level 2 Training on Impact Assessment (2019)
- ◆ Alberta Wetlands 101: Online Training (2020)

PROFESSIONAL EXPERIENCE

I have 26 years of project management, environmental assessment, biophysical studies, and regulatory permitting experience in a consulting capacity across Canada. I have been a panel member at 2 Alberta Utilities Commission regulatory hearings; for the Stirling Wind Power Project, and for the Brooks Solar II project.

I am a former Responsible Authority under the Canadian Environmental Assessment Act. This role included review of EAs, creation of conditions, and regulatory compliance monitoring for projects requiring Federal approvals and included development of the EA requirements for developments on first nation lands.

I also have extensive environmental assessment experience and have completed federal and provincial environmental impact assessments in Alberta, Saskatchewan, New Brunswick, Nova Scotia and Newfoundland.

I understand project lifecycles and technical and regulatory requirements for oil and gas, renewable energy development, property development, overhead power line development, and industrial facilities.

I also understand technical, business and project management functions associated with mega, large and small project developments and executions. I understand life cycles and all associated critical inputs, outputs and deliverables associated with each project stage. I can adjust project management approaches to meet the requirements of projects

EMPLOYMENT HISTORY

McCallum Environmental Ltd.

President (2001 – Present)

Responsibilities include business development, business operations, financial management, administration, project management and environmental assessment services for oil and gas, forestry, land and commercial development, wind power, solar power, transmission lines, and gold mining in Alberta, Saskatchewan, New Brunswick and Nova Scotia.



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EMPLOYMENT HISTORY

Indian Oil & Gas Canada (IOGC), Crown- Indigenous Relations and Northern Affairs Canada Environmental Analyst (Responsible Authority under CEAA) (1999-2001)

Regulated oil and gas development on First Nation reserves in Alberta and Saskatchewan under the *Indian Oil & Gas Act* and regulations. Assisted with development on the environmental assessment requirements for IOGC applications (2000). Completed review of environmental assessment applications, issued terms and conditions, and conducted regulatory compliance audits. Assisted 5 First Nation reserves with the establishment of mirror offices for self-management of oil and gas applications under the IOGC process. Completed reclamation inspections for reclamation applications (known as Memorandum of Surrender).

Stantec Consulting Ltd., AB Project Manager (1998-1999)

Involved with the business development of environmental services for the oil and gas industry in the Calgary office of Stantec. Completed pre-disturbance field assessments for oil and gas applications, detailed site assessments for reclamation applications, supervised equipment during land reclamation activities, completed Phase I and II environmental site assessments, contamination testing at industrial sites within Calgary, and completed environmental assessments for oil and gas projects on First Nation lands in Alberta.

Pioneer Land Services Ltd., Calgary, AB Assistant Environmental Coordinator (1997-1998) Environmental Division Coordinator - Grande Prairie, AB

Involved with the business development of oil and gas environmental services for the Calgary office. Transferred to Grande Prairie to start the environmental services component of the existing land permitting services. Completed pre-disturbance field assessments for oil and gas applications in Alberta and British Columbia, detailed site assessments for reclamation applications, supervised equipment during land reclamation activities, completed Phase I and II environmental site assessments, completed environmental assessments for oil and gas projects on First Nation reserves. Completed hundreds of Environmental Field Reports ('EFR') for oil and gas applications in the green zone in Alberta.

Great White North Environmental Services Ltd., AB Senior Environmental Scientist (1996-1997)

Working with the business owner and assisted with the completion of Phase I and Phase II ESAs in Calgary and Banff. Tasks included field testing, data analysis, and assistance with reporting. Completed waste audits, including an audit at the Grande Cache Institution.

EMPLOYMENT HISTORY

Wellsite Environmental Inc. Field Technician (1996)

Assisted with drilling waste disposal under the new EUB drilling waste disposal guidelines. Assisted with detailed site assessments for reclamation applications for upstream oil and gas developments.

ENVIRONMENTAL ASSESSMENT EXPERIENCE

FEDERAL - ENVIRONMENTAL IMPACT ASSESSMENTS

- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the Prairie Lights 360 MW Gas Turbine Power Plant, Alberta. Completed the first ever power plant application under the new Federal Impact Assessment Act (“IAA”) in December 2019. Completed both the initial and detailed project descriptions and summaries.
- Completed the Cumulative Effects Assessment and Environmental Protection Plan for a 107 shallow gas well program on federally regulated PFRA lands in Saskatchewan for submission to the Canadian Wildlife Service and Environment Canada.
- Completed the Cumulative Effects Assessment under CEAA for 54 oil and gas wells, roads and associated pipelines on the Onion Lake IR#119 in Saskatchewan. Project involved site assessments, first nation consultation, and regulatory consultation. Assisted client with the development of the environmental protection plan for construction. Also assisted with the development of the company Operations & Management Plan for operations on the IR. Assisted client with First Nation consultation.
- Completion of CEAA Environmental Assessments for submission to what is now called Crown-Indigenous Relations and Northern Affairs Canada, through Indian Oil & Gas Canada, for 90 oil and gas developments on First Nation reserves in Alberta and Saskatchewan between 2001-2012. Also conducted compliance monitoring during construction, completed the 1, 2- and 5-year regulatory compliance audits for ongoing activities, and completed detailed site assessments for reclamation applications. Assisted clients with First Nation consultation.
- Completion of CEAA Environmental Assessments for submission to what is now called Crown-Indigenous Relations and Northern Affairs Canada, through Indian Oil & Gas Canada, for 100+ km of oil and gas pipeline and 2D and 3D seismic on First Nation reserves in Alberta and Saskatchewan between 2001-2012.

PROVINCIAL – ENVIRONMENTAL EFFECTS ASSESSMENTS

- Panel member at Foothills Solar Project Alberta Utilities Commission hearing, 2023.
- Panel member at Stirling Wind Power Project Alberta Utilities Commission hearing, 2019.
- Panel member at Brooks Solar II Project Alberta Utilities Commission hearing, 2019.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 122 MW Winnifred Wind Project, Alberta.



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- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 14 MW Chappice Lake Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 24 MW Tilley Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 22 MW Coaldale Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 115 MW Stirling Wind Power Project in Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 300 MW Jenner 1, 2 and 3 Wind Power Projects in Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 30 MW McLaughlin Wind Power Project in Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 122 MW Wheatland Wind Power Project in Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 150 MW Paintearth Wind Power Project in Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 79 MW Hand Hills Wind Power Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 100 MW Willowridge Wind Power Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 120 MW Claresholm Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 60MW Sunset Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 8.5 MW Stavely Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 24 MW Monarch Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 25 MW Vulcan Solar Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 200 MW Golden South Wind Power Project, Saskatchewan.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 80 MW Glen Dhu South Wind Power Project, Nova Scotia.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 50 MW East Bay Wind Power Project, Nova Scotia.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 25.2 MW Hampton Mountain Wind Power Project, Nova Scotia



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- Completed Environmental Assessment amendment application for the operating 32 MW Amherst Wind Power Project, Nova Scotia.

TRANSMISSION LINE EXPERIENCE

- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 14km HVDC line for the Jenner 1, 2, 3, Wind Power Projects, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 35km HVDC line for the Prairie Lights Power Plant, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 15km HVDC line for the Winnifred Wind Power Project, Alberta.
- Environmental assessment coordination, planning, execution, reporting and regulatory permitting for the 12km HVDC line for the Buffalo Trail Wind Power Project, Alberta.
- Assisted Valard Construction with coordination of wetland assessments, bird sweeps, habitat assessments, rare plant transplants, bat monitoring at hibernacula and watercourse boundary determination for ~480km of transmission line for the OEWTl in Ontario.
- Environmental and Camp permitting for the Churchill Falls to Muskrat Fall HVAC and HVDC lines (1300 km in length) in Labrador and Newfoundland. Project included regulatory consultation and applications for 5 x 200-person camps. Environmental permitting included water withdraw and use. Assisted with regulatory consultation.
- Environmental monitor for Segments 1 and 3 of the Eastern Alberta Transmission Line (EATL) Project for Graham Brothers Construction. Assisted Graham Brothers during the construction segments to ensure compliance with the Bechtel managed project.
- Environmental coordinator and monitor for construction of the Pike 170s Substation in AB for Rising Edge Technologies.

SELECT PROJECT EXPERIENCE

- Under contract to Alberta Environment & Parks, and in cooperation with Bear Tracks Environmental Services Ltd., completed the *New Survey Protocols: Bird Migration Survey Protocol and Post-Construction Survey Protocols for Wind and Solar Energy Projects, Alberta.* 2019.
- Planning, construction and restoration of 147 acres (59.5 hectares) of wetlands in Nova Scotia.
- Assisted the CNOOC International Ltd. abandonment and reclamation team to complete the facility amendment application, and the Decommissioning, Remediation and Land Reclamation Plan for the 105 MW Balzac Gas Plant, Alberta.
- Coordinated and assisted with the 105 MW Balzac Power Station Industrial approval 10-year renewal.
- Environmental assessment coordination, planning, execution and regulatory permitting for the Jenner 22 MW Gas Power Plant, Alberta.



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- Environmental assessment coordination, planning, execution and regulatory permitting for a 6 MW Gas Power Plant, Alberta.
- Environmental Coordinator for Baytex Energy Ltd. from 2004-2006. Responsible for regulatory approvals and compliance for all business operations in Alberta, Saskatchewan, and British Columbia. Project manager for environmental approvals and compliance for pipeline development in Alberta. Project components included pipeline route selection, First Nation/public consultation, regulatory consultation, environmental assessments, survey supervision, regulatory applications for licenses/permits, construction monitoring, and reclamation of the right-of-ways. Water Act notifications for access road and pipeline crossings. Assisted client with First Nation consultation.
- Completion of reclamation project management, field construction activities, detailed site assessments, and regulatory applications for numerous oil and gas projects in Alberta and Saskatchewan since 1997.
- Completing detailed financial benchmarking of abandonment and reclamation costs for 16 large oil and gas companies for use in Asset Retirement Obligations. Data analysis includes assessment of over 5000 data points. Project ongoing since 2006.
- Completed 68 pre-disturbance environmental assessments in Special Areas 2 & 3, Alberta. Pre-site assessments included detailed soils and vegetation assessments and wetland boundary determinations for avoidance.

Years in Practice
21

Certifications

Nova Scotia Advanced Wetlands Delineator and Evaluator

Memberships

Nova Scotia Wetlands Delineation, Maritime College of Forest Technology

Education

- Master in Environmental Studies (MES), York University, Toronto, Ontario, 1997-1999
- BSc. (Biology), Dalhousie University, 1992-1997
- BA (Political Science), Honours, Dalhousie University, 1992-1997

Training

- Wetland Construction: Principles, Planning and Design, Rutgers, 2016
- Wetland Functional Assessment Training Workshop, NSE 2013
- Urban Wetland Restoration: A Watershed Approach, 2012
- Nova Scotia Advanced Wetlands Delineation and Evaluation Course, 2009;
- Water Management and Wetland Restoration Training Course, 2009;
- Identifying and Delineating Wetlands for Nova Scotia, 2008
- Saint John Ambulance Standard First Aid, AED, CPR(C). 2013

Summary

Ms. Milloy oversees, manages, and executes regulatory and environmental projects. She provides project management for Federal and provincial environmental assessment processes and is an experienced EA practitioner. She manages and completes environmental baseline surveys including habitat surveys, species at risk and wildlife surveys, botany and bird surveys, wetland and watercourse delineations, characterizations and functional assessment, fish habitat evaluation, HADD authorizations, and bat hibernacula identification. Ms. Milloy also completes watershed evaluations, and guides clients through the environmental and permitting stages of mining, industrial, alternative energy, and development projects.

Ms. Milloy supports clients through provincial and federal environmental assessment requirements and supports project teams to identify and evaluate project environmental risk. Ms. Milloy has completed several Federal and Provincial environmental assessment registration documents in the past two years and is currently preparing two Impact Assessment Agency of Canada (IAAC) environmental impact statements (EIS) for two mining projects in Nova Scotia. Ms. Milloy consults regularly with federal and provincial regulatory agencies, First Nation communities and local landowners and stakeholder groups.

Ms. Milloy regularly completes applications for wetland, watercourse alteration and HADD authorizations across Atlantic Canada, and has developed and implemented wetland compensation programs, fish habitat offsetting projects, and wetland and fish habitat restoration projects. Ms. Milloy is a trained wetland evaluator, biologist, and restoration professional. Ms. Milloy regularly implements species at risk, habitat and biodiversity mitigation planning, permitting, monitoring plans and offsetting.

Project Experience

- Project Manager and Team Lead for two Environmental Impact Statements (EIS) for submission to the Impact Assessment Agency of Canada (IAAC) (2017-2021).
- Biophysical Lead for Nova Scotia Environmental Assessment Registration Document (EARD) for a gold mining project in Nova Scotia, with planned submission in 2021.
- Provision of biophysical project management and coordination of field surveys to support the IAAC environmental assessment process for three proposed mining projects in Nova Scotia (2014-current).
- Completion of biophysical field surveys to support expansion efforts for several mines in Nova Scotia (2014-2017) and aggregate quarries (2017-2020) to meet requirements under the provincial environmental assessment process.
- Completion of provincial environmental assessments for multiple quarry expansions in Nova Scotia (2016-2020).
- Completion of environmental baseline surveys for the provincial environmental assessment process for a proposed re-development of a gold mine in eastern Nova Scotia in 2013.
- Completion of four provincial environmental assessments for community wind projects in Nova Scotia from 2013-2018.

Meghan Milloy, BSc. (Bio), MES
meghan@mccallumenvironmental.com
Vice President

- Watershed evaluation for wetlands and watercourses at a 500 hectares golf and residential development and associated wetland alteration permitting, compensation planning, wetland restoration activities, and enhancement of several wetlands to increase functionality.
- Surface water assessment and functional assessment, wetland permitting, watercourse permitting, and compensation planning and implementation at an 18 hole golf course and residential development along the south shore of Nova Scotia in 2014. Provision of environmental project management and regulatory lead role for the Project.
- Completed the Provincial Environmental Assessment for the 80 MW Glen Dhu South Wind Power Project, Nova Scotia, for Shear Wind Inc.
- Project Management of regulatory permitting and environmental assessments for a 50 MW Wind Power Project in Nova Scotia for Sprott Power Corp.
- Evaluation of the Musquodoboit River Watershed for wetland restoration opportunities (GIS based and ecology/field based study).
- Evaluation of the Sackville River Watershed for wetland restoration opportunities (GIS based and ecology/field based study).
- Completion of 35-45 projects involving watershed evaluation, land use classification, wetland delineation and alteration and infill, and compensation planning for numerous residential and commercial large-scale developments across Nova Scotia and New Brunswick.

Work Experience

McCallum Environmental Ltd., Nova Scotia, 2010-Present

Vice President/Senior Project Manager - Provides project management expertise for site and/or route selection, constraints mapping, regulatory consultation, environmental assessments, environmental baseline surveys, wetland alteration and restoration planning, environmental protection plan development, regulatory applications, construction monitoring, and reclamation for small and large scale industrial projects. Other responsibilities include marketing, budget management, report preparation and client service.

Strum Environmental Services Ltd., Nova Scotia 2000-2010

Project Manager- From 2000- 2010, provided project management expertise for development clients across Atlantic Canada. Projects included environmental assessment, large scale commercial and residential developments, wetland alteration projects, wetland compensation planning and implementation, wetland restoration and creation projects, phased site assessments, and risk assessment and management.

Environmental Sciences Group, Kingston, ON 1998

Environmental Scientist- in 1998, provided contaminant and project management expertise to Department of National Defense in the Canadian Arctic in support of remediation of several remote military sites. Identified areas required for remediation and completed associated boundary soil and sediment confirmatory sampling and analysis.

Years in Practice
7

Education

Master of Environmental Science, *Memorial University of Newfoundland*, 2015

B.Sc. Major in Biology, *St. Francis Xavier University*, 2010

Certifications

- ◆ Wetland Plants and Delineation, Fern Hill Institute
- ◆ Backpack Electrofishing, Canadian Rivers Institute
- ◆ Project Management Planning Course, Environmental Project Management & Sustainability Solutions

Training

- ◆ Brook Floater Virtual Workshop, Fisheries and Oceans Canada Species at Risk Program, Jan. 19-20, 2021
- ◆ Land Bird Species at Risk in Forested Wetlands Workshop, Jan. 2018
- ◆ Technical Writing for Professionals, Natural Resource Training Group, July 2019
- ◆ Fish and Fish Habitat Characterization, Natural Resource Training Group, July 2019
- ◆ Standard First Aid AED CPR "A", St.

Experience

Mr. Jeff Bonazza has been in the environmental consulting profession since 2015, after completing a master's degree in environmental science. He has managed projects, authored reports, and conducted regulatory consultation and First Nations engagement. Mr. Bonazza has worked as a field biologist on projects throughout Atlantic Canada as well as in western Canada and Ontario. Mr. Bonazza has conducted surveys including; bird surveys, wildlife surveys, evaluation for Species at Risk, herpetofaunal and reptile evaluations, wetland functional assessment, wetland delineation, fish habitat characterization and electrofishing.

McCallum Environmental Ltd., Halifax, NS

Project Manager

Feb. 2022 – present

- Project management
- Report writing
 - Federal Environmental Impact Statements, Provincial Environmental Assessments, Species at Risk permitting, wetland alteration applications etc.
- Regulatory consultation and First Nations engagement
- Design and lead field programs
 - Flora and fauna surveys, Species at Risk assessments, wetland delineation, wetland functional assessment (WESP-AC completed on >50 wetlands in NS), etc.
- Create maps using ArcGIS
- Projects:
 - Dexter Construction Company Limited
 - Environmental assessment registration
 - Cabot Gypsum
 - Environmental assessment registration

McCallum Environmental Ltd., Halifax, NS

Project Coordinator

Dec. 2016 – Feb. 2022

- Project management
- Report writing
 - Federal Environmental Impact Statements, Provincial Environmental Assessments, Species at Risk permitting, wetland alteration applications etc.
- Regulatory consultation and First Nations engagement
- Design and lead field programs
 - Flora and fauna surveys, Species at Risk assessments, wetland delineation, wetland functional assessment (WESP-AC completed on >50 wetlands in NS), etc.
- Create maps using ArcGIS
- Projects:
 - NextBridge Infrastructure LP.
 - Species at Risk permitting.
 - Atlantic Mining Nova Scotia
 - EIS reporting, wetland alteration applications, field surveys.
 - Zutphen Resources

- John Ambulance,
Dec. 2017
- ◆ Geographic Information System (GIS) Training, ESRI, Feb. 2015
- ◆ WHMIS, CCOHS, March 2018
- ◆ PADI Open Water certified scuba diver, Nov. 2010
- ◆ MED A1, Canadian Sailing Expeditions Inc. and Transport Canada, May 2008

Jeff Bonazza, BSc., M.Env.Sci
Jeffb@mccallumenvironmental.com

- Environmental Protection Plan, reporting and permitting requirements.
- Bio Design Earth Products
 - Environmental Assessment registration.

McCallum Environmental Ltd., Halifax, NS

Environmental Coordinator

Sept. 2015 – Dec. 2016

- Environmental monitoring
 - Regulatory advising, spill response, erosion/sediment control, wildlife monitoring, water quality monitoring, and reporting on construction activity.
- Provided field support for flora and fauna surveys, Species at Risk assessments, and wetland delineation/functional assessment.
- Report writing (monitoring reports, wetland alteration applications).
- Created maps using ArcGIS
- Projects
 - Valard Construction
 - Environmental coordinator for Muskrat Falls Transmission Line in Newfoundland and Labrador.
 - Terra Firma Development Corp
 - Reporting and permitting requirements.

Memorial University of Newfoundland, St. John's, NL

Research Assistant

2014- 2015

- Conducted a literature review investigating the role of predator/prey interactions of freshwater fish in Ontario.
- Developed a food web of piscivorous fish species in Ontario.

Agriculture and Agri-Food Canada, Truro, NS

Research Technician

2011- 2014

- Entered and analyzed scientific data
- Conducted quadrat sampling and botanical separation
- Prepared samples for analysis
- Operated specialized laboratory instruments
- Supervised and trained laboratory visitors and volunteers
- Assisted research scientists and graduate students in their research

Years in Practice

7

Education

Master of Resource and Environmental Management, Dalhousie University, 2014-2016.

B.Sc. (General Science, Minor in Biology), Mount Royal University, 2010-2013.

