Consolidated Research Priorities:

a Publication of the Northwest Territories Board Forum

Introduction

Please find attached the first annual list of Consolidated Research Priorities of the Northwest Territories Board Forum (NWT Board Forum).

The NWT Board Forum was established to facilitate discussion on matters of common interest by resource co-management boards in the NWT. Members of the NWT Board Forum include all resource co-management/public boards created under the Mackenzie Valley Resource Management Act (MVRMA), the NWT Waters Act (NWTWA), the Inuvialuit Final Agreement (IFA), the National Energy Board (NEB) and Renewable Resources Boards for each land claimant region. Indian and Northern Affairs Canada (INAC) and the Government of the Northwest Territories (GNWT) also participate in the NWT Board Forum.

Individual members of the NWT Board Forum identified research topics, prioritized them and consolidated them in this one document. The topic areas include many that are emerging issues, are common to many regions in the NWT, or for which a consolidation of current knowledge or best practices would facilitate more efficient and effective review processes.

Research priorities were identified that would address the NWT Board Forum member organizations' most pressing areas for improved information and process efficiencies.

The purpose of this document is to advise organizations and individuals interested in conducting research in the NWT of the priority research areas identified by members of the NWT Board Forum. While not generally funded to carry out research, our organizations have a strong understanding of the local, regional and territorial context that may be of assistance. The overarching goal is to obtain better information for making more effective decisions in implementing an integrated resource management system. This will benefit northerners and Canadians in general.

Members of the NWT Board Forum do not generally have a mandate to conduct or fund research into northern research management issues. However, Board Forum members do rely on individuals and organizations to bring forward the best information available so they can make the highest quality resource management decisions possible. In many situations, Board Forum members have found that desired information is not available and research is required to fill in those information gaps.

Organizationally, this document is divided into two topic areas:

- Biophysical Impact Assessment, and
- Social, Economic and Cultural Impact Assessment.

The following tables break these Research Priorities down into 13 High Priority Research Areas and 20 Other Research Areas.

Note that this document will be reviewed and updated in the fall of 2009 and then on a bi-annual basis. If your organization is familiar with studies that have already addressed these issues in one way or another, the NWT Board Forum would appreciate learning about the results. Contact

NWT Board Forum – Statement of Research Priorities Revised June 2009

Alan Ehrlich (details below) with any research findings you think are relevant to distribute to NWT Board Forum members.

Please be aware of the following:

The NWT Board Forum does not offer research funding. While some NWT Boards (in
particular the Renewable Resource Boards) have small research budgets, any researcher
looking to work on some of the topics identified here will need to seek funding from other
sources. Those researchers may want to contact the appropriate NWT Board ahead of any
funding applications for further insights regarding the information that would be most
helpful.

We draw your attention however to the **Environmental Studies Research Fund (ESRF)** program for oil and gas-related research on frontier lands in Canada, including the NWT. The Environmental Studies Research Funds (ESRF) is a research program administered by the National Energy Board which sponsors environmental and social studies. It is designed to assist in the decision-making process related to oil and gas exploration and development on Canada's frontier lands, including the NWT. The purpose of the ESRF is to finance environmental and social studies pertaining to the manner in which and to the terms and conditions under which petroleum exploration, development, and production activities on frontier lands should be conducted. The ESRF has a 12-person Management Board that, on behalf of the Minister of Natural Resources and the Minister of Indian Affairs and Northern Development, sets priorities for study topics, determines the program budget, and facilitates the development of study proposals. For more information, please visit the ESRF website at www.esrfunds.org or call Kym Hopper-Smith at (403) 299-3890 or toll free at 1-800-899-1265 extension 3890.

