

Identification of the Biophysical Information and Research Gaps Associated with Hydrocarbon Exploration, Development and Transmission in the Mackenzie Valley:

GWICH'IN AND SAHTU (NORMAN WELLS) COMMUNITY WORKSHOP RESULTS, MARCH 3-5, 2003

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prepared by: Gartner Lee Limited

in association with:

Highwood Environmental Management Ltd. Dr. Chris Burn Klassen and Associates Ltd. Joanne Barnaby Consulting BGC Engineering Inc. RWDI West Inc.

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Kimberly Horrocks Wilfred Lennie Fred Andrew Jr. Jimmy Mendo Alfred Taniton Gord Mackeinzo Roger Odgard Jody Snortland Sheila MacKeinzo Chief Peter Ross Peter Clarkson Jozef Carnogurski Anna May McLeod Gabe Andre Dan Andre Alestine Andre Woody Elias Richard Wilson Allen Firth Barry Greenland

James Edwards Ingrid Kritsch Norman Snowshoe Bruce MacDonald Greg Yeoman Tim Shopik Larry Dyke Jesse Jasper Sam Stephenson **Rick Popko** Paul Latour Ruth McKechnie Celina Stroeder Kirstie Simpson Stephen Harbicht Fred McFarland Kim Howland Stephanie Sibbetson Ray Case

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1. Background

An element in the identification of the biophysical information and research gaps associated with hydrocarbon exploration, development and transmission in the Mackenzie Valley (Gap Analysis) was to seek community input with respect to their knowledge of potential impacts of oil and gas developments and determine what their research priorities would be. The Statement of Work for the project required community workshops in Norman Wells (Gwich'in and Sahtu Settlement Areas) and Fort Simpson (Deh Cho Region).

To prepare for the workshops and engage communities in the process, the Project Advisory Committee (PAT) members agreed to hire Regional Liaison staff (Ms. Sheila Mackeinzo and Mr. John Edwards) to assist the PAT members from the Gwich'in and Sahtu Settlement Areas and the Deh Cho Region. Regional liaison staff were hired for the Gwich'in and Sahtu regions through an agreement with the Department of Indian Affairs and Northern Development (DIAND). In the Deh Cho, Stephanie Sibbetson of Deh Cho Environmental was hired by Gartner Lee Limited. Additionally, the PAT members were asked to provide names of workshop participants or recommendations on which community organizations to approach for potential participants. Once this exercise was completed, letters of invitation were sent out along with background material about the project, the purpose of the workshop and expectations of participants (Appendix A).

Corresponding with the preparations for the workshop, community visits were undertaken by Brenda Parlee of Gartner Lee Limited. She collected comments and thoughts on issues related to current and previous oil and gas development in the Gwich'in and Sahtu Settlement Areas (Appendix B and C).

In advance of the workshop, the participants were provided with information on the purpose of the workshop and a "Plain Language" version of the Background Report identifying the information gaps that are known regarding hydrocarbon activities in the Mackenzie Valley, which included copies of the presentations to be made at the workshop (Appendix D).

The results of the Norman Wells Workshop were later reviewed with community workshop participants at follow-up meetings held in the Gwich'in and Sahtu regions by DIAND and RWED. The input from the review was incorporated into this final Norman Wells Workshop report.

2. Introduction

This report is a summary of the workshop held for the Gwich'in and Sahtu communities in Norman Wells on March 3-5, 2003. As this was a community-focused workshop, adjustments were made through to the agenda (Appendix E) to meet their priorities. The list of attendees can be found in Appendix F.

The workshop was intended to provide the communities with an opportunity to raise questions and suggest areas where they feel more information is required for hydrocarbon development.



3. Day One

March 3, 2003 4:00 pm – 6:30 pm

3.1 **Opening Prayer**

Alfred Taniton of Deline provided the opening prayer for the session.

3.2 **Opening Remarks**

Representatives of the Sahtu and Gwich'in Settlement Areas, the Government of the Northwest Territories (GNWT), DIAND, and the workshop facilitators provided opening remarks. **Jody Snortland of the Sahtu Renewable Resources Board** (SRRB) welcomed the participants to Norman Wells and the Sahtu Region. **Chief Peter Ross** provided opening remarks on behalf of the Gwich'in emphasizing the importance of people working together.

Steve Morison and **Bill Klassen**, co-facilitators, introduced the workshop and its focus on research and information gaps related to oil and gas exploration, development and a potential pipeline in the Mackenzie Valley. They described the workshop objectives according the following questions:

- What do we know?
- What do we need to know?

Mr. Morison and Mr. Klassen also reviewed the agenda and drew attention to the resource material provided to the participants:

- Identification of the Biophysical Information and Research Gaps Associated with Hydrocarbon Exploration, Development and Transmission in the Mackenzie Valley: Plain language version of the background paper report that outlined what is currently known about the biophysical environment and how oil and gas activities impact the environment in oil and gas regions;
- Power point presentations were used to introduce the project;
- Resource Material about oil and gas exploration from the Petroleum Communication Foundation www.pcf.ca, and Worksheets (Summary Tables) of the Research and Information Gaps identified to date. These worksheets were designed to guide discussion in breakout groups.

Ruth McKechnie of DIAND provided background about the workshop and the research and information gaps project including next steps and involvement of communities in setting priorities. She emphasized the value of working with representatives from the Gwich'in and Sahtu regions in managing the project. Norman Snowshoe of the Gwich'in Tribal Council and Jody Snortland confirmed their involvement in the project from the beginning.

Norman Wells Community Workshop Results: March 3-5, 2003

Kirstie Simpson of DIAND outlined the other research projects and programs in the Northwest Territories (NWT) that contribute to the understanding of research and information gaps including:

- Northern Contaminants Program;
- NWT Protected Areas Strategy;
- Mackenzie River Basin Board State of Aquatic Environment;
- GWNT Western NWT Biophysical Study;
- Cumulative Impact Monitoring Program;
- Cumulative Effects Assessment Monitoring Framework;
- Environmental Studies Research Fund Projects; and
- GNWT Department of Resources Wildlife and Economic Development (RWED) Socio-Economic Indicators.

Finally, **Celina Stroeder, Superintendent of RWED** in Norman Wells welcomed the participants to the Sahtu region and talked about how the current research and information gaps work is being coordinated with other projects currently ongoing by RWED.

3.3 Special Presentations

Dan Andre of Tsiigehtchic gave a presentation about the Travaillant Lake Research Project (Appendix G). He described the different kinds of research and the partnerships that the community of Tsiigehtchic has developed to study this area. The study builds on work already underway by the Gwich'in Social and Cultural Institute (GSCI) and the Gwich'in Renewable Resources Board (GRRB). Further research on fish, wildlife and forest resources may be carried out in partnership with the GRRB, the Department of Fisheries and Oceans (DFO) and the RWED and Ducks Unlimited. Mr. Andre also indicated that additional traditional knowledge (TK) studies were also needed. Finally, he closed with comments related to the urgency of completing this research as soon as possible because the Travaillant Lake area falls with the proposed Mackenzie Gas Pipeline Corridor.



4. Day Two

March 4, 2003 8:30 am – 4:30 pm

4.1 Oil and Gas Activity in the Mackenzie Valley

The second day of the workshop started with a presentation of the oil and gas industry and potential development areas and pipeline corridor in the Mackenzie Valley. **Chris Baker of RWED** gave a presentation on the oil and gas development phases. Examples for his presentation came from the development areas in the Gwich'in and Sahtu Settlement Areas. During his presentation, community members raised some issues and questions related to the following issues:

- Effects of seismic;
- Sumps, waste and the importance of inspection;
- Accidents;
- Permafrost and pipelines;
- Regulatory issues and the pipeline;
- Reclamation and re-vegetation;
- TK;
- Effects of access roads and corridors on wildlife habitat; and
- Protected areas.

These questions were recorded on flipcharts and answers to the questions were obtained over the course of the workshop (Table 1) to the extent possible from the experts in attendance. Many of the questions from the participants were specific to the potential Mackenzie Gas Project and the work undertaken by the proponents of that project.

Table 1. Oil and Gas Related Questions and Responses, Norman Wells Workshop

Questions	Responses
Seismic	
What is the effect on fish of seismic exploration done over water?	We know that seismic studies in water that use explosives as an energy source are harmful to fish and therefore, explosives are no longer allowed to be used in water in the NWT. In 2002, Western Geco did some river-based research using airguns as an energy source between Norman Wells and the Delta. While there was no evidence of death or injury to fish more than 5.0 m from the airguns, more study is required. Contact Western Geco or Sam Stephenson - DFO in Inuvik for more information.

Questions	Responses
How does noise from seismic activity affect wildlife?	The impact of noise on wildlife depends on the kind of wildlife and the time of year.
How has seismic technology changed in the last ten years?	In the past, seismic shooting was very loud. Today, vibration (vibroseis) technology means that the noise is at a very low frequency (probably less than the noise of a boat motor). A person standing beside a truck could hear it but people standing further away would not hear it. Research about the impact of noise from seismic activity on wildlife has been done in Alberta. This information might be relevant to understanding the impacts in the Mackenzie Valley.
Sumps, Waste and Inspection	
How long after you abandon the rig do you monitor?	There is no fixed time. The terms and conditions from land use permits and water licenses will dictate the timeframe for monitoring.
Is there information available about abandoned sites (sumps) in the Gwich'in Settlement Area (GSA)? What are lessons learned from DIAND about sumps? Where are they? What risks do they have? Do they leak? Will they affect the watershed? Can waste buried get back to the surface?	DIAND has been doing an inventory of old sumps in the NWT. The Canadian Association of Petroleum Producers (CAPP) has also been doing research about the strength of sumps after a few years – this research is mostly focussed on the Mackenzie Delta. ESRF has also been doing research related to best practices in sump construction. Sumps are a big issue for communities. Contacts: David Milburn (DIAND), Ian Scott (CAPP)
How much hydrochloric acid (stimulating agent) is used in drilling? What happens to it after the drilling is completed? Does it get put into a sump? Is it sent down south?	Most of the drilling fluids (wastes) are recovered to the surface and treated to neutralize them (so they are not dangerous anymore). They are pumped into a disposal well. If it cannot be put into a sump, it gets trucked down south and disposed of there. Monitoring is done by the GNWT on municipal lands and DIAND on Crown lands.
How does hydrochloric acid affect vegetation (vapours, spills)?	No answer provided
How much water is used in the exploration phase?	The amount of water used in the exploration phase depends on the size and depth of the drilling and the type of drilling fluid used (water based or air). Conditions for disposing of the wastewater varies as required. These terms and conditions are in water licenses. Inspection is undertaken by DIAND (Steve Duchene)