Memberships

- ♦ Professional Biologist, Alberta Society of Professional Biologists (ASPB) – 2013
AB#2545

Training

- ♦ Project Management Planning Essentials – 2021
- ♦ Standard First Aid, AED, CPR(C) – 2021
- ♦ Technical Writing for Professionals – 2019
- ♦ W.H.M.I.S. – 2017
- ♦ Wilderness First Aid – 2018
- ♦ Backpack Electrofishing – 2018
- ♦ Pleasure Craft Operator's License – 2010
- ♦ PADI Advanced Open Water Diver – 2008

Experience

Ms. Pominville has been in the environmental consulting profession since 2017 after transitioning from the academic and not-for-profit sectors and is a Professional Biologist registered with the Alberta Society for Professional Biologists. Ms. Pominville is responsible for managing and coordinating staff, preparing applications, environmental assessment coordination, environmental reporting and permitting, GIS analysis, technical report writing, budget preparation, and maintaining client relationships. Ms. Pominville is also involved in field data collection for biophysical assessments, primarily for clients in the renewable energy, mining, and commercial development sectors.

McCallum Environmental Ltd., Halifax, Nova Scotia

Project Coordinator

Dec 2020 – Present

- Hiring and supervising junior staff, staff development, strategic planning including business growth and forecasting support to the VP, and field program coordination.
- Delivering in house training for Geographic Information Systems (GIS), technical writing, and field skills.
- Providing senior technical review on environmental assessments, cumulative effects assessments, technical reports and permit applications.
- Modelling, data analysis, and environmental screening with GIS.
- Facilitating project delivery, environmental assessment coordination, application preparation, environmental reporting and permitting, technical reporting, budget preparation, and maintaining client relationships.

McCallum Environmental Ltd., Halifax, Nova Scotia

Environmental Scientist

June 2017 – Dec 2020

- Responsible for providing the project team with technical writing, application preparation, project management and GIS support for a federal Environmental Assessment process for a multi-phase mining development in eastern Nova Scotia (2017-2020).
- Preparing applications, environmental reporting and permitting, technical reports, budget preparation, and maintaining client relationships.
- Completing biophysical assessments, including wetland and watercourse delineation, avian surveys including common nighthawk and owl targeted surveys, flora and fauna surveys, with emphasis on species at risk.
- Coordinating data management and completing analysis with GIS.

Saint Mary's University, Halifax, Nova Scotia

Sessional Instructor

January 2017 – April 2017 (Contract)

- Instructed BIOL 4422: Conservation Biology laboratory for senior level biology major and non-major university students.
- Developed syllabus and course material focused around teaching students how to communicate scientific information with a variety of stakeholders and the core issues facing conservation biologists.
- Carried out assignment planning, rubric preparation, marking, and gave weekly lectures on the fundamentals and current practices in conservation biology while also supervising a Teaching Assistant.
- Organized guest speakers, class poster conference, class debate, and other collaborative activities based on case studies ranging from caribou management in Northern Alberta to the ivory trade in China.

Dalhousie University, Halifax, Nova Scotia

Head Teaching Assistant, Teaching Assistant, Research Associate

January 2016 – April 2017 (Multiple Renewed Contracts)

- Taught a variety of biological sciences and resource management courses at the undergraduate and graduate level.
- Prepared, instructed, and lead weekly tutorial sessions that generally consisted of a presentation on weekly material and supporting students as they worked on weekly assignments in small groups.
- Graded weekly assignments, individual essays, culminating group projects, and final exams.
- Assisted instructors with course correspondence, assignment planning, rubric preparation, and implementation of the online learning system.

Nature Conservancy of Canada, Halifax, Nova Scotia

NS Conservation Intern / Dr. Bill Freedman Conservation in Science Intern

May 2015 – September 2015 / May 2016 – August 2016 (Contracts)

- Conducted a research project collecting and synthesizing information on Species at Risk of Atlantic Canada and identified those species that NCC is best positioned to help conserve.
- Conducted an analysis to help NCC identify invasive alien species of highest conservation concern in Atlantic Canada and evaluate decision-making tools for prioritizing management efforts.
- Completed stewardship monitoring including inventories of plants, animals, birds, habitat communities, physical features and anthropogenic influences on NCC sites and assisted with the volunteer events.
- Prepared baseline reports and monitoring reports including mapping with ArGIS, field data collection, data entry, and ongoing organization of information.

Years in Practice

17

Education

Masters of Resource and Environmental Management, Dalhousie University, 2009-2011

B.Sc. Advanced Major in Biology & Interdisciplinary Studies in Aquatic Resources, St. Francis Xavier University, 2001-2005

Training

- ◆ Avian Nest Sweeps & Monitoring, 2021
- ◆ Fish Habitat Restoration, In-stream Techniques, 2021
- ◆ Technical Writing Workshop, 2019
- ◆ Fish Habitat Assessments, 2019
- ◆ eDNA Methods, 2019
- ◆ Freshwater & Diadromous Fishes of New England, 2019
- ◆ Saint John Ambulance Standard First Aid, AED, CPR(C), 2019
- ◆ Field Hike Leader Certification, Basic and Winter modules, Outdoor Council of Canada, 2015 & 2018
- ◆ Wetland Ecosystem Services Protocol (WESP-AC) training, 2017
- ◆ WHMIS, 2017
- ◆ Electrofishing Crew Leader, 2015
- ◆ Wetland Delineation Certification, 2013
- ◆ Small Vessel Operator Proficiency & Marine Emergency Duties A3 certified, 2006

Summary

Ms. MacDonald has been in the environmental consulting profession since 2005. She has worked on both project and research related field assessments primarily in Nova Scotia and Alberta. She is responsible for completing biophysical assessments and ecological inventories, including flora and fauna surveys, avian surveys, and species at risk evaluations, primarily for clients in the energy, mining, and commercial development sectors.

Ms. MacDonald is a senior ecologist, highly skilled at completing ecological habitat assessments via geo-spatial desktop review (GIS), and implementation of field studies. During the past nine years of her career, Ms. MacDonald has gained extensive experience completing habitat and ecological integrity studies across the Nova Scotia landscape. Her in-depth knowledge of Nova Scotia flora and fauna has provided her with the tools to effectively determine habitat uniqueness, and ecological sensitivity.

Ms. MacDonald coordinates all McCallum field biologists required to complete all environmental baseline and ecological inventory programs for Provincial and Federal Environmental Assessment registration. Ms. MacDonald has been responsible for the implementation of more than ten environmental baseline programs for mining, quarry development and energy sector development projects in Nova Scotia in advance of environmental assessment registration. In addition, Ms. MacDonald has been largely responsible for communicating the results of baseline environmental conditions to industry and project related stakeholders. Her effective communication skills, broad technical knowledge and personable demeanor has furthered her involvement in multiple community liaison committees, and other community organizations.

Selected Project Experience

- Completion of environmental baseline surveys for the federal environmental assessment process for proposed development of four separate gold mines in eastern Nova Scotia from 2015-2020.
- Completion of avian surveys, including baseline studies, post-construction studies and pre-construction nest searches for over ten projects, such as mines, quarries, wind power projects and residential development.
- Completed baseline fish and fish habitat survey study design and analysis for four proposed gold mines in eastern Nova Scotia. Three of these projects have triggered the federal EIS process, and three will require authorization for Harmful Alteration, Disruption and Destruction of fish habitat under the *Fisheries Act*, and associated offsetting. The evaluations completed at each of these sites involved detailed evaluations of fish passage barriers, and detailed evaluation of the Projects potential direct and indirect effects on fish and fish habitat.
- Completed baseline studies on 125 wetlands across the province to implement a new wetland functional assessment technique (WESP-AC) to the Nova Scotian regulatory landscape.

Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Senior Ecologist & Field Coordinator

May 2011-Present

- Completing biophysical assessments, including flora and fauna surveys, with emphasis on species at risk.
- Leading a team to complete wetland and watercourse delineations and functions assessments.
- Extensive fish and fish habitat assessments to support *Fisheries Act* authorization applications and associated offsetting programs.
- Communicating field survey results and effects assessments for Environmental Assessments and other Provincial regulatory applications.
- Instructed Wetland Delineation course with Fern Hills Institute, Summer 2016-2019.

Amec Colt, Shell/Albian Sands Expansion 1 - Fort McMurray, Alberta.

Environmental Specialist and Area Environmental Lead

July 2008 – October 2009.

- Proactively monitored construction activities via inspections, audits and Environmental Work Permits & Protection Plans to ensure compliance with regulatory approvals, the projects' Environmental Control Plan, and best management practices. Investigated and reported incidents, and liaised between contractors and project owners. Implemented Environmental Awareness training programs and communicated issues via weekly newsletters.

Canadian Natural Resources Ltd. - Fort McMurray, Alberta

Regulatory and Environmental Specialist October 2005 – July 2008

- Conducted extensive field work in various fish and wildlife programs. Communicated issues with government agencies, contractors and external stakeholders. Performed on-call duties, spill response, and non-compliance reporting and response. Expanded upon site wide procedures for protection of water, wildlife and waterbirds.
- Chaired the regional 'Oil Sands Bird and Wildlife Protection Committee'.
- Acted as the clients' field lead in planning & completion of a fish salvage of 38 km of the Tar River, and in construction of a 77 hectare fish habitat compensation lake (Horizon Lake). Horizon Lake earned the CAPP Steward of Excellence Award for Environmental Performance (2009).

Years in Practice

16

Education

M.ScF, University of
New Brunswick, 2012.

B.ScF Major in Forest
Management, Minor in
Wildlife Ecology
University of New
Brunswick, 2004.

Certifications

- ◆ Class 5 driver's licence (1996)
- ◆ Emergency First Response and CPR (2022)
- ◆ Wilderness First Responder (2014)

Summary

Mr. MacDonald is a versatile, conservation focused ecologist with over 16 years' experience in adaptive project management in challenging environments. A dedicated learner, with a proven record of quickly developing new skills, and an excellent writer for both a technical and general audience. Diplomatic and capable when navigating differing values of multiple stakeholders.

Experience

McCallum Environmental Ltd., Halifax, NS

Project Manager

April 2022 - Present

- Project Management
- Report writing
 - Provincial Environmental Assessments
- Design and lead field programs
 - Flora and fauna surveys, Species at Risk assessments, wetland delineation, wetland functional assessments
- Create maps using ArcGIS
- Projects:
 - Antrim Gypsum Mine

Dept. of Marine and Wildlife Resources, Pago Pago, American Samoa

Wildlife Ecologist

2012-2020

- Principle Investigator on wildlife conservation projects and responsible for grant management, project design, field implementation, permit oversight, and all reporting.
- Designed and implemented a marine turtle conservation programme including a nesting beach monitoring protocol to assess reproductive output on American Samoan beaches and biotelemetry investigation on nesting females. Developed a stranding programme to respond to reports of distressed turtles or dead animals in near shore waters.
- Responsible for designing a Pacific Black Duck monitoring protocol and managing technicians conducting surveys. Developed a trapping protocol for the deployment of satellite transmitters needed to map habitat use and home range of ducks.

USFWS North-western Hawaiian Island National Wildlife Refuge, HI

Guest Researcher

2004-2007

- Led a 2.5-month expedition to Nihoa Island to collect data for Nihoa Millerbird pre-translocation assessment.
- Developed and executed sample design and methods for data collection.
- Responsible for planning camp logistics which included organising all equipment, food and water necessary for living 2.5 months on Nihoa. Netted 85 critically endangered Millerbirds and morphometric data was used to create a method for in-field sexing. Prey density analysis allowed for translocation to proceed.
- Deployed 7 months on Laysan Island investigating the impacts of invasive ant species on nesting success of Tristram's Storm-petrel (TRSP).
- Responsible for implementing project experimental design on the

ground.

- Included plot layout, eradicating ants from experimental plot, finding active TRSP nests, building nest boxes. Monitored active TRSP nests and measured growth rates of chicks (body mass, tarsus & wing chord measurements, and notes on feather development).

Years in Practice
 9

Education

M.Sc, Wetland
 Hydrology, *University of Waterloo*, 2015

B.ES, Geomatics Option,
University of Waterloo,
 2013

Memberships

- ◆ Society for Ecological Restoration – Eastern Canada Chapter Board Member

Certifications

- ◆ WESP-AC Certified
- ◆ Certificate of Indigenous Relations Program, Government of Manitoba

Training

- ◆ WESP-AC V3 training, Dr. Paul Adamus/NSECC, 2022
- ◆ Electrofishing Training – Crew Supervisor, NRTC, 2021
- ◆ Wetland Delineation Training, Co-Instructor and Participant, MEL, 2021
- ◆ Indigenous Relations Program, Apr. 2017 – Jan. 2018
- ◆ Online Geographic Information System (GIS) Training, ESRI, Ongoing
- ◆ WHMIS 2015, CCOHS, Apr. 2020
- ◆ Standard First Aid, May 2020

Experience

Sarah Scarlett has been in the environmental profession since 2014, specializing in wetland and biophysical sciences. Sarah holds an MSc in wetland sciences, with a focus on hydrology and restoration. She has worked across Canada in as an academic researcher, provincial regulator, private industry representative and environmental consultant. She has experience in developing and implementing field/research programs, wetland and biological surveys, project management, regulatory permitting, policy development, and Indigenous engagement and consultation.

McCallum Environmental Ltd., Halifax, NS

Project Coordinator

May 2020 - Present

- Project management, reporting, field surveys and regulatory consultation
- Field program design, implementation, and management
- Trained on the utilization of the WESP-AC wetland functional assessment tool, with in-field experience across Nova Scotia in support of regulatory wetland alteration permitting, provincial and federal environmental assessment, wetland monitoring and research programs
- Conduct wetland delineation and functional assessments
- Perform various biophysical assessments (e.g., flora surveys, nest sweeps, turtle surveys, fish habitat surveys), including species at risk
- Report writing for provincial and federal environmental assessments, regulatory applications (e.g. wetland and watercourse alterations), permits and proposals
- GIS spatial database management, map production and spatial analyses (ArcGIS and QGIS)
- Primary Projects:
 - Dexter Nova Alliance – Hwy 104 Twinning Project
 - Project management and implementation of wetland and wildlife surveys
 - Species at risk assessments and permit support
 - Wetland impact assessment and monitoring
 - NS Transportation and Active Transit Highway Projects
 - Project management, development and implementation of wetland monitoring programs
 - WESP-AC Calibration Study
 - Study management, site selection and implementation
 - Coordination and consultation with provincial and academic project partners
 - Atlantic Mining NS Inc.
 - Federal EIS reporting and project management
 - Emphasis on wetland and terrestrial effect assessments
 - Signal Gold – Goldboro Gold Mine
 - Provincial EARD reporting and environmental permitting
 - Valard Construction – ON EWT Transmission Project
 - Field program and project management

Sunterra Horticulture Inc., Winnipeg, MB

Director of Environmental Affairs

Jan. 2018 – Apr. 2020

- Ensure corporate compliance with regulatory requirements and environmental standards for the peat harvesting industry
- Manage environmental reporting, monitoring and peatland restoration programs
- Complete regulatory applications and permitting
- Participate in regulatory consultation and program advisement
- Upkeep environment, health and safety program
- In-field biological assessments, sample collection and laboratory processing

Government of Manitoba, Winnipeg, MB

Peatland Specialist

Jan. 2016 – Dec. 2017

- Lead the implementation of Manitoba's peatland management Act and regulations
- Manage provincial peatland program, peat resources, harvesting industry operations
- Develop best-management-practices and restoration policies in partnership with industry and public stakeholders
- Participate in public and Indigenous consultations
- Seek out and manage collaborative research partnerships

University of Waterloo, Waterloo, ON

Research and Teaching Associate

2011 – 2015

- Participated in a variety of multidisciplinary research projects in wetland ecosystems across Canada
- Research projects focused on the hydrology of natural, disturbed and restored wetlands
- Taught wetland ecosystem functions through lectures and hands-on field and laboratory classes
- Supervised and trained research assistants
- Primary Projects:
 - Nikanotee Fen: Oil Sands Reclamation Project, Alberta
 - Bic-St. Fabien Peatland Restoration Project, Quebec

Years in Practice

7

Education

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

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

Training

- ◆ Canadian Red Cross
Emergency First Aid &
CPR/AED (C) - 2021
- ◆ Technical Writing
Workshop - 2019
- ◆ Fish Habitat
Assessment - 2019
- ◆ Backpack
Electrofishing - 2018
- ◆ At-Risk Landbird
Identification
Workshop - 2018
- ◆ Fish Habitat
Restoration
Watercourse Alteration
Installer - 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, Alberta, and Quebec.

Ms. Stoffer has a range of experience in biophysical assessments, including fish and fish habitat surveys, wetland delineation and functional assessments, flora surveys, avian surveys, and species at risk evaluations. She has also performed environmental monitoring for a variety of large and small-scale development and exploration initiatives across Nova Scotia. Ms. Stoffer has prepared technical documents for multiple federal and provincial level environmental assessments and regulatory applications.

Selected Project Experience

- Led the planning and implementation of large-scale fish and fish habitat field programs for multiple federal and provincial mining projects.
- Performed wetland delineation and functional wetland assessments for multiple small- and large-scale developments in Nova Scotia.
- Utilization of the Wetland Ecosystem Services Protocol – Atlantic Canada (WESP-AC) wetland functional assessment tool in > 100 wetlands across Nova Scotia in support of regulatory wetland alteration permitting, provincial and federal environmental assessment and wetland monitoring (2017 - 2021).
- Led the planning, coordination, and implementation of watershed-level fish habitat restoration projects.
- Conducted migratory bird surveys, winter wildlife assessments, marine mammal surveys, and species at risk searches for federal and provincial infrastructure projects.
- Prepared technical reports for multiple federal and provincial level Environmental Assessments.

McCallum Environmental Ltd. - Halifax, Nova Scotia

Intermediate Environmental Scientist:

July 2017-Present

- Leading aquatic field programs including watercourse identification, fish habitat surveys, fish collection, benthic invertebrate surveys, periphyton sampling, and sediment sampling.
- Completing fish rescues for multiple provincial transportation and infrastructure projects.
- Completing wetland delineation and functional assessments.
- Performing various biophysical assessments (avian surveys, winter wildlife surveys, flora surveys) with emphasis on species at risk.
- Conducting water quality sampling and flow monitoring.

- Providing construction monitoring for mining and infrastructure projects.
- Preparing technical reports for federal and provincial environmental assessments and regulatory applications.
- Performing GIS analysis and map creation.

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 community and stakeholder consultation.
- Prepared watershed management plans.
- Provided staff and student training in fish habitat and fish passage assessments.

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.
- Developed project work plans and training documents for field surveys.
- Compiled, processed, and analyzed data for technical reports.
- Performed statistical analysis using R software.



McCallum Environmental Ltd.

Years in Practice

8

Education

Bachelor Environmental Science 2011, Dalhousie University

Training

- Bat Acoustics Training (Techniques and Analysis) – Ontario, 2017
- Saint John Ambulance Emergency First Aid, AED, CPR(A), 2017
- Wetland Ecosystem Services Protocols (Freshwater, Tidal) – Nova Scotia / New Brunswick, 2016
- Watercourse Alteration Certification for Sizers - Nova Scotia, 2016
- Watercourse Alteration Certification for Installers - Nova Scotia, 2016
- Wetland Delineator's Course – Nova Scotia/New Brunswick, 2014
- Watercourse Alteration Certification – New Brunswick, 2018

Summary

Ryan has worked in biology related environmental consulting since 2011. He has worked on both research related field assessments and project related field assessments in Nova Scotia, New Brunswick, Newfoundland, Ontario, Saskatchewan, Alberta, and Honduras.

Environmental Work Experience

McCallum Environmental Ltd., Halifax, Nova Scotia

Project Coordinator

June – August 2013; September 2014 - Present

Completing biophysical assessments, including flora and fauna surveys including acoustic bat surveys and analysis, fish and terrestrial habitat assessments, water quality and hydraulic flow volume surveys. Completing wetland and watercourse delineations and functional assessments. Developing and coordinating field monitoring programs. Communicating field survey results and methodologies for Environmental Assessments and other provincial regulatory applications.