- The NWT Board Forum is not the organization that licenses research in the NWT. All
 researchers should contact the Aurora Research Institute at www.nwtresearch.com for
 more information on research licensing.
- 3. Researchers working in the NWT also need to be aware of community- and region-specific protocols for involving communities in the identification of specific research targets, among other issues. Community acceptance plays a key role in some types of research in the NWT and it is the researcher's responsibility to be respectful of local expectations. In many cases, individual communities may have their own research priorities that they want to share. The Aurora Research Institute and local and regional aboriginal organizations in the proposed work area can assist researchers in developing the appropriate understanding of the local context. The Aurora Research Institute publishes *Doing Research in the Northwest Territories A Guide for Researchers* on its website.

For more information about this initiative or an individual research priority, contact the appropriate board(s) (see the list of contact details in Appendix A) or contact:

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Table 1: High Priority Research Areas

	Biophysical Impact Assessment			
Topic	Comments	Contact Organization		
A-1) Identification of valued component (VC) thresholds	Environmental impact assessment (EIA) and regulation of proposed developments depend on the necessary baseline, cumulative effects and valued component threshold information for quality and expedient decision making. Research and development work is proceeding in the Northwest Territories (NWT) with respect to baseline and cumulative effects information. However, little or no research and development is occurring with respect to thresholds which can be referenced by the NWT Boards.	Mackenzie Valley Environmental Impact Review Board (MVEIRB) and Land and Water Boards (LWBs), NWT Water Board (NWTWB), Environmental Impact Screening Committee (EISC) and Environmental Impact Review Board (EIRB) for the Inuvialuit Settlement Region (ISR) 1		
A-2) Research into caribou decline, including the effects of development	Caribou numbers are estimated to be in decline, particularly among the barren ground caribou, but also there are concerns about woodland caribou, a species at risk. In the far north, the Peary caribou and the Dolphin Union herd on Victoria Island are also at risk and merit further study. There is no consensus on caribou herd numbers or reasons behind declines. Because of the importance of this Valued Ecosystem Component, additional research into the causes and severity of this decline is a priority. Current evidence and numbers also need to be more readily collated and shared with organizations responsible for co-management. There are various pockets of research information which need to be inventoried and synthesized into a statement of the current state of knowledge on this topic. Information is lacking – or scattered – concerning impacts that significant developments	Renewable Resource Boards (RRBs), Wildlife Management Advisory Council – NWT (WMAC-NWT) for the ISR and the Inuvialuit Game Council (IGC) for the ISR		

¹ See Appendix A for a full list of NWT Board Forum members and Appendix B for a list of acronyms for organization names.

	such as roads, overhead power transmission lines, mines, oil and gas activities and others can have on caribou populations and behaviour. Questions about how various types of development affect the migration patterns and health status of individual animals and the herd(s) themselves are becoming increasingly important. Separate studies for boreal and woodland caribou populations are necessary. In addition, the impacts of climate change on caribou need to be better understood. Project specific studies on increased human access and effects on caribou herds would be valuable. *Note: Sensitive community issues are associated with caribou research. All research will need to respect processes and existing efforts that are in place to facilitate such research – please contact Aurora Research Institute and the communities in question for more detail.	
A-3) Updated, accurate and consistent caribou harvesting	Subsistence, resident and non-resident harvesting numbers are not current or accurate. The number of animals being harvested is not clear. This information would be valuable in determining a reasonable/sustainable total allowable harvest.	RRBs, WMAC-NWT, IGC
statistics		
	*Note: Sensitive community issues are associated with caribou research. All research will	
	need to respect processes and existing efforts that are in place to facilitate such research – please contact Aurora Research Institute and the communities in question for more details.	
A-4) Research into the impacts of different seismic/oil and gas exploration methods and highways on caribou	The ecosystem in the Mackenzie Valley and Mackenzie Delta is generally less resilient than in southern Canada to the potential effects of anticipated seismic and other development. Woodland Caribou, in particular, may be adversely impacted by seismic and road development in the Mackenzie Valley. One approach to minimize impacts is to use "low impact" seismic exploration methods.	MVEIRB, EISC, EIRB, IGC, WMAC-NWT, RRBs
Carroou	Research is required to develop new or improved low impact methods which can be used in all types of geotechnical conditions. In turn, further research will be required to determine how effective "low impact seismic" methods has been or will be in minimizing the impact of seismic exploration methods.	
	This may require an overview of current best practices from other jurisdictions, with recognition of the particularities of northern ecosystems. Best practices for seismic line width, density (e.g., kilometres of lines per square kilometre) and other mitigation measures need to be encoded. Note that these may be ecosystem specific and may differ across the Mackenzie Valley. Some steps seem to have been taken in this regard.	