Questions	Responses
How about monitoring and disposal of liquid waste? How can the GSA and the Sahtu be protected from spills etc.?	Monitoring in the GSA and the Sahtu, as elsewhere, is linked to understanding the risk of the project. There is a need to increase funding and resources for monitoring. More training is needed to facilitate community involvement in monitoring.
How are wells closed off (abandoned)? Are they monitored after that?	The terms and conditions for closing drill holes can be found in the company's drill program. The National Energy Board (NEB) has strict guidelines about closing of drill holes.
Accidents	
Is it possible that the gas flowing through the pipeline might catch on fire? How would this affect forests? How can these fires be managed? Has there ever been a forest fire caused by a pipeline fire?	It is possible that the gas would ignite. There are examples of this in the past. There are emergency procedures in place to deal with these. Forest fires would be dealt with the same as other fires. Pipelines are monitored 24 hours a day.
Are companies required to provide a bond (money) in case of accidents and for future reclamation?	Bonds for accidents and future reclamation would depend on terms and conditions of water licenses and the environmental assessment.
Permafrost and Pipelines	
What about permafrost stability and pipelines? Can we learn from what has been done in Siberia? What about levelling the ground (grading) before laying the pipeline? Is this possible?	The permafrost and fragile soils and vegetation in the Mackenzie Valley would probably limit the amount of levelling that could be done. Some things may be learned from other parts of the world.
Regulation of the Pipeline	
What are the steps for regulation of the pipeline? What opportunities will communities have to participate in the EA and regulatory process?	The cooperation plan sets out the details of a more coordinated environmental assessment and regulatory process. The opportunities for community participation will depend on the way the review is set up by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) and Federal Government (A Cooperation Plan is available through the MVEIRB, the NEB, the Canadian Environmental Assessment Agency for more information)
Granular and Forest Resources	
How much gravel will be used? Will they be chipping be used for insulation?	There has been no information released about granular resource or wood requirements from the proposed pipeline. Granular resource estimates are $600\ 000\ m^3$ in each of the Gwich'in and Sahtu



Questions	Responses	
Reclamation and Re-vegetation		
What about re-vegetation and reclamation of seismic lines and drill areas? How will they prevent non-native species from invading. What about revegetation of pipeline corridor?	There are ways of preventing the invasion of non- native species. Some research has been undertaken by DIAND. Other research has been done in Alberta and southern NWT. There is no current information available for the proposed pipeline corridor.	
Has there been any TK gathered about the pipeline corridor?	TK has been gathered over the years, which would include the pipeline corridor. Mackenzie Gas Producers want to fund communities to collect additional information. Communities or regional organizations are making their own arrangements with the Producers on the collection and access to TK.	
Access		
When there is a pipeline, how will access in the GSA and the Sahtu change? How will cumulative effects be managed?	No answer at this time.	
Protected Areas		
How would the Protected Areas Strategy affect the plan for a pipeline? (Concern regarding the protection of Great Bear Lake watershed)	To protect key cultural and ecologically significant areas, those priority protected areas should be established ahead of or concurrently with development.	
Cultural Sites	Culturally sensitive areas should be mapped	
Information Management and GIS	 There is a need for better information sharing and coordination of GIS and information management tools. Some existing databases that are searchable include: Berger Documents World Wildlife Fund (WWF) Digital Atlas Sahtu Atlas (cultural and ecologically significant areas) Gwich'in Land Use Plan (cultural and ecologically significant areas) Sahtu GIS Project (Sahtu Land Use Planning Board, SRRB, RWED, Sahtu Land and Water Board) 	

4.2 Development Scenarios: Presentation

Steve Morison of Gartner Lee provided an overview of oil and gas exploration and development scenarios in the Gwich'in and Sahtu regions with respect to the following geographic areas:

- Peel Plateau (exploratory drilling);
- Colville Hills (seismic surveys and exploratory drilling);
- Norman Wells Central Mackenzie Valley (seismic surveys, exploratory drilling, field development and pipeline construction); and
- Mackenzie Gas Pipeline Corridor (pipeline).

After Mr. Morison's presentation, the participants in the workshop were asked to discuss and review the information Mr. Morison presented and report back to the larger group.



4.3 Development Scenarios: Reports from Breakout Groups

The participants were arranged into groups based on interests and knowledge of the Peel Plateau, Colville Hills, Norman Wells and the potential Mackenzie pipeline. Each of the breakout groups was asked to discuss the following questions:

- What has happened in the past?
- What could happen in the future?

All groups were provided with a facilitator, maps and record keeper.

4.3.1 Peel Plateau

The participants in the Peel Plateau group identified the need for additional information on previous seismic activities and sumps in the Peel Plateau (Table 2). The group identified that some of the people who worked on the drilling rigs in the Peel Plateau may know what was disposed in the sumps. They felt

that there was more activity in the Peel Plateau than captured in the report. They did not provide any new information as to where this information could be found. The group also added comments on the need for additional baseline information with respect to heritage sites and collection of TK in the area.

Торіс	Comment/Discussion Points
Heritage Sites	Lack of documentation of cultural heritage sites
Seismic	Need to have a better record of seismic activities; what has happened in the past?
Sumps	Old sumps are a concern What is in the sumps? Where are they?
ТК	More TK research is needed about areas affected by development in the past and about those that might be affected in the future TK needs to be shared with younger generations
Information Management	Need a digital database of cultural heritage sites
Remote Areas	What impacts will happen in remote areas when exploration and development occurs?
Pipeline Potential	What is the possibility that a Mackenzie Valley gas pipeline will proceed?

Table 2.	Summary of the	Group Discussion	n of the Peel Plateau	Development Scenario
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4.3.2 Colville Hills

The primary comment from the Colville Hills group was the need to locate and clean-up former camps and exploration sites. They also felt that not all information on previous seismic lines was captured. They did indicate, however, that it was unlikely that the information could be obtained because of the propriety nature of the information.

In addition to comments on the development scenario, the group provided comments in the area of baseline information and impact understanding. They wanted to more fully understand for themselves the impact of oil and gas projects. See Table 3 for a summary of the group discussion.

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Торіс	Comments/Discussion Points
Heritage Sites and Protected Areas	Insufficient documentation of heritage sites. Need to develop thresholds of change for development in the regions
Noise	What is the impact of human activity including noise on wildlife? What is the impact of low level flying?
Baseline Studies	More baseline studies are required before development takes place. Maps of areas affected by development are needed.
Monitoring	More monitoring is needed to understand how the land and wildlife are affected. When there is a problem, someone needs to be responsible for fixing it. More community involvement in monitoring. More training and expertise needed for community monitors.
Abandonment and Reclamation	Old camps and exploration sites need to be identified and cleaned up
Accountability	Industry and government need to be more accountable and take responsibility when something happens
Information and Communication	Need more honest sharing of information between communities and industry (i.e. where are all the seismic lines)

4.3.3 Norman Wells

Table 4 summarizes the discussion on the Norman Wells development scenario. The primary comment within this group was the need to locate and clean-up abandoned sites. They were particularly concerned with potential contamination and the impact this was having on wildlife. Related to this matter was the need to clean-up within the town boundaries.

Like the other groups, the group provided comments in the area of baseline information and the need for a better understanding of the impacts of oil and gas development. They did not feel that all the effects were well understood. Finally, they wanted to see TK and scientific knowledge brought together to understand impacts of oil and gas activities.

The Norman Wells group also commented on the need to protect the Blackwater Lake area.



Table 4. Summary of the Group Discussion of the Norman Wells Development Scenario

Торіс	Comments/Discussion Points
Abandoned and Contaminated Sites	There is a concern about abandoned sites and the need to undertake clean-ups. In some areas, contaminated sites have affected wildlife and fish.
Reclamation of old seismic areas and wells sites	How safe are current methods of capping wells? Can contaminants leak? Drill holes; more monitoring of old drill sites is needed? What are the best terms and conditions related to monitoring these sites?
Natural Resources	Need better resource assessments
Heritage Sites and Protected Areas	Need a protected area around Blackwater Lake (Sahtu Settlement Area)
Information, Communication and Responsibility	There is not enough information about the developments that happened in the past and what will happen in the future; Communities do not have enough information about what exploration and development now and in the past. More discussion between companies and communities would help groups to better understand the issues; Companies need to be held accountable for their actions (i.e. clean up and compensation for damage).
Cumulative effects	Cumulative effects of all development in the area is a concern

4.3.4 Potential Mackenzie Pipeline Corridor

Table 5 summarizes the discussion on the potential pipeline corridor. The Mackenzie pipeline group felt that considerable information could be gained from previous pipeline projects. In particular, they felt that permafrost information was required.

The focus of the discussion was also on the regulatory roadmap for a possible Mackenzie Valley pipeline. The group wanted to understand how the pipeline would be assessed and approved. During the plenary, Ms. Klein provided an overview of the coordinated environmental impact assessment and regulatory process that was being developed to evaluate a Mackenzie pipeline project. The process has already been summarized in the *Cooperation Plan for the Environmental Impact Assessment and Regulatory Review of a Northern Gas Pipeline Project through the Northwest Territories* (June 2002). This report is available on the MVEIRB website - www.mveirb.nt.ca. This process has been developed through the cooperation of the environmental impact assessment and regulatory bodies in the NWT.



"Fish Is Like A Community Freezer"

Торіс	Comments/Discussion Points
Learning from the Past	What are the lessons learned from past pipeline activities? In the past, communities did not have input into these projects.
Permafrost	Permafrost research is needed.
TK and Western Science	More research is needed that links TK and Science together.
Regulations	Communities need a regulatory road map to understand how development activities are assessed and approved. Who is doing what?
Environmental Assessment	EA must be done in a way that ensures that the negative effects are mitigated
Monitoring	Monitoring is needed

 Table 5.
 Summary of the Group Discussion of the Potential Mackenzie Pipeline Development Scenario

4.4 Overview to Research and Information Gaps

After the conclusion of the discussion of the development scenarios, **Steve Morison** and **Heidi Klein** of **Gartner Lee** provided an overview of the research and information gaps related to land, water and fish and wildlife in the Gwich'in and Sahtu regions. These presentations were provided in anticipation of the discussions to be held the next day.

Mr. Morison and Ms. Klein discussed both the baseline information available and the potential impacts associated with oil and gas developments in the Gwich'in and Sahtu Settlement Areas. They covered the following research areas:

- Terrain/Surficial Geology;
- Permafrost;
- Hydrogeology and Groundwater;
- Surface Water;
- Air;
- Wildlife and Wildlife Habitat;
- Fish and Fish Habitat;
- Vegetation and Forests;
- Climate change; and
- Land and resource use.

4.5 Special Presentations

Participants had been interested in the presentation by Dan Andre the evening before, this prompted a number of requests by others to make presentations.

Alestine Andre and Ingrid Kritsch of the GSCI provided an overview of the TK related to the pipeline corridor (Appendix H). They described how their first TK projects resulted from the Northern Oil and Gas Action Program (NOGAP) process over ten years ago. From that time, they have carried out a range of place names projects, ethno-archaeological projects and oral history projects in the Gwich'in Settlement Area. Many of these projects have resulted in reports and publications, which are gathered together at the GSCI office in Tsiigehtchic. The Gwich'in Youth Science Camp is another GSCI project, which enables youth to learn from their elders as well as scientists. In closing the presentation, Ingrid quoted a Dogrib elder who said that this combination of science and TK education enables youth to be "strong like two people".

Alfred Taniton, an elder from Deline, provided an overview of issues in his area of the Sahtu.

I am 71 years old. I know this land. All the Aboriginal people around here know the land. We have lived in this environment for a long time and will live here for many years to come. The boy from Tsiigehtchic gave a presentation about the Travaillant Lake area. He does not want that area to be disturbed because it is his father's trapline area. He is absolutely right about this. The development of uranium mines around our area resulted in the loss of many lives. They never told us it was going to disturb anything. We asked them to clean it up. Just recently they said that they will develop a workplan to do that –to clean it up. This is good.

Regarding the noise and how it disturbs the wildlife – I am concerned about that. It affects the wildlife, even small noises affect them. There are lots of animals living around the airstrip in our community. They did not clean it up, so now there are no more fish in that area. You can't fish there anymore.

There used to be a lot of beavers. The beaver had been killed by a vehicle. I took the animals and cleaned it up and buried it. I didn't like that this had happened. But these are the kinds of things that are of concern when there are roads in the area.

