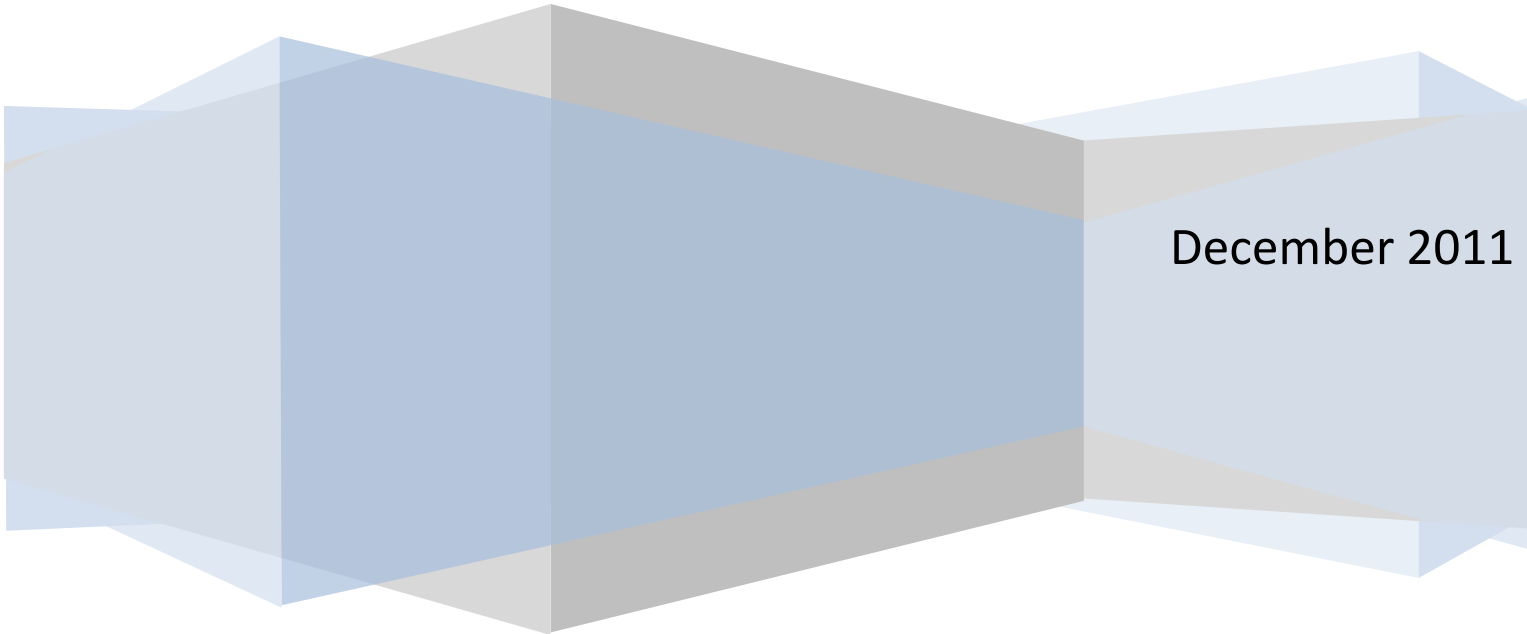


Northern Gateway Pipeline Project Joint Review Panel

A Submission regarding risks to SARA Listed Woodland
Caribou The Northern Gateway Pipeline Project

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For Nature Canada and BC Nature



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A Submission regarding risks to SARA Listed Woodland Caribou The Northern Gateway Pipeline Project