	Guidelines may be necessary.	
	It would be helpful if the effects of seismic or other linear disturbances on wildlife species were better understood.	
A-5) Better understanding of the ecology of "Large Lakes" and development impacts	Great Bear Lake baseline stock assessment For example, A Great Bear Lake simple stock assessments would help to establish a baseline to assess health trends over time. Compilation and summary of existing knowledge and biological status and trends in big lakes (>50km²), e.g., Koho Lake area, Lac Du Bois, thousands of sensitive fish lakes	RRBs, MVEIRB
A-6) Better knowledge of ecosystems interactions among aquatic resources	Better understanding of the aquatic food chain is necessary; seemingly small shifts in one species can have "snowball effects". For example, the ecology of ciscoes migrating from Alaska and spawning around Fort Good Hope is poorly understood, despite the fact this is a very important part of the food chain and very important economically for communities in the Mackenzie Delta.	RRBs, NWTWB, IGC(FJMC)
A-7) Migration and over-wintering patterns of keystone fish species	Improved understanding of the migration and over-wintering patterns of inconnu and ciscoes would assist Board Forum members; specifically the: i) Status of the char populations which use the Yukon North Slope and the Mackenzie delta. - Migration patterns - Overwintering - Habitat requirements - Population and distribution ii) Influence of climate change on the above, and iii) Influence of changes in Mackenzie River levels/flows on the above Information is dated or scattered on migration patterns, habitat requirements, population distribution, etc. of keystone species generally.	RRBs, IGC(FJMA)
A-8) Cumulative impacts (especially of habitat loss) from development	It would assist resource management Boards to better understand the impact of disturbance by industrial activities, especially oil and gas and mining, on wildlife in the NWT; specifically, i) Enumeration of the amount of habitat available and habitat alteration/loss for woodland and barren-ground caribou. This includes habitat loss, sensory and physical disturbance	RRBs, MVEIRB, IGC(FJMC), EISC, EIRB, SLUPB, GLUPB

	and displacement	
	and displacement.	
	ii) Compilation of best practices for caribou habitat protection	
	iii) Thresholds for habitat effectiveness	
	The focus should be on areas where there is an existing or potentially rising concentration of industrial activities. Best practices for caribou habitat protection are desirable as well.	
A-9) Assessment of	A better understanding of the cumulative effects of prior development on the aquatic	EIRB, MVEIRB,
the cumulative effects	resources of the Mackenzie River watershed is desired for the NWT Board Forum to be	Inuvialuit Joint
of development on the aquatic resources of	able to assess predicted impacts of proposed developments on those watersheds, and manage accordingly.	Secretariat (IJS), SLUPB, GLUPB
the Mackenzie River		
Watershed	Information is desired regarding the current status of the Mackenzie River watershed upstream of the NWT, including	
	- baseline information (e.g. development to date, water quality, terrestrial, aquatic and airshed indicators)	
	- summary of other research initiatives (past and current) including parameters	
	In particular this baseline information would assist in the consideration of transboundary	
	impacts of potential development(s) on the Mackenzie River watershed.	
	This research would also help to ensure on-going monitoring of the Mackenzie River watershed focuses on the most relevant parameters.	
	Socio-economic and Cultural Impact Assessment	
Topic	Comments	Contact Organization
A-10) Identification of	Environmental impact assessment (EIA) and regulation of proposed developments depend	MVEIRB, EIRB,
measurable indicators	on the necessary baseline, cumulative effects and valued component threshold information	Inuvialuit Joint
for the assessment of	for quality and expedient decision making. Minimal research and development work has	Secretariat (IJS)
cumulative impacts on	proceeded in the Mackenzie Valley with respect to cumulative effects information for the	
– and thresholds for -	human environment.	
socio- economic and cultural valued	In addition, little or no receased and development is accoming with respect to the set of the	
components (VSECs)	In addition, little or no research and development is occurring with respect to thresholds of acceptable change for VSECs which can be referenced by the MVEIRB or regulatory Boards in making their decisions.	

