

Brigitte Masella

EDUCATION

D.E.C. (Health Sciences), Collège de Sherbrooke, Canada, 1987

B.Adm., University of Ottawa, Canada, 1989

M.E.S. (Environmental Planning), York University, Canada, 1993

EXPERTISE

Environmental & Social Impact Assessment
Participatory Research & Capacity Building
Integrated Resource Planning
Aboriginal Affairs & Community Development
Project Management

EXPERIENCE

Brigitte Masella has approximately 20 years of consulting experience in several parts of Canada and internationally. As Senior Associate, she is responsible for project management as well as research, analysis and reporting for diverse mandates in the environmental and social sciences, most of which involve the assessment of the environmental and social impacts of large natural resource development projects potentially affecting Aboriginal peoples living in northern environments. She is a member of the Board of Directors of the *Association québécoise pour l'évaluation d'impacts*.

LANGUAGES

Fluent in English, French and Portuguese. Functional in Spanish.

SAMPLE OF ASSIGNMENTS

ENVIRONMENTAL & SOCIAL ASSESSMENT

Mining

2006-ongoing: Coordinator of Environmental and Social Affairs on behalf of New Millennium Iron Corp. for the environmental assessment of the KéMag Iron Ore Project, which provisionally involves an open-pit mine near Harris Lake, Québec, a 650-km slurry pipeline and a pellet plant at Sept-Îles. Project subject to impact assessment regimes of governments of Canada and Québec, Section 23 of *James Bay and Northern Québec Agreement* and Section 14 of *Northeastern Québec Agreement*.

2005-ongoing: Coordinator of Environmental and

Social Affairs on behalf of New Millennium Iron Corp. for the environmental assessment of the LabMag Iron Ore Project, which provisionally involves an open-pit mine in the Howells River Basin (Labrador), a 600-km slurry pipeline and a pellet plant at Sept-Îles. Project subject to impact assessment regimes of Canada, Québec and Newfoundland and Labrador.

2008-ongoing: Coordinator of Environmental and Social Affairs on behalf of New Millennium Iron Corp. for the environmental assessment of the Direct-Shipping Ore Project in the Schefferville area in both Québec and Labrador and for the implementation of conditions of release, including permitting.

2011-ongoing: Advisor to the Panel of the Mackenzie Valley Environmental Impact Review Board for the socio-economic impact assessment of the Gahcho Kue diamond mine project (Northwest Territories).

2010: Advisor to IKV Pax Christi on the socio-economic impact assessment of a major gold mine project in Tolima, Colombia. Participated in a two-day work session with the Colombian Department of Environment in Bogotá reviewing the draft terms of reference for the environmental impact statement and gave recommendations. Delivered presentations in Tolima at the State Parliament, public assemblies, business groups and universities.

2010: Senior Researcher for the planning of a pan-Canadian mission for a delegation of senior managers/consultants of Tata Steel Global Minerals from India, the objective of which was to understand the Canadian regulatory framework regarding mining and sustainable development practices.

2003-2004: Associate Coordinator of preliminary environmental baseline studies (terrestrial, avian and aquatic environment and archaeological resources) for the LabMag Iron Ore Project. Work involved: preparing researchers' work plans and coordinating field work; revising draft reports; liaising with client, including popularization of scientific data.

1998-2003: Advisor to Nunavut Water Board ("NWB") and Nunavut Impact Review Board ("NIRB") respecting procedural, environmental and socio-economic issues to be considered in the environmental assessment of the Jericho Diamond Project, Nunavut. Subsequently worked on: preparing Environmental Assessment Guidelines and Conformity/Deficiency Analyses of Draft and Final Environmental Impact Statements; assisting NWB and NIRB in pre-hearing consultations; preparing several presentations outlining key aspects of Draft/ Final

Brigitte Masella

EISs for NWB and NIRB; drafting Adjournment and Supplementary Final EIS Decision.

2003: Advisor to NIRB in preparing Environmental Assessment Guidelines for the Doris North Gold Mine Project, Nunavut. Thereafter worked on preparing Conformity/Deficiency Analysis of Draft EIS and presentations for pre-hearing consultations.

2001: Senior Researcher for a study into impacts of advanced exploration for diamond-mining on traditional pursuits, on behalf of Attawapiskat First Nation (Northern Ontario).

Energy

2008: Senior Researcher for the preparation of: case studies on knowledge of effects of northern transmission lines on First-Nation interests; a presentation for a workshop for Dene Elders. Work conducted on behalf of NWT Treaty #8 Tribal Corporation for its assessment of the Taltson Hydroelectric Expansion Project.

2004-2006: Senior Researcher for the Socio-Economic Impact Assessment of a liquefied natural gas terminal project at Cacouna (Québec), on behalf of TransCanada and Petro-Canada. Work involved baseline data collection and analysis, producing baseline and impact assessment reports and responding to questions from regulatory authorities.

2002: Senior Researcher for an environmental impact study of converting vehicles in Delhi and Mumbai (India) to propane and compressed natural gas, on behalf of Yugo-Tech Inc.

1993-1995: Researcher for the preparation of Makivik Corporation's Deficiency Report on Hydro-Québec's Great Whale Hydroelectric Complex Environmental Impact Statement, based on analyses of the Inuit communities and some 25 technical advisors.

1994: Researcher for Moose Cree First Nation (Northern Ontario) in reconstructing impacts of prior hydroelectric developments in the Moose River Basin for the negotiation of compensation and remedial measures with Ontario Hydro. Also researched past grievances of the Moose Cree regarding past hydroelectric development in their territory.

Transportation

2004-2005: Senior Researcher for the preparation of Environmental Monitoring Effects Programs for marine

infrastructure built in eight Inuit communities in Northern Québec, on behalf of Makivik Corporation. Instruments developed for application by community members.

2000-2005: Senior Researcher for Environmental Impact Statements for building/upgrading marine infrastructure in 10 Inuit communities in Northern Québec, on behalf of Makivik Corporation. Work involved literature reviews, preparing community questionnaires and analyzing results, analyzing results of field work, impact assessment, identifying mitigating measures and monitoring measures, and report drafting.

1999: Researcher for the socio-economic impact assessment of upgrading marine infrastructure in Quaqtaq (Northern Québec), on behalf of Makivik Corporation.

1993: Researcher on behalf of Waskaganish First Nation (Northern Québec) respecting environmental assessment methodologies for access roads and the social impacts of constructing the access road on the community.

Landmines and Unexploded Ordnance

1998-2001: Analysis Coordinator for a national survey to map mined areas in Mozambique and assess their socio-economic impacts, on behalf of Canadian International Development Agency and in partnership with Canadian International Demining Corps. Areas of responsibility included: participate in advance mission; prepare survey instruments and protocols; prepare training guides and train survey teams; oversee pilot-testing; supervise proper application of survey instruments during 18-month fieldwork; analyze data and draft reports; liaise with UN and other bodies.

Ecotourism

2007: Senior Researcher for an environmental screening pursuant to *Canadian Environmental Assessment Act* of an Aboriginal ecotourism project involving a lodge, yurts, hot tub and sauna, on behalf of Wolf Lake First Nation (Québec).

2004: Senior Researcher for an environmental screening pursuant to *Canadian Environmental Assessment Act* of an Aboriginal ecotourism project involving yurts, on behalf of Wolf Lake First Nation (Québec).

Waste Management

Brigitte Masella

1996: Representative of Naskapi Band of Quebec (now Naskapi Nation of Kawawachikamach) in public hearings on solid waste management held by *Bureau d'audiences publiques sur l'environnement*.

1995: Coordinator and Researcher for an analysis of potential biophysical and socio-economic impacts of underground storage of nuclear waste on Treaty #3 area (Northwestern Ontario). Prepared submission to Environmental Assessment Panel based on a review of that analysis by Treaty #3 representatives.

Policy

2005: Conducted peer review of annotated table of contents for guidelines for socio-economic impact assessment of development projects in Mackenzie Valley (NWT), on behalf of Mackenzie Valley Environmental Impact Review Board.

1995-2011: Representative of Naskapi Nation of Kawawachikamach on Institute for Environmental Research and Monitoring, mandated to monitor effects of military flight training over Québec-Labrador Peninsula. Work included advising on First-Nation Communications & Support Strategy and animating and reporting on briefing sessions for Naskapi Elders in Kawawachikamach.

1999: Naskapi Representative on the Organizing Committee for Workshop on Ecological Monitoring and Assessment for Taiga and Arctic Ecozones in Québec, and at the Workshop.

1996-1997: Researcher for a study evaluating Canadian experience in conceptual and regional environmental assessment and its applicability in India, on behalf of International Environmental Management Initiative (Environment Canada) and Tata Energy Resources Institute (India).

1996: Researcher for the Taiga Ecozone Chapter in Environment Canada's 1996 State-of-the-Environment Report, which involved describing the Taiga Ecozone, describing human activity - environment interactions, evaluating environmental impacts, assessing sustainability and indicating future trends.

1993-1995: Researcher for a comparative study of conceptual frameworks and methodologies for Cumulative Effects Assessment, on behalf of Moose River Baseline Data Collection Project (later re-named Environmental Information Partnership), funded by Ontario Ministry of Natural Resources to establish an information management system for assessing cumulative effects of development in the Moose River

Basin (Northern Ontario). Also evaluated proposals by consultants to catalogue information pertaining to Traditional Ecological Knowledge, biophysical and geological sciences, socio-economic issues and development activities, and subsequently reviewed catalogues. Work conducted on behalf of Mushkegowuk Tribal Council.

Methodology

2011: Presented to Canadian Environmental Assessment Agency workshop on consultation with First Nations as part of environmental assessment.

2006: Conducted peer review of several aspects of the socio-economic impact assessment done for the modernization of the Hudson-Oka ferry (Québec). Work done on behalf of Town of Hudson and presented to Bureau d'audiences publiques sur l'environnement.

2001-2002: Assisted in evaluating how fuzzy logic analysis can assist in determining impact significance through Mexican and Canadian case studies, on behalf of Canadian Environmental Assessment Agency.

1992-1993: As part of a Master's dissertation, researched the integration of impact analysis using the ecosystem concept.

CAPACITY BUILDING

2003: Senior Researcher for preparation of notes designed to assist World Bank staff in drafting Terms of Reference for consulting work involving capacity building for Indigenous Peoples. Notes form part of World Bank's Module on Capacity Building.