It is very important that we discuss all the details of these development projects. The land is like our mother, we have to respect it. When you cut your hand, it hurts. The land is the same. When you drill into the ground, it hurts it, when you take oil out of the ground it's like taking blood from it. It hurts the land and we have to realize these things.

We are not farmers, but like farmers we don't want our land disturbed. We are asking these questions now about the environment and how it will be affected. There are so many details – we need to look at all these things. It is all important.

Gabe Andre of Tsiigehtchic also presented his ideas and concerns at the workshop.

We are First Nations; we are one family up and down the Mackenzie Valley from the Gwich'in and the Sahtu. It used to be like that until the whiteman came and put a boundary between us. We walked a lot in the past. We don't have a garden. We used to live only off of meat. We had no tea and no sugar. I took some children out earlier in the fall. They don't understand how we used to live. We did everything by hand and by axe. In the summer, we would paddle by hand. Every time they hear an elder talk, no one believes them. We call it our land. We get hurt when the oil companies come and they destroy our land. Everything in the past we clean. We were not scared to eat anything from the land or drink the water. Now we are scared. We have lots of diseases that came from the whiteman. I used to trap all winter. Now my land will be destroyed because of the pipeline and we will have nothing. My children will have nothing. My grandparents used to trap there too. I say this because I want the land to be taken care of for our future generations. In the past, the Indian Agent came and he said, "Whatever you want from the land is yours.. as long as the Mackenzie River flows north and the sun rises and sets." It's not like that now. We are not treated this way anymore.

5. Day Three

March 5, 2003 8:30 am - 5:00 pm

5.1 Fish and Wildlife Research and Information Gaps: Reports from Breakout Groups

Day Three started with a re-organization of the agenda to consider fish and wildlife issues first. This was done to accommodate participants who would be departing on the afternoon flight out of Norman Wells. The departure of participants also resulted in a combining of the Colville Hills and Norman Wells groups for the discussions of land and water in the afternoon.

5.1.1 Peel Plateau

Торіс	Research and Information Gaps
Bears	How will development and climate change affect habitat and food of bears?
Sensitive Habitat	More research (including TK) is needed on sensitive habitat.
Fur Bearers	What is the affect of seismic activity on furbearers?
Footprint of Seismic Activity	What is the footprint (all effects) that seismic activity has on wildlife?
Wildlife Behaviour	What is impact of noise from oil and gas activity on wildlife?

Торіс	Research and Information Gaps
	How will species be disturbed by increased activity?
Harvesting	How will increased access (e.g. routes and seismic lines) affect harvesting activity?
Reclamation	More reclamation research is needed
Fur Bearers	More research of all kinds is needed about fur bearers
Contaminants	Further research on contaminants is required
Climate Changes	How will climate change affect wildlife including beaver and muskrat?
Birds	More research is needed on non-migratory species of birds – birds that stay around the area all year round (e.g. ptarmigan and grouse)
Fish	Need more TK research on fish similar to that being conducted by the GRRB. Stock assessments of fish in inland lakes are required, especially in pipeline route area.
Water	More research is needed about water chemistry and temperature because of the effect that these have on the health of the fish.
Insects	More research is needed on insects because of their importance to birds and wildlife



5.1.2 Colville Hills

Торіс	Research and Information Gaps
Water Quality and Water Quantity	More studies needed about water quality and quantity in the Colville area.
Harvesting	More funding is needed to continue the SRRB harvest study. Funding for the study ends this year.
Seismic Activity on Wildlife	More research is needed about the impact of seismic activity (i.e., in the past some studies were done in Colville area by Richard Riewe from the University of Manitoba)
TK and Mapping	Some land use mapping has been done but not a lot of TK has been documented in the Colville Hills area.
Wildlife and Wildlife Habitat	More research is needed related to the food chain and how it is affected by development.
Climate Change	What are the effects of climate change on wildlife and wildlife habitat?
Caribou	How does exploration and development in the Colville area affect the caribou and their migration?
Wildlife Disturbance	How does noise affect wildlife?
Migratory Birds	How are migratory birds affected by exploration and development activity? What about migratory bird habitat?
Coordination of research	People need to work together to do studies, particularly studies about the impacts of development on wildlife, fish and water.
Noise	What is the impact of human activity including noise on wildlife? What is the impact of low level flying?
Songbirds	More research is needed about songbirds; although they are not a subsistence species. They are a good indicator of the health of the forest.
Waterfowl	More research on waterfowl is needed in the Colville area; it may be important for migration and nesting
Access and Harvesting	How will increased access to remote areas around Colville affect the harvesting of wildlife?

5.1.3 Norman Wells

Торіс	Research and Information Gaps
Seismic	Need inventory and maps of old seismic lines and drills sites as well as areas where fish and water have been affected by exploration activity
Inland Lakes	More research is needed with respect to the health and contaminants in inland lakes
Air Quality	Need better air quality monitoring
Fish	More TK research should be done about fish. Changes in migration of fish should be researched. What is the impact of seismic activity on fish and water?
Fish, Spawning Habitat	Small streams are main spawning habitat for fish; how will spring run off, changes in fall conditions affect spawning habitat?
Fish Surveys	Fish surveys need to be long term to be useful. Survey crews need to check the fishing lakes as well as the streams. These crews need to consider TK related to fish distribution.
Wildlife Behaviour	Impact of seismic on wildlife behaviour (i.e., wildlife does not seem to be afraid of people anymore)
Caribou	Seismic activity including noise may be scaring the caribou away. Impact of seismic activity on woodland caribou (there are three woodland caribou herds in the Sahtu region).
	More TK research is needed about woodland caribou Impact of air traffic (helicopters) on caribou; what does the research say about these effects?
Wildlife Habitat	Habitat fragmentation and seismic activity What is the impact of seismic lines on wildlife? Need to map critical lichen areas for caribou
Harvesting	What is the impact of seismic on fishing and hunting? More research needs to be done with people whose trap lines and hunting areas are being affected by seismic activity. How do new seismic lines affect harvesting? What about use by snowmobiles, quads? What is the potential for erosion, landslides etc.?
Wildlife Predation	What can be learned from the impacts of Enbridge pipeline



Торіс	Research and Information Gaps
Traditional Food	Impacts of development and climate change on fish.
Vegetation	How they prevent non-native species of plants from invading through pipeline corridor? What current methods are used to prevent this from happening? (e.g., steam cleaning equipment before it moves into the north, enforcement, legislation)
Birds	What is the impact of seismic activity on birds and migration?
Cumulative Effects	More research needed about cumulative effects

5.1.4 Potential Mackenzie Pipeline Corridor

Торіс	Research and Information Gaps
Fish	What is the impact of river seismic on fish and fish habitat e.g., Western Geco proposed project?
Cultural Mapping and TK	More mapping should be done of old trails and cultural areas Cultural areas like Travaillant Lake should be protected More TK is needed about wildlife and fish
Existing Information	More understanding is needed about what research has already been done (e.g. by DFO)
Wildlife Range	More research is needed on changes in the range of caribou, muskox and moose; changes currently being observed in the Gwich'in and Sahtu regions
Coordination	More coordination of information and action is needed between government, industry and communities
Vegetation Mapping	More mapping of vegetation including wildlife habitat is needed
Access Roads	How will pipeline corridor and feeder lines affect wildlife, wildlife habitat as well as harvesting?
Monitoring	Need long term monitoring of wildlife
Existing Information	What lessons can be learned from Enbridge?
Harvesting	Need to continue research and surveys regarding wildlife harvesting
Communication	More communication between communities and industry

5.2 Land and Water Research and Information Gaps: Reports From Breakout Groups

5.2.1 Peel Plateau

Торіс	Research and Information Gap
Traditional Use	Traditional use mapping is needed for the Peel River Plateau area
Seismic	Areas affected by seismic exploration in the past should be better recorded
Information Management	A common database should be developed for the region to help communities access information
Management	More studies regarding management for development in the area
Continuation of Current Work	Current work done by Ducks Unlimited and RWED should be continued

5.2.2 Colville Hills and Norman Wells

Торіс	Research and Information Gap
Information Sharing and Communication	More information should be shared between industry and communities
Past development	Impacts of previous development activities (drill sites and sumps) on the water quality How have terms and conditions changed? More monitoring of past development sites is needed Need an inventory of past sumps
Mapping	More mapping is needed of cultural and ecologically significant sites; Sahtu Land Use Plan is only a beginning
Landscape and Watershed Planning Protected Areas	Research and planning should be done at a larger watershed and landscape level More research and planning related to protected areas is needed
Granular Resources	An updated Inventory of granular resources is required. Research about these areas should be done prior to development taking place
Unpredictability of Permafrost	Will past permafrost research be accessible for other projects?



Торіс	Research and Information Gap
Mapping	Good mapping of land and water issues has been done Gwich'in Land Use Plan and Sahtu Land Use Plan have done most of this work
Permafrost and erosion	Need more research on ground temperatures and monitoring of permafrost; riverbank erosion How have forest fires in the region affected permafrost? What about changes in surface water and erosion?
Reforestation and reclamation	What information exists about recovery of seismic lines? How long does it take for the plants and trees to grow back (50-100 years)?
Cultural areas	More mapping of traditional trails is needed What are terms and conditions in place to protect traditional areas? A database should be developed to keep track of these concerns
Water Quality	How do sumps affect water quality? More sampling of water is needed More research on water quality of inland lakes
Water Licensing	More information for managing effects on water is required

5.2.3 Potential Mackenzie Pipeline Corridor

5.3 Special Presentations

Richard Popko of RWED in Norman Wells provided a presentation about RWED research in the Sahtu region and made some recommendations about research and information gaps. The research projects underway (mostly in partnership with the SRRB) include:

- Research related to changes in barren ground caribou migration;
- Baseline population studies for moose, beaver, and marten;
- Small mammal studies (e.g., hares);
- Waterfowl and duck habitat mapping;
- TK studies of woodland/ boreal caribou; and
- Dall's sheep studies.

In his recommendations, Mr. Popko emphasized the importance of establishing systematic, repeatable, long-term and low cost studies. He also suggested that there were many ways of doing cost effect wildlife research by working with communities. He pointed to the success of community bird counts that are carried out by volunteers in many parts of the country.

Bruce McDonald of Ducks Unlimited gave a presentation about the work of Ducks Unlimited in the Inuvik area where they have been habitat mapping and water chemistry sampling. Between 150 and 300 wetlands were selected for the survey. They have also carried out aerial surveys to develop an understanding of bird distribution in the area. In the lower Mackenzie, there is also interest in research related to declining Black Duck populations. He emphasized the importance about doing more studies in the areas proposed for development. He suggested that DIAND should focus on ways of building on previous research including TK and scientific projects.

Paul Latour of the Canadian Wildlife Service (CWS) discussed a project the CWS has underway in the Fort Liard area to understand the impact of habitat fragmentation on forest birds. Dr. Latour explained that songbirds are a useful indicator of overall forest and ecosystem health. The 'checkerboard pattern' created by seismic lines and access roads is known to affect wildlife however, little is known about its impact on songbirds. He explained that some research has been done in Alberta on habitat fragmentation and its effects. Key questions being asked as part of that study include:

- What species of songbirds are most sensitive to habitat fragmentation?
- How is the overall songbird community affected by this fragmentation?

The CWS is asking similar questions in its research, but for the Fort Liard area.