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Executive Summary

1. The Gateway Application appropriately identifies Woodland Caribou (*Rangifer tarandus-caribou*) as a key indicator species for wildlife. These Caribou (Southern Mountain Population) are listed on Schedule 1 of the Species at Risk Act and similar categories in British Columbia (Red, threatened) and Alberta (AR, at Risk). The Northern Gateway Pipeline Project application identifies that some 214 kilometres of the proposed pipeline Right of Way (RoW) are intended to cross Sensitive areas for Woodland Caribou. Further, the environmental and socio-economic assessment (ESA) identifies 24,465 hectares of the Project Effects Assessment Area (PEAA) to be overlapping caribou range. Two of the five caribou populations that occur in this area are identified as declining; another two are stable, and one is stable and increasing.
2. The two significant risk factors are increased mortality and disturbance (fragmentation) of the habitat of Woodland Caribou. These factors are cumulative and thus the risks of the proposed Northern Gateway Pipeline Project impacts must be assessed in the long term and cumulatively in context with other anthropogenic caused impacts. Contributions to cumulative risks are to be considered under the terms of Canadian Environmental Assessment Act.
3. The Northern Gateway Pipeline Project Environmental Assessment has incorrectly identified caribou mortality in winter as the determining factor for population viability, when recent literature clearly document that summer mortality is prevalent. The consequence of this error is that a finding of insignificant impacts on caribou from the pipeline proposal is based on assessment of impacts on winter habitat is also in error.
4. Without the assessment and modeling of linear density changes and the role of corridors to patch environments in the summer season, the proponent has underestimated the risk of increased predation on caribou populations that are currently recognised as vulnerable. A conclusion of non-significance is therefore not supportable.
5. The proponent also implies that it will achieve marked reductions in impacts through its mitigation actions. While these actions are certainly best management practices, they are not specific, quantified nor measurable for results.
6. The ESA substantiates that the impacts of this major project will not be positive for these caribou herds. It is only the level and significance of the degradation that is under discussion.



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7. It is our contention that a reasonable expectation would be that the Northern Gateway Pipeline project will exacerbate the current decline in the Little Smokey, Narraway, Hart and Telkwa Caribou herds through cumulative effects and increased mortality. The pipeline and the residual impacts of the pipeline will continue to provide detrimental effects for the life of the pipeline and an extended period after and likely contribute to the extinction of two or more of these herds. The ESA has not disproved that proposition.

Introduction

8. The Gateway Application appropriately identifies Woodland Caribou (*Rangifer tarandus-caribou*) as a key indicator species for wildlife (Gateway Application, V 6A Environmental and Socio-economic Assessment – Pipelines and Tank Terminal, Section 9 Wildlife; Table 9a). It identifies that these Caribou (Southern Rocky Mountains Ecotype) are listed on Schedule 1 of the Species at Risk Act and similar categories in British Columbia (Red, threatened) and Alberta (AR, at Risk).
9. The Species at Risk Act states “threatened species” means a wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction. It is intuitive that *“For a threatened species, the objective is to improve environmental conditions for the species to halt and reverse current population declines. Further destruction of core habitat is inconsistent with recovering these threatened caribou, and rather, efforts to improve the habitat condition for these animals is what is required to meet recovery objectives”* (Seip 2011).
10. The Northern Gateway Pipeline Project application identifies that some 214 kilometres of the proposed pipeline RoW is identified as crossing Sensitive Areas for Woodland Caribou. (pg. 9-9). Further, the ESA identifies 24,465 hectares of the PEAA as overlapping caribou range. (Table 9-39)
11. The conservation status of Woodland Caribou is identified as threatened and two of the five populations are documented as declining, another two are currently stable and one is stable and increasing (Table 9-38).
12. This submission reviews the Northern Gateway Pipeline Project’s assertion that the impact of the project to caribou risk is insignificant, based on assessment of potential winter range disturbance and restoration.

Risk Factors

13. Woodland Caribou (Southern Rocky Mountain and Boreal Ecotypes) are listed as threatened as a result of continuing loss of occupied range and general declines in overall numbers. In the past



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two decades much effort has been made to identify the causes. Currently most accepted rationale is summarized in an appendix to the Forest Practices Board of British Columbia report on cumulative effects (FPB/SR/39) which states *“Natural and anthropogenic disturbance have been shown to influence caribou distribution and movement (Smith et al. 2000, Dyer et al. 2002), and development activities have been associated with increased mortality of woodland caribou (Darby & Duquette 1986, Cumming & Beange 1993, James & Stuart-Smith 2000, Smith 2004).”* (Forest Practices Board March 2011).