RESOURCE PLANNING/MANAGEMENT

1993-2011: Advisor to Naskapi Party on the Hunting, Fishing and Trapping Coordinating Committee, established by *James Bay and Northern Québec Agreement*, and on several working groups thereof. Naskapi Representative on Steering Committee for Migratory Caribou Workshop held in January 2010 for Québec and Labrador stakeholders and on HFTCC Working Group for drafting the new five-year Migratory Caribou Co-management Plan.

Brigitte Masella

2007-2008: Senior Researcher for the preparation of a workshop at which First-Nation representatives from Western and Eastern Canada, scientists and managers shared their knowledge of the eastern and western wolverine populations with a view to identifying approaches to promoting the recovery of the eastern population. Preparatory work funded by Environment Canada. Workshop held in Kawawachikamach in 2009.

2003-2008: Naskapi Representative on Québec Steering Committee for Northern Ecosystem Initiative, which focused on monitoring, contaminants, climate change and resource management.

1994: Researcher for two background papers for a Workshop on Belugas to establish a five-year co-management agreement between the Inuit and Fisheries and Oceans Canada. Research topics were: the evolution of traditional and scientific research and management of belugas internationally and in Northern Québec; and how Aboriginal hunters acquire, transmit and apply knowledge, and the possibilities of integrating Native and Euro-Canadian knowledge systems. Subsequently drafted the executive summary of the 250-page Proceedings of the Workshop.

COMMUNITY ECONOMIC DEVELOPMENT / PROGRAMME EVALUATION

2001-2002: Senior Researcher in a study on Impacts and Benefits Agreements ("IBAs") to assist the Attawapiskat First Nation in negotiating an IBA with the proponent of a diamond-mine operation in its territory.

2000: Senior Researcher for an evaluation of the Transfer Agreement between Heritage Canada and the National Association of Friendship Centres respecting the Aboriginal Friendship Centre Programme. Undertook literature review on urban Aboriginal persons, conducted interviews with Executive Directors of several Friendship Centres and animated focus groups with clients of Friendship Centres. Also responsible for evaluating Bilingual Communications, which involved literature reviews, preparing survey instruments, conducting interviews, data analysis and report production.

1998: Senior Researcher for the evaluation of two training programs (Native Intervention/Youth Care Worker and Office Management/ Computer Operator) directed at Native peoples in New Brunswick, using literature reviews, questionnaires and interviews. Report submitted to Human Resources Development

Canada.

1998: Senior Researcher for an evaluation of the possible roles of the Department of Indian Affairs and Northern Development in ensuring a bid-preparation advisory service to Aboriginal suppliers who bid on government contracts, as part of the Procurement Strategy for Aboriginal Business. Work involved literature reviews, questionnaires and interviews.

1997: Researcher for a study into economic opportunities of building marine transportation infrastructure for all Inuit villages of Québec, on behalf of Makivik Corporation and Federal Government.

1997: Researcher for the preparation of a training manual for Chief and Council of Naskapi Band of Quebec to assist them in carrying out their duties in conformity with relevant legislation and regulations.

1995-1997: Advisor to Naskapi representative on the Regional Development Council of the Caniapiscau Regional County Municipality.

1993-1997: Researcher for Mushuau Innu of Davis Inlet (Labrador) respecting various socio-economic development issues, including costs of relocation of isolated communities, in assistance to their relocation to Natuashish (Labrador).

1995: Researcher for Moose Cree First Nation respecting the mandate, structure and operation of committees/corporations arising from hydroelectric compensation agreements, in assistance to its negotiations with Ontario Hydro for compensation for past hydroelectric development.

REPORTS

2012

Gahcho Kué Diamond Mine Project. Environmental Impact Statement. Key Socio-Economic Issues to Date. Submitted to Mackenzie Valley Environmental Impact Review Board.

Gahcho Kué Diamond Mine Project. Environmental Impact Statement Technical Meeting of May 22-25, 2012. Summary Report. Submitted to Mackenzie Valley Environmental Impact Review Board.

Railway in the Province of Québec from (but excluding) the Timmins Yard to the Main Schefferville – Sept-Îles Railway Line at Mile Post 357. Project Description. Draft submitted to KéRail inc. (Co-author).

Brigitte Masella

Direct-Shipping Ore Project. Compilation of Water-related Data Extracted from DSO Projects 1a (Elross Lake Area Iron Ore Mine) and 2b (Joan Lake Direct-Shipping Ore Project) Reports. Submitted to Tata Steel Minerals Canada.

2011

Gahcho Kué Diamond Mine Project. Environmental Impact Statement Analysis Sessions of November 28 – December 2, 2011. Summary Report. Submitted to Mackenzie Valley Environmental Impact Review Board. (Co-author).

Taconite Venture. Letter of Intent. Submitted to Major Projects Management Office, Government of Canada. (Co-author).

2010

Review of Generic Draft Terms of Reference for the Environmental Impact Assessment of Mining Projects in Colombia with respect to Socio-Economic Issues: Principal Conclusions. Submitted to IKV Pax Christi. (Co-author).

La Colosa Gold Mine Project, Cajamarca, Tolima, Colombia. Gap Analysis of Términos de Referencia, Estudio de Impacto Ambiental para Explotación de Oro de Filón, 1998 and Recomendaciones para la Elaboración de los Términos de Referencia de Minería with respect to Social and Security Issues. Submitted to IKV Pax Christi. (Co-author).

Community Well-being Index for the Naskapi Nation of Kawawachikamach. Submitted to Naskapi Nation of Kawawachikamach. (Co-author).

New Millennium Capital Corp. Projet de minerai de fer à enfournement direct, Projet 2a (Gisements Goodwood, Leroy 1, Sunny 1 et Kivivic 3S). Étude d'impact soumise au gouvernement du Québec. (Co-author) [also co-authored English version].

New Millennium Capital Corp. Direct Shipping Iron Ore (DSO) Project. Feasibility Study Report. (Co-author).

2009

Direct-Shipping Ore Project: Elross Lake Area Iron Ore Mine (Assessment Group 1a). Re-establishment of a 28-km Rail Line and Construction of a Rail Car Loading Station and Explosives Factory/Magazines. Environmental Impact Statement Submitted to Government of Canada. Submitted in collaboration

with New Millennium Capital Corp. (Co-author) [also co-authored French version].

Elross Lake Area Iron Ore Mine. Environmental Impact Statement Submitted to Government of Newfoundland and Labrador. Submitted in collaboration with New Millennium Capital Corp. (Co-author).

New Millennium Capital Corp. KeMag Iron Ore Project. Pre-Feasibility Study. (Co-author).

New Millennium Capital Corp. Direct Shipping Iron Ore Project. Pre-Feasibility Study. (Co-author).

Loi sur la qualité de l'environnement. Avis de projet. Projet de minerai de fer à enfournement direct. Submitted in collaboration with New Millennium Capital Corp. to ministère du Développement durable, de l'Environnement et des Parcs. (Co-author) [also co-authored English version].

2008

Direct-Shipping Ore Project: Potential Impacts on Fish and Fish Habitat. Submitted to Fisheries and Oceans Canada. (Co-author).

Canadian Environmental Assessment Act. Project Description. Direct-Shipping Ore Project. Submitted in collaboration with New Millennium Capital Corp. to Canadian Environmental Assessment Agency and Major Projects Management Office. (Co-author) [also co-authored French version].

Environmental Protection Act. Project Registration. Direct-Shipping Ore Project. Submitted in collaboration with New Millennium Capital Corp. to Department of Environment and Conservation, Newfoundland and Labrador. (Co-author).

Avis de projet. Projet de minerai de fer à enfournement direct. Submitted in collaboration with New Millennium Capital Corp. to ministère du Développement durable, de l'Environnement et des Parcs. (Co-author) [also co-authored English version].

Hydro Aluminium AS: Labrador Smelter Project. Site Constraints Exercise. Aboriginal Land Claims. Submitted to Jacques Whitford Limited. (Co-author).

Review and Analysis of Knowledge of the Effects of Northern Transmission Lines on First-Nation Interests. Submitted in partnership with Arktis Solutions Inc. to NWT Treaty #8 Tribal Corporation. (Co-author).

Brigitte Masella

Wolverine Workshop Project Workplan. Prepared for Canadian Wildlife Service in collaboration with Naskapi Nation of Kawawachikamach. (Co-author).

Review Session of 27 August, 2008, in Kawawachikamach concerning the Ranking of Valued Ecosystem Components by the Scientific Review Committee of the Institute for Environmental Monitoring and Research. Submitted to Institute for Environmental Monitoring and Research.

2007

Briefing Session of 14 November, 2007, in Kawawachikamach concerning the Institute for Environmental Monitoring and Research Workshop of 26-27 September, 2007, on Valued Ecosystem Components: A Report. Submitted to Institute for Environmental Monitoring and Research.

Briefing Session of 18 June, 2007, in Kawawachikamach concerning the Institute for Environmental Monitoring and Research Workshop of 9-10 May, 2007, on Valued Ecosystem Components: A Report. Submitted to Institute for Environmental Monitoring and Research.

New Millennium Capital Corp. Preliminary Assessment Study for the KeMag Iron Ore Project. (Co-author).

Environmental Assessment Screening Report. Eunice Lodge Project. Submitted to Wolf Lake First Nation. (Co-author).

2006

New Millennium Capital Corp. LabMag Iron Ore Project. Pre-Feasibility Study. (Co-author).

LabMag Iron Ore Project. Project Description/Registration. Submitted to Canadian Environmental Assessment Agency on behalf of LabMag GP Inc. (Co-author).

Revue critique de certains aspects du volet socio-économique de l'Étude d'impact sur l'environnement du projet de modernisation des débarcadères de la traverse d'Oka. Submitted to Municipal Council of Town of Hudson. Presented to Bureau d'audiences publiques sur l'environnement. (Co-author).

2005

The Cacouna Energy Project Socio-Economic Impact Assessment. Submitted to Golder Associates Ltd and

TransCanada Ltd. (Co-author).

The Cacouna Energy Project Socio-Economic Impact Study Baseline Report. Submitted to Golder Associates Ltd and TransCanada Ltd. (Co-author).

Northern Québec Marine Transportation Infrastructure Program. Environmental Effects Monitoring. [Separate reports for Aupaluk and Puvirnituk] Submitted to Makivik Corporation. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Tasiujaq. Submitted to Makivik Corporation. (Co-author).

2004

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Inukjuak. Submitted to Makivik Corporation. (Co-author).