5.4 Closing Remarks

Ruth McKechnie of DIAND provided closing remarks and thanked the participants for their input and the experts assembled for their advice and assistance. It was felt that the workshop was successful and will contribute to the study on research gaps. She indicated that she would follow-up with communities in the spring as to the status of the research and establishing priorities. She also indicated that the participants would receive the reports from the workshop and the other research undertaken by Gartner Lee.

Norman Snowshoe, Jody Snortland and Celina Schroeder also thanked the participants and echoed Ms. McKechnie's comments that the workshop was highly successful. Stephen Morison and Heidi Klein thanked everyone for all their hard work and input into this important work.

5.5 Conclusions

Discussions related to oil and gas development potential in the Gwich'in and Sahtu regions and research gaps related to the environmental assessment and regulation of these activities were varied. The participants challenged the research that had taken place previously and the effectiveness of mitigation measures.

5.5.1 Development Scenarios

With respect to the development scenarios, the groups did not identify any new information to add to the background report but they did consistently identify the need for additional research in the areas of 1)

sump location mapping, identification of sump contents, and sump integrity evaluation; 2) identification of previous drilling sites along with clean-up and remediation of existing sites; and 3) mapping of all seismic lines.

5.5.2 Fish and Wildlife

TK paired with scientific knowledge was a dominant theme in the discussions. It was generally felt that more could be done to link the two types of knowledge so that a fuller understanding of impacts and baseline characteristics could be achieved. Special emphasis was put on the Traviallant Lake region and on fish populations in inland lakes. It was generally felt that more TK research could be done in these areas.

Baseline research needs for each of the development scenarios focused on fish in inland lakes, woodland/ boreal caribou population dynamics, fur-bearers and migratory and non-migratory birds. It was felt that not enough was known about these "populations".

With respect to impact issues, much of the discussion focused on the impact of seismic activities. The focus of discussion was on noise, habitat fragmentation, and behavioural changes. The discussion was not specific to any species, but a desire to generally understand the impacts of seismic lines on wildlife. The introduction of non-native plant species was also raised as a concern warranting additional study. In particular, the participants wanted to understand what measures were already in place to prevent the introduction of non-native species. Linked to this discussion was the need to develop seed banks of local flora for reclamation purposes.

Climate change and its impact on wildlife was raised repeatedly as needing more research.

Contamination, contaminants, and impact on wildlife were also raised as a concern. Of particular interest were species used in human consumption such as fish.

Finally, cumulative impacts from the perspective of indirect effects as an area is opened up were raised. More information on the impacts of opening areas up and allowing spin-off developments will be useful to communities.

5.5.3 Land and Water

Baseline research needs focused on water quality and quantity, and the need to map more extensively the water regimes in the affected areas. Also featured was the need to better map traditional land use and cultural sites before development proceeds. They also wanted to see mapping completed of all the past developments in these areas.

Permafrost, erosion, and climate change dominated the discussion with respect to impacts on land and water. There was a desire to understand how permafrost would be affected by climate change.

Reclamation and revegetation featured heavily in the pipeline discussion group. More research on revegetation using indigenous species to return the land to an acceptable state was requested.

Finally, they felt that more could be done to document the impacts of previous oil and gas development in the Mackenzie Valley and provide that information in a user-friendly format.

5.5.4 Other

It was apparent from the response to the introduction to oil and gas development that participants found the information interesting and useful, and would like to have additional information/ training to better understand the oil and gas industry. Closely linked to better understanding the oil and gas industry was the desire to better understand the environmental assessment and regulatory processes and who was responsible for evaluating impacts, ensuring compliance and seeking redress if there was a failure to comply with regulatory measures. The participants also expressed a keen interest in being involved in community-based impact monitoring programs and studies.



Appendices



Appendix A

Letters of Invitation



Appendix A: Letters of Invitation

DATE:

INSERT ADDRESS

Dear NAME:

Re: 22649 – Invitation to a Workshop on Biophysical Information Gaps Related to Oil and Gas Exploration, Development and a Potential Pipeline in the Mackenzie Valley

I am writing to you to extend an invitation to send two (2) people from the Fort Good Hope Metis Local #54 Land Corporation to the biophysical information gap analysis workshop in Norman Wells, NT on March 3 to 6, 2003. The costs for attendance at the workshops will be covered in accordance with the federal government Treasury Board travel directive. The entire project is funded by DIAND, the GNWT and the Environmental Studies Research Funds (ESRF).

The purpose of the workshop is to seek community input to the following four (4) questions and to gain an understanding of what is understood about oil and gas exploration, development and a potential pipeline in the Mackenzie Valley and its impacts in the Sahtu area:

- what kinds of environmental effects do you feel are most important?
- what TK has been documented about the land, water, and wildlife in the regions proposed for development?
- what studies have been done in these areas?
- what studies still need to be done?

If you have any questions regarding this invitation, do not hesitate to contact me at (403) 262-4299 ext. 122 or email hklein@gartnerlee.com. Once we have received the names from you, we will be able to provide you with additional information about the workshop and make travel arrangements accordingly.

Yours very truly, GARTNER LEE LIMITED

Heidi Klein, MES Sr. Environmental Planner

cc. Ruth McKechnie Kirstie Simpson Ray Case



Appendix B

Summary of Community Concerns



Appendix B: Summary of Community Concerns

Research and Information Gaps about Oil and Gas Exploration, Development and a Potential Pipeline Workshop: Summary of Plain Language Report and Exercise Sheet

Oil and gas exploration, development and a potential gas pipeline may affect the land, water, wildlife and air in the Mackenzie Valley. To make good decisions about what development should happen in the Gwich'in, Sahtu and Deh Cho regions, communities, government and industry need good **scientific** and **TK** research and information.

Gartner Lee Ltd. has been working with the Department of Indian Northern Affairs (DIAND), the Government of the Northwest Territories, Resources Wildlife and Economic Development (GNWT-RWED) and representatives from the Environmental Studies Research Fund (ESRF) to find out:

- What information and research has been done in the past?
- What information and research needs to be done in the future?

For the purposes of this research, we focused on those areas currently being explored and developed including:

- Peel Plateau;
- Colville Hills;
- Norman Wells (Central Mackenzie);
- Liard Plateau;
- Cameron Hills; and
- a possible pipeline corridor.

Our researchers looked for information in libraries and databases. They also interviewed a variety of people, and they talked to people in Gwich'in, Sahtu and Deh Cho communities. From this study, we have learned many things about the environment and how development in the region may affect the land, water, wildlife and air. A summary of what research has been done and the research that needs to be done in the future based on community input and on Gartner Lee research team findings is attached (Table 1). We have also provided you with a summary of the recommendations and comments made by communities in the Gwich'in, Sahtu and Deh Cho regions (Table 2). A detailed Background Report is being written and will include the results of this workshop.

The results of our study will be presented in a *Research and Information Workshop in Norman Wells* on *March 3-6, 2003*. We will tell you what we have learned. We would also like to hear from you.

- What do you think of the research that has been done already?
- What other scientific and TK research needs to be done?
- Do you have questions or concerns about what research has been done in the past and how research should be done in the future?



We look forward to meeting and hearing from you.

Table 1. What Research has been Done in the Past? What Research Needs to be Done in the Future?

Oil and Gas Exploration, Development and a Potential Pipeline may affect water in many ways. Some of these include: • changes in the quality of water because of activity in the watershed blockage or change in water flow • change or blockage of water access by people and wildlife • contaminants • What research has been done in the past? Most research has been done about water quality and quantity in major rivers used by northern communities. Some research on contaminants has been done in these rivers. Very little research has been done about water in the areas proposed for development. Who did this research? Environment Canada and the DFO and DIAND did most of the research about water in the Mackenzie Valley. There is very little TK documented about water in any of the regions proposed for development. What research needs to be done in the future? There is not enough information to understand how exploration and development will affect water quality and quantity in the future (lack of baseline). This is especially true for the inland lakes, streams and rivers. Some important research questions related to oil and gas exploration development and a potential pipeline are: How will disturbance of the ground affect water quality? • What is the potential for water contamination from spills, leaks or waste and other materials? • How can these be managed? Who should gather this information? Both scientific and TK is needed.

WATER



2

	There are many ways that oil and gas exploration development and a potential pipeline can affect air
	quality. Some important air quality issues include:
	• $SO2$ (sour gas)
	 Dust (air borne particles)
	 Fumes from gas oil and diesel engines (carbon/greenhouse gas emissions)
	What research has been done in the past?
	Air quality information (dust monitoring) has been gathered from weather stations in some
	communities in the Mackenzie Valley. Industry has been monitoring air quality for a few years in the
	Liard Plateau, Norman Wells and Inuvik. Some ideas (modelling) about how air quality in the
	Cameron Hills might be affected by oil and gas development.
	Who did this research?
~	
I A	Most research on air quality was done by Environment Canada and industry in the Liard Plateau. No
	TK has been gathered about air quality.
	What research needs to be done in the future?
	There is not enough information to understand how oil and gas exploration, development and a
	potential pipeline will affect air quality in the future (lack of baseline). This is especially true for the
	areas proposed for development. Some important air quality research questions related to oil and gas
	exploration development and a potential pipeline are:
	• Contaminants in the air;
	• Gas, oil and diesel fumes from engines (carbon/greenhouse gas emissions)
	Who should gather this information?
	Both TK and scientific research is needed about air quality. There is also the need for a database of
	air quality information for the whole of the Mackenzie Valley.

Т



There are many ways that oil and gas exploration, development and a potential pipeline might affect permafrost. Some important permafrost issues include:

- waste buried in the permafrost (sumps)
- melting of permafrost in disturbed areas including areas along river banks (stability)
- keeping the permafrost strong where the pipeline is built (stability)
- changes in permafrost because of warming weather

What research has been done in the past?

Research on permafrost has also included some regional mapping of where to find the permafrost and how it changes in different areas of the Mackenzie Valley (permafrost regimes). There have also been some studies done about the strength of the ground (soil) changes when the ice under it melts. There have also been some studies on melting of permafrost and the dangers of burying waste in the ice. Research on the effect of pipelines on permafrost was done in northern Alberta and the Norman Wells area. Very little research on pipeline and permafrost has been done further north except for some recent work around Inuvik. Northern communities have documented some TK about the use of permafrost as a "refrigerator".

Who did this research?

Research about permafrost has mostly been done by people from government, universities and industry around Inuvik and from Norman Wells south. Government and northern communities have done very little research. DIAND has started doing research on waste in permafrost (sumps).

What research needs to be done in the future?

There is not enough information to understand how exploration and development will affect permafrost in the future (lack of baseline). More mapping of where the permafrost is located needs to be done. A lot of work also needs to be done about the strength of permafrost in different areas and the effect of putting a pipeline on top of it. There is not enough research on how the permafrost might change over 10-20 years.

This research is especially needed north of Norman Wells.

Who should gather this information?

TK research about permafrost is needed because very little has been done so far. More research by scientists is also needed especially scientist who have knowledge about pipelines.
There are many ways that the water flow and water under the ground (hydrogeology) might be affected by oil and gas exploration, development and a potential pipeline. Some important issues include:

- blockage of water flows and water under the ground because of construction
- changes in the strength of the ground and permafrost because of changes in water flows
- contaminants in the water under the ground because of spills and waste
- cumulative effects

What research has been done in the past?

There is very little information about water flows and water under the ground. Some mapping of water flows has been done for the region.

Who did this research?

Government including Environment Canada and Natural Resources Canada has done most research on water flows and water under the ground. Northern communities have done very little research on water flows.

What research needs to be done in the future?

There is not enough information to understand how exploration and development will affect water flow and water under the ground in the future (lack of baseline). More research of all kinds is needed about water flows and water under the ground, especially in the areas proposed for development.