14. While some will argue that this relationship has not been proven, science accepts that a proposition is likely when it is unable to be disproven. The same Forest Practices Board Report, looking at the role of forest management in cumulative effects, concludes *“Given research constraints and well-documented links between caribou distribution, population demographics and disturbance, the lack of an established causal relationship between population declines and disturbance of woodland caribou does not provide sufficient evidence that such a relationship is nonexistent (Seip 1998, Dzuz 2001, Mahoney & Schaefer 2002)”*. (Forest Practices Board March 2011)
15. The two significant risk factors are increased mortality and disturbance (fragmentation) of the habitat of woodland caribou. These factors are cumulative and thus the risks of the proposed Northern Gateway Pipeline Project impacts must be assessed in the long term and cumulatively in context with other anthropogenic caused impacts. Contributions to cumulative risks are to be considered under the terms of the Canadian Environmental Assessment Act.
16. This submission will identify that we believe the Northern Gateway Pipeline Project Environmental Assessment has incorrectly identified caribou mortality in winter as the determining factor for population viability, when recent literature clearly shows that summer mortality is prevalent. The consequence of this error is that a finding of insignificant impacts on caribou from the pipeline proposal that is based on assessment of impacts on winter habitat is also in error. An assessment of the impacts of the pipeline proposal on the much larger amount of summer range is very likely to show a significant risk to the viability of four of the five caribou populations; with a special risk of greatly increasing the risk to the Hart population due to the fragmentation of the Roadless area between km 588 and 615 of the proposed route.

Northern Gateway Pipeline Project Assessment



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Habitat Assessment

17. Section 9.2.7 of the ESA identifies that *“an effect is significant when a resource undergoes an unacceptable change or reaches an unacceptable level...or..... when it passes a key threshold.....e.g. the viability of a population..... an effect is considered **not significant when the project is not expected to result in an effect on the long term viability of a wildlife population** (our emphasis)....it is considered significant when there is a moderate to high probability that the project may result in an effect on the long term viability of that same population”* The question thus becomes whether the Northern Gateway Pipeline Project will have an impact on the long term viability of the caribou populations.
18. Section 9.5.24 states *“Three caribou ecotypes are distinguished along the PEAA based on seasonal migration patterns and habitat use.”* However *“Predation is recognized as an important limiting factor (our emphasis (pg. 9-224) “.* While the Northern Gateway Pipeline Project accepts that predation is an important limiting factor, it incorrectly identifies predation as important in winter. Wittmer et al (2008) clearly identify for these particular caribou populations *“caribou more likely to die during calving and summer seasons (pg. 412)”*.
19. Section 9.5.24 states *“Habitat in early and late winter, which has been selected as the critical season for caribou for this assessment “(our emphasis).... *“Early and late winter habitat was the focus of assessment for habitat change”* (Northern Gateway Response to BC Nature & Nature Canada IR 1) even though it is the changes in summer habitat that are manifested in the increased predation and declines in caribou populations.*
20. When questioned on this approach the proponent responded *“Early and late winter habitat was the focus of assessment for habitat change, not mortality risk. Early and late winter habitats are considered to be a limiting life requisite for caribou, and are supported by the literature.”* (Northern Gateway Response to BC Nature & Nature Canada IR 1-A30928); an entirely true, but misleading response. Of course caribou cannot exist without adequate winter habitats and the proponent has rightly utilized linear density to characterize their proportion of impact on these habitats *“The Application (Volume 6A, Section 9.4.3.2) states that linear feature density was identified as a suitable predictor of mortality risk for a number of species, including caribou. Linear feature density is a commonly-used metric for quantifying and modeling the effect of development on large mammals such as caribou “(Northern Gateway Response to BC Nature & Nature Canada IR 1), however it is more important for summer habitats than winter habitats.*
21. What the proponent has apparently failed to acknowledge is that caribou with an adequate supply of good winter range can face declines and even extinction from the consequences of predation, primarily in summer. Without the assessment and modeling of linear density changes and the role of corridors in and to summer environments, the proponent has



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underestimated the increased risk of increased predation on caribou populations that are currently recognised as vulnerable. This severely underestimates the risk to caribou populations created by this project proposal.