Northern Québec Marine Transportation Infrastructure Program. Environmental Effects Monitoring. [Separate reports for Umiujaq, Kangiqsujaq, Ivujivik, Kuujuaq, Salluit and Kangirsuk] Submitted to Makivik Corporation. (Co-author).

Environmental Assessment Screening Report. Yurt Project. Submitted to Wolf Lake First Nation. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Puvirnituk. Submitted to Makivik Corporation. (Co-author).

2003

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Aupaluk. Submitted to Makivik Corporation. (Co-author).

Capacity Building for Indigenous Peoples. Notes on the Preparation of Terms of Reference. Prepared for World Bank module on capacity building. (Co-author).

Evaluation of whether Requests Contained in Submissions from Intervenors on Jericho Diamond Project Final Environmental Impact Statement are: (a) Requirements under the Environmental Assessment Guidelines for the Jericho Diamond Project and (b) Considered in the Draft Nunavut Impact Review Board Adjournment and Supplementary Final EIS Decision. Submitted to Nunavut Impact Review Board. (Co-author).

Jericho Diamond Project. Conformity/Deficiency

Brigitte Masella

Analysis of Final Environmental Impact Statement. Submitted to Nunavut Impact Review Board. (Co-author).

Doris North Gold Mine Project. Presentations on Project Overview and Conformity/Deficiency Analysis of Draft Environmental Impact Statement. Workshop, Cambridge Bay, April 2003. Submitted to Nunavut Impact Review Board. (Co-author).

Doris North Gold Mine Project. Conformity/Deficiency Analysis of Draft Environmental Impact Statement. Submitted to Nunavut Impact Review Board. (Co-author).

Jericho Diamond Project. Glossary (with Selected Inuktitut Translations). Submitted to Nunavut Impact Review Board. (Co-author).

Jericho Diamond Project. Presentations on Process Overview, Project Overview, Overview of Environmental Assessment Guidelines, Overview of Draft Environmental Impact Statement, and Review of Issues. Refresher Workshop, Edmonton, January 2003. Submitted to Nunavut Impact Review Board. (Co-author).

2002

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Kangirsuk. Submitted to Makivik Corporation. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Salluit. Submitted to Makivik Corporation. (Co-author).

2001

Landmine Impact Survey. Republic of Mozambique. Implemented by the Canadian International Demining Corps and Paul F. Wilkinson & Associates Inc. Submitted to Canadian International Development Agency and Mozambican National Demining Institute. (Co-author).

Mozambique Landmine Impact Survey. Executive Summaries for the Provinces of Cabo Delgado, Niassa, Tete, Nampula, Zambezia, Manica, Inhambane, Sofala, Gaza, and Maputo. Submitted to the Canadian International Development Agency and Mozambican National Demining Institute. (Co-author).

Environmental Impact Assessment of Use of Propane and Compressed Natural Gas in Auto-Rickshaws and

Four-Stroke Automobiles in Delhi and Mumbai, India. Draft. Submitted to Yugo-Tech Inc. (Co-author).

Jericho Diamond Project. General Findings of Conformity/Deficiency Review of Draft Environmental Impact Statement. Submitted to Nunavut Impact Review Board. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Ivujivik. Submitted to Makivik Corporation. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Kuujuaq. Submitted to Makivik Corporation. (Co-author).

Impact and Benefit Agreements. An Overview and Evaluation. Draft Report. Submitted to Attawapiskat First Nation. (Co-author).

2000

Transfer Agreement Respecting the Aboriginal Friendship Centre Program: Phase 2 Evaluation Report. Submitted to National Association of Friendship Centres. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Kangisujuaq. Submitted to Makivik Corporation. (Co-author).

Environmental Impact Study. Northern Québec Marine Transportation Infrastructure Program. Umiujaq. Submitted to Makivik Corporation. (Co-author).

Victor Kimberlite Project. Advanced Exploration Programme: Impacts on Traditional Pursuit. Submitted to Attawapiskat First Nation. (Co-author).

1999

Environmental Assessment Guidelines for the Jericho Project. Submitted to Nunavut Water Board and Nunavut Impact Review Board. (Co-author).

Social Impact Study of Building and Upgrading Marine Transportation Infrastructure in Quaqtaq. Submitted to Makivik Corporation. (Co-author).

1998

Evaluation of the Native Intervention / Youth Care Worker and Office Management / Computer Operator Training Program, under the Aboriginal Strategic Initiatives Program. Submitted to Human Resources Development Canada. (Co-author).

Brigitte Masella

Issues to be Considered in the Environmental Review of the Jericho Diamond Mining Project and Satisfaction with Proponent's Treatment of Issues. Submitted to Nunavut Water Board. (Co-author).

1997

Canadian Experience in Conceptual and Regional Environmental Assessment and Its Possible Applicability in India. Submitted to Environment Canada. (Co-author).

Job-Creation Potential of the Northern Québec Marine Transportation Infrastructure Program. Submitted to Makivik Corporation. (Co-author).

Training Manual for Chief and Council of the Naskapi Band of Quebec. Submitted to the Naskapi Band of Quebec. (Co-author).

Examination of the Need for Bid-Preparation Assistance for Aboriginal Suppliers, and the Possible Roles for DIAND. Submitted to Indian Affairs and Northern Development. (Co-author).

1996

The State of Canada's Environment 1996, Chapter 8, Taiga Ecozone. Submitted to Environment Canada. (Co-author).

1995

Preliminary Evaluation of the Social and Economic Impacts of the Nuclear Fuel Waste Disposal Concept on the Treaty #3 Area and First Nations. Submitted to Grand Council Treaty #3. (Co-author).

Environmental Impact Statement on the Concept for Disposal of Canada's Nuclear Fuel Waste: Position of Grand Council Treaty #3. Submission to the Environmental Assessment Panel. (Co-author).

An Approach Towards Determining Types of Committees or Corporations Appropriate to the Past Grievances Process. Submitted to Moose Cree First Nation. (Co-author).

Natuashish Economic Development Report: Comprehensive Community Plan. Submitted to Mushuau Innu Renewal Committee. (Co-author).

Davis Inlet Relocation Project: Comparative

Relocation Costs. Submitted to Mushuau Innu Band and Mushuau Innu Renewal Committee. (Co-author).

1994

Evolution of Traditional and Scientific Research and Management of Belugas. Submitted to Fisheries and Oceans Canada. (Co-author).

How Hunters Know What They Know: A Preliminary and Deferential Essay. Submitted to Fisheries and Oceans Canada. (Co-author).

Preliminary Identification of the Past Grievances of the Moose Cree First Nation with respect to Ontario Hydro's Past Activities in the Moose River Basin. Submitted to Moose Cree First Nation. (Co-author).

1993

Methodological Considerations for the Environmental Assessment of an Access Road to Waskaganish. Submitted to Waskaganish Band Council. (Co-author).

Impact Prediction: A Review of Concepts and Methods. Submitted to Ontario Ministry of Natural Resources, Moose River Baseline Data Collection Project. (Co-author).

Achieving Greater Ecological Integration in Environmental Impact Assessment by Defining a Conceptual Framework for Ecosystem Analysis. Master's dissertation.

PUBLICATIONS

Naskapi Nation of Kawawachikamach. Annual Report. Coordinator/Editor for six editions (fiscal years 2003-04, 2004-05, 2005-06, 2006-07, 2008-09, 2009-10).

Mozambique Landmine Impact Survey. Optimising Mine Action. 2003. In *Mine Action in South Africa: Instrument of Development?* N. Grobelaar (ed.). South African Institute of International Affairs. (Co-author).

Summary of the Round Table with the Agreement Signatories. 2002. In *Reflections on the James Bay and Northern Québec Agreement*, A-G. Gagnon & G. Rochers (eds). Éditions Québec Amérique inc. (Co-author).

Proceedings of the Workshop on Traditional and Contemporary Knowledge of Nunavik Belugas, Maurice Lamontagne Institute, Québec, 20-25 November, 1994. Executive Summary. 1994.

Brigitte Masella

SELECTED PRESENTATIONS

Mineral Exploration and Mining: Consultation, Accommodation and Communications with Aboriginal Groups – Some Perspectives. Presented to Strategic Mineral Exploration and Mining Training Course, Nishnawbe Aski Development Fund, Thunder Bay, March 30, 2012.

New Millennium Capital Corp. : Le Projet de minerai de fer à enfournement direct – Consultations avec les Premières Nations. Presented at workshop of Canadian Environmental Assessment Agency "Consultation des groupes autochtones dans le cadre des évaluations environnementales". Québec, 24 February, 2011.

Experience of Naskapi Nation of Kawawachikamach with the Mining Industry: Its Relations with New Millennium Capital Corp. – A Case Study. Learning Together Conference, Winnipeg, 9-10 April, 2008. (Co-presenter).

Institute for Environmental Monitoring and Research - Ranking of Valued Ecosystem Components: Review Session for Elders of Naskapi Nation of Kawawachikamach. Kawawachikamach, 27 August, 2008.

Coming Full Circle. LabMag Iron Ore Project. Environmental Impact Assessment. Seminar for M.Sc. Environmental Assessment, McGill University. (Co-presenter). 2007.

Institute for Environmental Monitoring and Research Workshop of 9-10 May, 2007, on Valued Ecosystem Components: Briefing Session for Elders of Naskapi Nation of Kawawachikamach. Kawawachikamach, 18 June, 2007.

Second Briefing Session for Elders of Naskapi Nation of Kawawachikamach on Valued Ecosystem Components in relation to Sonic Booms. Kawawachikamach, 14 November, 2007.

Presentation to Due Diligence Team. LabMag Iron Ore Project. Environmental and Regulatory Issues. Montréal, November, 2005.

LabMag Iron Ore Project. Federal Pre-Coordination. 3 May, 2005. Project Overview. Montréal. (Co-presenter).

Les impacts sociaux : une perspective à l'échelle internationale. 2003 Annual Congress of Association

québécoise pour l'évaluation d'impacts. (Co-presenter).

Jericho Diamond Mine Project: Environmental and Socio-Economic Baseline; Environmental and Socio-Economic Management and Monitoring; Conformity Analysis of Draft Environmental Impact Statement. Three presentations made to Nunavut Impact Review Board. 2001.

Mozambique Level One General Survey. Progress Report. Presented at Geneva International Centre on Humanitarian Demining on 9-10 December, 1999. (Co-presenter).