Tasks

- Develop and conduct Post Construction Monitoring Plans in wetland habitat
- Develop and conduct surface water quality sampling programs
- Develop and conduct surface water quantity monitoring programs
- Develop stage discharge curves for hydrometric study
- Wetland and watercourse delineation, functions assessments and alteration applications
- Biophysical assessments including species at risk assessments
- Bat surveys (presence/absence, acoustic surveys, and interpretation)
- Flora, fauna and habitat field surveys
- Construction monitoring
- Develop sediment and erosion control management plans
- Reporting of methodology and results
- Provincial regulatory applications
- Manage large datasets
- GIS and GPS utilization

Years in Practice
13

Education

Bachelor of Science,
Double-Major
Environmental Science &
Physical Geography, *Saint
Mary's University of
Nova Scotia*, 2008

B.Sc. Major in Biology,
*St. Francis Xavier
University*, 2010

Certifications

- ◆ Certified Environmental Site Assessor, Associated Environmental Site Assessors of Canada, AESAC
- ◆ Environmental Professional, ECO Canada

Training

- ◆ All-Tech: Asbestos Awareness
- ◆ All-Tech: Mould Awareness
- ◆ Emergency First Aid/Class C CPR
- ◆ Class 5 License (manual transmission)
- ◆ Canadian Pleasure Craft Operators License
- ◆ SSNS: Occupational Health and Safety Committee
- ◆ SSNS: Joint Occupational Health & Safety Committee (Level 1 Cert.)
- ◆ SSNS: Fall Protection
- ◆ SSNS: Fire Warden
- ◆ SSNS: Incident Investigation
- ◆ SSNS: Workplace Inspections
- ◆ Violence in the Workplace: Awareness
- ◆ Workplace Education: Communication Skills

Experience

Mr. Jason More has been in the environmental consulting professions since 2009, after completing bachelor's degrees in environmental science and physical geography. He specializes in project management with particular emphasis on construction monitoring, contaminated site assessment and remediation programs. His experience includes having performed over 200+ environmental site assessments and remediation projects for residential, commercial and industrial clients. He has a proven ability to work with a variety of project stakeholders including, property owners, insurance representatives, NSE inspectors, contractors, First Nations communities and other interested parties as necessary. Supervising small to large-scale projects, including scope creation, cost estimation, coordination of staff resources, equipment, contractors, health and safety procedures, scheduling and budgeting.

McCallum Environmental Ltd., Halifax, NS

Project Manager

April. 2022 – present

- Project management
- Report writing
 - Provincial Environmental Assessments, Industrial Approvals, Wetland Alteration Applications, etc.
- Regulatory consultation and project stakeholder liaison
- Design and lead field programs
 - Surface water quality inspections and sampling programs,
 - Wetland Compensation Construction projects,
 - Wetland functional assessment (WESP-AC) field crew and data management,
 - Invasive Species Surveys,
 - Water level data logger setup and installation programs.
- Create maps using AutoCAD and ArcGIS
- Project Examples:
 - Wetland Compensation Construction Implementation
 - Garden of Eden WL Restoration Project,
 - Gray Pond WL Restoration Project.
 - Nova Scotia Public Works
 - Surface Water Quality Sampling Highway 102/103
 - East Chezzetcook District School Construction Monitoring.
 - Quarry Operation Monitoring and Reporting programs
 - Industrial Approval Amendments and Reporting,
 - Monitoring programs for surface and ground water,
 - Client / stakeholder training on sample collection protocols.

EFI Global Canada, Dartmouth, NS

Project Manager

Jan. 2018 – Mar. 2022

- Project management
- Report writing
 - Federal and Provincial-level Contaminated Sites Remediation Assessments, Phase I & II Environmental Site Assessments, Watercourse Alteration applications, etc.

for Professionals (40-Hr Course)

- ♦ Workplace Education: Project Management (40-Hr Course)
- ♦ WHMIS 2020

- Regulatory consultation, First Nations engagement and stakeholder liaison.
- Design and lead field programs for contaminated sites and hazardous materials mitigation / abatements.
- Create maps using AutoCAD and ArcGIS.

Pario Engineering and Environmental Sciences, Dartmouth, NS

Environmental Scientist / Project Manager

Nov. 2009 – Dec. 2017

- Report writing
 - Federal and Provincial-level Contaminated Sites Remediation Assessments, Phase I & II Environmental Site Assessments, Watercourse Alteration applications, etc.
- Design and lead field programs for contaminated sites and hazardous materials mitigation / abatements.
- Create maps using AutoCAD and ArcGIS.
- Environmental monitoring
 - Regulatory advising, spill response, erosion/sediment control, groundwater and surface water monitoring, air quality testing, and reporting on construction activity.
- Regulatory consultation, First Nations engagement and stakeholder liaison.

2009 NDP Provincial Election Campaign, Dartmouth, NS

Office / Voter Contact Manager

2009

- Supervised setup of office systems and database.
- Conducted volunteer training and voter contact outreach.
- Coordinated scheduling with Candidate for community outreach.
- Supervision of office and facilities maintenance.
- Performed community canvassing and phone call outreach, as needed.
- Daily updates to Voter Contact Database.

MLA – Dartmouth South, Portland Valley, Dartmouth, NS

Research / Office Assistant

2007-2009

- Conducted literature reviews and updated office documents / digital media operation procedures.
- Managed content creation and updates to the MLA website and news publications.
- Supervised office technology upgrades and facilities maintenance.
- Prepared mailouts and community communications packages for dissemination.

Years in Practice
5

Education

Bachelor of Environmental Studies, *Saint Mary's University*, 2014

Photography Diploma, *Nova Scotia Community College*, 2008

Training

- ◆ Aboriginal Awareness Training
- ◆ Wildlife Awareness and Bear Safety
- ◆ Standard First Aid & CPR + AED
- ◆ Transportation of Dangerous Goods
- ◆ WHMIS
- ◆ Energy Sector Driver Improvement Training
- ◆ Fire Extinguisher Training
- ◆ OSSA Basic Safety Orientation

Experience

Melissa Dubé has been in the environmental profession since 2015 and brings a blend of field based and administrative expertise. Melissa supports engagement with community members, landowners and stakeholder groups. Melissa has coordinated and supported projects related to air quality monitoring, cumulative effects monitoring, deposition monitoring, Traditional Knowledge Community Based Monitoring, and forest health surveys. Melissa is responsible for collecting data, documentation related to field activities and reporting. Melissa is a detail-oriented and organized individual and has extensive experience from providing administrative program support to working at remote field sites accessed by helicopter. Her time spent working in the Alberta Oil Sands Region (Wood Buffalo) has provided her with experience working with First Nations Communities and a commitment to health and safety standards and procedures.

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

January 2022 - Present

- Completing GIS analysis and creating maps using ArcGIS
- Report writing (engagement reports, wetland alteration applications)
- Public and community engagement support
- Planning, coordination and support for community open houses
- Data entry and administrative project tasks
- Formatting and compilation of monitoring reports
- Providing field support for flora and fauna surveys, Species at Risk assessments, and wetland delineation/functional assessments

McCallum Environmental Ltd., Halifax, NS

Office Administrator

September 2021 – January 2022

- Created company operating procedures.
- Developed an extensive Employee Manual for the company.
- Assisted in the revision of the Health and Safety Manual.
- Managed and maintained electronic administrative files, document management system and team collaboration software.
- Managed daily administrative functions of the office.
- Prepared meeting agendas, facilitated meetings and took meeting minutes for internal meetings
- Provided administrative support to senior Management as required.
- Assisted with recruitment and onboarding of new employees.
- Developed an Onboarding procedure for the company.
- Responsible for purchasing and ordering of office inventory and supplies.
- Provided formatting and revisions for client reports.

Wood Buffalo Environmental Association, Fort McMurray, AB

Office Administrator

August 2019 - April 2021

- Provided administrative support to the Executive Director.
- Prepared meeting agendas, facilitated meetings and took meeting minutes for internal and technical meetings with the organization's Members and stakeholders.
- Supported technical Program Leads and Stakeholder Engagement Coordinators in meeting administrative obligations.
- Developed and maintained Administrative standard operating procedures.
- Managed daily administrative functions of the office.

- Acted as the first point of contact in the office, including reception duties (answering phones and greeting visitors).
- Managed and maintained electronic administrative files, document management system and team collaboration software.
- Facilitated the organization's implementation of an electronic security access system.
- Responsible for recruitment and onboarding for new employees.
- Compiled monthly progress reports in collaboration with programs and Team Leads.
- Responsible for purchasing and ordering of office inventory and supplies.

Wood Buffalo Environmental Association, Fort McMurray, AB

Terrestrial Environmental Effects Monitoring Field Technician

October – November 2015 (contract) April 2016 – October 2017 (contract), April 2018 – August 2019

- Actively participated in Traditional Knowledge Program for 3 consecutive field seasons working with Elders of the Fort McKay First Nation.
- Supervised junior team members, including training for new employees.
- Recorded thorough notes and documentation of field activities.
- Contributed to meeting agendas and meeting material preparations.
- Managed assigned tasks and personal workflow with tracking in team collaboration programs.
- Conducted year-round sample change-outs for multiple Forest Health Programs in remote wilderness safely and efficiently.
- Developed and updated Standard Operating Procedures.
- Assisted in the establishment of new sampling sites including location scouting, site relocations, plot staking and site documentation.
- Completed site maintenance at all remote and local sites as required.
- Prepared samples and field supplies for 7 Terrestrial Environmental Effects Monitoring Programs at up to 98 monitoring sites including monthly, bi-monthly, and bi-annually sampling schedules.
- Packaged and prepared all retrieved samples for lab shipments and corresponded with lab contacts regularly.
- Tracked inventory and sent requests for replenishments as needed.
- Samples collected were for long term cumulative effects monitoring including passive air sampling, precipitation sampling, lichen sample collection, as well as assisting with vegetation surveys, soil sampling and deposition studies.
- Conducted maintenance of meteorological equipment and site infrastructure (access trails, helipads, plot markers, sampling equipment, etc.).

Wood Buffalo Environmental Association, Fort McMurray, AB

Program Support

January 2016 – April 2016

- Worked directly under the Executive Director to catalogue and copyright registration of WBEA scientific reports.
- Established the WBEA library as a physical document database.
- Recorded data, searching for, and reproducing historical WBEA related reports and organizing documents for future reference.
- Assisted with administrative duties as needed including filing for accounting and answering telephone calls.

Years in Practice

3

Education

Bachelor of Science
with Major in
Biology, *Saint France*
Xavier, 2019

Training

- ◆ Emergency First Aid and CPR "A", Nova Scotia Lifesaving Society,
- ◆ WHMIS, CCOHS,
- ◆ Electrofishing
- ◆ Pleasure Craft Operator
- ◆ Open Water Scuba Instructor

Experience

Ms. Katrina Ferrari has been in the environmental consulting profession since June 2020. She primarily performs environmental monitoring for a variety of large and small-scale development, construction and exploration initiatives, as well as project related field assessments across Nova Scotia, Canada.

Since beginning with McCallum Environmental Ms. Ferrari has completed wetland delineation, watercourse assessments, fish and fish habitat assessments, and construction monitoring for environmental compliance for a 1300km transmission line project.

Ms. Ferrari is certified in electrofishing.

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

June 2020 - Present

- Environmental monitoring of transmission line construction project
 - Regulatory advising, spill response, erosion/sediment control, wildlife monitoring, water quality monitoring, and reporting on construction activity.
- Report writing
 - Monitoring reports, Crown Land use applications, wetland alteration applications, water withdrawal applications
- Conducted fauna surveys, water quality sampling and surface water flow sampling
- Conducted watercourse assessments
- Conducted fish and fish habitat assessments including electrofishing and fish rescue during construction.
- Completion of wetland boundary determination and characterizations for regulatory wetland alteration permitting.

Years in Consulting

2

Education

Bachelor of Science,
Biology (honours and
co-op programs) and
Environment,
Sustainability and
Society, *Dalhousie
University*, 2016

Training

- ◆ Emergency First Aid AED CPR "C", Red Cross
- ◆ Electrofishing Certification – Crew Supervisor
- ◆ WHMIS
- ◆ OHS training for multiple work environments
- ◆ Introduction to the Care and Use of Wildlife
- ◆ Avid bird watcher since 2014: skilled in identifying bird species by sight and sound. Also skilled in identifying nests
- ◆ Participates in the Christmas Big Count yearly through the Audubon Society

Experience

Ms. Jessica Lohnes has been in the environmental consulting profession since May 2021. She primarily performs environmental monitoring for a variety of large and small-scale development, construction and exploration initiatives, as well as project related field assessments across Nova Scotia, Canada.

Since beginning with McCallum Environmental Ms. Lohnes has completed environmental assessment reporting, avifauna spring/fall migration and breeding surveys, nest sweeps, wetland delineation, watercourse assessments, fish and fish habitat assessments, fish rescues, and construction monitoring.

McCallum Environmental Ltd., Halifax, NS

Environmental Scientist

May 2021 - Present

- Environmental monitoring of transmission line construction project (Wataynikaneyap Power Transmission Project):
 - Regulatory advising, spill response/reporting, erosion/sediment control, wildlife monitoring/reporting, wildlife surveys (e.g., nest sweeps and caribou surveys) water quality monitoring, hazardous waste and environmental supply management, camp/equipment inspections, watercourse delineation, and reporting on construction activity,
- Report writing:
 - Monitoring reports, Crown Land use applications, wetland alteration applications, water withdrawal applications, environment assessments,
- Conducted fauna surveys, water quality sampling and surface water flow sampling,
- Species at risk surveys,
- Conducted watercourse assessments,
- Conducted fish and fish habitat assessments including electrofishing and fish rescue during construction,
- Completion of wetland boundary determination and characterizations for regulatory wetland alteration permitting,
- Avifauna surveys: nest sweeps, spring/fall migration surveys and breeding bird surveys,
- Company mentor for bird identification and nest sweeps.

Noble Grape, Burnside, Dartmouth, NS

Full Time Sales Associate/Winery Worker - Team Lead - Manager

August 2016 – April 2021

- Running sales floor and assisting customers with their hobbies relating to brewing,
- Working the cashier and the POS system and organizing customer databases and information,
- Making wines and beer for on-site wine making and assisting in winery tasks when needed (checking gravities, racking and stabilizing, grape skins, chaptalizations, filtering, etc.),
- Assisting in outreach programs for the store such as beer education posters, brewing in store to showcase machinery, and tradeshow (Saltscapes 2017 and 2018 and The Guy Show 2017 in Halifax),
- Assisting customers with creating beer and wine recipes for at home brewing. Assisted customers with weighing grains and hops in the bulk grain section for recipes,
- CO₂ cannister refills,
- Placing, accepting, and putting away store inventory orders,
- Working at the “hub store” meant dealing and helping all other stores with stock, information, transfers, inquiries, and more,
- Management of clearance items for the company,
- Worked on various machines in the store and the mechanics of them (e.g., brewing machines such as “The Grainfather” for example) and bottle fillers for on-site wine makers,
- WHMIS training for chemicals used in the winery (Sulphites, PBW, Star San, Chlorinated cleaner, and more),
- Data management on overstock and all transfers of product between stores and the affiliated wholesale company “Best Case Wholesale”,
- Tracking sales numbers and made reports relating to sales, movement of product, and more to help aid the company with future endeavors,
- Employee management including hiring, training, store scheduling, and determining raises,
- Cash deposits.

Canadian Wildlife Service (Atlantic Region), Environmental Stewardship Branch (ESB), Environment Canada (Environment and Climate Change Canada) through Dalhousie University Science Co-op (Biology), Queen Square, Dartmouth, NS

Wildlife Technician/Biologist

May 2015 – Aug 2015

- Support and assistance in mapping the distribution of marine and coastal birds in New Brunswick and Nova Scotia through research, fieldwork, data compilation, and analysis,
- Aiding with advancing the knowledge on bird species and their occurrence and abundance in the Maritimes for the purpose of landscape planning and the conservation and management of birds (e.g., SARA),
- Development and query of wildlife databases for monitoring and management,
- Data collection/management, synthesis, and report writing related to avian monitoring,
- Assistance with fieldwork relating to birds (e.g., colonial bird census/surveys, banding, deploying tags (GPS and VHF tags) on wild birds, telemetry studies, collecting blood/feather samples from wild birds, weighing wild birds, aerial/vessel-based surveys, and studies at bird colonies),
- Training in driving company (Environment Canada) vehicles, general field operations, camp and workstations on an isolated island, GPS and GIS mapping and devices,
- Avifauna population assessments and monitoring (e.g., nests with chicks, adults in a colony, species at risk, etc.),
- Avifauna surveys: bird population and nest census,
- Working in the field in multiple conditions and in remote locations with bird colonies (e.g., Important Bird and Biodiversity Areas (IBAs)),
- Project creation, development, and management within the Canadian Wildlife Service (based on seabird monitoring and conservation),
- Worked with my supervisor to develop an honours research project for undergraduate degree at Dalhousie University (*Foraging ecology and diving behaviour of the black guillemot (Cepphus grylle) during nesting season from Country Island, Nova Scotia, Canada*).

Maritime Brain Tissue Bank, Department of Medical Neuroscience, Sir Charles Tupper Building, Dalhousie University through Dalhousie University Science Co-op (Biology), Halifax, NS

Technician and Research Assistant

Sep 2014 – Dec 2014

- Research in this laboratory is focused on cholinergic involvement in Alzheimer's disease (and other neurodegenerative diseases) as well as the development of tools for the diagnosis of this disease,
- Studying the cholinergic neurotransmitter system in the cetacean brain to compare and contrast to the human brain. The aim of the research is to provide information on

cholinergic control of cognition and consciousness and how this system may be altered in a species that can "sleep" with one brain hemisphere at a time,

- Work focused on gaining a greater understanding of the cholinergic system and its role in cognition and consciousness,
- Developing a strong foundation in neuroanatomy and a greater understanding of the cholinergic system and its importance in the brain,
- Technical duties involved:
 - Carrying out immunohistochemical and histochemical staining reactions in dolphin and human brain tissue,
 - Gaining a greater understanding of the cholinergic system and its importance in the brain (role in cognition and consciousness),
 - Learning about neuroanatomy and performing work in a neuroscience-based laboratory,
 - Tissue sectioning of dolphin and human brain tissue on a freezing microtome,
 - Analysis of stained tissue using photomicroscopy and digital imaging software tools,
 - General lab care/maintenance and training on biosafety and working with hazardous and toxic chemicals, including carcinogens,
- Research paper published as a result of work: Reid, G. A., Geula, C., & Darvesh, S. (2018). The cholinergic system in the basal forebrain of the Atlantic white-sided dolphin (*Lagenorhynchus acutus*). *Journal of Comparative Neurology*. <https://doi.org/10.1002/cne.24460>.

Compliance Promotion, Export Support and Environment Effects Monitoring Section – Environmental Protection Operations Directorate (Atlantic Region), Environmental Stewardship Branch (ESB), Environment Canada (Environment and Climate Change Canada) through Dalhousie University Science Co-op (Biology), Queen Square, Dartmouth, NS

Co-op Student

Jan 2014 – Apr 2014

- Assisting Environment Canada with its efforts to improve compliance with federal environmental laws and regulations (under the Canadian Environmental Protection Act and the Fisheries Act),
- Creating, verifying, and updating various electronic databases (e.g., Microsoft Dynamics CRM),
- Entering data from various reports into electronic databases and conducting quality assessments of electronic data,

- Analyzing specific industry sectors and contacting identified businesses to ensure the company still exists, verify contact information, and confirm types of activities undertaken by that facility,
- Formatting data for use by compliance promotion program staff,
- Provide support to compliance promotion officers on the development and delivery of compliance promotion material,
- Assisting with decisions regarding enforcement,
- Contacting specific businesses or staff from other federal departments to inform them about specific regulations that may apply as well as upcoming workshops that may be of interest,
- Aided with the creation of formal reports for Environment Canada.

Aquaculture Association of Nova Scotia through Dalhousie University Science Co-op (Biology), Halifax, NS

Outreach Biologist

May 2013 – Aug 2013

- Organizing, coordinating, and delivering/representing the “Summer Outreach Program” for 2013 and working with the staff of the Aquaculture Association of Nova Scotia (the executive director, public engagement coordinator, and the research and development coordinator),
- Aiding in communication with and supporting the stakeholders and members of the association, which include small to medium sized businesses that are usually family owned,
- Educating and spreading positive awareness to Nova Scotians about the sustainable (socially, economically, and environmentally) aquaculture industry that the AANS supports and providing the public an opportunity to discuss a controversial subject face-to-face,
- Building public confidence in the industry by disproving common misconceptions in the media,
- Exposing the public to NS aquaculture products by giving out food samples and providing information on them,
- Traveling to events around Nova Scotia to represent the association and communicate with the public by answering questions, discussing various topics relating to AANS, etc. (festivals, home shows, Saltscapes, farmer’s markets, farm open houses, school presentations, and summer camp presentations),
- School and summer camp presentations included AANS videos, PowerPoint presentations, a touch tank with live shellfish, games, crafts, etc. depending on age groups. The interactive



Jessica Lohnes, B.Sc.H.

jessica@mccallumenvironmental.com

booth for festivals, markets, open houses, and other events included posters, pamphlets, recipes, a fish tank with live locally farmed fish/shellfish, activity books for kids, and more,

- Creating strong public engagement material through social media, social networking, presentations, pamphlets, information booklets, and more,
- Received the training to handle food samples and care for and travel with live shellfish and finfish species.