Mortality Factors

22. When requested to *“Rationalize the finding of no significance to the increased mortality factors for threatened woodland caribou”* (BC Nature & Nature Canada IR 1), the proponent responded; *“Early and late winter habitats are not appropriate measurable parameters for mortality risk; as indicated in the Application (Volume 6A, Section 9.4.3.2) linear feature density was chosen as the measurable parameter for mortality risk”* (Northern Gateway Response to BC Nature & Nature Canada IR 1). We Concur.
23. However, linear feature density and related issues of corridors to patch habitats, such as isolated mountaintop features, were not assessed for the habitats utilized in the seasons of mortality, calving and summer. Consequently, the risk of predation mortality is, for the critical part, not assessed. A conclusion of non-significance is therefore not supportable; as this model, based on inaccurate assumptions, is incorrect.
24. Further, The ESA identifies that *“Corrective measures to reverse the decline of caribou must involve mitigating predation either by managing early seral forest conditions, roads and linear corridors, non-caribou ungulates and predators, or a combination of these..... Although this supposition is not new, the importance of non-caribou ungulates and the success of predation mitigation techniques remain largely untested and unknown. Therefore, the value of managing predation risk is circumstantial and anecdotal”* (Section 9.6.5.2., pg. 9-195). We believe that this statement is unfounded and contrary to other findings () and the word anecdotal is misleading, not reflecting the considerable caribou science that has been undertaken in the last decade (Wittmer et al 2008 , Forest Practices Board 2011).

Significance

25. When questioned on the finding of significance the proponent responded: *“The approach to significance determination for wildlife is described in the Application (Volume 6A, Section 9.2.7). In brief, an effect is significant when a resource undergoes an unacceptable change or reaches an unacceptable change or reaches an unacceptable level.*
26. *Northern Gateway accepts that ultimately it is the role of the responsible authority, that is, the government authority charged with making a decision about whether a project is in the*



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public interest, to determine the significance of an environmental effect. The ESA includes analyses intended to aid regulators and support their decision-making process. The determination of significance is most straightforward when clear thresholds separate minor and major effects. However, accepted thresholds are less clear for most effects on wildlife in general, and even less so, for individual species and most population units.

27. *For this assessment, an effect is considered not significant when the Project is not expected to result in an effect on the long-term viability of a wildlife population (e.g., a subpopulation, herd or management unit, as appropriate). It is considered significant when there is a moderate to high probability that the Project may result in an effect on the long-term viability of that same population.*
28. *The end goal of the mitigation strategies that Northern Gateway has committed to for the management of Project effects on woodland caribou were applied to the assessment of all five caribou herds and the resulting characterization of Project effects and the determination of significance of these effects. As outlined above, the long term viability of caribou was the criteria used to define significance, and Project effects were measured comparably against the approach taken by the Species at Risk Act (“SARA”) for a threatened species, **specifically to improve environmental conditions for the species to halt and reverse current population declines** (our emphasis). The approach taken by Northern Gateway is in alignment with the intent of recovery strategies being examined under SARA.” (Northern Gateway Response to BC Nature & Nature Canada IR 1)*
29. There is no disagreement with these statements except the statement that “project effects were measured comparatively against the approach taken by the Species at Risk Act (“SARA”) for a threatened species, specifically to improve environmental conditions for the species to halt and reverse current population declines”. There is nothing in the ESA to show that the project was assessed to halt and reverse population declines, in fact the ESA shows negative effects but identifies them as not significant. However, as already identified, the risks of increased predation from impacts on summer habitat are likely to be very significant and are not utilized in the determination of significance. Additionally the proponent attributes considerable weight to the application of actions which mitigate impacts. Again there is no disagreement with the mitigation actions as appropriate, although they appear to be best management actions rather than a mitigation program; however, the significance of these actions in reducing the long term impacts of the project on the viability of caribou populations is not measurable and of concern.

Mitigation

30. We (BC Nature and Nature Canada IR1) asked the proponent to:



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- *“Identify if increases in linear feature density can lead to increased caribou mortality without human access.*
- *Identify the time frame to decreased mortality risks from both operations decommissioning (i.e. reversibility -Table 9-78) if mortality is increased by linear features without human access?”*

31. The proponent has responded with: ‘Mortality risk at the operations and decommissioning phases is characterized as long term, meaning more than 10 years, but not more than 30 years, beyond decommissioning. However, measures to reduce mortality risk will be ongoing through all Project phases, and thus decreases in mortality risk will be realized on an ongoing basis, rather than entirely during the decommissioning phase. For example, temporary access roads used for construction will be decommissioned early in the operations phase. Another measure to reduce mortality risk along linear features in the absence of human activity will be to reduce line of sight for predators (see Table 9-78). Line of sight reduction is considered highly effective [Caribou Landscape Management Association (CLMA) and Forest Products Association of Canada (FPAC). 2007. Audit of operating practices and mitigation measures employed within woodland caribou ranges. Unpublished report prepared for CLMA and FPAC, Peace River, AB.], and may include the use of vegetation screening (i.e., active-replanting or natural regeneration), rollback or berms, and bends in the RoW. Line of sight measures will be implemented early in the operations phase. Further to reducing the time frame of mortality risk, Northern Gateway has committed to all mitigation measures presented in Volume 7A, including development of an Access Management Plan prior to commencement of construction.’