Position of the Naskapi Band of Quebec on the Management of Solid Waste. Brief presented to Bureau d'audiences publiques sur l'environnement. (Co-presenter). 1996.

EXPERIENCE SUMMARY

Mr. Dave Tyson is a Senior Environmental Study Manager and the Lead for Fish and Fish Habitat for Tetra Tech's Environmental Assessment, Permitting, and Natural Resources group in Canada. Mr. Tyson has spent his entire career in environmental assessment and has an extensive background both as a consultant and as a regulator with Fisheries and Oceans Canada (DFO). His areas of expertise include environmental impact assessment, approvals and permitting, effects monitoring, mitigation design, habitat assessment/compensation, and baseline environmental studies. As a federal regulator, he was responsible for transportation, community infrastructure, oil and gas exploration, power generation and distribution, and base and precious metal mining portfolios in the Northwest Territories. In this role, Mr. Tyson represented DFO in the review and permitting of numerous projects in a multi-departmental, multi-government environmental assessment process. As a consultant, Mr. Tyson has managed and participated in a similarly broad variety of projects, including power generation, transportation, pipelines, contaminated sites, and mining. Mr. Tyson's project experience extends from Nunavut and the Northwest Territories, throughout eastern, central, and western Canada, to the south Pacific.

PROFESSIONAL RECORD

2011/Present	Tetra Tech. Senior Environmental Study Manager Lead, Fish and Fish Habitat
2006/2011	Wardrop Engineering Inc., A Tetra Tech Company. Senior Environmental Study Manager Lead, Fish and Fish Habitat
2000/2006	Fisheries and Oceans Canada, Western Arctic Area. Area Habitat Management Biologist
1997/2000	Rescan Environmental Services Ltd. Manager, Northern Operations Senior Fisheries Biologist
1996/1997	R.L. & L. Environmental Services Ltd. Fisheries Biologist
1994/1995	North/South Consultants Inc. Fisheries Biologist
1989/1994	Independent Consultant

KEY PROJECT INVOLVEMENT

Mining

- **BHP Billiton Diamonds Inc., Ekati Diamond Mine, Northwest Territories.** Technical lead and study manager for various projects spanning baseline data collection during mine construction, through the design and implementation of monitoring programs, to the mine expansion.
 - **Environmental Baseline Studies.** Designed, managed, and conducted fish and fish habitat surveys over twenty-five lakes on the claim block for the initial mine plan, the Sable, Pigeon, Beartooth expansion, and other potential mining targets.
 - **Lake Fish-out Program.** Designed, managed, and conducted a multi-year program to fish-out and collect empirical fish community data from seven lakes scheduled to be lost during the mine development.

Education:

University of Manitoba,
 M.Sc., Zoology, Fish
 Biology Major, 1996

University of Manitoba,
 B.Sc. (Major), Zoology,
 1990

Registrations/Affiliations:

College of Applied Biology
 of British Columbia

Association of Professional
 Biologists of British Columbia

Alberta Society of
 Professional Biologists

American Fisheries Society

Board Member, Canadian
 Institute of Mining,
 Metallurgy and Petroleum,
 Winnipeg Branch

Specialized Training:

Habitat Inspector, Fisheries
 and Oceans Canada

Habitat Enforcement
 (Fishery Guardian)
 Fisheries and Oceans
 Canada, Department of
 Justice

Expert Witness, Department
 of Justice; Fisheries and
 Oceans Canada

Navigability Assessment,
 Navigable Waters
 Protection Program

Years of Experience:

22+



- **Environmental Impact Statement, Mine Expansion.** Contributed the fish and fish habitat component for the Sable, Pigeon, Beartooth mine expansion.
- **Aquatic Effects Monitoring Program.** Designed and led the fisheries component of the annual effects monitoring program. Negotiated fish and fish habitat monitoring requirements with the Independent Environmental Monitoring Agency.
- **Specific Effects Studies.** Designed and conducted the fisheries component of a study to determine the effects of eutrophication on a small tundra lake.
- **No-Net-Loss Strategies.** Designed and managed a project that developed conceptual plans to meet the DFO policy of no-net-loss through pit rehabilitation and research.
- **Fisheries and Oceans Canada, Northwest Territories and Nunavut.** Developed fish-out protocols for the dewatering of lakes and impoundments.
- **Fisheries and Oceans Canada, Meadowbank Gold Project, Nunavut.** Conducted an independent review of the estimated aquatic monitoring costs for the proposed fish habitat compensation plan.
- **Yukon Zinc Corporation, Wolverine Project, Yukon.** Provided the Environmental Considerations section of the Optimization Study, an NI 43-101 compliant technical report, including a review of the existing environmental and socioeconomic information and the permitting process.
- **Canadian Zinc Corporation, Prairie Creek Mine, Northwest Territories.** Led DFO contribution to a multi-agency review of various advanced exploration activities including diamond drilling, access roads, and underground bulk sampling.
- **North American Tungsten Corporation Ltd., Cantung Mine, Northwest Territories.** Led DFO contribution to a multi-agency review of the reactivation and permitting of the mine after 15 years under care and maintenance.
- **North American Tungsten Corporation Ltd., Mactung Property, Northwest Territories and Yukon.** Led DFO contribution to a multi-agency review of permits for renewed exploration activities.
- **Fortune Minerals Limited, NICO and Sue Dianne Properties, Northwest Territories.** Led DFO contribution to a multi-agency review of advanced exploration activities and permitting at both properties.
- **Miramar Mining Corporation, Con Mine, Northwest Territories.** Led DFO contribution to a multi-agency review of the closure and reclamation permitting for the mine site.
- **Tyhee Development Corp., Yellowknife Gold Project, Northwest Territories.** Led DFO contribution to a multi-agency review of permits for renewed exploration activities.
- **BHP World Minerals Inc., Hope Bay Gold Project, Nunavut.** Technical lead for fish and fish habitat responsible for co-designing and conducting the environmental baseline studies for each of the Boston and Windy properties.
- **Fisheries and Oceans Canada and BHP World Minerals Inc., Hope Bay Belt Property, Nunavut.** Study Manager and Technical Lead responsible for designing and conducting a baseline survey of trace metals in fish populations from various lakes on the property.
- **Darnley Bay Resources Ltd., Darnley Bay Project, Northwest Territories.** Study Manager responsible for co-designing and conducting a winter water quality and chemistry survey of waterbodies on the claim block.
- **Starfield Resources Inc., Ferguson Lake Property, Nunavut.** Study Manager responsible for co-designing and conducting baseline fisheries, aquatic, water quality, and hydrology baseline study.
- **Canamera Geological Ltd., Jericho Diamond Mine, Nunavut.** Project Biologist responsible for leading field crews in conducting a baseline fisheries, aquatic ecology, water quality, and hydrology study.
- **Canamera Geological Ltd., Kennady Diamond Project, Northwest Territories.** Project Biologist responsible for leading field crews in conducting a baseline fisheries, aquatic ecology, water quality, and hydrology study.
- **Kria Resources Inc., Halfmile Lake Project, New Brunswick.** Technical Lead, Fish and Fish Habitat for an environmental baseline study and environmental impact assessment registration document to



develop an underground base metal mine near Bathurst, New Brunswick. Also conducted open house sessions to solicit public opinion.

- **Kria Resources Inc., Stratmat Project, New Brunswick.** Technical lead for a review of the environmental considerations and permitting risks for a preliminary economic assessment of a proposed base metal mine in New Brunswick.
- **Mustang Minerals Corp., Mayville Project, Manitoba.** Study Manager and Technical Lead for a proposed base metal mine, including:
 - **Environmental Baseline Study.** Study Manager for a multidiscipline project to collect, analyze, and report initial baseline environmental information.
 - **Environmental Scoping Study.** Study Manager and technical lead for a desktop study to compile and review existing environmental and socio-economic information for a proposed study area and identify information gaps and potential development constraints.
- **Mustang Minerals Corp., Maskwa Project, Manitoba.** Study Manager and Senior Biologist for a project to reactivate and expand a nickel mine in Nopiming Provincial Park. Including:
 - **Environmental Baseline Study.** Study Manager and technical lead for fish and fish habitat component for a multidiscipline project to collect, analyze, and report environmental and socioeconomic information.
 - **Prefeasibility Study.** Provided the Environmental Considerations section of a NI43-101 technical report, including a review of the existing environmental and socioeconomic information and the permitting process.
 - **Public Engagement.** Study Manager and technical lead for a series of open houses and public communications project to engage and inform local stakeholders and aboriginal groups.
 - **Maskwa Pit Fish Study.** Study Manager and technical lead for fish and fish habitat for a study investigating trace metal concentrations in a fish community inhabiting a pit lake.
 - **Project Description.** Study Manager and contributor to the development of a project description, a necessary component of the both the environmental impact statement and the closure plan.
- **Vale INCO, Denison Project, Ontario.** Environmental Lead and senior advisor for the preparation of a permitting plan for the development of a new nickel-copper open pit adjacent to a previously producing mine in Sudbury, Ontario. Tasks included the preparation of a permitting plan for the project that included a review of existing permits and regulatory requirements, determining which permits could be extended to the development, and identify which permits would require a new issue.
- **Carlisle Goldfields Limited, MacLellan Mine, Manitoba.** Study Manager and Technical Lead, Fish and Fish Habitat and senior advisor for a series of gold exploration projects east of Lynn Lake, Manitoba. Tasks include:
 - **Environmental Baseline Study.** Designed, managed, and conducted the baseline aquatics study to be included in the EIS for permitting.
 - **Preliminary Economic Assessment and Environmental Planning.** Environmental lead providing other expert input to the development of a PEA for the project as well as ongoing environmental planning to minimized permitting impacts to project costs and schedule.
- **Mega Precious Metals Inc., Monument Bay Project, Manitoba.** Technical Lead, Fish and Habitat and senior advisor for a gold exploration project northeast of Red Sucker Lake, Manitoba. Tasks include an environmental baseline study, permitting the use of fuel storage bladders, permitting and environmental planning for advanced exploration and mining.
- **Western Potash Corp., Milestone Project, Saskatchewan and South Russell Project, Manitoba.** Study Manager for a review of the environmental assessment and permitting requirements to take potash developments to production in Saskatchewan and Manitoba.
- **Western Potash Corp., Milestone Project, Saskatchewan and South Russell Project, Manitoba.** Study Manager for the development of community and aboriginal engagement plans to take potash developments to production in Saskatchewan and Manitoba.