	The Boards would benefit significantly if relevant parties identified measurable indicators of impacts, and thresholds of manageable change for same, that could then be referenced in	
EIA of proposed developements.		
A-11) Development of methods to forecast i) long and short term labour demand ii) impacts on lifestyle,	Research into the short and long term impacts of developments on the local labour pool would better inform the Boards so they can more accurately assess impacts and mitigation that may be appropriate. Typically there is a gap between the local labour capacity and the labour needs of a proposed development. Research is encouraged to:	MVEIRB, EIRB, Inuvialuit Joint Secretariat (IJS)
culture, health etc	 Compile and discuss the current knowledge of the short and long term impacts of developments on local labour pools Identify and evaluate of ways to manage gaps between local labour capacity and 	
A-12) Cultural	the labour needs of a development. Research is encouraged regarding:	MVEIRB, EIRB,
landscape assessment	- Cultural landscapes – identification of ways to define them in the NWT - Impacts of activities on cultural landscapes (other than cultural activities) e.g. perceptual, physical?	Inuvialuit Joint Secretariat (IJS)
A-13) Long distance commuting effects	More than a decade of diamond mining should provide a very strong material base for applied research and identification of "lessons learned" from different strategies to make long-distance commuting less onerous on workers, families and communities. Applied research and identification of "lessons learned" related to long-distance commuting is encouraged, including strategies to reduce impacts on workers, families and communities.	MVEIRB, EIRB, Inuvialuit Joint Secretariat (IJS)

Table 2: Other Identified Research Areas (NOTE: not in order of priority)

#	Topic	Comments / Examples	Board Contact
B-1	More study on changing seasonal distributions of bears and reasons for same.	Grizzly bears are moving further north and are more common near communities, in the barrens and in the mountains. Polar bears are moving further south and creating public safety issues too. The reasons behind these respective changes in habitat usage are not well understood nor are their implications. The following information would be helpful to NWT resource management Boards: i) Reasons behind recent observed changes in habitat use and travel patterns, and their implications - Grizzly bear (moving further north and becoming more common near communities) - Polar bear (moving further south, creating public safety issues) ii) Impacts of development on grizzly bear, polar bear, including the role of climate change and the overall health of the species iii) Delineation of denning areas for black bears and grizzly bears	RRBs, WMAC-NWT, IGC
B-2	Moose harvesting statistics	Similar to caribou harvesting statistics, there is only limited credible evidence about the amount of moose taken "out of the system". Annual harvest statistics, by region would improve baseline information available.	RRBs, WMAC-NWT, IGC
B-3	Forest regeneration management	Best practices in, and timelines around, regeneration in the boreal forest	RRBs
B-4	Water quantity and quantity changes over time	There are concerns that the amount and quality of water available for lakes and rivers will decline through the combined effects of climate change and industrial use, such as oil sands development. Monitoring changes in water quality and water quantity is important from an impact and public concern perspective. To better inform Boards the following information would be helpful: Compilation of baseline information on water quality and quantity Development of a methodology to monitor changes in water quality	LWBs, MVEIRB, EIRB, EISC