32. The proponent, while recognising the mortality risk is long term, arbitrarily indicates the term is less than 30 years, with no data to substantiate. The life of the pipeline and the time it takes to re-establish a forest is clearly much longer than 30 years and beyond the time when declining caribou populations will have gone extinct. The proponent also implies that it will achieve marked reductions in impacts through its mitigation actions. While these actions are certainly best management practices they are not specific, quantified nor assessable for results.

Discussion

33. Caribou habitat is a spatial entity, somewhat uniformly featureless with no easily definable travel routes. Linear corridors, by the cutting down of trees and the disturbance of the soil to change the vegetation to an early seral state (grasses and shrubs), fragment the spatial entity that is caribou habitat. This fragmentation is only “reversed” when the forest grows back to the height of the adjoining forest canopy and the trails and travel routes disappear into the trackless



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whole. In the northern forests of Canada this process takes many decades from the time of disturbance.

34. In pipeline projects these disturbances, by the objectives of a pipeline going from one place to another, necessarily bisect the caribou landscape into fragments, at least two but usually many more, as the pipeline is in combination with periodic access points, utility corridors and other resource development features. Linear disturbances become the travel routes and corridors for predators.
35. Caribou exist by avoiding predation on this spatial scale, they are unpredictable in their utilization of their habitat and so provide no reliable food source to sustain predator populations. The fragmentation of their habitat provides travel corridors for predators, these corridors dramatically increase the potential for the paths of caribou and predators to intercept and additionally allow predators (wolves in particular) to increase their travel range into caribou habitat from other habitat where they have a more predictable prey base. Once fragmented, caribou habitat will stay that way for several decades, even with the intervention of accelerating succession by the planting of trees.
36. Disturbances from this pipeline project will functionally fragment caribou habitat, with the fragmentation lasting for at least three decades from initial disturbance and longer, if maintained for the use and functioning of the pipeline. These impacts last for several decades after abandonment. These are significant, long term negative impacts by any assessment consideration.
37. The Proposal, as submitted, is so conceptual and lacking in specifics that it is not possible to accurately quantify the large number of access routes, utility corridors etc. that determine the actual footprint, nor to accurately quantify the fragmentation and loss of use of caribou habitat. The assessment of significance utilized in this ESA relies on the quantitative assessment of linear disturbance and the efficacy of “mitigation” proposals. We question the quantitative assessment, as it is based erroneously on winter habitat when it should have included summer habitat.
38. Mitigation is defined as *to lessen in force or intensity*, not eliminate. We see the proponent’s proposed mitigation simply to be expected best management practices already implemented in similar pipeline projects. These proposed “mitigation” actions are merely qualitative mitigation strategies that would not eliminate the significant long term consequences this project would have on five caribou populations.



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Conclusions

39. The intent of this submission is to assist the Panel. The Panel must ultimately judge the risk that the project is a significant cumulative increment of risk for the Little Smokey, Narraway, Hart and Telkwa Caribou herds whose habitat the pipeline corridor bisects. These caribou populations have been recognised by the Species at Risk Act of Canada as threatened and vulnerable.
40. The ESA substantiates that the impacts of this major project will not be positive for these caribou herds. It is only the level and significance of the degradation that is under discussion.
41. It is our contention that a reasonable expectation would be that the Northern Gateway Pipeline project will exacerbate the current decline in the Little Smokey, Narraway, Hart and Telkwa Caribou herds through cumulative effects and increased mortality. In the lifetime of the pipeline and the residual impacts of the pipeline, the project will likely continue to provide detrimental effects and contribute to the extinction of two or more of these herds. The ESA has not provided information or details to disprove that proposition.