- **Grande Portage Resources Ltd., Merry Widow Project, British Columbia.** Study Manager and Senior Biologist for environmental baseline studies.
- **Exploration Syndicate Inc., McKenzie Project, Saskatchewan.** Study Manager and technical lead for aquatic baseline studies in lakes on the property.
- **Athabasca Potash Inc., Burr, Saskatchewan.** Technical lead responsible for providing the fish community component of the environmental baseline study and environmental impact assessment.
- **Athabasca Potash Inc., Foam Lake, Saskatchewan.** Technical lead responsible for providing the fish community component of the environmental baseline study.
- **Crowflight Minerals Inc., Bucko Mine, Manitoba.** Study Manager and technical lead responsible for designing the fish habitat compensation plan as a requirement for the use of Bucko Lake for tailings disposal.
- **Redfern Resources Ltd., Tulsequah Chief Mine, British Columbia.** Managed and developed a closure plan for the mine road between the Taku River barge landing and the mine infrastructure.
- **Independent Nickel Corp., Lynn Lake, Manitoba.** Technical lead responsible for providing the baseline fish community information and environmental impact assessment.
- **Sultan Minerals Inc., Jersey-Emerald, British Columbia.** Coordinator and Senior Biologist for a baseline aquatics study.
- **Eldorado Gold Corp., Efemcukuru Project, Turkey.** Provided the Environmental Considerations section of the Feasibility Study, an NI 43-101 compliant technical report, including a review of the existing environmental and socioeconomic information and the permitting process.
- **Roxmark Mines Ltd., Nortoba-Tyson Property and Northern Empire Mine, Ontario.** Technical lead responsible for providing the baseline fish community information and environmental impact assessment.
- **Victory Nickel Inc., Minago Project, Manitoba.** A green-field nickel property in north, central Manitoba.
 - **Preliminary Economic Assessment.** Provided the Environmental Considerations section of the Scoping Study, an NI 43-101 compliant technical report, including a review of the existing environmental and socioeconomic information and the permitting process. Also provided an estimate of the environmental bond.
 - **Environmental Baseline Studies.** Study Manager and technical lead for the development of an environmental baseline study plan, including initial field work and preliminary plans for the environmental impact assessment, permitting, and public engagement.
- **GLR Resources, Goldfields Project, Saskatchewan.** Reviewed the development plans and identified environmental and permitting risks.
- **INCO Limited, Goro Project, New Caledonia.** Senior Biologist responsible for co-designing and leading the freshwater aquatic baseline data collection in preparation for the Environmental Impact Statement.
- **INCO Limited, Voisey's Bay Nickel Mine, Newfoundland.** Co-designed an aquatic effect monitoring program based on the baseline information and the expected impacts described in the Environmental Impact Statement.
- **Smoky River Coal Ltd., No. 12 Mine, Grande Cache, Alberta.** Study Manager responsible for designing and conducting a fish and fish habitat inventory of streams within the expansion zone.

Orphan and Abandoned Mine Sites

- **Mackenzie Valley Environmental Impact Review Board, Giant Orphan Mine, Northwest Territories.** Providing expert advice to the MVEIRB regarding fish and fish habitat issues to the environmental assessment of the Aboriginal Affairs and Northern Development Canada proposed remediation works at the Giant Orphan Mine in Yellowknife, Northwest Territories.
- **Indian and Northern Affairs Canada, Giant Mine, Northwest Territories.** Led DFO contribution to a multi-agency review of the closure and reclamation of the orphan mine site.



- **Indian and Northern Affairs Canada, Colomac Mine, Northwest Territories.** Led DFO contribution to a multi-agency review of the closure and reclamation of the orphan mine site.
- **Indian and Northern Affairs Canada, Discovery Mine, Northwest Territories.** Led DFO contribution to a multi-agency review of the reclamation of the orphan mine site.
- **Indian and Northern Affairs Canada, Tundra and Salmita Mines, Northwest Territories.** Led DFO contribution to a multi-agency review of the reclamation of the orphan mine sites.
- **Manitoba Science, Technology and Mines, Sherridon Orphan Mine, Manitoba.** Designed and conducted a baseline study to determine the extent of impacts of acid mine drainage on the fish community in Kississing Lake.

Transportation and Infrastructure

- **Tibbitt to Contwoyto Winter Road, Northwest Territories.** Led DFO review of the 550 km winter road providing a supply route to diamond mines and other properties in the Northwest Territories and Nunavut. The review included several camp sites. Also led DFO review of the winter road spurs to each mine and property along the route.
- **Fisheries and Oceans Canada, Mackenzie Gas Project, Northwest Territories.** Managed a project investigating the effects of winter road crossing construction on fish and fish habitat on tributaries along the east bank of the Mackenzie River between Wrigley and Fort Good Hope.
- **GNWT Department of Transportation, Various Locations, Northwest Territories.** Managed and led the DFO review of all transportation related projects. Responsibilities included project reviews under the Fisheries Act, providing advice to the proponent and to permitting and environmental assessment agencies, and developing *Fisheries Act* s.30 and s.35(2) authorizations. Key areas of development included:
 - **Small Craft Harbours.** Reviewed development plans and provided advice and *Fisheries Act* s.35(2) authorizations for the construction, upgrade, and maintenance of small craft harbours at various locations.
 - **Bridge Construction.** Reviewed development plans and provided advice and *Fisheries Act* s.35(2) authorizations for the construction of 48+ bridges at various locations. Conducted construction and follow-up compliance inspections.
 - **Maintenance Dredging in Navigation Channels.** Conducted *Fisheries Act* reviews and provided advice for projects located throughout the Great Slave Lake/Mackenzie River system.
 - **Highway Maintenance and Upgrades.** Conducted *Fisheries Act* reviews and provided advice during the permit renewals, highway upgrade and realignment projects at numerous locations throughout the Northwest Territories. Conducted follow-up compliance inspections.
 - **Culvert Replacements.** Conducted *Fisheries Act* reviews, provided advice, and worked with proponent to minimize and mitigate culvert crossing effects on fish and fish habitat. Participated in experimental crossing design projects. Conducted follow-up compliance inspections.
 - **Airport Maintenance.** Conducted *Fisheries Act* reviews of airport landscape maintenance procedures as well as runway and access expansion projects at various locations.
 - **Winter Roads, Ice Bridges, and Ferry and Barge Landings.** Conducted *Fisheries Act* reviews for the license renewals of numerous winter roads and ferry and barge landings across the Northwest Territories. Conducted follow-up compliance inspections.
 - **Vehicle Recovery.** Drafted *Fisheries Act* s.30 authorizations to facilitate the use of explosives in recovering vehicles that had fallen through the surface ice. Conducted compression wave monitoring during explosions.
 - **Highway 3, Northwest Territories.** Lead DFO reviewer for the environmental assessment and permitting for the realignment and upgrades to the 110 km highway into Yellowknife.
- **Deh Cho Bridge Corporation, Fort Providence, Northwest Territories.** Led DFO review and provided advice to a multi-department, multi-government review of the 2,720 m (including 1,045 m bridge) Mackenzie River crossing at Fort Providence.



- **Redfern Resources Ltd., Tulsequah Chief Mine, British Columbia,** Managed and developed a closure plan for the mine road between the Taku River barge landing and the mine site.

Power Generation and Distribution

- **Northwest Territories Power Corporation, Blue Fish Generating Station, Northwest Territories.** Led DFO contribution to a multi-agency review of the upgrading and permit renewals for a small (7.2 MW) hydroelectric facility on the Bluefish River, near Yellowknife, NT. The facility was acquired from private ownership.
- **Northwest Territories Power Corporation, Snare River, Northwest Territories.** Led DFO contribution to a multi-agency review of the permit renewals for hydroelectric facilities along the Snare River, Northwest Territories.
- **Northwest Territories Power Corporation, Taltson Generating Station, Northwest Territories.** Led DFO contribution to a multi-agency advisory group regarding the environmental assessment and permitting requirements to expand the generating capacity beyond the existing 18 MW.
- **Ecology North and the Pembina Institute, Nailii Hydro Project, Northwest Territories.** Provided design advice for a small run-of-river hydroelectric facility to minimize effects on fish and fish habitat and thus minimize permitting requirements under the *Fisheries Act*.
- **Northwest Territories Power Corporation, Snare River, Northwest Territories.** Study Manager and Senior Biologist responsible for conducting a state of the environment survey of the Bigspruce Reservoir, Strutt Lake, and the forebays and tailraces of the four dams along the Snare River. This project involved collecting limnological and water quality data as well as primary and secondary producer and fish community information to describe the current state of the aquatic environment in the reaches of the Snare River modified for power generation.
- **Northwest Territories Power Corporation, Snare River, Northwest Territories.** Co-designed and conducted a study investigating the effects of zero-flow on fish and fish habitat in the Snare River. This project involved conducting a fish habitat inventory in tailraces of the various dams on the Snare River and overlaying this information with hydrological models to determine effects.

Oil and Gas

- **Fisheries and Oceans Canada, Mackenzie Gas Project, Northwest Territories.** Served as liaison between the science and regulatory arms of DFO conducting the project assessment. Provided technical support for several projects investigating the effects of oil and gas development activities on fish and fish habitat.
- **Fisheries and Oceans Canada, Mackenzie Gas Project, Northwest Territories.** Provided technical support for a research project investigating effects of air cannons used for seismic surveying on fishes in the Mackenzie River delta.
- **Esso Petroleum Canada Ltd., Norman Wells, Northwest Territories.** Provided the aquatic component of the Environmental Impact Statement for the decommissioning of the Norman Wells refinery.

EXPERT ADVICE/TESTIMONY

- **Giant Orphan Mine, Northwest Territories.** Providing expert advice to the MVEIRB regarding fish and fish habitat issues to the environmental assessment of the Aboriginal Affairs and Northern Development Canada proposed remediation works at the Giant Orphan Mine in Yellowknife, Northwest Territories.
- **Keeyask Generation Station, Manitoba.** Provided technical advice to the York Factory First Nation regarding the potential environmental effects of the construction and operation of the proposed facility.
- **R. vs. BHP Diamonds Inc.** Provided expert testimony for the defense with respect to fish and fish habitat in R. vs. BHP Diamonds Inc. (27 February – 20 September, 2002, Supreme Court of NWT,



Judge J.E. Richard presiding), concerning undertakings at the Ekati Diamond Mine, Northwest Territories.