#	Topic	Comments / Examples	Board Contact
		and quantity over time, taking into consideration the identification of causes, where possible to do so	
B-5	Comparative studies of the effectiveness of conservation zones	How well do different types of conservation zones work in different jurisdictions? What types of restrictions actually prevent harm from coming to the environment? What lessons can land use planners and other comanagement groups learn from the past, and from other places?	Land Use Planning Boards (LUPBs)
B-6	Ocean current data	Current and time series measurement of ocean current data in the Beaufort. Improvements to available information would allow assist with project planning, oil spill management modeling, assessing threats to large mammals, and environmental impact assessment.	IGC, IJS
B-7	Ice distribution and conditions monitoring	Evaluation of the linkages between the amount of ice with prevailing winds in the Beaufort . - Modeling ice distribution - taking into account climate change Linking the amount of ice with the prevailing winds, and air-sea interactions in general would improve the information available for environmental impact assessment. Any reconsideration of ice distribution needs to take into account climate change.	EIRB, EISC, IGC, IJS
B-8	Better delineation of useable granular resource deposits	Identification and evaluation of granular resources, by region (sources, quality, delineation of prime deposits).	LUPBs
B-9	Sewage treatment for remote camp sites	 Identification and evaluation of sewage treatment technologies for remote camps. Best practices for sewage treatment at remote camps. 	LWBs, EISC, NWTWB
B-10	General fish and wildlife distribution data	Compilation and summary of distribution data for harvested species (wildlife and fish) in relation to areas of high harvest activity, proposed development, protected areas and proposed protected areas. This information will be help in assessing sites used heavily by aboriginal and resident hunters, areas where new developments are proposed, protected areas and proposed protected areas, etc.	LUPBs, IGC, IJS, NWTWB

#	Topic	Comments / Examples	Board Contact
B-11	Flaring and venting	Compilation of existing information, including previous monitoring programs, of the impacts of flaring and venting of oil and gas on air, water and vegetation.	LWBs, EISC
B-12	Best practices on waste rock management	The compilation of - Current best practices - Industry standards would assist Boards to better compare project proposals to industry standards and practice.	LWBs, EISC, WMAC- NWT, NWTWB
B-13	Best practices and Best Available Technologies on water quality constituents management	Improved management approaches for proposed mining developments that may produce high ammonia discharges would assist developers and Boards in their consideration of a project.	MVEIRB, LWBs, EIRB, EISC, NWTWB
B-14	Development of guidance on effluent quality criteria and water quality parameters	Thresholds/limits or very detailed advice on how to choose effluent quality criteria for different types of industrial development in the NWT (e.g. mining) in different biophysical environments (bridging the gap between minimal environmental protection and Best Available Technologies)	MVEIRB, LWBs, EIRB, EISC, NWTWB
B-15	Best practices for aquatic monitoring plans (AMPs)	Summary of existing best practices for aquatic monitoring plans (AMPs)	LWBs, RRBs, EISC, IGC, IJS, NWTWB
B-16	All-season roads to previously "off the highway system" communities	A literature search/annotated bibliography of all studies regarding the potential social, economic and cultural impacts on a community resulting from year round versus seasonal or no highway access to larger urban communities.	MVEIRB, EIRB
B-17	In-migration impacts modeling	Information is limited regarding the potential impacts of industrial development on social and physical infrastructure, cost of living, social and cultural change of in-migration events, including modeling and case study research.	MVEIRB, EIRB, IGC, IJS
B-18	Comparative Studies of EIA in other jurisdictions	Compilation of best practices in EA in the north (i.e. areas with geographic or socio-political similarities to the NWT), including Nunavut, Alaska, Northern Ontario, Labrador, Northern Quebec, Scandinavia, and Russia.	MVEIRB, EIRB
B-19	On-going incorporation of Traditional Knowledge	Evaluation of whether Traditional Knowledge is being incorporated into follow-up monitoring of development impacts and over the lifespan of	LWBs, EIRB, EISC, NWTWB, IGC, IJS,

#	Topic	Comments / Examples	Board Contact
		projects.	MVEIRB, LWBs, RRBs, LUPBs
B-20	Bowhead Whale Studies	Research on - bowhead whale behaviour and use of feeding areas in the Beaufort - Impacts of seismic noise on behaviour, including an evaluation of the effectiveness of current mitigation measures Development of new mitigation/detection methods or technologies	EISC, IGC(FJMC)