Years in Practice
8

Education

B.Sc. Major in Biology,
 Minor in Management
 Dalhousie University, 2012

Certifications

- ◆ Class 5 driver's licence (2005)
- ◆ Class 6 Motorcycle licence (2011)
- ◆ Workplace Hazardous Materials Information System (2009)
- ◆ Rescue S.C.U.B.A. Diver Certification (2009)
- ◆ Pleasure Craft/Boating licence (2008)
- ◆ St. John Ambulance First Aid and CPR (2018)
- ◆ ATV/OHV safety certificate (2010)

Technical Skills

- ◆ Mechanical Repair
- ◆ Computer and Electronic Repair
- ◆ Machining/Fabrication
- ◆ Equipment Calibration
- ◆ Laboratory Analysis
- ◆ ArcGIS
- ◆ MS Access
- ◆ Python
- ◆ Linux
- ◆ Excel

Experience

Nicholas Doane has been in the environmental and biological professions since 2012, after completing a Bachelor's degree in biological sciences. He has managed projects, authored reports, developed methods, and patented an apparatus for controlled ecology. Nicholas has worked as a field biologist on projects throughout Atlantic Canada as well as in western Canada. Nicholas has conducted surveys including; bird surveys, wildlife surveys, evaluation for Species at Risk, wetland functional assessment, wetland delineation, and electrofishing.

McCallum Environmental Ltd., Halifax, NS

Project Coordinator

May 2022 - Present

- Project Coordination
- Report writing
 - Provincial Environmental Assessments
- Design and lead field programs
 - Flora and fauna surveys, Species at Risk assessments, wetland delineation, wetland functional assessments
- Create maps using ArcGIS
- Projects:
 - Antrim Gypsum Mine

Oberland Agriscience Inc., Halifax, NS

Operations Manager

Sept. 2017 - Mar. 2021

- Managed daily operations, staffing schedules, and equipment/materials procurement
- Supervised teams of technical staff and contractors
- Led research and development projects including design, logistics, synthesis of background information, definition of data/sample collection requirements, data/sample analysis, and presented results to improve existing practices and equipment
- Inventor/builder of Apparatus and Method for Breeding Black Soldier Fly. Pat No. WO 2021/195775
- Initiated and managed educational outreach to support middle school STEM programs
- Prepared and presented technical/scientific reports and protocols to a variety of audiences

Coastal and Oceans Information Network, Halifax, NS

Biological Data Manager/GIS Analyst

Nov. 2016 - Sept. 2017

- Digitized historical paper publication datasets for re-publication as web site content
- Re-formatted existing datasets and assigned metadata according to international standards
- Authored an interactive publication on the biodiversity of the Sydney Harbour in Cape Breton
- Used ArcGIS to analyse large datasets

Buchanan Environmental Inc., Fredericton, NB

Lead Laboratory Analyst

Jan. 2014 – July 2016

- Aquatic toxicology analysis and research to ISO 17025 laboratory standards
- Primary RM/13 lab analyst, document manager, and client care
- Lead equipment calibration, care, and maintenance technician

Atlantic Sea Smolt Ltd., Souris, PE

Biological Technician

Nov. 2012 - May 2013

- Tracked and adjusted culture characteristics according to standard procedures
- Produced, tested, and standardized new hatchery equipment
- Consulted with colleagues on development and improvement of existing systems and practices

Years in Practice
1 Year

Education

Bachelor of Science
with Major in
Environmental
Science, *Dalhousie
University, 2022*

Training

- ♦ Emergency First Aid
- ♦ CCAC Wildlife Care and Use Certification

Experience

Recently entering the consultant profession, Mr. Brayden Thomas is working to broaden his professional field skills, aiming to be introduced and familiar with various aspects of field environmental sciences and biology.

During his time with McCallum Environmental Ltd., Mr. Thomas has been involved with tasks ranging from watercourse and wetland delineation and habitat assessments, fish and turtle surveys, and participating in long term wetland monitoring programs. Mr. Thomas also has experience in office based tasks – Wetland Alteration Applications, Project Proposals, and Wetland Monitoring Plans.

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

May 2022 - Present

- Delineated wetlands and watercourses for the purposes of regulatory wetland/watercourse alteration permitting
- Long Term Wetland Monitoring: Authored Wetland Monitoring Plans, Setup and Installed Solinst Level Loggers, Conducted Soil and Vegetation Monitoring
- Performed flow monitoring assessments
- Conducted species at risk surveys
- Authored Wetland Alteration Applications
- Prepared project proposals for submission to clients
- Produced figures for clients via ArcGIS and QGIS Software

Years in Practice

< 1

Education

Master of
Environmental
Management,
*University of New
Brunswick*, Present

Bachelor of Science
with Major in Ecology
and Conservation
Biology, *Memorial
University of
Newfoundland*, 2020

Training

- ♦ Canadian Red
Cross Standard
First Aid & CPR /
AED

Experience

Mr. Lucas Bonner has recently entered the environmental consulting profession, beginning in May 2022. He is diligently working to broaden his professional field skills and familiarizing himself with various aspects of professional field biology and environmental sciences.

During his time with McCallum Environmental Ltd., Mr. Bonner has been involved with watercourse and wetland delineation, detailed fish habitat assessments, nest sweeps, and fish rescues including participation in electrofishing across Nova Scotia, Canada.

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

May 2022 - Present

- Conducted fish and fish habitat assessments including electrofishing and fish rescue during construction.
- Completion of wetland and watercourse boundary determination and characterizations for regulatory wetland alteration permitting.
- Participated in nest sweeps during construction.

Years in Practice

3

Education

M.Sc. in Ecological Restoration, 2017-2019.
Simon Fraser University & BC Institute of Technology

B.Sc. Hons.
Environmental Science,
2011-2015. Dalhousie University

Training

- ◆ Wetland Ecosystem Services Protocols Training (Freshwater, Tidal) – Nova Scotia, 2022
- ◆ Pleasure Craft Operator licence (2022)
- ◆ Canadian Red Cross First Aid & CPR/AED level C (2021)
- ◆ Class 5 driver's licence (2011)
- ◆ Alberta Safety Council All Terrain Vehicle (ATV) Safety Training (2019)
- ◆ Introduction to Lichens, Eagle Hill Institute (October 2022)
- ◆ AMA Demerit Reduction Defensive Driver Course certification

Summary

Emma is an environmental professional with a wide range of skills in tree and vegetation surveys, wetland monitoring and functional assessments, and species at risk conservation planning. She has a background in non-profit work, designing habitat restoration strategies for birds and reptiles, and organizing citizen science projects. Emma has a wide variety of field work experience in upland, wetland, and aquatic ecosystems.

Select Project Experience

Wetland Ecosystem Services Protocol Calibration Study.

Field Lead. 2021- 2022.

- Assisted project manager to organize field work across Nova Scotia including route planning, field logistics, and desktop evaluation of wetlands and access.
- Helped to conduct field assessments of >600 wetlands covering different ecoregions in Nova Scotia over the 2021 and 2022 growing seasons.
- Project is in collaboration with Nova Scotia Environment wetland scientist Ian Bryson, who developed the WESP-AC evaluation system.

Wetland Monitoring Program at Highway 104 Twinning project.

Field Lead. 2021- present.

- Completed wetland monitoring and baseline monitoring for Highway 104 twinning project near Barney's River, Nova Scotia on behalf of Dexter Nova Alliance.
- Conducted visual observations of wetlands along the study site, soil conditions, vegetation surveys, and collected data from monitoring wells.
- Contributing to planning and logistics for the project and assisted in reporting.
- Trained other staff in wetland observational study methods.

Goldboro Gold Mine Biophysical Assessments.

Field technician/ Biologist.. 2021.

- Wetland delineation and functional assessments using WESP-AC for 300 wetlands in Goldboro, Nova Scotia to support the biophysical components of a provincial Environmental Assessment.
- Evaluated habitat using the Forest Ecosystem Classification guidelines, surveys for Species at Risk, and assisted in data organization and analysis.
- GIS and geospatial data management

Haliburton Habitat Health Check-up Program.

Project Manager and Conservation technician. 2019-2020.

- Developed an assessment and mentorship program to help private landowners improve the quality of wildlife habitat on their properties.



McCallum Environmental Ltd.

Emma Halupka, M.Sc.
ehalupka@mccallumenvironmental.com

Experience

McCallum Environmental Ltd. Halifax, NS.

Junior Environmental Scientist. *April 2021- present*

- Wetland delineation and functional assessments
- Flow monitoring in freshwater streams
- Electrofishing, fish rescues, and fish habitat assessments.

The Land Between Charity. Haliburton, ON.

Project Manager and Conservation Technician. *November 2019 – October 2020.*

- Helped to develop and implement regional conservation strategies for species at risk in Central Ontario, especially birds and turtles. Projects included citizen science programs, public educational events, field work, webinars, and direct population recovery.
- Managed partnerships with Birds Canada, the Kawartha Land Trust, Couchiching Conservancy, post-secondary researchers, and volunteers.
- Led educational tours and presentations for kids and the general public.
- Encouraged local stewardship by developing a Habitat Health Check-up program to help interested landowners manage their property in an ecologically-friendly manner.

Toronto and Region Conservation Authority. Vaughn, ON.

Restoration Field Crew. *September 2019 – November 2019.*

- Worked with a field crew to implement restoration initiatives on the ground throughout the Rouge, Humber, and Don River watersheds.
- Followed moisture and nutrient codes to plant a range of native vascular plants in appropriate microsites.
- Gained an understanding of native species and ecosystems in Southern Ontario and the challenges of ecological work in urban areas.

Alberta Biodiversity Monitoring Institute. Lac La Biche, AB.

Vegetation Field Technician. *May 2019 – August 2019*

- Followed government-issued protocols to establish plots and track biodiversity in remote sites across Northern Alberta.
- Assessed vascular plant coverage, moss and lichen diversity, measured trees, and collected soil cores within one-hectare plots.
- Navigated to sites via helicopter, truck, and ATV, and navigated to remote locations using GPS units. Set up plots using compass and measuring tape.
- Practiced in-lab taxonomic classification for several bryophyte genera and species.

Years in Practice
3

Education

Master of Resource and Environmental Management, Dalhousie University, 2020-2021

B.Sc. Honours in Environmental Science, (Co-op option), 2015-2019. Acadia University.

Certifications

- ♦ Canadian Red Cross First Aid & CPR/AED level C (2022)
- ♦ WHMIS (GHS) Training (2019)

Training

- ♦ Wetland Ecosystem Services Protocols Training (Freshwater, Tidal) – Nova Scotia, 2022
- ♦ Class 5 driver's licence (2013)

Summary

Hannah Machat has been working in the environmental industry since 2019 and has acquired a wide range of skills in tree and vegetation surveys, wetland monitoring and functional assessments. She has a background in non-profit and academia work, helping with urban forest monitoring, conducting GIS mapping and lab-based seedbank work. At McCallum Environmental Limited, Hannah has worked predominantly on functional wetland assessments, wetland monitoring and flora and fauna surveys.

Experience

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

January 2022-Present

- Drafted baseline technical reports for federal and provincial environmental assessments and regulatory applications.
- Conducted wetland monitoring and baseline monitoring for highway construction projects.
- Performing various biophysical assessments (avian surveys, winter wildlife surveys, flora surveys) with emphasis on species at risk.
- Conducted watercourse and wetland assessments, including field delineation, habitat assessment, species at risk identification and data management
- Produced maps and completed spatial analysis using both ArcGIS and QGIS

Dalhousie University, Halifax, NS

Urban Forestry Research Assistant

April 2021- September 2021

- Continuous monitoring of urban trees through various mensuration techniques. All quantitative data was collected using GIS Field Maps and a strict sampling protocol.
- Liaising with Halifax Regional Municipality officials to ensure research goals are met through bi-weekly check-in meetings and the production of midterm and final reports.
- Synthesizing of current knowledge through literature reviews and jurisdictional scans.
- Conducted independent research on urban forest management, including assessing the resiliency of the urban forest in HRM to hemlock woolly adelgid.

Dalhousie University, Halifax, NS

Research Assistant, Physical Literacy Project

January 2021- January 2022

- Develop Geospatial Information System georeferenced maps and backend manipulation to conduct behavioral mapping through the FieldMaps application.
- Creation of a learning manual for the FieldMaps collection on the tablet, while also conducting trials and training sessions for the core research group of 5 people.
- Communicate complex technical GIS information to interdisciplinary research teams by adapting information based on the skill level of the group.

Acadia University, Wolfville, NS

Plant Biology Technician

May 2018- May 2019

- Using molecular techniques for various sand barren plants to assess their genetic diversity by PCR after field sampling for plant biomass in the threatened sand barren ecosystem.
- Synthesize relevant literature through qualitative methods in conjunction with quantitative methods of data collection to evaluate plant material and observe the implications of the data for conservation efforts.
- Support on-going research and lab work in the E.C. Smith Herbarium and seed bank.

Years in Practice

2

Education

Master of Resource and Environmental Management, Dalhousie University, 2020-2021

B.Sc. Major in Environmental Science, Minor in Geography, University of Windsor, 2014-2020

Training

- ♦ Wetland Ecosystem Services Protocols Training (Freshwater, Tidal) – Nova Scotia, 2022
- ♦ WHMIS (GHS) Training (2019)
- ♦ Pleasure Craft Operator licence (2022)
- ♦ LifeShield Fire Medical & Safety Training, First Aid and CPR (2021)
- ♦ Pilot Certificate, Small Remotely Piloted Aircraft System (RPAS) (2019)
- ♦ Class 5 driver's licence (2011)
- ♦ Class 6 Motorcycle licence (2021)

Experience

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

January 2022 – Present

- Wetland delineation and functional assessments using WESP-AC
- Flow monitoring and fish habitat assessments in freshwater streams
- Flora and fauna surveys, Species at Risk assessments
- GIS and geospatial data management

Dalhousie University., Halifax, NS

Research Assistant

May 2021 - Sept. 2021

- Facilitated a full summer of field work in a leadership position in the Lake Pockwock watershed
- Tasks included timber cruising, stand characterization, navigation, water quality testing, geospatial data management, and further data collection using a variety of forest mensuration techniques
- Gained valuable knowledge and experience regarding forestry in Nova Scotia as well as the best management practices related to forested watersheds that supply drinking water
- Supported by the Mitacs Accelerate research program

Folklore Contracting Ltd., Prince George, BC

Tree Planter

April 2020 – August 2020

- Reforestation company based in Prince George, British Columbia
- Tasks included tree planting, camp set-up, tree quality inspection, and cut block scouting
- Gained valuable knowledge and experience related to sustainable forest management

Academic Experience

Management Without Borders, Dalhousie University

Sept. 2021 – December 2021

- Partnered with the Town of Yarmouth to assess where retail, commercial, or industrial development opportunities lie through both a regional market analysis and a current land-use market analysis
- Deliverables included a final report with recommendations and a presentation by the six-person interdisciplinary team

Field Methods for Environmental Studies, University of Windsor

August 2010 - December 2019

- Collected spatial field measurements of local beaches in Southwestern Ontario using a Total Station
- Beach profiles of accessible areas were created and provided to ERCA (Essex Region Conservation Authority) and GLIER (Great Lakes Institute of Environmental Research)
- Established the basis for a new beach erosion and water level monitoring program

Years in Practice

4

Education

Bachelor of Science
with Major in Earth
Sciences with a
Certificate in
Geographic
Information Sciences,
Dalhousie University,
2022

Training

- ◆ Intermediate
First Aid &
CPR/AED, Red
Cross
- ◆ WHMIS
- ◆ Occupational
Health and
Safety
- ◆ Inuit Cultural
Awareness
- ◆ Working on Ice

Experience

Sadie Jacobs-Peters has been working in the environmental industry since 2019. She primarily performs environmental monitoring related to the mining industry, and has completed projects involving air quality, surface water quality sampling, erosion and sedimentation mitigation, construction monitoring and migratory bird surveys. Her experience has been gained by working in the Arctic and the East Coast of Canada. At McCallum Environmental Limited, she has worked predominantly at future mining projects in the beginning stages of construction, where she provided regulatory environmental monitoring and environmental advising. Additionally, she has performed wetland and watercourse assessments and conducted spatial analysis tasks using ArcGIS.

Sadie Jacobs-Peters is eligible for her Professional Geoscientist Certification, and has a Certificate in Geographic Information Sciences.

McCallum Environmental Ltd., Halifax, NS

Junior Environmental Scientist

May 2022 - Present

- Coordinated and conducted regulatory environmental monitoring at active drill sites
- Advised of mine site environmental responses to spills, sediment releases, and wetland protection
- Authored Information Responses to submitted Environmental Impact Statements
- Drafted baseline Environmental Effects Monitoring plans
- Conducted watercourse and wetland assessments, including field delineation, habitat assessment, Species at Risk identification and data management
- Produced maps and completed spatial analysis using both ArcGIS and QGIS

Baffinland Iron Mines, Mary River, Nunavut

Environmental Technician

May 2019-September 2019, May 2020-September 2021

- Conducted field monitoring and sampling programs as required under existing Territorial permits, licenses, and the company's Environmental Management System (including surface, lake and ground water, effluent, soil and dustfall sampling)

- Conducted environmental baseline studies, fish habitat monitoring, erosion and sediment control measures, and active migratory bird nest surveys
- Delivered staff environmental training/ orientation/ awareness for conducting field work, sampling, inspections, equipment use and other environmental monitoring requirements
- Collected and analyzed field data using ProDSS YSI, TOG Analyzer and HACH Flow Meter equipment.
- Aided environmental consultants with environmental data collection and field monitoring
- Fly In/ Fly Out, 4 week/2 week rotational work in remote regions under harsh Arctic conditions

Sasha Chilibeck

2512 Windsor St., Halifax NS, B3K 5C1 | (306) 713 2743 | sasha.chilibeck@dal.ca

Co-op Status

- Will have completed five of eight academic terms in January 2023.
- Available for third co-op work term in May 2023.

Education

Bachelor of Science | Dalhousie University | September 2020 – September 2024

- Environmental Science and Biology Double Major
- Dean's List | April 2021-2023

Skills

Technical

- *Statistical Analysis*: Capable of performing a variety of statistical hypotheses tests in R and Excel on large data sets.
- *Geospatial Analysis*: Familiar with using ArcGIS and QGIS for performing spatial analyses, creating maps of data, and creating visually pleasing graphics.
- *Formal Reporting*: Experienced with writing concisely in scientific format from writing academic lab reports.
- *Environmental field work*: Experienced with conducting a wide variety of environmental field work to collect data on flora and fauna species or ecosystem characteristics.
- *Species and Ecosystem Identification*: Knowledgeable on a large range of Canadian flora and fauna species and ecosystems, including specifics like conservation statuses, ecological services, and significance to Indigenous peoples.
- Care and Use of Wildlife Certificate | Canadian Council on Animal Care | September 2022
- Primary & Secondary Care CPR/AED/First Aid | Canadian Red Cross | May 2022 – May 2025
- WHMIS 2015 Certificate | Dalhousie University | September 2021

Non-Technical

- *Bilingual*: Fluent in oral and written English and French.
- *Excellent Time Management*: Experienced with balancing multiple tasks and working efficiently from job as a server. Have also succeeded in balancing studies, sports, and volunteering since high school.
- *Team Player*: Keen and eager to collaborate with other's strengths to complete projects efficiently and effectively.
- *Athletic*: Former high-performance judo athlete, experienced backcountry camper, and experienced with remote field biology work.
- *Science Communication*: Communicating complex scientific topics, like environmental impact of energy systems, to general audiences.

Work Experience

Research Coordinator | Net Zero Atlantic | January 2023 – Present

- Assisted with compiling research on potential social and environmental impacts of future offshore wind projects in Nova Scotia.
- Disseminated scientific information into engagement materials for rural and Indigenous communities.

Junior Environmental Scientist | McCallum Environmental Ltd. | May – September 2022

- Led surface water flow monitoring to assess changes in water volume and current speed in waterbodies.
- Independently completed mainland moose and wood turtle survey transects by hiking up to 6-8 km a day and searching for tracks, scats, and other wildlife signs in remote backcountry.
- Acted as second-hand for electro-fishers to help collect live specimens for fish diversity sampling.
- Mapped habitat for fish populations by assessing open waterbody characteristics such as water quality, vegetation, and substrate.
- Independently delineated wetlands and completed full suite of data collection to assess vegetation, soil, and hydrology composition for important ecological wetland habitat.
- Calibrated the Wetland Ecosystem Services Protocol (WESP) for use in Nova Scotia to aid with identifying wetlands of special significance.
- Assisted with fall migration bird surveying by hiking 5 hours from dawn to noon and noting birdsong and bird sightings.
- Created maps for various forms of field work such as fish habitat mapping, wetland delineation, and wetland monitoring using QGIS. Finalized maps to be presented to clients in assessment package.
- Managed geospatial, and field data to ensure proper file organization and that data is complete and correct.