- **R. vs. Beaulieu et al.** Provided expert testimony for the defense with respect to fish and fish habitat in R. vs. Beaulieu et al. (25 – 27 January 2000, NWT Territorial Court, Judge R.M. Bourassa presiding) concerning activities in N'dilo, Northwest Territories.
- **Ekati Diamond Mine, Northwest Territories.** Managed, researched, and wrote expert interpretation of the applicability of the Fisheries Act to waterbodies on the Ekati Diamond Mine, Northwest Territories, claim block.

Regulatory Environment

- **Environmental Assessment Screenings.** Led DFO participation in numerous multi-agency environmental assessments of projects proposed for land use permits and water licenses. Key environmental review activities included:
 - Conducted screenings under the Mackenzie Valley Resource Management Act (MVRMA) and Canadian Environmental Assessment Act (CEAA).
 - Composed Fisheries Act Authorizations (including the development of habitat compensation strategies) and Letters of Advice for proponents.
 - Led DFO reviews of numerous developments in or near water related to transportation, oil and gas, community water licenses, contaminated sites, base and precious metal mining, mineral exploration, hydroelectric generation, logging, quarrying, marine structures, and dredging.
 - DFO member on Technical Advisor Committees for the review and licensing of numerous projects across all economic sectors.
- **Mackenzie Gas Project, Northwest Territories.** Environmental Science Coordinator (liaising between the regulatory and research branches of DFO) for the environmental assessment of the 1220 km proposed gas pipeline involving 660+ stream crossings. Provided technical support for several projects investigating the effects of oil and gas development activities on fish and fish habitat.
- **Mineral Exploration, Northwest Territory.** Lead DFO reviewer for the environmental assessment of numerous mineral and oil and gas exploration projects involving winter road construction and seismic lines.
- **Mineral Development Advisory Committee.** Represented DFO on a multi-department, multi-government committee providing environmental assessment and permitting advice to prospective project developers with the goal of giving proponents a scope of the environmental requirements and schedule milestones to develop mineral properties.

PUBLICATIONS/CONFERENCE PRESENTATIONS/TECHNICAL REPORTS

- Nine peer-reviewed contributions/conference presentations and over 70 technical reports.

EXPERIENCE SUMMARY

Terry Antoniuk is an independent consultant with wide-ranging environmental and public involvement experience. He has designed, conducted, and managed environmental and socio-economic programs in Alberta, British Columbia, Northwest Territories, Yukon, Saskatchewan, Manitoba, Ontario, Quebec, Newfoundland, and Russia.

Trained as a biologist, Terry spent thirteen years in the energy industry. He established Salmo Consulting Inc. in 1992 and continues to provide technical advice on assessment and management of cumulative and project-specific environmental and social effects.

His recent work includes: development of cumulative effects indicators, objectives, and management systems in four jurisdictions; developing a national guideline for boreal caribou action plans; independent lead for a provincial boreal caribou recovery plan; independent review of impact assessments for territorial and provincial regulators and non-profit groups; project impact and cumulative effects assessment for provincially and federally regulated energy facilities and pipelines; project management for a habitat compensation program in Jasper National Park and Mount Robson Provincial Park; regional cumulative effects assessments for government and industry; design, review, and implementation of aquatic and terrestrial monitoring and research programs; applying a landscape simulation model for watershed planning and management; developing a watercrossing inventory and remediation program; comprehensive literature reviews of aquatic and terrestrial development effects; regulatory/public communication strategies and plans; contaminated site investigations and ecological risk assessments; and

preparation of environmental operating guidelines and wildlife protection plans.

Since 1978, Terry's key responsibilities have included: coordination of multi-disciplinary teams; design and management of environmental and socio-economic research, programs, and budgets; environmental and socio-economic impact assessment; ongoing liaison and negotiation with government agencies, communities, and environmental groups; regulatory planning; community relations programs; and workshop facilitation. He has also acted as a public hearing expert witness and expert advisor to regulators.

EDUCATION AND TRAINING

University of Alberta, 1978
B.Sc. (Honors), Zoology

Standard First Aid 2011, WHMIS 2005;
Wilderness Survival 2003

PROFESSIONAL HISTORY

1992 - Present
SALMO CONSULTING INC.
Principal

1977, 1978 - 1991
Gulf Canada Resources Ltd.
Environmental Coordinator and Advisor

1975, 1976
Alberta Fish and Wildlife Division
Fisheries Technologist

AFFILIATIONS

Alberta Society of Professional Biologists
American Fisheries Society
BC College of Applied Biology
Society for Conservation Biology
The Wildlife Society



LAND PLANNING /MANAGEMENT

- Advisor to BC government cumulative effects management pilot in NW British Columbia.
- Independent leader of multi-stakeholder study evaluating long-term effects of land use on water quality and supply in the Upper Bow River Basin, Alberta (2009-2011).
- Senior author of caribou action planning guide for Canadian Boreal Framework Agreement between forest sector and environmental groups.
- Independent Team Leader for Government of Alberta Athabasca Caribou Landscape Team developing northeast Alberta caribou conservation and recovery plan (2008-2009).
- Complete modeling to demonstrate implications of applying land management thresholds for oil and gas development in the Dehcho region (2009).
- Worked with modeling group simulating effects of alternate land-use scenarios on ecological indicators in the Lower Athabasca (oil sands) region (2009).
- Working with Alberta Land Use Framework initiative to develop predictive modelling tools for regional land use planning.
- Developing environmental indicators and targets for Sahtu Land Use Planning Board, NWT (2008-2009).
- Developed environmental and social indicators and target implementation process for NWT for Environmental Studies Research Program (2007-2008).
- Worked with North Yukon Planning Commission to develop cumulative effects assessment and management tools for regional land use plan.
- Developed social and environmental cumulative effects indicators and thresholds for the Deh Cho Land Use Planning Committee, southern NWT.
- Developed Muskwa-Kechika case study for National Round Table on the Environment and

the Economy to identify fiscal and regulatory instruments for conservation of the boreal forest

- Worked with Muskwa-Kechika Oil and British Columbia Ministry of Sustainable Resource Management to define ecological indicators and thresholds for oil and gas development.
- Led Athabasca Oil Sands Cumulative Effects Management Association workshop on use and identification of thresholds for fish and wildlife indicators.
- Participant in group developing regional land use plan for the Mackenzie Delta-Beaufort Sea region.

IMPACT ASSESSMENT

Alberta

- Independent reviewer retained by Alberta Environment to evaluate aquatic sections of mineable oil sands Environmental Impact Assessment (EIA).
- Completed ecological risk assessment for Agrium Gypsum Stack Extension EIA.
- Independent reviewer retained by EUB to evaluate aquatic sections of mineable oil sands EIA.
- Prepared cumulative effects assessment (CEA) for the West Central Caribou Range area.
- Prepared cumulative terrestrial and aquatic effects assessments (CEA) for 2 areas in foothills of west-central Alberta.
- Directed CEA for proposed Keepphills power plant expansion.
- Prepared CEA for two proposed *in-situ* oil sands projects in Cold Lake area of northeast Alberta.
- Evaluated cumulative effects for 2 proposed pipeline projects in foothills of west-central Alberta.



IMPACT ASSESSMENT (Cont.)

- Reviewed aquatic CEA prepared for proposed Cheviot Mine and participated in public hearing on behalf of Trout Unlimited Canada.
- Prepared AEP and EUB applications for Teepee Creek gas plant expansion project and directed public consultation program.
- Prepared aquatic and air components of the EIA for *in-situ* oil sands development in the Wabasca area of northern Alberta.
- Prepared aquatic and air components of the EIA for mineable and *in-situ* oil sands development in the Fort McMurray area of northeast Alberta.
- Prepared aquatic and air components of environmental overviews for gas field development in the foothills of west-central Alberta.
- Conducted CEA of existing and future natural gas development in a 20,000 km² boreal forest region of northeast British Columbia.
- Conducted CEA in a 5,000 km² region of foothills and boreal forest in northeast British Columbia.
- Prepared aquatic and air components of environmental assessments for proposed coal exploration and development programs in northeast and northwest British Columbia.

British Columbia

- Conducted CEA for proposed 500 km pipeline in north central BC under the British Columbia Environmental Assessment Process (BCEAP) and CEAA.
- Worked with Oil and Gas Commission to develop traditional use indicators for cumulative impact management.
- Prepared Case Studies evaluating cumulative effects of development in the Blueberry and Sukunka areas for the Oil and Gas Commission Science and Community

Environmental Knowledge Fund and Muskwa-Kechika Advisory Board.

- Lead consultant and project manager for environmental, socio-economic, and heritage resources assessment of proposed gas plant and 160-km long pipeline under the BCEAP.
- Lead consultant and project manager for environmental, socio-economic, and heritage resources assessment of proposed liquids facility under the BCEAP.
- Lead consultant and project manager for environmental, socio-economic, and heritage resources assessment of proposed sour gas plant and gas gathering pipeline under the BCEAP.
- Conducted wildlife assessment for proposed sour gas plant and gas gathering pipeline under the BCEAP.

Federal/Other

- Independent technical reviewer for Mackenzie Valley Environmental Impact Review Board evaluation of proposed Gahcho Kue diamond mine.
- Fisheries and cumulative effect assessments for National Energy Board (NEB) and Parks Canada-regulated Terasen Pipelines loop through Jasper National Park and Mount Robson Provincial Park.
- Independent technical reviewer for Mackenzie Valley Environmental Impact Review Board evaluation of gas development expansion.
- Prepared CEAA Screening Report for proposed facility expansion in Kootenay National Park.
- Worked with Mackenzie Gas Project environmental and community consultation teams on behalf of Mackenzie Delta producers.
- Prepared CEA and coordinated wildlife assessment for proposed NEB-regulated 160-km long sour gas pipeline in foothills of Alberta and British Columbia.



IMPACT ASSESSMENT (Cont.)