Appendix A: List of NWT Board Forum Members

1. NWT Water Board - ISR

PO Box 1326

Yellowknife, NT X1A 2N9 Ph: (867) 765-0106

Fax:(867) 765-0114

Contact: Mike Harlow, Executive Director

HarlowM@nwtwb.com

2. Environmental Impact Review Board - ISR

PO Box 2120

Inuvik, NT X0E 0T0 Ph: (867) 777-2828 Fax:(867) 777-2610

Contact: Liz Snider, Chair

lizzie@theedge.com

3. Environmental Impact Screening Committee - ISR

PO Box 2120

Inuvik, NT X0E 0T0 Ph: (867) 777-2828 Fax:(867) 777-2610

Contact: Fred McFarland, Chair

fjmcfarland@storm.ca

4. Inuvialuit Joint Secretariat & Inuvialuit Game Council

PO Box 2120

Inuvik, NT X0E 0T0 Ph: (867)777-2828 Fax:(867)777-2610

Contact: Norm Snow, Executive Director

execdir@jointsec.nt.ca

5. Gwich'in Land Use Planning Board

PO Box 2478

Inuvik, NT X0E 0T0 Ph: (867) 777-7936 Fax:(867) 777-7970

Contact: Sue MacKenzie, Land Use Planner

planner@gwichinplanning.nt.ca

6. Gwich'in Land and Water Board

PO Box 2018

Inuvik, NT X0E 0T0 Ph: (867) 777-4954 Fax:(867) 777-2616

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7. Gwich'in Renewable Resources Board

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Inuvik, NT X0E 0T0 Ph: (867) 777-6602 Fax:(867) 777-6601

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athompson@grrb.nt.ca

8. Sahtu Land Use Planning Board

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Ph: (867) 598-2055 Fax:(867) 598-2545

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9. Sahtu Land and Water Board

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Fort Good Hope, NT X0E 0H0

Ph: (867) 598-2413 Fax:(867) 598-2325

Contact: George Govier, Executive Director

sahtuexd@allstream.net

10. Sahtu Renewable Resources Board

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Tulita, NT X0E 0K0 Ph: (867) 588-4040 Fax:(867) 588-3324

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11. Mackenzie Valley Land and Water Board

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YELLOWKNIFE, NT X1A 2P6

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12. Mackenzie Valley Environmental Impact Review Board

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Alan Ehrlich, Senior Environmental Assessment Officer

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13. Wek'eezhii Land and Water Board

PO Box 32

Wekweeti, NT XOE 1W0

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14. Wek'eezhii Renewable Resources Board

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15. Environment and Natural Resources, GNWT

PO Box 1320

Yellowknife, NT X1A 2L9

Ph: (867) 920-6389 Fax: (867) 873-0638

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16. National Energy Board

Planning, Policy and Communications

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Appendix B: A List of Acronyms for Organization Names

EISC Environmental Impact Screening Committee (for the Inuvialuit

Settlement Region)

EIRB Environmental Impact Review Board (for the Inuvialuit Settlement

Region)

WMAC-NWT Wildlife Management Advisory Council –NWT (for the Inuvialuit

Settlement Region)

FJMC Fisheries Joint Management Committee (for the Inuvialuit

Settlement Region)

IGC Inuvialuit Game Council

IJS Inuvialuit Joint Secretariat

NWTWB NWT Water Board

GRRB Gwich'in Renewable Resources Board

GLUPB Gwich'in Land Use Planning Board

GLWB Gwich'in Land and Water Board

SRRB Sahtu Renewable Resources Board

SLUPB Sahtu Land Use Planning Board

SLWB Sahtu Land and Water Board

WRRB Wek'eezhii Renewable Resources Board

WLWB Wek'eezhii Land and Water Board

MVEIRB Mackenzie Valley Environmental Impact Review Board

MVLWB Mackenzie Valley Land and Water Board

NEB National Energy Board