Volunteer Experience

President | Dalhousie Birding Society | September 2022 – Present

- Organize meetings and events aimed at educating other students about birding, enhancing their naturalist skills, and connecting to natural world around them.
- Mentor students to carry out point counts and bird surveys, with focus on increasing identification skills through sound and sight.
- Manage the society's finances to ensure funding is being spent appropriately on activities that benefit students interested in birding.

Academic Projects

Educational Website | ENV2500 Environmental Field Methods | Sept – Dec 2022

- Created a website to document continuous learning of field methods and findings, and lessons learned from participating in and leading environmental studies in Halifax.
 - Website can be viewed here: [One Fall's Journey \(arcgis.com\)](https://arcgis.com)

Point Pleasant Park Forest Succession | BIOL2060 Introductory Ecology | March 2022

- Created poster presentation to explain state of forest community ecosystem in reference to successional stages during recover of park post- Hurricane Juan.

Melvin Pothier

Naturalist

PO Box 145
Wedgeport, NS
B0W 3P0

Personal Birding Experience

Member of:

- Birds Canada
- Nova Scotia Bird Society

Experience:

- Birds Canada Loon survey
 - 26-year participant
 - Participate annually
- Christmas Bird Count
 - 17-year participant
 - Participate annually
- Local birder
 - Species identification
 - Personal data collection
 - Observation of habitat
 - Seasonal migration observations

Work Experience

My experience in local birding and knowledge of local flora and fauna is an asset to the McCallum team. Assisting in the following:

- Waterfowl survey
- Owl survey
- Common nighthawk survey
- Seasonal migration survey
- Maintaining technical field equipment

CULTURAL RESOURCE MANAGEMENT GROUP LTD.



KYLE G. CIGOLOTTI, BA
Managing Partner - Archaeologist

Education: Bachelor of Arts – Anthropology, Saint Mary’s University, 2009

Affiliations: Nova Scotia Archaeology Society (Member 2012 – present; Treasurer 2018 – present)
Canadian Archaeology Association (Conference Chairperson; Safety Committee Chairperson)
Ontario Archaeological Research License Holder, R1281

Awards: Placide Rivette Family Archaeology Award, 2009

REPRESENTATIVE ARCHAEOLOGICAL EXPERIENCE

- 2022
- Principal Investigator during the Archaeological Resource Impact Assessments of a series of proposed mining projects for Atlantic Mining Nova Scotia;
 - Licensed Field Director during the Stage 2 Archaeological Assessment of a proposed mixed commercial/residential development in Kincardine, Ontario.
 - Principal Investigator during the Archaeological Resource Impact Assessment of a directional drilling program in Shubenacadie East;
 - Principal Investigator during Archaeological Monitoring at the Fort Belcher Marsh Aboiteau project for the Nova Scotia Department of Agriculture;
 - Principal Investigator during Archaeological Monitoring of the directional drilling operations in at Shipyard Landing for the Municipality of Bridgewater;
- 2021
- Principal Investigator during the Archaeological Resource Impact Assessment of the proposed Tote Road Quarry Expansion project in Halifax Regional Municipality, Nova Scotia for GHD;
 - Principal Investigator and Archaeological Monitor for the Sallyport Upgrade project at the Nova Scotia Law Courts in Halifax Regional Municipality, Nova Scotia for Nova Scotia Department of Transportation and Infrastructure Renewal;
 - Principal Investigator and Archaeological Monitor for the Canadian Forces Housing Agency garage project at the Halifax Dockyard in Halifax Regional Municipality, Nova Scotia for Bell Multi Construction Inc;
 - Principal Investigator during the Archaeological Resource Impact Assessment of the proposed Westchester Wind Farm project in Colchester County, Nova Scotia for Dillon;
 - Principal Investigator during the Archaeological Resource Impact Assessment of the proposed expansion of the Touquoy Gold project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc;

Archaeological Monitor during the Fort Needham services upgrade project in Halifax Regional Municipality, Nova Scotia for Halifax Regional Municipality;

Archaeological Monitor during the Summer Street Parking Garage project in Halifax Regional Municipality, Nova Scotia for the Nova Scotia Department of Transportation and Infrastructure Renewal;

Principal Investigator during the archaeological testing program at the Fifteen Mile Stream Gold project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc.;

2020

Principal Investigator during the archaeological testing program at the Fifteen Mile Stream Gold Project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc;

Assistant Field Director during the archaeological testing program at the Beaver Dam Gold Project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc;

Principal Investigator during the Archaeological Resource Impact Assessment of the Allain River Marsh project in Annapolis County, Nova Scotia for the Nova Scotia Department of Agriculture;

Principal Investigator during the Archaeological Resource Impact Assessment of the St. Mary's Bay Marsh project in Digby County, Nova Scotia for the Nova Scotia Department of Agriculture;

Project Coordinator for the Stage 3 Archaeological Assessment during the 849 Front Road development project in Amherstburg, Ontario for Dillon;

Project supervisor for the development of GIS archaeological potential modeling for Mineral Exploration Claims throughout Nova Scotia;

2019

Principal Investigator during the archaeological monitoring at St. Paul's Church in Halifax, Nova Scotia for Halifax Regional Municipality;

Principal Investigator during the Archaeological Resource Impact Assessment of the proposed Gabarus Quarry Expansion project in Cape Breton Regional Municipality, Nova Scotia for Dexter;

Principal Investigator during the Archaeological Resource Impact Assessment of the proposed Sporting Mountain Quarry Expansion project in Richmond County, Nova Scotia for GHD;

Principal Investigator during the Archaeological Resource Impact Assessment of the proposed Isgonish Aboiteau infrastructure upgrade project in Colchester County, Nova Scotia for the Nova Scotia Department of Agriculture;

Principal Investigator during the Archaeological Resource Impact Assessment of the proposed Nappan Dam infrastructure upgrade project in Colchester County, Nova Scotia for the Nova Scotia Department of Agriculture;

Project Coordinator and Archaeological Field Director during the Stage 3 Archaeological Assessment of the 849 Front Road development in Amherstburg, Ontario;

Principal Investigator during the Archaeological Resource Impact Assessment of the Beaver Dam Gold Mine redevelopment project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc;

Principal Investigator during the Archaeological Resource Impact Assessment of the Fifteen Mile Stream redevelopment project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc;

Principal Investigator during the Archaeological Monitoring of the St. Andrew's Community Centre redevelopment project in Halifax Regional Municipality, Nova Scotia for Halifax Regional Municipality;

Project Coordinator and Assistant Field Director during the Stage 2 Archaeological Assessment of the Sandwich and Mill development project in Sandwich, Ontario for Dillon;

Assistant Field Director during the Stage 1 Archaeological Assessment of the Sandwich South Master Servicing Report in Windsor, Ontario for Dillon;

2018

Principal Investigator during the archaeological monitoring at St. Paul's Church in Halifax, Nova Scotia for Halifax Regional Municipality;

Principal Investigator during the archaeological monitoring at the Canal Greenway development in Dartmouth, Nova Scotia for Halifax Regional Municipality;

Principal Investigator during the archaeological monitoring at the St. Andrew's Community Centre Redevelopment project in Halifax, Nova Scotia for Halifax Regional Municipality;

Principal Investigator during the archaeological screening and reconnaissance at the Beaver Dam Gold Mine Haul Road project in Beaver Dam, Nova Scotia for GHD;

Principal Investigator during the archaeological screening and reconnaissance at the Beaver Dam Gold Mine Waste Rock Storage Pile project in Beaver Dam, Nova Scotia for GHD;

Principal Investigator during the archaeological screening and reconnaissance at the Cochrane Hill Gold Mine development project in Guysborough County, Nova Scotia for McCallum Environmental;

2017

Principal Investigator during archaeological screening and reconnaissance of the Louisdale Water Treatment Plant in Richmond County, Nova Scotia for Dillon Halifax;

Principal Investigator during archaeological monitoring at the Canal Greenway Project in Dartmouth, Nova Scotia for Halifax Regional Municipality;

Principal Investigator during the archaeological monitoring at St. Paul's Church in Halifax, Nova Scotia for Halifax Regional Municipality;

Principal Investigator during the archaeological screening and reconnaissance of the proposed quarry in Sheet Harbour for Dexter Construction Company Limited;

Principal Investigator during the archaeological screening and shovel testing of the Lake William Trail development for the Shubenacadie Watershed Environmental Protection Society;

2016	Principal Investigator during archaeological screening and reconnaissance of the Brazil Lake Quarry in Yarmouth County, Nova Scotia for GHD; Principal Investigator during archaeological screening and reconnaissance of the Duncan Gillis Quarry in Victoria County, Nova Scotia for Municipal Enterprises Limited;
2015	Archaeological Field Supervisor during the archaeological impact assessment of the proposed Sisson Mine for the Government of New Brunswick and the Maliseet Communities of New Brunswick;
2014	Field Technician in the archaeological and cultural/heritage landscape screening of 317 hectares of private land in Port Wallace, HRM, for a consortium of landowners; Archaeological Technician during design and coordination of the Canal Greenway in Dartmouth undertaken with CBCL on behalf of Halifax Regional Municipality;
2013	Field/GIS Technician during archaeological reconnaissance and testing of the Maritime Link Project for EMERA Newfoundland and Labrador Incorporated; Identified and evaluated archaeological potential on transmission lines on Cape Breton Island;
2012-2013	Archaeological Technician during archaeological mitigation of seven Precontact habitation sites for a dam replacement project at the outlet of Gaspereau Lake, Kings County for Nova Scotia Power Incorporated;
2011	Data Entry/Report Preparation for the San Felice Field School in Gravina, Italy through Saint Mary's University;
2010	Archaeological Field Technician in the San Felice Archaeological Field School in Gravina, Italy, through Mount Allison University;
2009	Participant in Grand Pré Archaeological Field School in Wolfville, Kings County;

EMPLOYMENT HISTORY

Cultural Resource Management Group Limited, Halifax, Nova Scotia

2012-present Managing Partner, Project Manager, Principle Investigator, addressing archaeological projects throughout Atlantic Canada and Southern Ontario.

Saint Mary's University, Halifax, Nova Scotia

2011 Data Entry/Report Preparation for the San Felice Field School in Gravina, Italy.

CERTIFICATIONS

Red Cross Standard First Aid; CPR Level C
CCOHS Hazard Identification, Assessment, & Control; Accident Investigation
WHMIS 2015

CULTURAL RESOURCE MANAGEMENT GROUP Ltd.



ROBERT H. J. SHEARS, MA, RPA

Partner | Archaeologist

Education: Master of Arts - Atlantic Canada Studies, Saint Mary's University, 2013
Bachelor of Arts (Adv.) - History/Anthropology, Saint Mary's University, 2004
Bachelor of Science - Biology, Saint Mary's University, 2000

Affiliations: Member of the Registry of Professional Archaeologists
Nova Scotia Archaeology Society (Director 2003-2016; President 2007-2009)
Canadian Archaeological Association (Member of Organizing Committee 2011 Annual Conference, Halifax)
Council of Northeast Historical Archaeology
Association of Professional Archaeologists of New Brunswick
Gorsebrook Research Institute (Graduate Research Fellow, 2010)

REPRESENTATIVE ARCHAEOLOGICAL EXPERIENCE

- 2022 Principal Investigator during the Preliminary Investigation of the Glenvale Gypsum Project, in Glenvale, NB, for Dillon Consulting;
- Principal Investigator during an Archaeological Impact Assessment (Initial Assessment) for the Fundy Nation Park Dickson Trail Pedestrian Bridge in New Brunswick, for Parks Canada via CBCL Limited;
- Principal Investigator during archaeological monitoring for the Dugau-Ryerson Marsh Upgrade Project, located in Annapolis County, for the Department of Agriculture;
- Principal Investigator during archaeological screening and reconnaissance of the Birch Plain Dredging Material Management Site in Victoria County, Nova Scotia, for the Department of Fisheries and Oceans Small Craft Harbours Branch via GHD;
- Principal Investigator during the Preliminary Investigation of the Hampton Multiuse Centre Project, in Hampton NB, for Dillon Consulting;
- Principal Investigator during archaeological screening and reconnaissance of the 760 Maplewood Lane Infilling Project, for the Landowner;
- Principal Investigator during archaeological screening and reconnaissance of the 1454 Birchdale Avenue Infilling Project, for McCallum Construction;
- 2021 Principal Investigator during archaeological assessment of the Plains Road Water Valve Removal Project within the Debert Business Park, for the Municipality of the Colchester County;
- Principal Investigator during archaeological assessment of the Debert Low Pressure Sewer within the Debert Business Park, for the Municipality of the Colchester County;
- Principal Investigator during the Preliminary Investigation of the Nepisiguit Dam Life Extension Project, for New Brunswick Power;
- Principal Investigator during archaeological screening and reconnaissance of the Kiwanis Grove Park Upgrade Project, located in Dartmouth, for Halifax Regional Municipality;
- Principal Investigator during archaeological screening and reconnaissance of 287 Old Post Road in Grand Pre, for the Landowner and Landscape Grand Pre Inc.;

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- Principal Investigator during archaeological assessment of the Benjamins Mill Wind Project, for Dillon Consulting;
- Principal Investigator during archaeological screening and reconnaissance of Lot 5 Grand Pre Road in Grand Pre, for the Landowner and Landscape Grand Pre Inc.;
- Principal Investigator during archaeological screening and reconnaissance of 131 King Street in Hortonville, for the Landowner and Landscape Grand Pre Inc.;
- 2020-2021 Principal Investigator during archaeological monitoring for the Brigadoon Village Phase II, Expansion in Aylesford, Nova Scotia, for Grey Cardinal;
- 2020 Principal Investigator during an archaeological screening and reconnaissance for the Welshtown Quarry in Welshtown, Nova Scotia for Municipal Construction;
- Principal Investigator during an archaeological screening and reconnaissance for Black Duck Brook 9Phase 7-3A/B in West Bedford, Nova Scotia for Clayton Development;
- Principal Investigator during an archaeological screening and reconnaissance for the Fort View Golf Course Expansion in Lequille, Nova Scotia, for 3314197 Nova Scotia Limited;
- Principal Investigator during an archaeological screening and reconnaissance for the Panuke Road Quarry Expansion in Windsor, Nova Scotia, for Nova Construction;
- Principal Investigator during an archaeological screening and reconnaissance for the Shot Rock Property – Piedmont Land in Pictou County, Nova Scotia, for Northern Shield Resources Inc.;
- Principal Investigator during an archaeological screening and reconnaissance for the Sheet Harbour Lands in Sheet Harbour, Nova Scotia, for Halifax Regional Municipality;
- 2019-2020 Principal Investigator during an archaeological impact assessment for the Canadian Centre for Climate Change and Adaptation in Saint Peters, PEI for UPEI;
- 2019 Principal Investigator during an archaeological screening and reconnaissance for the Pocologan Sand and Gravel project in Pocologan, New Brunswick for Amkis Resources;
- Principal Investigator during preliminary investigation for the Milltown Generating Station Decommissioning Project in Milltown, New Brunswick for NB Power (via Dillon Consulting);
- 2018-2020 Principal Investigator during archaeological impact assessment of the Town of Woodstock Water Supply project in Woodstock, New Brunswick, for the Town of Woodstock (via Dillon Consulting);
- 2018-2019 Principal Investigator during archaeological impact assessment of the Upham East Gypsum Quarry project in Upham, New Brunswick, for Hammond River Holdings Ltd. (via Dillon Consulting);
- 2018 Principal Investigator during archaeological assessment of the Debert Well 1C Connection project within the Debert Air Industrial Park, for the Municipality of the County of Colchester;
- Principal Investigator during archaeological assessment of the Kohltech Expansion Property within the Debert Air Industrial Park, for the Municipality of the County of Colchester;
- Principal Investigator during archaeological screening and reconnaissance of the Greenwood Subdivision Wastewater Upgrade project in Saint John, New Brunswick, for the City of Saint John (via Dillon Consulting);
- Principal Investigator during archaeological screening and reconnaissance of the Morna Heights Subdivision Wastewater Upgrade project in Saint John, New Brunswick, for the City of Saint John (via Dillon Consulting);
- 2017 Principal Investigator during archaeological screening and reconnaissance, monitoring and mitigation of the Proposed Irving Parking Garage project in Saint John, New Brunswick for Irving (via CBCL);

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- Principal Investigator during archaeological assessment of two lots within the Debert Air Industrial Park, for the Municipality of the County of Colchester;
- Principal Investigator during archaeological shovel testing of the Canada 150 Shannon Park Observation Deck, in Halifax Regional Municipality for Canada Lands Company;
- Principal Investigator during additional archaeological reconnaissance of the Truro Salt Marsh Dyke Restoration and Habitat project, for the Department of Transportation and Infrastructure Renewal;
- 2016 Principal Investigator during archaeological screening and reconnaissance of the Scots Bay Small Craft Harbour in Scots Bay, Kings County, Nova Scotia for GHD;
- Principal Investigator during the archaeological assessment of seven lots (7 hectares) within the Debert Air Industrial Park, for the Municipality of the County of Colchester;
- Field Director during archaeological mitigation for a dam replacement project amid three Precontact and historic sites at the outlet of Gaspereau Lake, Kings County for Nova Scotia Power Inc.;
- 2015 Principal Investigator during archaeological screening and reconnaissance of the Seabrook Quarry in Digby County, Nova Scotia for Dexter Construction;
- Field Director during the archaeological assessment of three commercial lots (15.6 hectares) within the Debert Air Industrial Park, for the Municipality of the County of Colchester;
- 2014 Principal Investigator during archaeological screening and monitoring of the redevelopment of the Roy Building in Halifax, Nova Scotia, for Starfish Properties;
- Principal Investigator during archaeological screening and reconnaissance of the proposed water treatment and wastewater treatment facilities in Oromocto, New Brunswick, for Defence Construction Canada;
- Field Director during the archaeological assessment of three lots (7.4 hectares) within the Debert Air Industrial Park, for the Municipality of the County of Colchester;
- Principal Investigator during archaeological screening of the Prince Albert Road Option of the Sullivan's Pond Storm Sewer Renewal Project, Dartmouth, Nova Scotia, for CBCL Limited;
- 2013-2014 Principal Investigator during archaeological monitoring at the Nova Scotia Fisheries Museum of the Atlantic Inshore Fisheries Display Building Renovation and Stabilization Project (BcDb-8) for the Nova Scotia Department of Transportation and Infrastructure Renewal;
- 2013 Principal Investigator during archaeological screening and reconnaissance of the Hankinson Quarry, Annapolis County, the James River Quarry, Antigonish County, the Irish Cove Quarry, Victoria County and the Porters Lake Quarry, Halifax Regional Municipality, Nova Scotia, for Dexter Construction;
- Principal Investigator during archaeological assessment of the Department of Fisheries - Canadian Coast Guard Base, Dartmouth, Nova Scotia, for Public Works and Government Services Canada;
- Principal Investigator during archaeological reconnaissance and screening of the preferred pipeline alignment in Pictou County, Nova Scotia, for Heritage Gas;
- Principal Investigator during archaeological shovel testing at four sites along the preferred pipeline alignment in Pictou County, Nova Scotia, for Heritage Gas;
- 2012-2013 Principal Investigator during archaeological monitoring for the Storm Water Easement for South Queens School in Liverpool, for the Nova Scotia Department of Transportation and Infrastructure Renewal;
- Field Director during archaeological mitigation for a dam replacement project amid seven Precontact and historic sites at the outlet of Gaspereau Lake, Kings County for Nova Scotia Power Inc.;
- Researcher for the Archaeological Resource Impact Assessment of Lovett Lake Estates in Beechville, Nova Scotia, for Armco Capital Inc.;

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- 2012 Researcher for the Archaeological Screening and Reconnaissance of the Red Bridge Replacement in Baddeck Bridge, for the Nova Scotia Department of Transportation and Infrastructure Renewal;
- 2011-2012 Principal Investigator during archaeological monitoring at the Nova Scotia Fisheries Museum of the Atlantic Wharf Repair Project (BcDb-8) for the Nova Scotia Department of Transportation and Infrastructure Renewal;
- 2011 Field Archaeologist during archaeological assessment and testing for the Route 2, St. Jacques to Quebec: Heritage Resource Impact Assessment Testing Program, near Edmonston, for the New Brunswick Department of Transportation and Infrastructure;
- 2010-2011 Principal Investigator during archaeological survey and testing at the Lawrencetown Township (BdCu-8) and Green Estate (BdCu-9) Sites in Lawrencetown, Nova Scotia, related to graduate research conducted as part of a Master of Arts degree with the Atlantic Canada Studies program at Saint Mary's University;
- 2004-2011 Archaeological Site Supervisor at the Grand Pré Archaeological Field School at Grand Pré National Historic Site, for Saint Mary's University;
- 2010 Field Archaeologist during archaeological testing on the proposed Mi'kmawey Debert Cultural Centre Site, in Debert, Nova Scotia, for the Confederacy of Mainland Mi'kmaq;
- Field Archaeologist during archaeological survey of a proposed 70 kilometre extension of Provincial Highway 11, Pokemouche to Janeville, for the New Brunswick Department of Transportation and Infrastructure;
- 2009 Principal Investigator during a geophysical survey of residential properties in Grand Desert, Nova Scotia, related to research as part of a Master of Arts degree with the Atlantic Canada Studies program at Saint Mary's University;
- 2004-2008 Collections Specialist (Assistant to the Archaeology Collections Manager) at the Parks Canada Archaeology Lab in Halifax, for Parks Canada Agency;
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EMPLOYMENT HISTORY

Cultural Resource Management Group Limited, Halifax, Nova Scotia

2011-date Archaeological Technician (Casual) to Company Partner & Archaeologist, involved in all aspects of assessment and mitigation, including: research; survey, excavation and recording; supervision of field and lab personnel; and, report writing;

Saint Mary's University, Halifax, Nova Scotia

2004-2011 Archaeological Site Supervisor (Seasonal) at the Grand Pré Archaeological Field School, involved in the instruction of undergraduate students in archaeological field and laboratory techniques.