Who should gather this information?

Both TK research and scientific research is needed about water flows and water under the ground. Research by scientists with knowledge of permafrost is pipeline is especially needed.



There are many ways that land use and harvesting by northern communities might be affected by oil and gas exploration, development and a potential pipeline. Some important issues include: direct loss of harvesting and land use areas due to development

loss of harvesting and land use areas due to changes in the land including:

- permafrost melt
- contaminants
- forest fires
- human activity (stress on wildlife)
- loss or blockages in access to areas important to wildlife due to development
- changes in the health of wildlife (traditional food) because of stress, contaminants or other changes
- changes in the spiritual and cultural value of sites because of development

What research has been done in the past?

Studies have been done on land use and harvesting since the early 1970s. This has included mapping of important harvesting and land use areas. Stories (oral histories) about the importance of the land and special sites on the land have also been written down. Protected areas research on cultural sites and areas important for wildlife has also been done. In the Gwich'in and Sahtu communities, there has also been a lot of research about how many animals are harvested each year by communities. Some research has also been done about changes in the health of traditional food. One issue is contaminants in traditional foods.

Who did this research?

Research on land use and harvesting has mostly been done by northern communities and their regional organizations. This includes the GRRB, the SRRB, and Deh Cho Tribal Council. Government, university people and non-governmental organizations have also been involved in some of this research.

What research needs to be done in the future?

More research needs to be done about all aspects of land use and harvesting. More research is especially needed about how land use and harvesting might affect oil and gas exploration, development and a potential pipeline.

Who should gather this information?

Northern communities should gather this information. Scientists assist in this research by sharing their knowledge of how land, water, wildlife, air are going to change because of development activities.

There are many ways that oil and gas exploration, development and a potential pipeline might affect wildlife. Some important wildlife issues include:

- Wildlife health (fat, condition)
- Changes in the land used by wildlife (habitat loss and fragmentation)
- Blockages (barriers) to wildlife movements
- Noise and Smells from Human Activity (sensory disturbance)
- Accidental deaths and hunting (direct mortality)
- Kills of small animals by wolf, grizzly and other large animals (competition and predation)
- Contaminants
- Community Harvesting of Wildlife

What research has been done in the past?

Caribou: The importance of caribou to the Gwich'in, Sahtu and Deh Cho communities is well documented. The Porcupine Caribou Herd has been studied more than the Bluenose Caribou Herd. A lot of information about many barrenland caribou movements has been gathered, largely through satellite collar studies. Some similar information exists about woodland caribou. Changes in caribou population (population modelling) are also being studied. Some research has recently been done about caribou behaviour around development areas (mines).

Moose: There have been a few population studies about moose in some areas.

Dall's Sheep: The importance of Dall's Sheep to Gwich'in, Sahtu and Deh Cho communities has been documented. Some studies have been done on population, range, food (forage) and disease (lung worm) have been done.

Black Bears and Grizzlies: Some research has been conducted on the range of grizzlies and black bears. There have also been studies about the population of grizzlies, harvesting rates and population growth (productivity). Some studies have also been done about black bears.

Fur Bearers: Some research and information has been documented about wolves, marten, lynx, fox, beaver, and mink. Some research related to the importance of fur bears to the Gwich'in, Sahtu and Deh Cho communities has been conducted. A few other studies have been about population and population change, age, food and denning (habitat), harvesting and contaminants issues.

Who did this research?

Research on wildlife has been conducted by many different organizations in the region including the Gwich'in Renewable Resources, SRRB and the GNWT- Department of Resources Wildlife and Economic Development and the Canadian Wildlife Service, Environment Canada. Both TK and scientific information has been documented about wildlife. Non-governmental organizations have also been involved in wildlife studies in recent years.

What research needs to be done in the future?

There is not enough information to understand how exploration and development will affect wildlife in the future (lack of baseline).

Caribou. Research is required for the different woodland caribou herds in the regions proposed for development. Important research questions relate to 1) cow pregnancy and calf populations, 2) weight/fat, 3) disease, 4) contaminants, 5) harvesting rates, 6) movements and distributions, 6) migration, 7) quality of food (habitat), 8) wolf, 9) stress and health (energy).

Moose: Not enough is known about moose. More studies need to be done in all areas of the Mackenzie Valley.

Dall's Sheep: Not enough is known about Dall's Sheep to make good management decisions. More studies need to be done in all areas of the Mackenzie Valley.

Black Bears and Grizzlies: More research is needed about both grizzly and black bears. Population size and changes, habitat (food and denning) and harvesting rates.

Who should gather this information?

Both scientific and TK research about wildlife is needed.

MAMMALS

There are many ways that ducks; geese and other birds might be affected by oil and gas exploration, development and a potential pipeline. Some important wildlife issues include:

- Changes in the land used by wildlife (habitat loss and fragmentation)
- Blockages (barriers) to wildlife movements
- Noise and smells from human activity (sensory disturbance)
- Accidental deaths and hunting (direct mortality)
- Kills of small animals by wolf, grizzly and other large animals (predators)
- Contaminants
- Community Harvesting of Wildlife

What research has been done in the past?

A variety of research and information has been gathered about bird populations in the Gwich'in Sahtu and Deh Cho regions. These include bird counts and aerial surveys. Some of the research dates back as early as the 1970s.

Who did this research?

The research about birds has been done by many different organizations in the region including the Canadian Wildlife Service, Environment Canada, Gwich'in Renewable Resources, SRRB and the GNWT- Department of Resources Wildlife and Economic Development. Both TK and scientific information has been documented about wildlife. Non-governmental organizations have also been involved in bird studies in recent years.

What research needs to be done in the future?

There is not enough information to understand how exploration and development will affect ducks, geese and other birds in the future (lack of baseline).

More research about all bird species is needed in the regions proposed for development. These include population studies, changes in migration routes, food, resting (staging), breeding and nesting areas (habitat). Research is also need about contaminants in duck and geese populations harvested by communities.

Who should gather this information?

Both scientific and TK research is needed about ducks, geese and other birds.

There are many ways that oil and gas exploration, development, and a potential pipeline might affect fish. Some important fish issues include:

- Loss of areas important to fish for food, laying eggs and movement (habitat);
- Changes in water quality due to human activity in the river system;
- Changes in water quality and river flow due to changes in river banks (landslides);
- Accidental death of fish;
- Ice roads;
- Noise and disturbance from explosives and blasting;
- Contaminants
- Changes in the temperature and flow of lakes and rivers.

What research has been done in the past?

A variety of research and information has been gathered about fish populations in the Gwich'in Sahtu and Deh Cho regions. The importance of fish species to communities in these regions is well documented. A variety of studies about fish populations, movements, disease, contaminants, have been done.

Who did this research?

The research about fish has been done by many different organizations in the region including the DFO, Gwich'in Renewable Resources, SRRB and the GNWT- Department of Resources Wildlife and Economic Development. Both TK and scientific information has been documented about fish.

What research needs to be done in the future?

There is not enough information to understand how exploration and development will affect fish in the future (lack of baseline).

More research is needed about fish in the areas proposed for development, especially in inland lakes, rivers and streams. These include population studies, changes in migration routes, food, resting (staging), breeding and nesting areas (habitat). Studies on changes in fish populations, where they are located (distribution) and how they might be affected by changes in the lakes and river systems are very important. Research is also needed about contaminants in fish populations harvested by communities.

Who should gather this information?

Both scientific and TK research is needed about all species of fish.



There are many ways that berries; plants and forests might be affected by oil and gas exploration, development and a potential pipeline. Some important issues include:

- Direct loss of vegetation and forests;
- Effects of dust on vegetation and forests;
- Invasion of non-native species;
- Loss of soil due to erosion, landslides etc.
- Re-vegetation of seismic lines;
- Contaminants.

What research has been done in the past?

A variety of research and information has been gathered about berries, plants and forests for the region and territory. This includes mapping of information about plants and forests (ecozone classification). Some research has been done about the importance of berries, plants and other forest resources to the communities in the Gwich'in, Sahtu and Deh Cho regions. The value of plants and forests as food and shelter for wildlife has also been well studied. Some research about forests as an economic resource for logs (timber) has also been done.

Who did this research?

The research about plants, berries and forests has been done by many different organizations in the region including the Gwich'in Social and Cultural Institute, SRRB and the GNWT- Department of Resources Wildlife and Economic Development. Non-governmental organizations have also been involved in studies about plants and forests in recent years. Scientists have done most research about berries, plants and forests. Documented sources of TK about berries, plants and forests are limited.

What research needs to be done in the future?

There is not enough information to understand how exploration and development will affect berries, plants and forests in the future (lack of baseline).

Who should gather this information?

Both scientific and TK research is needed about berries, plants and forests.

Other Important Issues:

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TAND	There is very little research and information about the "land" as a whole and how it might be affected by oil and gas exploration, development and a potential pipeline. Some research and ideas are being developed through the Cumulative Effects Assessment and Management Framework (CEAMF) and the Cumulative Impact Monitoring Program (CIMP). More research is required about the "land" as a whole. TK research may be very valuable in our understanding of the "land" as a whole.
	There are a growing number of protected areas in the region. Federal and Territorial government
	legislation protect them.
TECTED AREAS	In the <i>Gwich'in Settlement Area</i> , there are a number of areas that are currently protected or possibly protected in the future. These areas are defined under the Draft Gwich'in Land Use Plan, the Project Areas Strategy and through heritage work done by the Gwich'in Social and Cultural Institute. Development in the Peel Plateau and any pipeline corridor is not expected to interfere with efforts to protect identified areas.
	 In the <i>Sahtu Settlement Area</i>, there are five areas that are defined as potential protected areas under the Draft Sahtu Land Use Plan and the Protected Areas Strategy. They include: Canol Trail; Kelly Lake;
	Edacho (Scented Grass Hills)
	• Saoyue (Grizzly Bear Mountain); and
RO	The Tuktu Nogait National Park Proposed Extension.
PLANS FOR P	Special Management Areas include Tsodehnjline Tuyat'ah (Ramparts River and Wetlands), Fee Yee (Ramparts) Heritage Site, the Mackenzie River Corridor and the northern portion of the Pehdzeh Ki Deh. Development in the Colville Hills and proposed Mackenzie Gas Pipeline Corridor will not directly affect the protection of these areas.
	In the Deh Cho Region , protected areas are being defined through the Deh Cho Land Use Planning
	Committee (Draft Land Use Plan expected in Sept. 2003). Key withdrawal areas include:
	• Edehzhie
	Nahanni National Park
	Wood Buffalo National Park
	Pehdzeh Ki Deh
	Current information suggests that development in the Fort Liard, Cameron Hills and the proposed Mackenzie Gas Pipeline corridor will not directly affect the protection of these areas.



E	There is not enough information to understand how oil and gas exploration, development and a
5 NG	potential pipeline will affect or be affected by climate change in the future (lack of baseline).
IAI	More research is needed on all aspects of oil and gas development and climate change.
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Table 2. What Research and Information is Needed?