- Prepared CEA for Department of Fisheries and Oceans (DFO) *Canadian Environmental Assessment Act* (CEAA) screening of gas facility and pipeline in Fort Nelson and Petitot River watersheds of British Columbia and NWT.
- Coordinated environmental and socio-economic application for Alliance Pipeline NEB/CEAA review. Prepared CEA and overall impact assessment methodology and acted as environmental witness during hearing.
- Prepared wildlife assessment section of NEB-regulated proposed sour gas plant and gas gathering pipeline in boreal forest of British Columbia and Alberta.
- Assessed regional and cumulative environmental issues for natural gas producers involved in hearings on Fort St. John/Aitken Creek gas gathering system expansion NEB application.
- Assessed regional and cumulative environmental issues for natural gas producers involved in NEB hearings on Pine River gas plant expansion NEB application.
- Provided environmental and socio-economic input to the Esso/Shell/Gulf Mackenzie Delta NEB Gas Export Application and hearings. Conducted community and media relations.
- Coordinated preparation of Environmental Impact Statement (EIS) for Inuvialuit EIRB public review of Beaufort offshore drilling proposal. EIS assessed potential effects of routine exploration activities and major oil spill. Environmental and community affairs witness during public hearings.
- Coordinated preparation of EIS for DFO review of Beaufort offshore drilling proposal. This was first EIS done for DFO using new review guidelines.
- Coordinated Gulf Canada Resources' (Gulf) environmental and socio-economic input to the Hibernia EIS.

- Provided environmental and logistical support for Dome/Esso/Gulf Beaufort Sea Hydrocarbon Development EARP Impact Assessment (BEARP).

Saskatchewan

- Prepared CEA for the Great Sand Hills area.

ENVIRONMENTAL STUDIES

Cumulative Effects Management

- Advisor to BC government cumulative effects management pilot in NW British Columbia.
- Contributor to evaluation of cumulative effects management challenges and implementation strategies for Yukon Environment.
- Led workshop developing cumulative effects assessment and management framework for offshore Beaufort Sea.
- Conducted study funded by Environmental Studies Research Funds to develop cumulative effect indicators and thresholds for the Mackenzie Valley region, NWT.
- Coordinator for multi-disciplinary Northern Ecosystem Initiative research team developing wildlife, aquatic, social and economic dose-response curves and thresholds for northern Canada (Yukon, NWT, and Labrador).
- Prepared background paper for NWT workshop on setting and implementing cumulative effect thresholds.
- Conducted study funded by Environmental Studies Research Funds to develop cumulative effect indicators and thresholds for the Beaufort Delta region, NWT.
- Conducted study funded by Dehcho Land Use Planning Committee to develop cumulative effect indicators and thresholds for the Dehcho planning region, NWT.
- Worked with Muskwa-Kechika Oil and Gas Pre-tenure planning team to identify results-based indicators and targets (thresholds).



ENVIRONMENTAL STUDIES

(cont.)

Cumulative Effects Management (cont.)

- Worked with multi-stakeholder Cumulative Effects Management Association to develop fish and wildlife management objectives for the oil sands area.

Aquatic

- Fisheries lead on proposed pipeline looping through Jasper National Park and Mount Robson Provincial Park.
- Directed revisions of cumulative effects and compensation sections of Water Crossing Guide.
- Developed remediation program for failed crossings in northwest Alberta.
- Led team that prepared background paper on Explosives Use Beneath Waterbodies for Canadian Association of Petroleum Producers.
- Summarized literature on effects of natural disturbance and human activity on fish in the oil sands area; prepared for the multi-stakeholder Cumulative Effects Management Association.
- Developed effects monitoring program for under-ice seismic program in the Mackenzie Delta.
- Designed water quality and fisheries monitoring program for Arctic grayling stream affected by produced water blowout in Fort Nelson River watershed of northeast British Columbia. Prepared report summarizing year-long aquatic monitoring program.
- Implemented aquatic ecosystem monitoring program for mine in northern Ontario. Program was designed to detect acid mine drainage effects in sediments, water, benthos, phytoplankton, and sport fisheries.
- Assessed cumulative effects of existing and proposed industrial activities on fisheries habitat capability, bull trout, and Arctic

grayling in several watersheds in northeast British Columbia and western Alberta.

- Member of technical group directing cumulative effects research for multi-stakeholder Northern Watershed Project, a multi-stakeholder program evaluating natural and disturbance-related watershed processes on salmonids in northwestern Alberta.
- Designed and implemented aquatic monitoring program to detect acid mine drainage in northwestern Ontario. Integrated program with Ministries of Energy and Environment (MOEE) and Natural Resources (MNR).
- Project manager for Environmental Studies Research Funds (ESRF) project on fish habitat in the Beaufort Sea-Mackenzie Delta area. Directed government-industry-native scientific committee.
- Designed, coordinated and conducted numerous water quality, hydrology, fisheries, and benthic invertebrate investigations in west-central, north-central, and northeast Alberta, northeast and northwest British Columbia, and Mackenzie Delta, NWT.
- Conducted study funded by BC Oil and Gas Commission Environmental Fund to evaluate cumulative effects in two areas of northeast BC and identify thresholds for land and watershed management.
- Developed discussion paper for multi-stakeholder initiative to inventory and protect native fish on Alberta's Eastern Slopes.
- Reviewed predictive models applicable to fish and wildlife management in the oil sands area for the multi-stakeholder Cumulative Effects Management Association.
- Identified cumulative effects issues and mitigation measures relevant to pipelines for the Gas Research Institute.



ENVIRONMENTAL STUDIES (Cont.)

Terrestrial

- Developed guidelines for caribou predator exclosure management; organized and facilitated 50 person expert workshop as key input to the guidelines.
- Senior advisor to Alberta Biodiversity Monitoring Institute study on boreal caribou response to pipelines and associated linear features.
- Independent Team Leader for Government of Alberta Athabasca Caribou Landscape Team developing northeast Alberta caribou conservation and recovery plan
- Five year telemetry study to investigate boreal-ecotype resource selection relative to habitat, land use, and predators near Fort Nelson, British Columbia and develop cumulative impact management tools.
- Developing detailed study design for Range of Natural Variability study in Mount Robson Provincial Park, British Columbia.
- Summarized land use thresholds and analyses used for woodland caribou management.
- Assessed cumulative effects of existing and proposed human activities on burrowing owl, ferruginous hawk, sharp-tailed grouse, and mule and white-tailed deer in Saskatchewan.
- Assessed cumulative effects of existing and proposed human activities on grizzly bear, marten, moose, caribou, trumpeter swan, warblers, and sharp-tailed grouse in British Columbia and Alberta.
- Assessed effects of gas plant and pipeline construction and operation on grizzly bear, caribou, moose, marten, and songbirds.
- Assessed effect of gas development on woodland caribou in northern Alberta.
- Prepared Caribou Protection Plans for proposed activities in West Central, Northwest, and Northeast Boreal regions of

Alberta, Mackenzie Delta, and Yukon North Slope.

- Overwintering ungulate surveys for caribou, moose, Dall sheep, and mountain goats in west-central and northern Alberta and northwest British Columbia.
- Designed air quality, vegetation and soils monitoring program for sour gas plant in northeast British Columbia.
- Reviewed soil and vegetation monitoring results for Key Lake Uranium mine in Saskatchewan to evaluate program design and recommended modifications.
- Spring and summer aerial wildlife surveys for caribou, grizzly bear, and raptors in northeast British Columbia and Mackenzie Delta, NWT.
- Waterfowl surveys in northern Alberta and Mackenzie Delta, NWT.

Air

- Designed air quality monitoring program for sour gas plant in northeast British Columbia.
- Coordinated meteorology and air quality monitoring and modelling programs at proposed development sites in Alberta and British Columbia to assess effect on air and water quality, soil, and vegetation.

ENVIRONMENTAL PROTECTION

Environmental Protection Plans

- Developed national caribou action planning guidelines for Canadian Boreal Forest Initiative.
- Independent Team Leader for Government of Alberta Athabasca Caribou Landscape Team developing northeast Alberta caribou conservation and recovery plan.
- Prepared grizzly bear, wolverine, barren-ground caribou and migratory bird protection plans for development project in tundra ecosystem.



- Prepared western Canada watercourse crossing decision criteria and inventory guide for large energy company.

ENVIRONMENTAL PROTECTION (Cont.)

Environmental Protection Plans (cont.)

- Prepared fisheries habitat restoration, enhancement, compensation and cumulative effect portions of Pipeline Associated Watercourse Crossing Guidelines (2nd and 3rd Edition) for the Pipeline Industry (2005).
- Defined wildlife protection measures for 160-km sour gas pipeline in foothills of Alberta and British Columbia.
- Prepared Environmental Protection Plan for 160-km pipeline, watercourse crossings, and associated facility in northeast British Columbia.
- Lead consultant and project manager for southern Alberta sour gas facility and pipeline assessment and applications (Conservation and Reclamation Plan, Historical Resources Assessment, and Water Crossing Application)
- Prepared Development and Reclamation Plans for operating and abandoned gravel pits.- Prepared Conservation and Reclamation Plans for three sour gas pipelines in the Hay-Zama production area.
- Prepared environmental operating guidelines for seven gas producers in northeast BC.
- Prepared Environmental Protection Plans for offshore drilling and pipeline construction in northern Canada.

Site Assessments and Audits

- Environmental audit of 200 Mmcf/day sour gas facility in northeast British Columbia.
- Audit of corporate environmental program and operating practices for northeast British Columbia operating area.
- Audit Team Leader for audit of five oil and gas fields in central Alberta.

- Environmental assessments and audits of over 500 oil and gas facilities and sites in Alberta, British Columbia, Saskatchewan, and Manitoba prior to sale or purchase.
- Coordinated inspection of spill sites, pipeline ROWs and stream crossings, well sites, facilities, and properties at Gulf's oil and gas operations in Alberta and Saskatchewan to identify environmental concerns and appropriate mitigative measures.
- Designed program to assess existing oil properties in Russia, quantify problems, and define mitigative measures.

Contaminated Sites

- Identified ecological receptors for Alberta Upstream Chemically Affected Sites Task Group (UCASTG) generic risk-based remediation protocol.
- Identified ecological receptors for contaminated site risk assessments in central and northern Alberta and Northwest Territories.
- Reviewed and summarized risk-based and legislated provincial, national, and international clean-up criteria.
- Phase I environmental assessment of contaminated sites in Town of Turner Valley.
- Prepared remediation plan for groundwater contamination at a battery site in central Alberta.
- Coordinated multi-million dollar restoration of site in Quebec with soil and groundwater heavy metal contamination; included detailed chemical and hydrogeological investigations, negotiation of regulatory requirements with Quebec Environment, design of site restoration plan, and surface and groundwater monitoring.
- Site investigation of property and residence contaminated by a leaking underground gasoline tank.