Parks Canada Agency, Halifax, Nova Scotia

2009-2010 Archaeological Site Assistant and Field Archaeologist (Contract), responsible for archaeological excavation on a mitigation project at Grand Pré NHS; and site assessment, excavation, recording and report writing for a monitoring and mitigation project on George's Island National Historic Site;

Parks Canada Agency, Halifax, Nova Scotia

2004-2008 Collections Specialist (Term), performing a variety of collections management duties including: processing of artifacts from point of excavation to final storage; compilation of electronic databases of archaeological site records, research library and map collection; and, material culture research.

NON-ACADEMIC COURSES

WHMIS 2015 (workplace hazardous materials) training
St. John Ambulance Standard First Aid / CPR Level A

DATE AWARDED PROFESSIONAL DESIGNATIONS

Nova Scotia Heritage Research Permits held since 2009
New Brunswick Archaeological Field Research Permits held since 2014
Member of the Registry of Professional Archaeologists since 2014

CULTURAL RESOURCE MANAGEMENT GROUP Ltd.



LOGAN ROBERTSON, BA
Archaeologist

Education: Saint Mary's University, Honours Bachelor of Arts Anthropology, 2021

Affiliations: Nova Scotia Archaeology Society

REPRESENTATIVE ARCHAEOLOGICAL EXPERIENCE

- 2022 Archaeologist and Permit Holder during the Archaeological Resource Impact Assessment of the Former Penhorn Mall Property Redevelopment project in Dartmouth, Nova Scotia for Clayton Developments Limited;
- Archaeologist and Permit Holder during the Archaeological Resource Impact Assessment of the Windsor Road Quarry Expansion project in Chester, Nova Scotia for South Shore Sand & Gravel;
- 2021 Archaeologist and Permit Holder during the Archaeological Resource Impact Assessment of the Lightfoot Farms Barn Addition project in Wolfville, Nova Scotia for Equilibrium Engineering Inc;
- Archaeologist and Permit Holder during the Archaeological Resource Impact Assessment of the Glenwood Provincial Park Development project in the Municipality of Argyle, Nova Scotia for the Municipality of Argyle;
- Archaeological Field Supervisor during the Archaeological Resource Impact Assessment of the Debert Low Pressure Sewer System in Debert, Nova Scotia for the Municipality of Colchester;
- Archaeological Technician during the Archaeological Resource Impact Assessment of the Touquoy Mine in Middle Musquodoboit, Nova Scotia for the Atlantic Mining NS;
- Archaeological Technician during the Archaeological Resource Impact Assessment of the Fifteen Mile Stream Mine in Halifax Regional Municipality, Nova Scotia for the Nova Scotia Mining Inc;
- Archaeological Technician during the Archaeological Monitoring of the Summer Street Parkade project in Halifax, Nova Scotia for the NS Department of Transportation and Active Transit;
- Archaeological Technician during the Archaeological Resource Impact Assessment of the Plains Road Water Valve Replacement project in Debert, Nova Scotia for the Municipality of Colchester;
- 2020 Archaeological Technician during the Archaeological Resource Impact Assessment of the MacElmon Road West in Debert, Nova Scotia for the Municipality of Colchester;
- Archaeological Technician during the Stage 3 Archaeological Assessment of the 849 Front Road property in Amherstburg, Ontario for Dillon Consulting;
- Archaeological Technician during the Archaeological Resource Impact Assessment of the Beaver Dam Gold Project in Halifax Regional Municipality, Nova Scotia for Nova Scotia Mining Inc;
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EMPLOYMENT HISTORY***Cultural Resource Management Group Limited, Halifax, Nova Scotia***

2020-date Principal Investigator, Archaeological Field/Lab Technician, addressing archaeological projects throughout Nova Scotia and in Southern Ontario;

Saint Mary's University, Halifax, NS

2017-date Previous positions included Senate Office Assistant (2017-2019) and Teaching Assistant (2018-2021). Current position with SMU as a Forensic Osteology Curator.

TRAINING AND CERTIFICATES

Red Cross Standard First Aid/CPR Level C

WHMIS Training

Commercial Diver DCBC Category 1

DATE AWARDED PROFESSIONAL DESIGNATIONS

Nova Scotia Heritage Research Permits Held since 2021.

EDUCATION & ACADEMIC AWARDS

Bachelor of Arts, Honours in Anthropology 2016 – 2021, Saint Mary's University, Halifax, NS

Dean's List 2017, 2018

Saint Mary's Academic Writing Awards 2017 and 2018, undergraduate social sciences.

Benoit Ouellette Cartography Prize 2018

John Harvey Award 2018/2019

Saint Mary's University President's Hall of Academic Excellence Award 2021



SOQ May 2022

Indigenous Environmental Solutions- Statement of Qualifications



May 2022



SOQ May 2022

Indigenous engagement or consultation is a complicated subject in Canada. In Nova Scotia, this is especially true for companies that propose development projects or complete crown permitting requirements because of the ambiguity between the required Proponent engagement activities and the crown consultation activities with the Mi'kmaq of Nova Scotia. The current Crown-Mi'kmaq consultation process and, specifically the Proponent's role, is ambiguous. This makes project risk difficult to assess and often leaves the Proponent with a less than desirable relationship with the rightsholders.

IES is a majority owned Mi'kmaq company that is unique. Collectively our owners have over 50 years' experience working with the Project developers and the Mi'kmaq in engagement and consultation activities, with specific expertise relative to development projects requiring provincial and federal permits/approvals. This experience has been gained from the Mi'kmaq perspective, the Crown perspective, the permitting process perspective, and the Proponent perspective.

This gives IES the necessary expertise to provide the following services:

1. **Engagement or Consultation**- These processes can be confused by Proponents and the distinction between the two is important. IES can provide guidance on the best approach for you to take, given the type of project and location being proposed.
2. **Engagement Risk Assessment**- Completed early in the process, IES will review project information and provide an assessment of project risk associated with the engagement aspects. The scope of this assessment will be to outline the potential concerns that may need to be addressed during the engagement process and identify specific engagement activities to minimize the risks.
3. **Engagement Training**- Develop organizational or project specific training tools to enhance Indigenous engagement. This training can be delivered to Proponents, consultants assisting Proponents, NGOs and Indigenous/non-Indigenous communities or interested groups.
4. **Engagement Program Development**- Develop/review project specific engagement plans and provide advice to the project team (Proponent/consultants) on timelines and advice on how to navigate the Crown-Mi'kmaq Consultation process.
5. **Mi'kmaq Ecological Knowledge Studies (MEKS)**- Prepare the MEKS to current standards and with the participation of knowledgeable Mi'kmaq communities.
6. **Consultation Support**- Participate, as required, in the consultation phase of the process to assist the Proponent engagement activities and to protect the Proponent-Mi'kmaq relationship (provide advice to minimize risk to the Proponent-Mi'kmaq relationship because of the consultation process).
7. **Mutual Benefits Assessments and Advice** – Assist in determination of appropriate benefits and/or programs for proponents to consider with the Mi'kmaq and provide advice on service providers and/or frameworks for benefits delivery.
8. **Relationship/follow-up Support**- Provide advice and services to ensure commitments made to the Mi'kmaq are followed-through with and provide advice to the Proponent on how the relationship can be fostered into the future, if necessary.



Managing Project Risk and Costs

The services listed above will help you reduce project risks as you proceed through the regulatory processes. IES skills and knowledge can help you reduce and control consultation and/or engagement costs.

Collaboration Details

The owners of IES have been collaborating and delivering results for many years on a wide range of subjects related to Indigenous and non-Indigenous environmental matters. This collaborative relationship has been used to develop strategies to take projects from concept stage through to successful conclusions for Proponents, communities, and organizations. This well-developed collaborative model is a key asset and a distinguishing feature of what IES can bring to your projects and organizations.

Project Experience

Project	Roles	Parties Involved	Key Outcomes
<p>Black Bull Resources - White Rock Mine</p>	<p>Peter O: Project Permitting</p> <p>Michael C: Mi'kmaq Knowledge Study and Indigenous engagement</p>	<p>NS Government, Federal agencies, Proponent, local Indigenous and non-Indigenous communities/organizations</p>	<p>Identified rare species of concern for protection and areas of Mi'kmaq interest for mine layout and operations planning</p> <p>Successful Mi'kmaq engagement and Project approval</p>



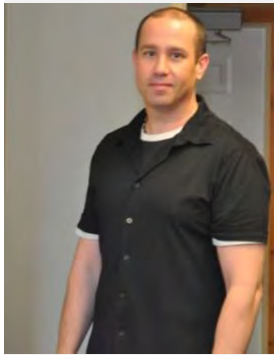
Project	Roles	Parties Involved	Key Outcomes
<p>Fundy Gypsum – Miller’s Creek Mine Expansion</p>	<p>Peter O: Project Permitting</p> <p>Michael C: Mi’kmaq Knowledge Study and indigenous engagement</p>	<p>NS Government, Federal agencies, Proponent, local Indigenous and non-Indigenous communities/organizations</p>	<p>Identified concerns for protection and areas of Mi’kmaq interest for mine layout and operations planning.</p> <p>Successful Mi’kmaq engagement and Project approval</p>
<p>Savage/ Pasmaenco Resources - Gays River Mine</p>	<p>Peter O: Project Permitting</p> <p>Michael C: Mi’kmaq Knowledge Study and Indigenous engagement</p>	<p>NS Government, Federal agencies, Proponent, local Indigenous and non-Indigenous communities/organizations</p>	<p>Identified concerns for protection and areas of Mi’kmaq interest for mine layout and operations planning</p> <p>Successful Mi’kmaq engagement and Project approval</p>
<p>First Nations Environmental Network</p>	<p>Michael C: Co-Founder/ coordinator</p> <p>Peter O: Provided key technical inputs and presentations on issues and topics for members</p>	<p>Network of Indigenous communities/organizations and the Federal family</p>	<p>Connected communities with resources/tools and enhanced technical knowledge in Indigenous communities on environmental matters</p>



Project	Roles	Parties Involved	Key Outcomes
<p>Hydraulic Fracturing 3rd Party Technical Review</p>	<p>Michael C: Lead, engagement</p> <p>Peter O: Advisory support including providing key technical advice and guidance</p>	<p>NS Government, Industry, academia, local Indigenous and non-Indigenous communities/organizations</p>	<p>Identified concerns for environmental protection and elements of Mi'kmaq interest for informed decision making.</p> <p>Successful Mi'kmaq engagement</p>
<p>Alton Gas 3rd Party Technical Review</p>	<p>Michael C: Lead, engagement</p> <p>Peter O: advisory support including providing key technical advice and guidance</p>	<p>NS Government, Industry, academia, local indigenous and non-Indigenous communities/organizations</p>	<p>Identified concerns for environmental protection and elements of Mi'kmaq interest for informed decision making.</p> <p>Successful Mi'kmaq engagement</p>



SOQ May 2022



Michael Cox, BSc Biology

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Professional Overview: Michael is a biologist by training and education and has 25 years of experience working in Indigenous Engagement/Consultation processes and initiatives. Michael has experience working for the Mi'kmaq Government, the Peskotomuhkati Nation at Skutik, the Government of Canada, Sipekne'katik, Bear River First Nation and many Indigenous organizations in the capacity of completing science research, project management for initiatives that support government-to-government discussions, community engagement and formal consultation planning/process. As part of this experience, Michael has learned key engagement and consultation elements relating to

Crown approval processes for environmental impact assessment, environmental site assessments other permitting/approval requirements. In all these roles Michael has sought to engage all parties in a respectful and meaningful way appropriate to their rights, interests, and abilities.

Indigenous engagement processes and formal consultation processes are complicated and different. Although both are related, the goal for engagement is to build a relationship with the rights-holders for a specific development to identify the potential impacts, through interest-based dialogue, that the development could have from the Indigenous perspective. Alternatively, consultation is a government-to-government process of identifying and evaluating potential impacts to rights and claims. Industry has a role in engagement which is sometimes difficult to understand because of the complexity of consultation elements.

IES has developed a series of products and services to support Industry to develop comprehensive and complete engagement planning (including Mi'kmaq Ecological Knowledge) so that the roles and responsibilities of all parties to the engagement and consultation related to a development project are understood.

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SOQ May 2022

Engagement and Consultation Related Experience (select)

Peskotomuhkati Nation at Skutik |
Consultation Adviser | 2019-2021

- Lead consultation files and complete technical research for the Peskotomuhkati Nation. This role includes attending all project meetings, developing, and delivering position papers, preparing presentations, and briefing materials to and for the Peskotomuhkati Nation.
- Provide advice and guidance to the Nation and regulators/Proponents on matters regarding the potential impacts of a variety of project types (mining, forestry, aquaculture, fisheries, oil, and gas etc.) to Peskotomuhkati Rights and title.
- Support and network with First Nation Organizations and government departments on technical areas of consultation.
- Develop and evolve the Peskotomuhkati Consultation Process.

Sipekne'katik | Consultation Adviser | 2018

- Established the Sipekne'katik Consultation Process by working with the Crown, the Chief and Council and the Community.
- Lead consultation files and completed technical research for Sipekne'katik;
- Developed position papers, discussion papers, briefing notes and correspondence on a variety of consultation issues.

Canadian Environmental Assessment Agency |
Indigenous Adviser | 2018

- Provided expert advice to Senior Management on consultation issues with First Nations.
- Authored several environmental assessment related documents including the adequacy of consultation processes for the consideration of the President of the Agency.
- Worked with all rights holders participating in environmental assessments on many issues relating to rights and claims.

Kwilmu'kw Maw-klusuaqn Negotiation Office |
Consultation Researcher | 2013-2017

- Lead consultation and negotiation files and complete technical research in support of the on-going discussions between the Mi'kmaq of Nova Scotia, Canada, and Nova Scotia. This role includes attending all project meetings, developing, and delivering position papers, preparing presentations, and briefing materials to and for the Assembly of Nova Scotia Mi'kmaq Chiefs.
- Provide advice and guidance to regulators and Proponents on matters regarding the potential impacts of a variety of project types (mining, forestry, aquaculture, fisheries, oil, and gas etc.) to Mi'kmaq Rights and title. This includes providing expert advice on Mi'kmaq Ecological Knowledge Studies, Mi'kmaq Fisheries Studies and other mechanisms that are necessary to identify the potential concerns for both land and ocean-based projects.
- Support and network with Mi'kmaq Organizations on technical areas including Species at Risk, Water and Wastewater, Fisheries, Forestry, Mining, Oil and Gas and Archaeology to inform the Assembly of Nova Scotia Mi'kmaq Chiefs.

Bear River First Nation | Fisheries and
Livelihood Consultant | 2018-2019

- Develop and implement governance mechanisms for the Bear River First Nation to be able to exercise rights and responsibilities.
- Coordinate engagement with the Crown and the Bear River First Nation.
- Develop programming to support the implementation of Netukulimk.

North Shore Mi'kmaq District Council |
Manager, Environmental Services | 2008-2013

- Created and managed the Environmental Services Program that provided the necessary environmental and natural resources support and



SOQ May 2022

expertise to member communities and all levels of government.

- Established a Traditional Ecological Knowledge Program. This program involved identifying and interviewing knowledge holders, developing GIS tools to support confidential storage of the information, developing questionnaires, and developing consent forms.
- Established a Species at Risk forum for the New Brunswick Mi'kmaq.
- Completed a sea level rise study for the Mi'gmaq of New Brunswick.
- Established the Circuit Rider Training Program that provides expertise to all water and wastewater operators in the Atlantic Region. The focus of the program is to achieve the necessary certification for each operator, but it also provides emergency support to communities when needed.
- Coordinated the Atlantic First Nations Environmental Network which had representation from all First Nation Communities/technical organizations in the Atlantic Region.

Confederacy of Mainland Mi'kmaq | Director, Lands, Environment and Natural Resources | 1999-2008

- Managed the Lands, Environment and Natural Resources Programs (including technical engineering services). This including managing 14 full time positions.
- Developed the current Mi'kmaq Ecological Knowledge Study mechanism that was designed to be incorporated into Environmental Assessment processes to identify potential Mi'kmaq concerns with development projects.
- Established the Mi'kmaq Environmental Services Program to provide expertise and support to member communities on many environmental issues of concern such as environmental assessment processes, species at risk, fisheries, and forestry.
- Provide consultation services to member communities.
- Participated in exploratory discussions with the Canadian Environmental Assessment Agency on the development of community specific

regulations under the Canadian Environmental Assessment Act.

- Developed organizational policies and strategic plans for the organization and member communities.

Indian and Northern Affairs Canada | Environmental Officer | 1995-1999

- Managed the regional Environmental Protection Program for INAC.
- Developed relationships with First Nation Communities and Organizations to address environmental investigations and remediation projects.
- Advised Senior Management and INAC programs on environmentally related issues and prepared briefings for the Minister's Office frequently.
- Participated in providing expert advice to CEAA and Public Works and Government Services Canada on environmental assessments when First Nation issues arose.

Technical\Field Experience (select)

Fisheries and Oceans Canada | Biologist | 1994

- Coordinate crews with Oromocto First Nation, Kingsclear First Nation, St. Mary's First Nation, Woodstock First Nation at counting fence on Nashwaak River.
- Collected gaspereau samples at Mactaquac Dam for scales, species identification and otolith collection

Environment Canada | Environmental Engineering Officer | 1994

- Collected effluent samples at federal institutions.



Peter Oram, P.Geo

[Petero@I-E-S.ca](mailto:petero@I-E-S.ca) | (902) 499-8280

Professional Overview: Peter is an environmental scientist by training (B.A Geol/Geog minor in biology, Mount Allison 1987) and has 35 years of progressively more complex and involved roles as project manager for environmental projects for a variety of private and government clients in Canada, the Caribbean, and the US. Peter did two years of exploration work for a NS based mining company before a 33-year career in environmental consulting. Peter was Principal in Charge of the Halifax office for a Canadian based multi-national from 2005 to 2014 and is a past Executive Committee member for that firm. Peter has lectured at Dalhousie University and Saint Mary's

University in the Environmental Science and Mining Engineering Departments and is routinely involved in the development and review of legislation associated with mine and aggregate operations in Nova Scotia and beyond. Peter is an active member of the Biodiversity Council of Nova Scotia.

Peter has been aware of the special role First Peoples should play in decisions relative to land use since a chance brookside meeting with a Mi'kmaq Elder during a gold exploration program in 1987. He has sought to educate himself on how to respectfully engage and involve First Peoples in projects throughout his career. The formation of IES is a natural evolution of this journey as his Partner is Mi'kmaq and they have had a 20-year working relationship through our many employers and projects. Peter has developed and implemented First Peoples engagement programs for projects including mining, landfills, aggregates, highways, and industrial waste remediation. Peter has completed projects on all NS and PEI Bands and several NB Bands directly for the Bands, regional organizations, or federal government clients.