Gwich	Gwich'in Settlement Area		
•	Travaillant Lake area (heritage, cultural, place names and fisheries information)		
•	Effects of development on inland lakes		
•	Harvest studies; regulatory issues		
•	Traditional harvesting		
•	Migration routes of Bluenose Caribou		
•	Impacts of development / construction on wildlife habitat		
•	Boreal; woodland caribou		
•	Impact of hydrocarbons (point source contaminants) on caribou		
•	Muskox movements; caribou / muskox interactions		
•	Climate change		
•	Permafrost		
•	Old sumps; clean-up of contaminants is a big issue		
•	Social and economic issues		
•	Old sumps; clean-up of contaminants is a big issue		
•	Baseline water quality and hydrology; effects of development on water quality		
•	Caribou: baseline; effects of development on herd health and movements		
•	fire history; vegetation mapping; woodland caribou; black bears; grizzly bears; furbearers;		
	ungulates; air traffic and disturbance on Dall Sheep		
•	See Protected Areas mapping for areas of key geographic priority for research and information		
•	Porcupine Caribou; health; habitat, movements		
•	Woodland Caribou: health; habitat, movements; effects of development; changes in range (southern)		
•	Muskox: health; habitat, movements; effects of development		
•	Dall Sheep; disease, range, movements; effects of development		
•	Grizzly and black bears; behaviour and movements around developed (pipeline) areas; baseline		
	required for pipeline corridor; habitat use, movements; seasonal feeding areas; denning locations		
•	Wolf: baseline for pipeline corridor; changes in behaviour including use of seismic lines for		
	predation		

- Furbearers: baseline for pipeline corridor; population sizes; habitat use; changes in trapping pressure due to increased access to remote areas
- Upland Lakes: baseline for pipeline corridor including Travaillant Lake; use by waterfowl; broad whitefish; inconnu, lake trout, lake whitefish and loche
- Rengling River, Tree River and Travaillant River
- Fish in Upland Lake; Inland Lakes: health; movements; effects of development; population size, fish movements; spawning sites, critical habitats for arctic grayling
- Appropriate disposal of drilling fluids
- Site Reclamation
- Thresholds for development
- Plants and Forests; effects of development
- Community Harvesting; effects of development
- Culturally and ecological important areas: Travaillant Lake area

Sahtu Settlement Area

- Colville Hills area
- Harvest studies; regulatory issues
- Traditional harvesting
- Boreal; woodland caribou
- Impact of hydrocarbons (point source contaminants) on caribou
- Muskox movements; caribou / muskox interactions
- Climate change
- Permafrost
- Impacts of eevelopment / construction on wildlife habitat
- Seismic effects of seismic activity on woodland caribou health, behaviour etc.
- Impacts of seismic activity / access roads on caribou harvesting
- Sumps / permafrost
- Mitigations
- Effects of seismic / access roads on vegetation; mitigations
- Fish and wildlife population distribution
- Sewage treatment
- Caribou behaviour around sumps
- Effects of flaring
- Seismic lines and predator prey dynamics
- Impact of seismic activity / brush clearing on the ecosystem as a whole
- Permafrost
- Spills / Clean Up
- Repeated use of access roads
- Spatial information (mapping) about Sahtu region; existing maps need to be updated

- Impact of exploration and development on Bluenose Herd and their habitat
- Impact of winter roads / traffic flow on caribou habitat
- Guidelines for caribou management
- Contaminants in country food
- Potential impacts of development on protected areas

• Trapping

- Bluenose Caribou; effects of oil and gas development on caribou movements in Sahtu region
- Health of fish as country food
- Cultural and archaeological sites
- Seismic activity around access roads; effects on trapping
- Waste water and drilling
- Impact of increased activity in Horton Lake / Colville Hills areas
- Positive and negative effects of seismic on hunting and trapping
- Guidelines and regulations for employment related to hunting and trapping
- Impact of development on Bluenose Caribou; health, movements and community harvesting
- Health of fish in inland lakes
- Cultural and ecological value of land between Fort Good Hope and Colville Hills

Other Important Research and Information Management Issues

- Communities, region need more capacity to access and organize information
- Need more resources and tools (e.g. GIS) to effectively use existing information
- More TK research is needed
- Recommend accessing existing information from Berger era
- Better coordination, organization and communication about research programs
- GRRB has significant information about renewable resources; should be more involved in defining research and information gaps
- Need a Workshop in Inuvik to deal with issues in the Gwich'in Settlement Area (GSA);
- Concern that facilitation of workshop to be well managed to ensure worthwhile outcomes
- Organization, coordination and communication with other initiatives is key
- Effective and meaningful communication, consultation, reporting with communities
- Use of TK in permitting and licensing
- Methods, policies, organization related to traditional ecological knowledge
- Meaningful consultation and reporting (more plain language materials are needed)
- Meaningful consultation and reporting (more plain language materials are needed)
- Traditional Ecological Knowledge must be fully recognized in the process; people must be adequately compensated for consultation and use of TEK

Appendix C

Results of Community Visits



Appendix C: Results of Community Visits

Results Of Community Input: Visits To Gwich'in And Sahtu Region Communities For Identification Of The Biophysical Information And Research Gaps Associated With Hydrocarbon Exploration, Development And Transmission In The Mackenzie Valley

Community Input

1. Objective

Community input in the identifying research and information gaps has been an important part of the project. The main objective in gathering community input was to ensure that

- Communities including local organizations and resource people were included in the process of identifying research and information gaps.
- Local and TK about the biophysical environment was identified and included in the Background Report
- Research and information gaps identified through the project were relevant to local communities.
- •

2. Methods

A Plan for Community Input was developed in collaboration with the Project Advisory Team in early December. The main elements of that plan included:

2.1 Introductory Letter, Project Description and Posters

An introductory letter was sent on behalf of DIAND (Heidi Heder) and RWED (Ray Case) to all organizations and communities in the study region. The distribution list for the letter was developed in cooperation with the Project Advisory Team. A plain language project description was developed to accompany the introductory letter outlining key objectives and timelines for the project. Contact information for Gartner Lee Ltd. and representatives of the Project Advisory Team was included with the letter

Gartner Lee Ltd. also prepared a information poster to be shared in the communities that included a generalized map of the study region, a summary of the project and contact information as a means of project communication.

2.2 Acceptance from organizations who wish to participate

Gartner Lee followed up the distribution of the letter and project description with phone and emails to ensure that those individuals and organizations who received the information agreed to participate in the project and felt adequately informed about the project and its potential outcomes.



2.3 Facilitation of Community Input Regional Liaison

Gartner Lee worked with regional liaisons in each of the Sahtu, Gwich'in and Deh Cho regions to:

- gather feedback from organizations and resource people at the community level;
- raise awareness and prepare for regional workshops

Sheila Mackeinzo, Johnny Edwards were hired by their regional organizations through the existing DIAND contribution agreements. They reported directly to their regional organizations. A 1-day training session was held during in January 2003 to increase capacity of trainees in carrying out their roles and responsibilities. Stephanie Sibbeston of Deh Cho Environmental was hired in the Deh Cho region to assist with workshop planning in Fort Simpson.

2.4 Visits to Regional Centres

Input from the regional centres was also sought directly by Gartner Lee Ltd. Brenda Parlee and the regional liaisons visited the communities of Fort Simpson, Fort Good Hope and Inuvik to and met with local resources people and organizations about the project. Input was specifically solicited about the following:

- Input regarding sources of local and traditional ecological knowledge related to the development scenarios;
- Verification of the preliminary gaps identified by the Team;
- Identification of additional research gaps of importance to the community;
- Recommendations for ways to address the research gaps;

The plain language questions to be asked during these visits included:

- 1. How do you think development in your region will affect the land, water, wildlife and air in your region?
- 2. What is currently being done by your organizations to address these issues? (e.g. regulations, management plans)
- 3. Do you know if there has been any scientific or traditional ecological knowledge already done about these issues?
- 4. What other research do you think needs to be done?

2.5 Follow-Up: Seeking Feedback

Follow-up feedback was also solicited through the following methods:

- Phone calls, fax and email will be used to acquire feedback
- Brenda Parlee of Gartner Lee Ltd. will meet with organizations in regional centres of Inuvik, Fort Good Hope and Fort Simpson during the week of January 6-12 to gather input.
- Where a regional liaison has been hired, he/she will be asked to meet with key resource people and organizations in the community to seek feedback.



• Where possible the Regional Representative of the Project Advisory Board will also be involved in soliciting feedback from their representative organizations.

The results of community input are summarized next.

GWICH'IN REGION

Resource People and Organizations Contacted in the Gwich'in Region:

- Gwich'in Land and Water Board
- Gwich'in Land Use Planning Board
- GRRB
- Gwich'in Renewable Resource Committees (Regional Meeting)
- Regional RWED Office in Inuvik

What research and information related to oil and gas exploration and development is needed in the Gwich'in region?

- Travaillant Lake area
- Effects of development on inland lakes
- Harvest studies; regulatory issues
- Traditional harvesting
- Migration routes of Bluenose Caribou
- Impacts of Development / Construction on wildlife habitat
- Boreal; woodland caribou
- Impact of hydrocarbons (point source contaminants) on caribou
- Muskox movements; caribou / muskox interactions
- Climate change
- Permafrost
- Old sumps; clean-up of contaminants is a big issue
- Social and economic issues
- Old sumps; clean-up of contaminants is a big issue
- Baseline water quality and hydrology; effects of development on water quality
- Bathurst Caribou: baseline; effects of development on herd health and movements
- fire history; vegetation mapping; woodland caribou; black bears; grizzly bears; furbearers; ungulates; air traffic and disturbance on Dall Sheep
- See Protected Areas Mapping for areas of key geographic priority for research and information
- Porcupine Caribou; health; habitat, movements
- Woodland Caribou: health; habitat, movements; effects of development; changes in range (southern)
- Muskox: health; habitat, movements; effects of development
- Dall Sheep; disease, range, movements; effects of development
- Grizzly and Black Bears; behaviour and movements around developed (pipeline) areas; baseline required for pipeline corridor; habitat use, movements; seasonal feeding areas; denning locations

- Wolf: baseline for pipeline corridor; changes in behaviour including use of seismic lines for predation
- Furbearers: baseline for pipeline corridor; population sizes; habitat use; changes in trapping pressure due to increased access to remote areas
- Upland Lakes: baseline for pipeline corridor including Travaillant Lake; use by waterfowl; broad whitefish; inconnu, lake trout, lake whitefish and loche
- Rengling River, Tree River and Travaillant River
- Fish in Upland Lake; Inland Lakes: health; movements; effects of development; population size, fish movements; spawning sites, critical habitats for arctic grayling
- Appropriate disposal of drilling fluids
- Site Reclamation
- Thresholds for Development
- Plants and Forests; effects of development
- Community Harvesting; effects of development
- Culturally and Ecological important areas: Travaillant Lake area

SAHTU REGION

Community Resource People and Organizations Contacted in the Sahtu Region:

- Sahtu Land and Water Board
- Sahtu Land Use Planning Board
- Fort Good Hope Renewable Resources Committee
- Chief Frank T'selie
- Metis Association
- Regional RWED Office in Norman Wells

What research and information related to oil and gas exploration and development is needed in the Sahtu region?