References

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Resume

In 2004 British Columbia designated the College of Applied Biology Act which designates Applied Biology as a self-regulating profession. Only members of the college can use the designation Registered Professional Biologist or Professional Biologist in British Columbia.

Brian Churchill is a Registered Professional Biologist (#128) in British Columbia.

Brian has with 34 year career of wildlife habitat and management experience dealing with all aspects of the upstream oil and gas industry; training & experience in the Canadian EA process (Teresen-Kinder Morgan –TMX-Anchor Loop); specific work on pipelines, mountain goats, southern mountain caribou and grizzly bear in the NE BC/ Prince George regions; As a professional biologist he is required to have up to date knowledge of research and management in his area of expertise. Brian practices applied biology on the industry-wildlife interface. Brian has considerable field experience in the south peace region.

Education:

- Bachelor of Science in Biology with specialization in Terrestrial Ecology and Physical Geography, University of Victoria.
- Master of Science Faculty of Forestry (Wildlife Management), UBC.
- Canadian Environmental Assessment Act Training
- Applying DNA Methods to the Study of Wildlife Distribution and Abundance.

Professional experience includes:

- Chair NE BC Stone Sheep Science Committee *Research and Inventory project, ILMB.*
- Integrating First Nations Values in Land Use Planning, Wildlife and Industrial Development *MOELP (Peace Region) 1985-1997 Consultant 1997-2007*
- Management/research of Habitat and Populations of Moose, Elk, Caribou, Mountain Goats, Grizzly Bear, Birds, Stone and Bighorn Sheep Deer *MOELP (Peace Region) 1985-1997 Consultant 1997-2007*
- Wildlife Habitat Connectivity and Conservation of Peace River Lowlands, A Conservation Plan For The Security Of Wildlife Habitat *Peace Habitat and Conservation Endowment Trust 2002-2003.*



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- Pre-Tenure Planning for Oil and Gas Tenures (Upper Sikanni Management Plan, Besa Prophet Phase 1 and four results based Pre Tenure Plans, Sulphur/8 mile Plan), MOELP (Peace Region) 1977-1997, Consultant 1997,2001-2007)
- Habitat assessments for forest planning Slocan/BC Timber Sales 2004
- Heli-drilling Suitability Assessment Muskwa-Kechika Trust Fund 2002
- Environmental Management of Industry (Oil and Gas, Forestry, Coal Mining, Agriculture) in North-eastern British Columbia including the Muskwa-Kechika MOELP (Peace Region) 1977-1997, Consultant 1997-2007.
- Oil and Gas Regulation and Environmental Management for Roads, Leases, Pipelines, MOELP (Peace Region) 1977-1997
- Mitigation of Wildlife Impacts Oil and Gas Proposals (Roads, Leases, Pipelines), MOELP (Peace Region) 1977-1997 Consultant (1997-2007).
- Land Use Planning, Land and Resource Management Plans (Ft. Nelson, Ft. St. John & Dawson Creek) MOELP (Peace Region) 1992-1997.
- Planning, facilitation and coordination (Co-ordinator Muskwa-Kechika Advisory Board) Consultant (1998-2000).
- Expert Witness s (Wildlife and fish habitat, pesticides, ecosystem, vegetation) Consultant (1997-2007).
- Habitat Assessments for Pesticide applications Consultant (1997-2007).
- Wildlife habitat model and assessment reports (moose, elk, bison, caribou, mule deer, mountain goat) Consultant (1997-2007).
- Terrestrial Ecosystem Mapping (TEM) projects. MOELP (Peace Region) 1977-1997Consultant (1997-2007)
- Wildlife and Fish Habitat Protection MOELP (Peace Region) 1977-1997
- Wildlife Habitat Enhancement MOELP (Peace Region) 1985-1988(full time) 1988-1997.
- Liaison with First Nations MOELP 1992-96, MK Board 1998-2000 Consultant 2001-2007

Managerial Experience:

- Councillor, Vice president, College of Applied Biologists of BC, 2004-2011
- Board of Directors, Association of Professional Biologists, 2001-2007
- Wildlife and Habitat Section Head Ministry of Environment, 1987-1997,
- Principal and project manager of Chillborne Environmental, 1997 to Present.
- Councillor, City of Fort St. John, 1996--2004
- Board of Directors of School District 60, Peace River North, 1987-1992



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