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(902) 499-8280



SOQ May 2022

Engagement and Consultation Related Experience (select)

Project Manager | Mi'kmawey Debert Centre Development | Confederacy of **Mainland Mi'kmaq (CMM) | 2015-2021**

Peter was Project Manager for several activities to support the development of the Centre including site assessment and remediations activities, ecological assessment work for site layouts, input to sessions involving the Elders Advisory Group and providing advisory support direct to CMM staff.

Environmental Impact Assessment Lead
Boat Harbour Assessment and Remediation
Project – NS Lands 2016-2021

Role involved the development of the data collection programs, coordination of specialist sub consultants and staff, facilitation of workshops, Pictou Landing First Nation involvement and input at various workshops through the federal Impact Assessment process leading to preparation of submissions to the Impact Assessment Agency of Canada (IAAC).

Project Director
Moose River Gold Mine Permitting | DDV
Gold now Atlantic Gold | 2004 - 2021

This project is a 4000 tonne per day surface gold operation beginning construction in Q1 2016. Project duties included design and management of baseline environmental data gathering programs for surface water, groundwater and habitat, preparation of permit application documents (Environmental Approval, Mining Permit, Industrial Permit and Development Permit), liaison with provincial "One Window Committee" members and other provincial and federal regulators, landowner liaison, public information sessions, and preparation of claims assessment reports. Ongoing projects components include

management of drill program and environmental monitoring programs, Mi'kmaq Ecological Knowledge Studies (MEKS) and First Nations engagement.

Project Director
Gays River Lead | Zinc Mine
Re-Development Permitting | Selwyn
Resources Inc. |
2008 - 2012

Project Director for Gays River Lead/Zinc Mine Re-Development involving management of project components such as monitoring plan development, regulator liaison, First Nations involvement, public information sessions, mine dewatering program development, archaeological investigations reclamation plan development and regulatory compliance reporting and compliance monitoring programs. Peter developed and implemented all Mi'kmaq engagement programs and MEKLS aspects including development of an artifacts assessment program and Mi'kmaq involvement in an assessment program.

Project Director
Miller's Creek Gypsum Mine Extension
Environmental Assessment | CGC Inc. |
2003 - 2012

Project Director for Millers Creek Gypsum Mine Development involving environmental baseline studies and overall permitting management of all environmental baseline programs, public consultation, regulator liaison, landowner discussions for water supply replacement plans, and preparation of environmental assessment reports. The project was for a 50-year mine extension of over 400 hectares in size and 2 million tonnes per year and was successfully permitted. Peter developed and implemented all Mi'kmaq engagement programs and MEKS aspects.



SOQ May 2022

Technical\Field Experience (select)

This project was completed for Public Works and Government Services Canada (PWGSC) on behalf of Parks Canada (2010)

Public Works and Government Services Canada | Defense Construction Canada | Nova Scotia Transportation and Infrastructure Renewal | 2005 - 2021

Client services manager for several large Standing Offer Agreements (SOA) for federal and provincial agencies for broad range of services including environmental assessments, site assessments, remedial programs, auditing, dredging programs, groundwater and surface water monitoring, building materials surveys and other projects to support operations at the client's facilities. Total annual values of contracts are in the \$1.5 M CDN range and represent roughly 100 projects per year. Peter was the assigned CSM for the following SOAs:

- Defence Construction Canada (DCC) Standing Offer Agreements for Contaminated Site Assessment at Department of National Defence (DND) – Maritime Forces Atlantic (MARLANT) sites in Nova Scotia. (2010 - 2013)
- Nova Scotia PWGSC RISO for Environmental Services involving over 500 Phased ESAs (2006 - present)
- Client Services Manager, Additional Phase I and II Site Assessment and Preliminary Quantitative Risk Assessment, CFB Halifax, 12 Wing Shearwater Running Track, MARLANT (2010 - 2011)
- Client Services Manager, Additional Site Assessment, Site Characterization and Remedial Action Plan Development, Future Transport, Electrical and Mechanical Engineering (TEME) Complex, CFB Halifax, Willow Park, MARLANT (2010 - 2011)
- Client Services Manager, Post-Remediation Groundwater Monitoring, Former Petroleum Storage and Handling Area, McNab's Island, NS.

Project Coordinator/Field Supervisor
Over 700 environmental projects throughout Nova Scotia, New Brunswick, Newfoundland & Labrador, and Prince Edward Island | At First Nations communities, federally owned facilities, petroleum bulk plant facilities, petroleum retail outlets, maintenance garages, marine wharf facilities, and lighthouses (both remote and land based)

The projects completed at these sites included historical reviews, Phased ESAs, development and costing of remedial alternatives, implementation of remediation programs, transport and fate of contaminant studies, emergency spill response, human health and ecological risk assessments (quantitative and qualitative), environmental/closure audits and geophysical survey design and implementation. Typical project responsibilities included historical reviews, soil, sediment, groundwater, surface water and air sampling (using a wide variety of sampling methods including test pits, boreholes, monitor wells and soil vapour wells), site interviews, historical land use review, regulatory reviews, site infrastructure inspection, on site supervision during remediation and removal of petroleum storage tank/equipment removal, site decommissioning, plume delineation, compaction testing, data compilation and interpretation, and report preparation.

Peter Scarlett

Radar Survey Analyst

Raytheon Engineering Fellow

Radar Subject Matter Expert (SME) for 25 years.

Education

B.A.Sc. Electrical Engineering, Queen's University, 1978

M.A.Sc. Electrical Engineering, University of Toronto, 1987

Experience

Radar Insight Limited, 2017 to present **Sidney, BC, Canada**

President and Consulting Radar SME

Bird radar installation, bird surveys, statistical analysis and public hearings for two Israeli wind energy companies

Upgrading and maintaining Raytheon radar surveillance systems at La Guardia, JFK and Doha (Qatar) airports.

Cognitive Radar Corporation, 2017 to present **Waterloo, ON, Canada**

Technical Director

Designed the Cognitive Tracker - used for bird research and surveys in Canada (Acadia) and Israel

Raytheon Canada, 2011 to 2017 **Waterloo, ON, Canada**

Engineering Fellow

Radar and visible/thermal camera SME for proposals up to \$1B.

Technical Director of phased array radar signal processor, UAV/Bird classifier and HADCS arctic radio system

Raytheon Canada, 1997 - 2011 **Waterloo, ON, Canada**

Senior Principal Engineer and Manager of New Ventures

Technical Director for: all microwave radar marine surveillance projects and phased array radar processors.

Raytheon Canada, 1986 - 1997 **Waterloo, ON, Canada**

Engineer to Senior Engineer II Manager

Technical director of space-based radar signal processor, EHF satcom and tropo-scatter radio testing

Schlumberger International, 1978 - 1984 **Nigeria, Algeria, Morocco, Angola, Gabon, Cote d'Ivoire**

Wireline Field Engineer to Technical Manager

23 years of experience

Professional qualifications

Alberta Society of Professional Biologists

Area of expertise

Environmental Assessment
Permitting Strategy
Bird and Bat Ecology
Sustainability
Renewable Energy Projects

CAREER SUMMARY

Mike is a professional biologist and senior environmental regulatory professional with 23 years of experience specializing in bird and bat ecology, 16 years of which spent nearly exclusively in the renewable energy sector. Mike specializes in environmental assessments, permitting strategy, and application preparation with experience providing consulting services to most of Canada's major renewable energy developers. Mike was the successful manager of the Environment, Health and Safety, and Sustainability operations of Canada's largest renewable energy company (~1.3 GW). Mike has displayed a proven ability to analyze, summarize and effectively communicate complex technical information, interpret regulatory requirements, and prepare applications to meet the requirements of renewable energy regulators across Canada and the US. He is experienced in client, project, and personnel management with the ability to liaise with a wide audience, lead multi-disciplinary teams, and professionally present findings in public. Involved in numerous renewable energy projects across North America from project assessment and permitting through to project construction, operation, and maintenance

PROFESSIONAL HISTORY

National Director, Power, Ausenco, Halifax, NS, Canada	2022-present
National Lead, Renewable Energy, Hemmera, Halifax, NS, Canada	2019-2021
Business Lead, Atlantic Canada, Hemmera, Halifax, NS, Canada	2019-2021
Environmental Planning and Ecology Business Lead, Hemmera, Calgary, AB, Canada	2018-2019
Renewable Energy and Wildlife Lead, Hemmera, Calgary, AB, Canada	2017-2018
Manager, EHS and Sustainability/Wind and Solar Operations, TransAlta Corp, Calgary, Canada,	2016-2017
Senior Environmental Specialist, TransAlta Corp, Calgary, AB, Canada	2012-2016
Environmental Assessment and Permitting Manager, TAMA Transmission, Calgary, AB, Canada	2013-2014
Project Manager / Wildlife Ecologist, Golder Associates Ltd., Calgary, AB, Canada	2007-2012
Research Associate, Acadia University, Wolfville, NS, Canada	2006-2007

RELEVANT EXPERIENCE

- o Rhodena Wind Project, Nova Scotia, Canada (2022-ongoing): Project Director. Mike is a Project Director for the Project, providing strategic support and oversight. Currently in partnership with local firms, conducting a full suite of environmental assessment services to meet the NS Environment and Climate Change Environmental Assessment Branch Class I EA requirements.
Client: ABO Wind Canada.
- o Aulds Mountain III Wind Project, Nova Scotia, Canada (2022-ongoing): Project Manager. Mike is the Project Manager, currently conducting avian radar and acoustic monitoring for a proposed wind energy project. Mike's work on the project will form a portion of the provincial environmental assessment of the project, assessing risk to migrating birds.
Client: Natural Forces Inc.

- Confidential Wind Project, Nova Scotia, Canada (2022-ongoing): Project Manager. Mike is the Project Manager, currently conducting avian radar and acoustic monitoring for a proposed wind energy project. Mike's work on the project will form a portion of the provincial environmental assessment of the project, assessing risk to migrating birds. Client: Natural Forces Inc.
- Confidential Wind Project, Prince Edward Island, Canada (2022-ongoing): Project Manager. Mike is the Project Manager, currently conducting avian radar and acoustic monitoring for a proposed wind energy project. Mike's work on the project will form a portion of the provincial environmental assessment of the project, assessing risk to migrating birds. Client: Natural Forces Inc.
- Solar Energy Due Diligence Assessment, Alberta, Canada (2022): Technical Lead. Mike completed an environmental and permitting due diligence review to support a renewable energy developer in the acquisition of multiple solar energy assets in Alberta. Client: Confidential.
- Solar and Storage Energy Projects, Nova Scotia, Canada (2022): Technical Lead. Mike provided advisory services to guide a global oil and gas company's entrance into the Nova Scotia renewable energy sector through the development of a renewable energy (solar and energy storage) guidance document specific to Nova Scotia and support in evaluating and selecting a renewable energy development partner. Client: Confidential Oil and Gas Company.
- Mahone Bay Solar Project, Mahone Bay, Nova Scotia, Canada (2021-2022): Project Manager. Mike is the Project Manager, completing the assessment of wetlands and wildlife habitat in association with the proposed solar facility interconnection distribution line. Client: Alternative Resources Energy Alternatives (AREA).
- Brooks Solar Expansion, Brooks, State, Country (2021-ongoing): Project Director. Mike is the Project Director, supporting the environmental permitting of an expansion to the Brooks Solar Project. Mike is providing strategic environmental regulatory advice to aid the proponent in removing the project from AUC abeyance. Client: Solar Krafte.
- Two Solar Energy Projects, Southern Alberta, Canada (2021): Technical Lead. Mike provided advisory services to guide a global oil and gas company's entrance into the renewable energy sector through the development of a renewable energy guidance document and support in evaluating and selecting a renewable energy development partner. Client: Confidential Oil and Gas Company.
- Forty Mile Solar Energy Project, Southern Alberta, Canada (2021-ongoing): Project Director. Mike is the Project Director, supporting the environmental permitting of a 200 MW solar project. Mike's scope includes regulatory consultation and environmental permitting regulated by Alberta Environment and Parks and the Alberta Utilities Commission. Client: Suncor Energy.
- Benjamins Mill Wind Project, Nova Scotia, Canada (2021-ongoing): Project Manager. Mike is the Project Manager, currently conducting avian radar and acoustic monitoring for a proposed 150 MW wind energy project. Mike's work on the project will form a portion of the provincial environmental assessment of the project, assessing risk to migrating birds. Client: Natural Forces Inc.
- Westchester Wind Project, Nova Scotia, Canada (2021-ongoing): Project Manager. Mike is the Project Manager, currently conducting avian radar and acoustic monitoring for a

proposed 50 MW wind energy project. Mike's work on the project will form a portion of the provincial environmental assessment of the project, assessing risk to migrating birds.
Client: Natural Forces Inc.

- Riplinger Wind Project, Alberta, Canada (2021-ongoing): Strategic Advisor. Mike is providing senior technical and strategy support for this project. The scope includes consultation with AEP-FWS and coordination of baseline pre-development environmental surveys and reporting, Environmental Evaluation creation and submission, and development of Post-Construction Monitoring and Mitigation Plans required by the AEP-FWS and AUC.
Client: TransAlta Corp.
- Willow 1 and Willow 2 Wind Projects, Alberta, Canada (2021-ongoing): Strategic Advisor. Mike is providing senior technical and strategy support for these projects. The scope includes consultation with AEP-FWS and coordination of baseline pre-development environmental surveys and reporting, Environmental Evaluation creation and submission, and development of Post-Construction Monitoring and Mitigation Plans required by the AEP-FWS and AUC.
Client: TransAlta Corp.
- Garden Plain Transmission Project, Hanna, Alberta, Canada (2021): Project Director. Mike is the Project Director for this Project, supporting ATCO Electric in completing the environmental filings with the AUC.
Client: ATCO Electric.
- Windrise Transmission Project, Fort MacLeod, Alberta, Canada (2020-2021): Strategic Advisor. Mike provided senior technical and strategy support for the environmental construction monitoring of this 21 km transmission line project. The scope included regulatory liaison and development of wildlife mitigations during project construction, including development of a raptor mitigation strategy approved by AEP-FWS.
Client: TransAlta Corp
- Bullshead Solar, Medicine Hat, Alberta, Canada (2020-ongoing): Project Director. Mike is the Project Director for the project, directing regulatory strategy for advancing the project through the Alberta Environment and Parks environmental assessment and AUC regulatory processes. He is also assisting in development of study scopes to meet regulatory requirements, and consultation support with regulators.
Client: Confidential.
- Carseland Solar, Carseland, Alberta, Canada (2020-ongoing): Project Director. Mike is the Project Director for the project, directing regulatory strategy for advancing the project through the Alberta Environment and Parks environmental assessment and AUC regulatory processes. He is also assisting in development of study scopes to meet regulatory requirements, and consultation support with regulators.
Client: Confidential.
- Alderson Solar, Suffield, Alberta, Canada (2020-ongoing): Project Director. Mike is the Project Director for the project, directing regulatory strategy for advancing the project through the Alberta Environment and Parks environmental assessment and AUC regulatory processes. He is also assisting in development of study scopes to meet regulatory requirements, and consultation support with regulators.
Client: HEP Solar.
- Kneehill Solar Project, Three Hills, Alberta, Canada (2020-ongoing): Project Director. Kneehill Solar is a 25 MW project which has received AEP, AUC and municipal approvals. Mike serves as the Project Director overseeing the ongoing AUC and municipal permitting for the Project.
Client: Samsung Renewable Energy Inc.

- Michichi Solar Project, Drumheller, Alberta, Canada (2020-ongoing): Project Director. Michichi Solar is a 25 MW project which has received AEP, AUC and municipal approvals. Mike serves as the Project Director overseeing the ongoing AUC and municipal permitting for the Project.
Client: Samsung Renewable Energy Inc.
- Study Regarding Migrating Birds & Future Wind Energy Development, Nova Scotia, Canada (2020-ongoing): Project Manager. Through partnership with staff at Acadia University, Mike is the Project Manager, completing the initial data collection stage of a province wide study of risk to migratory birds from future wind energy development. The initial stage of the project involves acoustic data collection from 50+ remote sensors positioned across central Nova Scotia.
Client: Acadia University / Nova Scotia Department of Energy and Mines.
- Various Pumped Hydro Projects, Southern Alberta, Canada (2020-ongoing): Project Director. Mike is the Project Director, providing strategic advice to support a renewable energy company in identifying a suit of candidate sites for wind powered, pumped hydro / storage projects across southern Alberta. Mike is also providing guidance related to future environmental permitting for these sites.
Client: Confidential.
- Confidential Wind Project, Northern Alberta, Canada (2020-ongoing): Project Director. Mike is currently providing strategic environmental support and guidance to Potentia related the development of a 400 MW wind project. Mike is also leading initial environmental regulator consultation/negotiations for the Project and the associated Project transmission line.
Client: Potentia Renewable Inc.
- Hand Hills Wind Project AUC Hearing, Hanna, Alberta, Canada (2020): Expert Witness. Mike served as an expert witness regarding potential environmental impacts from the Project, with respect to native grassland and coulee habitat impacts and sharp-tailed grouse. The Project received AUC approval in December 2020 with only slight changes to the mitigation associated with sharp-tailed grouse leks.
Client: BluEarth Renewables Inc.
- Ferruginous Hawk Nest Monitoring, Medicine Hat, Alberta, Canada (2019): Project Director. Mike was the Project Director for the project which involved environmental monitoring of a SARA Schedule 1 Ferruginous Hawk nest located on an electrical distribution pole. Project works were successfully completed in compliance with AEP's guidance and without disturbance to the sensitive wildlife feature.
Client: City of Medicine Hat.
- Lanfine Wind Project AUC Hearing, Oyen, Alberta, Canada (2019): Expert Witness. Mike served as an expert witness regarding potential environmental impacts from the Project, with respect to migratory bats. The Project received AUC approval on January 27, 2020, with no additional environmental conditions added to the Project approval.
Client: Pattern Development.
- Buffalo Bird to Lanfine Project, Oyen, Alberta, Canada (2018-2021): Project Director. Mike is the Project Director and lead ecologist for the AUC submission for this project. This includes consultation with AEP-WM and coordination of baseline field work and reporting, and Environmental Evaluation creation/submission for this 14 km transmission line.
Client: ATCO Electric.
- Confidential Project, Southern Saskatchewan, Canada (2018-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the environmental application for this project. This includes consultation with MOE and coordination of baseline field work and reporting, constraints analysis, and regulatory

- applications (e.g., Technical Project Proposal).
Client: RWE Renewables.
- Saint John Energy Wind Project, Saint John, New Brunswick, Canada (2018): Project Director. Mike served as the Project Director for the project. The scope with this project includes a fatal flaw assessment and a permitting and regulatory framework for the Project.
Client: Confidential.
 - Windrise Wind Project, Fort MacLeod, Alberta, Canada (2018-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP-WM and AUC submissions for this project. This includes strategy related to regulatory submissions related to assessment of potential environmental impacts. Coordinating the archaeology work on this project. Mike and the team were successful in obtaining a 'Low Risk' rating from AEP-WM for the Project and helped receive AUC approval within four months of submission.
Client: TransAlta Corp.
 - Frontline Solar Project, Central Alberta, Canada (2018-2019): Project Director. Mike is the Project Director for the project, directing regulatory strategy for advancing the projects through the provincial environmental assessment and AUC regulatory processes. He is also assisting in development of study scopes to meet regulatory requirements, and consultation support with regulators.
Client: FrontLine Energy Consulting.
 - Highfield Solar Farm, RM of Coulee, Saskatchewan, Canada (2018): Project Director. Highfield Solar is scheduled to be the first utility-scale solar facility in Saskatchewan. Mike was the Project Director for the proposed 10 MW project, providing senior reviews and guidance on the initial environmental screening for the project site selection.
Client: Saturn Power.
 - Forty Mile Wind Project, Bow Island, Alberta, Canada (2017-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP submission for this project. The project includes coordination of baseline field work and reporting, Environmental Evaluation creation/submission and development of Post-Construction Monitoring and Mitigation Plans required by the AEP-WM and AUC. Coordinating the noise assessment, archaeology work on this project.
Client: Suncor Energy Inc.
 - Lanfine Wind Project, Oyen, Alberta, Canada (2017-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP-WM submission for this project. This includes coordination of baseline field work and reporting, Environmental Evaluation creation/submission, and development of Post-Construction Monitoring and Mitigation Plans required by the AEP-WM and AUC. Coordination of the archaeology work on this project is included.
Client: BowArk Energy / Pattern Development.
 - Oldman 2 Wind Project, Pincher Creek, Alberta, Canada (2017-ongoing): Project Manager/Director. Mike led the regulatory engagement with AEP-WM and AUC to achieve an accepted Construction Mitigation Plan and Raptor Mitigation Plan for the Project. Mike also provides senior review and strategic guidance on the Post-Construction Bird and Bat Monitoring Program for the Project.
Client: Ingka Group.
 - Hand Hills Wind Project, Hanna, Alberta, Canada (2017-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP-WM submission for this project. This includes consultation with AEP-WM and coordination of baseline field work and reporting, Environmental Evaluation creation/submission, and development of

Post-Construction Monitoring and Mitigation Plans required by the AEP-WM and AUC. Mike also provided responses to environmental Information Requests from the AEP-WM and AUC. Conducted the Historical Resource Impact Assessment for the project.
Client: BluEarth Renewables Inc.