- Colville Hills area
- Harvest studies; regulatory issues
- Traditional harvesting
- Boreal; woodland caribou
- Impact of hydrocarbons (point source contaminants) on caribou
- Muskox movements; caribou / muskox interactions
- Climate change
- Permafrost
- Impacts of Development / Construction on wildlife habitat
- Seismic Effects of seismic activity on woodland caribou health, behaviour etc.
- Impacts of seismic activity / access roads on caribou harvesting
- Sumps / permafrost
- Mitigations



- Effects of seismic / access roads on vegetation; mitigations
- Fish and Wildlife Population Distribution
- Sewage Treatment
- Caribou Behaviour around Sumps
- Effects of Flaring
- Seismic Lines and Predator Prey Dynamics
- Impact of seismic activity / brush clearing on the ecosystem as a whole
- Permafrost
- Spills / Clean Up
- Repeated Use of Access Roads
- Spatial information (mapping) about Sahtu region; existing maps need to be updated
- Impact of exploration and development on Bluenose Herd and their habitat
- Impact of Winter Roads / Traffic Flow on Caribou Habitat
- Guidelines for Caribou Management
- Muskox movements (expansion of range)
- Contaminants in country food
- Potential impacts of development on protected areas
- Trapping
- Bluenose Caribou; effects of oil and gas development on caribou movements in Sahtu region
- Health of Fish as Country Food
- Cultural and Archaeological Sites
- Seismic Activity around Access Roads; effects on trapping
- Waste water and drilling
- Impact of increased activity in Horton Lake / Colville Hills areas
- Positive and negative effects of seismic on hunting and trapping
- Guidelines and regulations for employment related to hunting and trapping
- Impact of Development on Bluenose Caribou; health, movements and community harvesting
- Health of Fish in Inland Lakes
- Cultural and ecological value of land between Fort Good Hope and Colville Hills

Other Important Research and Information Management Issues identified by Gwich'in and Sahtu Community Organizations and Representatives

- Communities, region need more capacity to access and organize information
- Need more resources and tools (e.g. GIS) to effectively use existing information
- More TK research is needed
- Recommend accessing existing information from Berger era
- Better coordination, organization and communication about research programs
- GRRB has significant information about renewable resources; should be more involved in defining research and information gaps
- Need a Workshop in Inuvik to deal with issues in the Gwich'in Settlement Area (GSA);

- Concern that facilitation of workshop to be well managed to ensure worthwhile outcomes
- Organization, coordination and communication with other initiatives is key
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- Use of TK in permitting and licensing
- Methods, policies, organization related to traditional ecological knowledge
- Meaningful consultation and reporting (more plain language materials are needed)
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- Traditional Ecological Knowledge must be fully recognized in the process; people must be adequately compensated for consultation and use of TEK



Appendix D

Gap Analysis Power Point Presentation





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SEISMIC EXPLORATION

- Why is it done?
 - To look at underground geological formations
 - · To identify potential hydrocarbon reserves
- How is it done?
 - · Identify the areas where you want to do a seismic program
 - · Prepare cut lines: conventional and low impact methods used
 - Layout and survey seismic source and receiver points
 - Drill seismic source holes (15-30 m depth); lay out charges (20-25
 - kg) back fill
 - Lay out geophones
 - · Detonate charges and record seismic signals









EXPLORATION DRILLING Why is it done? To verify hydrocarbon reserves identified during seismic survey's To quantify potential hydrocarbon reserves How is it done? Set upand drill to target formation Identify and test target formation Flow back and flow test well











DEVELOPMENT / PRODUCTION

- Why is it done?
 - Petroleum reserves are not found in "underground lakes", they are contained in the pores of certain sedimentary rock formations.
 - To supply markets for fuels, lubricants, plastics, etc.















































Ecozones NWT has 6 ecozones Oil and gas development areas, and possible pipeline route all lie within the <u>Taiga Plains</u> plateaus, lowlands, permafrost black spruce, white spruce, jack pine, tamarack, paper birch, trembling aspen, balsam poplar berries, mushrooms, roots, medicinal plants



Ecoregion Overview

Norman Wells Area:

- Mackenzie Valley broad, rolling, drift covered plain between Mackenzie and Franklin Mountains
- Subhumid high boreal ecoclimate
- Wetlands cover 25-50 % of the ecoregion generally peat plateau bogs and ribbed fens
- Extensive discontinuous permafrost
- · Dominant soils include cryosols, brunisols and regosols

Ecoregion Overview

Colville Hills

- · Hummocky to undulating plain with extensive peat plateaux
- · High subarctic ecoclimate
- Predominant vegetation open stands of black spruce and tamarack with ground cover of dwarf birch, willow, shrubs, cottongrass, lichen and moss.
- Typical soils include cryosols and brunisols with continuous permafrost.
- · Abundant ice wedges, massive ground ice and some pingos.

Ecoregion Overview
Peel Plateau
Predominant vegetation is open black spruce and tamarack, with some white spruce and ground cover of dwarf birch, willow, shrubs, cottongrass, lichen and moss.
Delta is a complex area of peat covered deltaic deposits and fluvial deposits.
Extensive lakes and stream channels with over 50 % wetland cover that are generally polygonal plateau bogs and ribbed fens.
Soils are cryosols with abundant organic soils.
Extensive discontinuous permafrost













































Bears: What we need to know • More research required in oil and gas development areas and along potential pipeline route to determine population size, reproductive rates, habitat needs and harvest rates

































Land and resource use

- Protected areas have been identified and set aside in Gwich'in, Sahtu and Deh Cho. Many are of cultural significance
- The establishment of protected areas requires detailed documentation
- Representative areas need to be identified for each ecoregion



Appendix E

Workshop Agenda



Appendix E: Workshop Agenda

Information and Research Gaps Workshop Norman Wells, Legion Hall

DAY ONE MARCH 3, 2003

4:00 PM	Coffee, Tea and Bannock		
4:20 PM	Opening Prayer		
4:30 PM	Introductions and Opening Remarks Steve Morison – Gartner Lee Ltd. Ruth McKechnie – DIAND, Ottawa Kirstie Simpson - DIAND, Yellowknife Celina Stroeder - RWED, GNWT Chief Peter Ross – Tsiigehtchic Workshop Participants		
5:00 PM	Overview of Project and Workshop Objectives Steve Morison – Gartner Lee Ltd. Ruth McKechnie – DIAND, Ottawa		
6:00	Special presentation: Travaillant Lake Dan Andre - Tsiigehtchic		
6:30 PM	Dinner (provided)		
DAY TWO MARCH 4, 2003			
8:30 AM	Coffee, Tea and Bannock		
9:00 AM	Introduction to Oil and Gas Activities in the Mackenzie Valley What has happened in the past? What could happen? Steve Morison – Gartner Lee Industry (TBC) Discussion by Workshop Participants		

10:15 AM Break
11:00 PM	Development Scenario discussion					
	What has happened in the past? What is happening now? What could happen?					
	Group #1 - Peel Plateau Area Group #2 - Colville Hills Area					
	Group #3 – Norman Wells Area					
	Group #4 - Pipeline Corridor Area					
12:00 PM	Lunch (provided)					
1:00 PM	Development Scenario discussion CON'T					
	What has happened in the past? What is happening now? What could happen?					
	Reporting by GROUP.					
2: 00 PM	Break					
2:30 PM	Overview to Research and Information Gaps					
	Land and water; Fish and wildlife					
Steve Morison - Gartner Lee Ltd.						
	Heidi Klein – Gartner Lee Ltd.					
	Discussion by Workshop Participants					

4:30 PM Break for the day

DAY THREE MARCH 5, 2003

- 8:30 AM Coffee, Tea and Bannock
- 9:00 AM Breakout Groups What are the key research and Information gaps about the land and water in your area? Group #1 - Peel Plateau Area Group #2 - Colville Hills Area Group #3 - Norman Wells Area Group #4 - Pipeline Corridor Area

10:30- 10:45 AM Break



11:00 AM	<u>PLENARY</u> What are the key research and Information gaps about the land and water in your area? Plenary and discussion
12:00 PM	Lunch (provided)
1: 00 PM	<u>Breakout Groups</u> What are the key research and Information gaps about the fish and wildlife in your area? Group #1 - Peel Plateau Area Group #2 - Colville Hills Area Group #3 – Norman Wells Area Group #4 - Pipeline Corridor Area
2:30 PM	Break
3:00 PM	<u>Plenary</u> Reports from Breakout Groups Key Issues and Conclusions from Scientists
3:45 PM	Summary of Workshop Outcomes What did we achieve? What are the next steps?
4:15 PM	<u>Closing Comments</u> Gartner Lee Ltd. Workshop Participants DIAND, RWED, ESRF
5:00 PM	Departure



Appendix F

List of Participants



Appendix F: List of Participants

ORGANIZATION	PARTICIPANT	ADDRESS	FAX/ PHONE	E-MAIL
SAHTU REGION				
Sahtu Land & Water Board	Patrick Clancy, Hydrologist	Box 1, Fort Good Hope, NT	867-598-2325	sahtuhyd@attcanada.ca
		X0E 0H0	867-593-2413(tel)	
Sahtu Land Use Planning	Kimberly Horrocks	Box 235, Fort Good Hope, NT	867-598-2545	
Board		X0E 0H0		
Tulita Renewable Resources	Wilfred Lennie	Box 27, Tulita, NT	867-588-3726(f)	
Council/Fort Norman Metis		X0E 0K0	867-588-4724(t)	
Local				
Tulita Band	Fred Andrew Jr.	Tulita	867-588-3341(t)	
Tulita	Jimmy Mendo	Tulita		
Deline Renewable Resources	Alfred Taniton	Box 156, Deline, NT	867-589-3826(f)	
Council		X0E 0G0	867-589-3618(t)	
Deline Renewable Resources	Gord Mackeinzo	Box 156, Deline, NT	867-589-3826	
Council		X0E 0G0		
Norman Wells Renew.	Roger Odgard	Box 69, Norman Wells, NT	867-587-2545(f)	
Resources Council		X0E 0V0	867-587-2455(t)	
Sahtu Renew. Resources	Jody Snortland - Exec. Director	Box 134, Tulita, NT X0E 0K0	867-588-3324	director@srrb.nt.ca
Board				
Sahtu Renew. Resources	Sheila MacKeinzo	Box 134, Tulita, NT	867-588-3324	
Board		X0E 0K0		



ORGANIZATION	PARTICIPANT	ADDRESS	FAX/ PHONE	E-MAIL
GWICH'IN REGION				
Gwich'in Tribal Council	Chief Peter Ross	Box 1509, Inuvik, NT	867-777-4538	snowshoe@inuvik.net
		X0E 0T0		
Gwich'in Renewable Resource	ePeter Clarkson	Inuvik	867-777-3429	
Board				
Gwich'in Renewable Resource	eJozef Carnogurski	Inuvik	867-777-3429	
Board				
Gwich'ya Gwich'in Renewable	eAnna May McLeod	Tsiigehtchic	867-953-3608	
Resource Council				
Gwich'ya Gwich'in Renewable	eGabe Andre	Tsiigehtchic		
Resource Council				
Gwich'ya Gwich'in Renewable	eDan Andre	Tsiigehtchic		
Resource Council				
Gwich'in Social & Cultural	Alestine Andre	Tsiigehtchic	953-3613	
Institute				
Tetlit Gwich'in Renewable	Woody Elias	Fort McPherson		
Resource Council				
Tetlit Gwich'in Renewable	Richard Wilson	Fort McPherson		
Resource Council				
Inuvik Niihat Renewable	Allen Firth	Inuvik		
Resources Council				
Inuvik Niihat Renewable	Barry Greenland	Inuvik		
Resources Council				
Ehdiitat Renewable Resource	James Edwards	Aklavik, NT		
Council				
Gwich'in Social & Cultural	Ingrid Kritsch	50 Rycon Dr., Yellowknife	867-669-9743(t)	ingrid_kritsch@learnnet.nt.ca
Institute			867-669-7733(f)	
Gwich'in Tribal Council	Norman Snowshoe	Box 1509, Inuvik, NT X0E 07	0 867-777-4538	snowshoe@inuvik.net