ENVIRONMENTAL MANAGEMENT

Environmental Management Systems

- Developed best practices guide and biodiversity offsets framework for large petroleum company.
- Prepared environmental management program for junior petroleum companies.
- Prepared Environmental Operating Practices for exploration and production activities in Alberta, British Columbia, and Saskatchewan for large petroleum company.
- Co-author of Canadian Association of Petroleum Producers Innovative Footprint Reduction tools report.

Environmental Inspection

- Coordinated development of computer databases for Environmental Inspectors to prepare field inspection reports, electronically transmit these to a central database, and prepare an automated daily report. Versions prepared for use by Alliance Pipeline inspectors in Canada and United States.
- Assisted with development of template and reporting process for Alliance Pipeline Environmental As-Built Reports submitted to the NEB.

REGULATORY AFFAIRS

Regulatory Planning and Approvals

- Member of project team evaluating feasibility of land use cap and trade system for cumulative effects management in the NWT.
- Member of team advising inter-departmental Upstream Oil and Gas - Developed social and environmental cumulative effects indicators and thresholds for North Yukon planning region; Beaufort Delta region, NWT; and Dehcho planning region, NWT.
- Developed Muskwa-Kechika case study for National Round Table on the Environment and the Economy to identify fiscal and regulatory

instruments for conservation of the boreal forest

- Worked with Muskwa-Kechika Oil and British Columbia Ministry of Sustainable Resource Management to define ecological indicators and thresholds for oil and gas development.
- *Fisheries Act* approval for seismic program in Gull Lake, Alberta.
- *Fisheries Act* approvals for watercourse crossings in Alberta.
- *Fisheries Act* approvals for under-ice seismic program in the Mackenzie Delta.
- Environmental and technical approvals strategy and planning for natural gas and transmission pipeline development in the Mackenzie Delta/Mackenzie Valley.
- *Fisheries Act* and *Navigable Waters Protection Act* approvals for bridge across Fort Nelson River north of Fort Nelson.
- Summarized regulatory regime for petroleum exploration, development, and production in Fort Liard area of Yukon and Northwest Territories.
- Prepared habitat enhancement, monitoring, and compensation sections of the Canadian Pipeline Water Crossing Committees' Watercourse Crossing guide.
- *Fisheries Act* and *Navigable Waters Protection Act* permitting for bridge across Peace River near Fort St. John.
- Prepared environmental planning, consultation, and access management sections of the British Columbia Oil and Gas Handbook issued by the provincial government.
- Reviewed and summarized regulatory approvals process, socio-economic, and First Nations issues associated with hydrocarbon exploration, construction, and operations in British Columbia.
- Coordinated environmental approvals planning for a large diameter NEB/EARP-regulated oil pipeline in northern Canada. Initiated environmental and socio-economic



REGULATORY AFFAIRS

(Cont.)

work required for a Certificate of Public Convenience and Necessity.

- Environmental approvals planning for a large diameter NEB-regulated gas pipeline in northern Canada.
- Prepared environmental applications for a mineable oil sands project, in-situ oil sands projects, coal mines, and ongoing exploration, production, and remediation/reclamation programs in Alberta, British Columbia, Saskatchewan, Quebec, Newfoundland, Northwest Territories, Yukon, and Inuvialuit lands.

Public Hearings

- Independent advisor to Mackenzie Valley Environmental Impact Review Board environmental impact review of Gahcho Kue diamond mine proposal
- Environmental support for proponent in Mackenzie Gas Project Joint Review Panel and National Energy Board hearings.
- Independent advisor to Mackenzie Valley Environmental Impact Review Board hearing on Paramount Cameron Hills Development Assessment Report.
- Environmental witness for proponent in EUB hearing on proposed TransAlta Keephills power plant expansion.
- Environmental witness for intervenor in joint EUB/CEAA hearing on proposed Cheviot Mine.
- Environmental witness for proponent in NEB/CEAA hearing on proposed Alliance Pipeline Project.
- Producer environmental witness in NEB hearing on Westcoast Energy Inc. gas plant and gathering system expansion proposals.
- Environmental and community relations witness and hearing coordinator for Inuvialuit

EIRB public review of proposed offshore drilling proposal in the Beaufort Sea.

- Provided community and media relations support for the Esso/Shell/Gulf Mackenzie Delta NEB Gas Export Application northern hearing.

PUBLIC INVOLVEMENT

Community Relations

- Project coordinator for multi-stakeholder group managing habitat compensation fund in Jasper National Park and Mount Robson Provincial Park.
- Facilitator for regional fisheries enhancement and compensation workshop in Fort McMurray hosted by Trout Unlimited Canada and Pembina Pipelines.
- Facilitator for discussions of environmental legacy projects in the Greater Yellowhead Ecosystem.
- Facilitator for Beaufort Sea Integrated Management Planning Initiative community workshop in Inuvik.
- Designed and coordinated Gulf's community relations activities in Northwest Territories and Yukon including: issue identification, monitoring, and scoping; and consultation with northern native and non-native communities, groups, and individuals.
- Resident contacts for preparation of sour facility Emergency Response Plans and trapper contacts for notification of seismic and drilling activities.

Harvester Compensation

- Developed Renewable Resource Compensation Guidelines that formed the basis for industry agreements with northern native groups.
- Prepared industry position on harvester compensation for the BEARP public hearings.



PROFESSIONAL DEVELOPMENT

Invited Speaker - Cumulative Effects Management Conference, Smithers, November 2012

Speaker - North American Caribou Conference, Fort St. John, September 2012

Invited Speaker, Cumulative Effects Management Frameworks for Offshore Beaufort Sea Development, Indian and Northern Affairs Canada, January 2012

Presentation co-author, North American Caribou Conference, Winnipeg, October 2012

Invited Speaker, Cumulative Effects Management Frameworks, Alberta Environment, September 2010

Society for Conservation Biology International Conference, Edmonton, July 2010

Invited Speaker, Cumulative Effects Assessment Issues, Canadian Environmental Assessment Agency, Vancouver, November 2009

Speaker, 9th International Environmental Concerns in Rights-of-Way Management Symposium, Portland, Oregon, September 2009

Invited Speaker, International Association of Impact Assessment Cumulative Effects Conference, Calgary, Alberta, November 2008

Invited Participant, Canadian Water Network Cumulative Effects Management Workshop, Saskatoon, October 2008

Speaker, Sahtu Land Use Planning Board Targets Workshop, Yellowknife, November 2007

Speaker, Dehcho Boreal Caribou ALCES Pilot Project, Hay River, NWT, March 2007

Invited Speaker, Wildlife Society Alberta Chapter Conference, Canmore, Alberta, March 2007

11th North American Caribou Conference, Jasper, Alberta, April 2006

Speaker, Applying ALCES in the Greater Yellowhead Ecosystem, Jasper, Alberta, April 2006

Invited Speaker, Cumulative Effects Management Workshop, Goose Bay, Labrador, March 2006

Wildlife and Environmental Impact Assessment Conference, Yellowknife, NWT, March 2006

Invited Speaker, NWT Thresholds Workshop, Yellowknife, NWT, March 2006

Invited Speaker, ESRF Northern Advisory Group Workshop, June 2005

Speaker, Science in the Changing North Conference, Yellowknife, NWT, March 2005

Invited Speaker, CAPP Environmental Issues Seminar, Calgary, Alberta, January 2005

Wildlife Radiotelemetry and Resource Selection Design and Analysis Workshop, University of Idaho, March 2004

ALCESII Modelling Course, February 2004

15th International Conference on Bear Research and Management, San Diego, California, February 2004

Invited Speaker: 7th Prairie Conservation and Endangered Species Conference, Calgary, Alberta, February 2004

Invited Speaker, DIAND Integrating Land Use Planning and Cumulative Effects Workshop, Whitehorse, Yukon, March 2003

Invited Speaker, ASPB Access Management Conference, Calgary, Alberta, March 2003

Speaker, ASPB Cumulative Environmental Effects Management Conference, Calgary, Alberta, November 2000



VOLUNTEER/GOVERNANCE

Riverwatch Institute of Alberta, Director,
2009-current

Alberta Society of Professional Biologists,
Director, 1998-2000

Trout Unlimited Canada National Board,
Director, 1994-1997

Foothills Outdoor Recreation Club,
President, 1984-1988



Anne Gunn

Resume



Ph.D. 1973 Imperial College, University of London, UK

B.A. Natural Sciences 1969 Trinity College, Dublin, Eire

Anne is a field biologist with a long experience in designing and managing programs for territorial governments and co-management boards in wildlife management and environmental assessment. While with the Government of the NWT (1979-2006), Anne worked as the regional biologist in the Kitikmeot Region and then as Caribou Biologist based in Yellowknife. Her knowledge and experience is from working with people and much time in the field watching caribou behavior and counting caribou from the ground and the air. Anne has made a point of listening to and sharing information with co-management boards, government agencies, the public, aboriginal hunters and elders.

Since leaving the government in 2006, Anne has worked on caribou matters for the Wek' èezhii Renewable Resource Board, the Mackenzie Valley Environmental Impact Review Board, the Beverly Qamanirjuaq Caribou Management Board, the Deline Renewable Resource Council, the Qikiqtani Inuit Association, and World Wildlife Fund Canada. At the international scale, Anne contributes to Circum-Arctic Rangifer Monitoring and Assessment (CARMA) Network and to the International Union for the Conservation of Nature's Deer Specialist Group.

As well as authoring 10 book chapters and some 70 journal articles, Anne co-authored a book on conservation in theory and practice and has a long list of government reports to her credit. Recent papers include:

- Gunn, A., Russell, D.R. and J. Eamer. 2011. Northern caribou population trends. Canadian Biodiversity: Ecosystem Status and Trends 2010 Technical Thematic Report Series No. 10. Canadian Councils of Resource Ministers. Ottawa, ON. 55 p.
- Gunn, A., C.J. Johnson, J. S. Nishi, C. J. Daniel, M. Carlson, D. E. Russell, and, J. Z. Adamczewski. 2011. Addressing Cumulative Effects in the Canadian Central Arctic – Understanding the Impacts of Human Activities on Barren-ground Caribou. Chapter 8. In eds. P. R. Krausman and L. K. Harris. Cumulative Effects in Wildlife Management: A Critical Aspect of Impact Mitigation. Taylor and Francis.
- Boulanger, J., K. G. Poole and A. Gunn. 2012. Estimating the Zone Of Influence of Industrial Developments on Wildlife: A Migratory Caribou and Diamond Mine Case Study. Wildlife Biology 18: 164-179.