- Lone Pine Wind Project, Three Hills, Alberta, Canada (2017-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP-WM submission for this project. This includes consultation with AEP-FWS and oversight of baseline field work and reporting and development of the required environmental management plans required by the AEP-FWS.
Client: Confidential.
- New Dayton Wind Project, New Dayton, Alberta, Canada (2017-2018): Project Director/Lead Ecologist. Mike is Project Director and Lead Ecologist for the project. Leading the environmental studies and the submission of concurrent municipal, provincial and federal permitting including to AEP-WM, AUC, municipal development, Transport Canada, Alberta Transportation, NAV Canada and Environment and Climate Change Canada.
Client: Acciona Canada.
- Windy Point Wind Project, Pincher Creek, Alberta, Canada (2017-2018): Strategic Advisor. Mike has provided senior regulatory advice regarding the Alberta regulatory process for renewable energy applications with the Alberta Environment and Parks and the Alberta Utilities Commission.
Client: Boralex Inc.
- Burdett Solar Project, Burdett, Alberta, Canada (2017-ongoing): Project Director. Mike serves as the Project Director overseeing regulatory filings and providing senior reviews for technical reports and work plans. Specifically, Mike is overseeing the AEP applications related to Alberta Water Act regulations and the Conservation and Reclamation Directive for Renewable Energy Projects. As the Project advances into the construction stage, Mike is provided guidance related to construction environmental monitoring and Post-Construction Environmental Monitoring.
Client: BluEarth Renewables Inc.
- Yellow Lake Solar Project, Burdett, Alberta, Canada (2017-ongoing): Project Director. Mike serves as the Project Director overseeing regulatory filings and providing senior reviews for technical reports and work plans. Specifically, Mike is overseeing the AEP applications related to Alberta Water Act regulations and the Conservation and Reclamation Directive for Renewable Energy Projects. As the Project advances into the construction stage, Mike is provided guidance related to construction environmental monitoring and Post-Construction Environmental Monitoring.
Client: BluEarth Renewables Inc.
- Confidential Solar Project, Alberta, Canada (2017-2018): Project Manager. Mike was responsible for completing regulatory consultation with AEP and designing the environmental assessment for the Project. Mike also oversaw environmental data collection for the Project.
Client: TransAlta Corp.
- Riverview Solar Project, Radville, Saskatchewan, Canada (2017-2018): Project Director. Mike is the Project Director, providing strategic advice and senior review of project deliverables for this 40 MW solar project. Hemmera's support on the Project included a screening level survey and constraints analysis for selection of the site among three other potential locations, including the identification of environmental risks and development constraints, and overseeing rare plant, bird, and amphibian surveys. Upon selection,

- Completed the Technical Project Proposal, suitable for submission to SK MOE.
Client: BluEarth Renewables Inc.
- Wind Energy Green House Gas Offsets, Alberta, Canada (2017): Project Manager. Mike performed greenhouse gas (GHG) offset credit enumeration reports and prepared applications to the GHG Registry for TransAlta Renewables Inc. wind assets eligible under the Specified Gas Emitters Regulation (SGER) for Q4 2016 and for the Wintering Hills Wind Project for Q1 2017.
Client: TransAlta Corp.
 - Garden Plain Wind Project, Hanna, Alberta, Canada (2016-ongoing): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP-WM submission for this project. This includes consultation with AEP-FWS and coordination of baseline field work and reporting, Environmental Evaluation creation/submission, and development of Post-Construction Monitoring and Mitigation Plans required by the AEP-WM and AUC. Completed the archaeology work on this project and providing continuous support the project as it moves into.
Client: TransAlta Corp.
 - Various Projects, Alberta, Ontario and Quebec, Canada (2016): EHS & Sustainability Manager. While employed at TransAlta, Mike completed the GHG enumeration, and prepared the associated offset credit reports which were verified by a GHG accounting specialist (KPMG). The creation of the GHG calculations and reports required the successful integration of renewable energy production with GHG inputs obtained by wind energy facility operators across Alberta. Mike also oversaw the Renewable Energy Credit (REC) accounting for wind energy projects in ON and QC.
Client: n/a
 - Cowley Ridge Wind Repower Project, Cowley, Alberta, Canada (2016-2018): Project Director/Lead Ecologist. Mike is the Project Director and lead ecologist for the AEP-WM submission for this project. This includes consultation with AEP-WM and coordination of baseline field work and reporting, Environmental Evaluation creation/submission, and development of Post-Construction Monitoring and Mitigation Plans required by the AEP-WM and AUC.
Client: TransAlta Corp.
 - WindCharger Battery Storage, Pincher Creek, Alberta, Canada (2016-2017): Environmental Manager. While employed at TransAlta, Mike was responsible for environmental permitting of the Alberta's first utility-scale lithium-ion battery storage facility. The Project has a name plate capacity of 10 MW with total storage capacity of 20 MW and is connected to the Summerview Wind Energy Facility.
Client: n/a
 - MASS Solar, Massachusetts, USA (2015-2017): Environmental Manager. While employed at TransAlta, Mike was responsible for environmental due diligence for the acquisition of the MASS Solar project. Mike was also responsible for all EHS aspects of the operations of these projects. MASS Solar consists of four ground-mounted projects and four roof-top projects for a total nameplate capacity of 21 MW.
Client: n/a
 - Various Sites, Canada/USA (2013-2016): Senior Environmental Advisor. In addition to TransAlta's fleet within Alberta, Mike was the Senior Environmental Advisor at TransAlta, responsible for all environmental aspects of these Wind Power Projects located across North America, in addition to the development of site-specific Operations Environmental Management Plans (OEMPs) for each.
Client: TransAlta Corp.

- Fort McMurray West 500 kV Transmission Project, Central Alberta, Canada (2013-2014): Environmental Manager. While employed at TAMA Transmission, Mike managed the environmental assessment and permitting program of the Alberta Electric System Operator (AESO) RFP phase of the Fort McMurray West 500 kV Transmission Project. He was responsible for the preparation of environmental aspects of submissions under the project's AESO RFP phase, as well as for all consultation with environmental regulators. In addition, Mike developed the environmental consultation program for future project phases; represented environmental aspects of the Project during consultation efforts with First Nations and the public and assisted in the development of a preliminary route for the transmission line.
Client: n/a
- Wolfe Island Wind Power Project, Wolfe Island, Ontario, Canada (2012-2014): Senior Environmental Advisor. Mike was the Senior Environmental Advisor at TransAlta, responsible for the completion of the post-construction bird and bat mortality monitoring program for the 198 MW project. Mike was also responsible for obtaining an Overall Benefit Permit under the Ontario Endangered Species Act, and the subsequent development of the required Management Plan for Bobolink.
Client: TransAlta Corp.
- Confidential Wind Energy Projects, Canada and US (2012-2017): environmental Manager. While employed by TransAlta, Mike completed environmental due diligence for wind and solar projects across North America. He also completed environmental permitting for greenfield wind project develops in Alberta and Saskatchewan.
Client: n/a
- Confidential Solar Energy Projects, Canada and USA (2012-2017): Environmental Manager. While employed at TransAlta, Mike completed environmental due diligence assessments for solar projects across North America.
Client: n/a
- Red Lily Wind Power Project, Moosimin, Saskatchewan, Canada (2011-2012): Project Manager/Lead Author. Mike was the Project Manager and lead author and regulatory advisor for the post-construction bird and bat mortality monitoring for the 26 WM project.
Client: Algonquin Power.
- Ferruginous Hawk Nest Monitoring, Milo, Alberta, Canada (2011): Wildlife Biologist. Mike completed environmental monitoring of a SARA Schedule 1 Ferruginous Hawk nest within proximity of an AltaLink switching station. Time activity budgets were recorded to provide baseline activity, and potential disturbance response, behaviour.
Client: AltaLink.
- Various Wind Energy Projects, Southern Saskatchewan, Canada (2010-2012): Project Manager/Lead Wildlife Biologist. Mike served as Project Manager and Lead Wildlife Ecologist for seven confidential wind energy projects, bidding into the 2012 SaskPower Renewable Energy competitive process. Projects involved multi-disciplinary investigations ranging from wildlife (bird and bat), vegetation, wetlands, noise, historical resources, as well as visual and social components.
Client: Confidential.
- Grizzly Bear Creek, Vermillion, Alberta, Canada (2010-2012): Lead Ecologist. Mike served as the Lead Ecologist for the Project, completed the required environmental assessments and reporting for submission to AEP-WM and the AUC. The 120 MW project obtained AUC approval in May, 2016.
Client: E.ON Climate and Renewables.
- Schuler Wind Project, Schuler, Alberta, Canada (2010-2011): Lead Ecologist. Mike served as the Lead Ecologist for the Project, completed the required environmental assessments

and reporting for submission to AEP-WM.
Client: Suncor Energy Inc.

- Hanna Region Transmission Development Project, Central Alberta, Canada (2010-2012): Lead Wildlife Ecologist. Mike served as lead wildlife ecologist for the baseline wildlife assessment for the 350 km, multicomponent, 240 kV transmission line and six substation development, located between Drumheller and Oyen, Alberta. The transmission line was granted AUC approval in May 2012.
Client: ATCO Electric.
- Wild Rose 2 Wind Power Project, Medicine Hat, Alberta, Canada (2010-2012): Project Manager. Mike was the Project Manager for the project during the preparation of the provincial permitting submissions, and AUC hearing for the 162 MW wind project. The project was granted AUC approval in August 2011.
Client: NaturEner Energy Canada.
- Wild Rose 1 Wind Power Project, Medicine Hat, Alberta, Canada (2009-2010): Project Manager. Mike was the Wildlife Lead and Project Manager for the project during the preparation of the provincial permitting submissions. The project was granted AUC approval in August 2010.
Client: NaturEner Energy Canada.
- East Palliser Transmission Line, Medicine Hat, Alberta, Canada (2009): Lead Wildlife Field Ecologist. Mike was the lead wildlife field ecologist for the baseline wildlife assessment for the 100 km, multicomponent 138 to 240 kV transmission line project.
Client: NaturEner Energy Canada.
- Multiple Alberta Wind Facilities, Southern Alberta, Canada (2008-2012): Project Manager/Lead Wildlife Biologist. Mike acted as Project Manager and Lead Wildlife Biologist for the multi-year post-construction bird and bat monitoring programs at the Soderglen, Summerview II, Blue Trail, and Ardenville Wind Power Facilities located in southern Alberta.
Client: Lead Wildlife Ecologist.
- Ghost Pine Wind Energy Centre, Trochu, Alberta, Canada (2007-2011): Lead Wildlife Ecologist. Mike was Lead Wildlife Ecologist for the baseline wildlife assessment for the 81.6 MW Ghost Pine facility. The project was granted AUC approval in July 2010 and began operation in early 2011. Mike also completed environment construction monitoring for the Project.
Client: NextEra Energy Canada.
- Wintering Hills Wind Farm, Drumheller, Alberta, Canada (2007-2012): Lead Wildlife Ecologist. Mike was Lead Wildlife Ecologist for the baseline wildlife assessment for the 88 MW Wintering Hills facility. The project was granted AUC approval and began operation in November 2011. Mike also designed the post-construction bird and bat monitoring program for the Project.
Client: Suncor Energy Inc.
- Chin Chute Wind Project, Taber, Alberta, Canada (2007-2008): Lead Wildlife Biologist. Mike acted as Lead Wildlife Biologist and author for the multi-year post-construction bird and bat monitoring program at the project.
Client: Suncor Energy Inc./Acciona Canada.
- Taber Wind Farm, Taber, Alberta, Canada (2007-2008): Lead Wildlife Biologist. Mike acted as Lead Wildlife Biologist and author for the multi-year post-construction bird and bat monitoring program at the project.
Client: ENMAX Corp.

EDUCATION

Bachelor of Science (Biology), Acadia University, Wolfville, Nova Scotia	1995-1999
Master of Science (Biology), Acadia University, Wolfville, Nova Scotia	2003-2006

PROFESSIONAL MEMBERSHIPS

Alberta Society of Professional Biologists	2012-present
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PUBLICATIONS AND PRESENTATIONS*Publications*

- o Authored species accounts of seven passerine species. In: Second Atlas of Breeding Birds of the Maritime Provinces. 2015. 528 + 28 pp. www.mba-aom.ca.
- o Taylor, P. D., J. Brzustowski, C. Matkovich, M. L. Peckford, and D. Wilson. 2010. radR: an open source platform for acquiring and analyzing data on biological targets observed by surveillance radar. *BMC Ecology*, 10:22.
- o Peckford, M. L., and P. D. Taylor. 2007. Comparisons of nocturnal migration counts recorded by radar and diurnal counts at a Canadian Migration Monitoring Station. *Journal of Field Ornithology*, 79(2): 207-214.
- o Peckford, M. L. 2005. Overview of passerine migration in southwestern Nova Scotia using radar. In: Tall structures and birds/bats working group newsletter 2(3).
- o Peckford, M. L., and D. Whitaker. 2005. The Status of Northern Wheatear (*Oenanthe oenanthe leucorhoa*) in Newfoundland and Labrador. Species Status Advisory Committee Report, SSAC-2005-01-Northern Wheatear
- o Peckford, M. L. 2006. Wind drift and the use of radar, acoustics, and Canadian Migration Monitoring Network methods for monitoring nocturnal passerine migration. Retrieved from <https://scholar.acadiau.ca/islandora/object/theses:120>
- o Nocera, J., C. Lawrie, and M. L. Peckford. 2004. Sonograms confirm Willow Flycatcher at Belleisle Marsh. *Nova Scotia Birds* 46(4):24-25.
- o Lees, A. C., T. M. Fitzgerald, and M. L. Peckford. 2003. A Le Conte's sparrow (*Ammodramus leconteii*) on Bon Portage Island. *Nova Scotia Birds* 45: 8-9
- o Peckford, M. L., and T. M. Fitzgerald. 2003. Autumn Migration at the Atlantic Bird Observatory. *Nova Scotia Birds* 45(4).
- o Peckford, M. L. 2002. Swainson's Warbler at the Atlantic Bird Observatory. Second record for Nova Scotia. *Birders Journal* 11(4):145-147.

Presentations

- o Peckford, Mike. The Challenge in Turning Sustainable Commitments into Sustainable Projects. Guest Speaker at Electricity Transformation Canada Inaugural Conference – Session 3.1 Embracing Renewable Energy's Leadership Role in Sustainability, Toronto, ON. November, 2021.

- Peckford, Mike. Risk Assessment – Best Practices in Wind Energy Project Siting. Presenter at Wind Energy and Bat Conservation Workshop. CanWEA Annual Conference & Exhibition, Calgary, AB. October, 2018
- Dawson, Marnie., Peckford, Mike., Coe, Leslie., and Stepnisky, Dave. Wind Energy and the Environment – Panel Member. CanWEA Alberta Summit. Edmonton, AB. May, 2017.
- Peckford, Mike. An overview of the environmental impacts of wind energy: an Ontario perspective. Invited presentation to Ontario Ministry of Natural Resources and Forestry. Wolfe Island, ON. June, 2015
- Taylor, Andrew., Kopysh, Nicole. and Peckford, Mike. An assessment of direct and indirect impacts to waterfowl in an important bird area from wind turbine operation. National Wind Coordinating Collaborative Conference. Broomfield, CO. November, 2014.
- Peckford, Mike. Challenges in predicting bat mortalities based on bat activity levels, and understanding the effectiveness of bat mitigation strategies. Presenter and discussion panel member. CanWEA Annual Conference & Exhibition. Toronto, ON. October, 2013
- Peckford, Mike. Acoustic and radar monitoring for passerines at a Canadian migration monitoring station. Guest Speaker. New Hampshire Audubon Society, Concord, NH, US. 2007.
- Peckford, Mike and Taylor, Phil. Migration strategies for crossing the Gulf of Maine: Compensate or Drift. IV North American Ornithological Conference, Vera Cruz, Mexico. 2006.
- Peckford, Mike. Enhancing CMMN stations through radar monitoring. 5th Biennial Canadian Migration Monitoring Network Meeting. Prince Edward County, ON. 2005.
- Peckford, Mike. and Taylor, Phil. Integrating radar as a tool for monitoring passerine migration. 24th annual meeting of the Society of Canadian Ornithologists, Halifax, NS. 2005.
- Peckford, Mike. Comparisons Between Nightly Radar Observations and Numbers of Birds Detected at a Migration Monitoring Station. Atlantic Cooperative Wildlife Ecology Research Network annual meeting, Fredericton, NB. 2004.
- Peckford, Mike. Patterns of Nocturnal Avian Migration in Atlantic Canada. Canadian Society of Zoologists 43rd annual meeting, Wolfville, NS. 2004.
- Peckford, M. L. and T. M. Fitzgerald. 2003. Migration monitoring in Atlantic Canada: Are we doing enough? Atlantic Cooperative Wildlife Ecology Research Network, Wolfville, NS.

LANGUAGE

English

7 years of experience

Area of expertise

Environmental Science
Conservation Biology
Data Management
Public Outreach
Fish and Aquatic Habitat
Monitoring

CAREER SUMMARY

Jillian is an experienced biologist and science communicator with a demonstrated history of working in the environmental science industry. Skilled in conservation biology, data management, public outreach and fish and aquatic habitat monitoring.

PROFESSIONAL HISTORY

Project Coordinator, GC Sustainability NA, EPE, Halifax, NS, Canada	2022-present
Conservation Biologist, Nova Scotia Salmon Association, Halifax, NS, Canada	2019-2022
Senior Aquatic Laboratory Technician, Animal Care Services, University of Victoria, Victoria, BC, Canada	2017-2019
Aquatic Science Technician, Fisheries and Oceans Canada	2016-2017

RELEVANT EXPERIENCE

- Rhodena Wind Project, Nova Scotia, Canada (2022-ongoing): Project Coordinator. Supporting field operations and data management within a full suite of environmental assessment services to meet the NS Environment and Climate Change Environmental Assessment Branch Class I EA requirements. Client: ABO Wind Canada.
- Confidential Wind Project, Nova Scotia, Canada (2022-ongoing): Project Coordinator. Supporting fieldwork and data management for avian radar and acoustic monitoring for a proposed wind energy project. Client: Natural Forces Inc.
- Confidential Wind Project, Prince Edward Island, Canada (2022-ongoing): Project Coordinator. Supporting fieldwork and data management for avian radar and acoustic monitoring for a proposed wind energy project. Client: Natural Forces Inc.
- Benjamins Mill Wind Project, Nova Scotia, Canada (2022-ongoing): Project Coordinator. Logistical support, field coordination and data management of avian monitoring program. Conducting radar and acoustic research for a proposed 150 MW wind energy project. This work forms a portion of the provincial environmental assessment of the project, assessing risk to migrating birds. Client: Natural Forces Inc.
- Westchester Wind Project, Nova Scotia, Canada (2022-ongoing): Project Coordinator. Logistical support, field coordination and data management of avian monitoring program. Conducting radar and acoustic research for a proposed 50 MW wind energy project. This work forms a portion of the provincial environmental assessment of the project, assessing risk to migrating birds. Client: Natural Forces Inc.
- West River Acid Mitigation Project, Nova Scotia, Canada (2019-2022): Project Coordinator. Lead biologist for monitoring project focused on habitat restoration of the West River, Sheet Harbour. This work supported objectives of the Canada Nature Fund for Aquatic Species at Risk.
- Fish Habitat Restoration Project, Nova Scotia, Canada (2020-2022): Conservation Biologist. Coordination of monitoring, design and installation of artificial rocky reef structures in Sheet Harbour designed to support the migration of Atlantic salmon and anadromous trout. This work supported objectives of the Coastal Restoration Fund.
- Atnarko River Chinook Escapement Estimation Project (2016-2017): Aquatic Science Technician. Supported field monitoring and data collection of Chinook salmon for

population estimates using mark-recapture program. This work supported objectives of the Coded Wire Tag (CWT) Improvement Program to improve escapement estimates.

EDUCATION

Master of Marine Studies, Memorial University of Newfoundland	2020-present
Bachelor of Science, University of New Brunswick	2003-2008

LANGUAGE

English