ORGANIZATION	PARTICIPANT	ADDRESS	FAX/ PHONE	E-MAIL
NON-GOVERNMENT				
ORGANIZATIONS				
Ducks Unlimited Canada	Bruce MacDonald	5017 - 52nd St. Yellowknife,	867-873-9306	b_macdonald@ducks.ca
		NT X1A 1T5		
Canadian Parks & Wildernes	s Greg Yeoman	Suite 302, 4921 - 49 St.,	873-9593(f)	cpawsnwt@theedge.ca
Society		Box 1934,		
		Yellowknife, NT X1A 2P4		
INDUSTRY				
Imperial Oil	Tim Shopik			
SCIENTISTS				
Natural Resources Canada	Dr. Larry Dyke	601 Booth St., Rm193,	613-996-1967(t)	ldyke@nrcan.gc.ca
		Ottawa, ON K1A 0E8	613-992-0190(f)	
Environment Canada	Jesse Jasper	5204 - 50th Ave.,	867-669-4740(t)	jesse.jasper@ec.gc.ca
		Yellowknife, NT X1A 1E2		
Fisheries and Oceans	Sam Stephenson	P.O. Box 1871,	867-777-7503(t)	StephensonS@DFO-
		Inuvik, NT X0E 0T0	867-777-7501(f)	MPO.gc.ca
RWED	Rick Popko	Box 130,	867-587-2786(t)	richard_popko@gov.nt.ca
		Norman Wells, NT X0E 0V0	867-587-2204(f)	
Environment Canada	Paul Latour	5204 - 50th Ave., Suite 301,	867-669-4769(tel)	paul.latour@ec.gc.ca
		Yellowknife, NT X1A 1E2	867-873-8185(f)	
PAT MEMBERS				
Department of Indian Affairs	Ruth McKechnie		819-953-0031	
& Northern Development				
RWED	Celina Stroeder	Box 130,		celina_stroeder@gov.nt.ca
		Norman Wells, NT X0E 0V0		



ORGANIZATION	PARTICIPANT	ADDRESS	FAX/ PHONE	E-MAIL
Department of Indian Affairs	Kirstie Simpson			SimpsonK@inac-ianc.gc.ca
& Northern Development				
Environment Canada	Stephen Harbicht	Suite 301, 5204 50 Ave.,	867-669-4733(t)	stephen.harbicht@ec.gc.ca
		Yellowknife, NT	867-873-8185(f)	
Department of Indian Affairs	Fred McFarland	RR#2, 269 Wolford Rd.,	613-269-4415(t)	mcfar@storm.ca
& Northern Development		Merrickville, ON K0G 1N0	613-269-4398(f)	
Fisheries and Oceans	Kim Howland	Winnipeg	204-984-4227(t)	howlandk@dfo-mpo.gc.ca

GLL FACILITATORS

Gartner Lee Ltd	Steve Morison	Calgary, AB	403-262-4299	smorison@gartnerlee.com
W.J. Klassen & Assoc. Ltd.	Bill Klassen	Whitehorse, Yukon		
Gartner Lee Ltd	Brenda Parlee	Calgary, AB		
Gartner Lee Ltd	Heidi Klein	Calgary, AB	403-262-4299	hklein@gartnerlee.com

TRANSLATION

SERVICES

Pido Pat Braden

North Slavey Laura Tutcho

North Slavey Agnes Naedzo

Appendix G

Presentation by Dan Andre, Travaillant Lake Basin Study



Appendix G: Presentation by Dan Andre, Travaillant Lake Basin Study

Travaillant Lake Basin Study

The Goal of my presentation is to create awareness for the Ecological and Cultural significance the Travaillant lake basin holds for the Gwich'in people and to introduce the Travaillant Lake Basin Study.

The Travaillant Lake Basin Study will enable us to measure the current health of the Basin and put us in a better position to monitor the changes that may occur over time, specifically related to the construction of the proposed Mackenzie Valley Pipeline.

Geography And Existing Management Tools

The Travaillant Lake (TL) is situated (refer to map) 60 air miles south east of Inuvik. The direction the water flows through the basin clearly indicates the size of the basin. It connects several lakes to the Mackenzie River. The water flows in two directions in this area. The Trout Lake basin flows to the north and the Travaillant Lake basin flows south. Any alteration of water quality and quantity will have a direct affect on the various species of fish and may compromise the health of their habitat.

The Gwich'in land use plan a document that has been in the works for the past 10 years and the establishment of Nakwichoonjik – National Historic Site through Parks Canada applied the same values and beliefs to select this area for some level of protection against development activities of any kind. The Gwich'in Social and Cultural Institute has been working diligently to acquire adequate financial resources to complete the work they began in 1992. This work is centred around their place names projects.

Historical Use of the Basin

The TL Basin has been widely used by Gwich'in people. It holds significant cultural resources. The resources are trail systems, burial sites, camp sites, harvesting sites and the area is directly connected to our legends and stories which have been passed down from generation to generation through oral history.

We are attempting to use our TK corroborated with scientific research to show our use of this area and document the cultural history and ecological significance the area holds for various species of wildlife, fish being only one area to research.

To present you with a picture of the amounts of fish that were harvested we calculated the needs of 20 families.

A family with an average of 8 dogs would need 1680 fish to see them through to the summer months. During the summer they would need 1200 fish. This is only to sustain their dogs. In total we calculated 33,600 fish were taken from the basin and 24000 fish taken from the Mackenzie River. We did not calculate the amount of fish they harvested for their own sustenance. You may be wondering how we arrived at such large amounts? Well we discussed how many families lived in the area for a ten year period from 1950-1960. Understandably there may not have been 20 families in the region every year, however these numbers will again give you a general idea of how much fish this basin could sustain.

Other harvesting activities that took place were trapping furbearers, hunting moose and caribou, harvesting migratory birds in the spring and fall.

Ecological Significance

From our oral history we know the direction the water flows and the fishery runs and spawning locations tells us that the fish travel throughout out the system. The present route the proposed pipeline is taking crosses the Travaillant river at two locations. The new access routes may cross waterways connected to the Travaillant River.

From previous work carried out by GSCI elders indicated to them that very few fish actually left the system by making their way to the Mackenzie river. The elders who lived at the Mouth of the Travaillant River and had fish nets indicated that they caught few lake whitefish. These people would know because fish from the lake and Mackenzie River are very different in colour and size.

We also know from TK that hundreds of geese, swans, and ducks migrate through the Travaillant Lake Basin and use it as a staging area. From the time that I was boy I could tell you about the hundreds of caribou we saw travel through the area. We could see them everywhere we travelled for most of the winter. Due to a large forest fire in 1986 they now travel further north. Regrowth of the vegetation will attract them back to this area.

Cultural Significance

To create awareness of the rich cultural history of this area we are continuing to document the existing land uses, historic land uses through the GSCI.

The Area as I indicated before is directly connected to many of our legends and stories that we have retained today.

Through current research and development activities; we know that existing seismic lines will be reopened and new access lines will be cut branching off the old seismic lines. We will have to ensure that they do not cross waterways connected to the Travaillant Lake Basin.

Research is also be conducted on the availability of granular resources, bio-physical studies and these activities require access to the area. GSCI is currently negotiating with Imperial Oil Resources to collect and document all heritage site locations to ensure these areas are avoided completely.

Just recently, Diamond exploration has become an issue, If we do not commence the study ASAP we may not be able to prevent irreversible damage to our cultural and ecological resources in this region.



Travaillant Lake Region in the Gwich'in Settlement Area

Appendix H

Presentation by Alestine Andre and Ingrid Kritsch, Gwich'in Social and Cultural Institute



Appendix H: Alestine Andre and Ingrid Kritsch, Gwich'in Social and Cultural Institute

Background

The Gwich'in Social & Cultural Institute (GSCI) is a non-profit society that was founded by the Gwich'in Tribal Council in 1992, in response to concerns about the erosion of the Gwich'in culture and language. GSCI's mandate is to document, preserve and promote the practice of Gwich'in culture, language, TK and values. In addition to its many other roles, the GSCI works with the GTC to implement heritage resource management obligations in the Northwest Territories and Yukon regions outlined in the Gwich'in Comprehensive Land Claim Agreement. GSCI takes the lead role in conducting TK, archaeological and other cultural and heritage studies in the Gwich'in Settlement Region.

Heritage Research – An Overview

Since 1992, the Gwich'in Social and Cultural Institute has been building an inventory of heritage sites within the Gwich'in Settlement Region (GSR) through a traditional land use study using oral history and ethno-archaeological research. This research has documented Gwich'in TK and use of the land, by recording place names and associated stories, trails, traditional camp sites, graves, historic sites, harvesting locales, and sacred or legendary places. This information is being used for a number of purposes:

to ensure that culturally significant heritage sites and places in the GSR are protected and/or managed in a manner consistent with Gwich'in values for the benefit of future generations to develop educational materials for the local schools, museums, interpretive centres and the public; to ensure that Gwich'in place names are recognized within the Gwich'in Settlement Region; and to review land use permits and provide information and advice on possible impacts on Gwich'in heritage resources, and to provide input on heritage and land management issues.

To date, GSCI has recorded approximately 1,000 named places for the Gwich'in Settlement Area in the Northwest Territories, and the Primary and Secondary Use Areas in the Yukon. Oral history and ethnoarchaeological research between 1992 and 1995 concentrated on the Gwichya Gwich'in traditional land use area, which includes the area from Reindeer Station, through the Delta, Campbell Lake, Travaillant Lake area to Thunder River – the proposed route for the Mackenzie Valley Pipeline. Since 1996, GSCI has conducted oral history and ethno-archaeological research on Teetl'it Gwich'in traditional lands in the NWT and the Yukon, in the Peel Plateau. Oral history and ethno-archaeological research to date has focussed on the Peel River watershed between Fort McPherson and the Wind River. An invitation in 1999 to work with the Tr'ondek Hwech'in, Yukon Heritage Branch and Yukon Protected Areas Secretariat (YPAS) resulted in the initial documentation of the oral history of Teetl'it Gwich'in and Tr'ondek Hwech'in use of the upper Blackstone River area. Ethno-archaeological surveys by helicopter in the southern Richardson Mountains, and by river between Fort McPherson and the Caribou River in 2000, identified new archaeological sites. In addition to this work, traditional place names and land use research has also been carried out with the Ehdiitat Gwich'in in 1998/99 in relation to the Aklavik land use area. Traditional land use, archaeological and ethnobotanical research was carried out in the Gwich'in Territorial Park area between 1993 and 1995. Further oral history, TK and ethno-archaeological work is needed in order to create a comprehensive inventory of cultural and heritage resources for the Gwichya Gwich'in and Teetl'it Gwich'in traditional land use areas so that the potential impact of oil and gas activities on these resources can be evaluated.

Reports and publications GSCI has produced since 1992 based on heritage research carried out in the proposed Mackenzie Valley pipeline corridor and Peel Plateau areas. For more information or to order, please contact:

Gwich'in Social and Cultural Institute, P.O. Box 46, Tsiigehtchic, NT X0E 0B0 (867)953-3613 ph. (867)953-3820 fax.

Publications Currently Available:

Andre. Alestine and Alan Fehr, 2002.

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Heine, Michael, Alestine Andre, Ingrid Kritsch, Alma Cardinal and the Elders of Tsiigehtchic 2001 *Gwichya Gwich'in Googwandak: The History and Stories of the Gwichya Gwich'in*. Gwich'in Social and Cultural Institute. 409 pp. ISBN 1-896337-05-8 (\$55.00)

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Kritsch, Ingrid and Alestine Andre 1997

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Kritsch, Ingrid and Alestine Andre 1994

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Kritsch, Ingrid and Alestine Andre 1993

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