GeoConnections
Milestone 1 Interim Project Report

Preliminary geospatial data needs report from Aboriginal Community Land & Resource Management Plans review

10/03/2008

Project Name: *Aboriginal Community Land & Resource Management: Geospatial Data Needs Assessment and Data Identification and Analysis* (hereafter the "Project")

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Project File No.: *NRCAN-07-00064* (hereafter the "Agreement")

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1. Introduction

1.1 Purpose

The purpose of this document is to transfer the first Interim Project Report to GeoConnections.

This report provides an overview of the accomplishments to date of the project team working on the Project: *Aboriginal Community Land & Resource Management: Geospatial Data Needs Assessment and Data Identification and Analysis.* The project is lead by the Makivik Corporation.

1.2 Scope

As per the Agreement, the Project has identified milestones in the form of work packages and deliverables as well as associated payments from the inception to the completion of the project. This document reports on the first project milestone: Preliminary geospatial data needs report from Aboriginal Community Land & Resource Management Plans review.

2. Milestone Overview

The work accomplished between December 20, 2007 and February 15, 2008 is described in this report. The work consisted of the project kick-off meetings, project set-up and planning, identification of land use plans and their review. All the project activities were carried out according to the original project implementation plan as described in the proposal.

2.1 Summary of Work Accomplished During this Period

This document provides an overview on the current status of the project and provides the results from the first stage of work, namely task 1 as identified in the statement of work:

> *"Review at least 10 Aboriginal Community Land & Resource Management Plans from representative areas of the country. The goal is to review at least one from each of the following locations Atlantic Canada, Eastern Canada, Central Canada, Western Canada and Northern Canada."*

The main activities to be conducted during this stage of the project were identified in the original work plan as follows:

- Conduct research on existing Aboriginal Community Land and Resource Management Plans, identify the communities and organizations that that have a land and/or resource management plan in place and acquire the plans
- Review at least 10 Aboriginal Community Land and Resource Management Plans;
- Summarize geospatial data requirements from Land and Resource Management Plans;

The following section of this report describes the work carried out to successfully complete these activities. For the remainder of the document, Aboriginal Community Land and Resource Management Plans will hereafter be referred to as land use plans.

2.1.1 Initial planning sessions and project setup

Project activities started with planning sessions between Makivik Corporation and other team members. An initial meeting was scheduled with GeoConnections in Ottawa on Thursday December, 20th, with members of the GeoConnections project authority. Key project team members attended the meeting along with GeoConnections representatives.

The initial contacts with the project authority and follow-up meetings between the project team members raised some important questions and emphasized the following general project guidelines:

The project teams long experience in working with Aboriginal groups across Canada and internationally tried to better understand the needs of GeoConnections as well as keeping in mind potential short and long term benefits to the participating Aboriginal groups.

Other outcomes identified the need to have smaller but focused workshops (with no more than 2 to 8 people) and with emphasis on people who went through the process of actually being involved in the land use plan creation. The need was also identified to include, when possible, a good representation of Aboriginal groups across Canada both in terms of culture and geographic location.

GeoConnections also provided the project team with initial documentation relevant to the project and initially suggested and provided 5 land use plans for review (Kitasoo, Hupacasath, Dehcho, Whitefeather Forest and Innu). However, it was concluded that the final choice of plans will be up to the project team and two plans that were originally identified by the GeoConnections project Authority were not included for the final shortlist (Kitasoo and Hupacasath).

Other initial project setup and research activities included the preparation of a project background document or the "press release" (see Appendix 1). This background document was used by members of the project team and the Project Manager in order to introduce the project to the participating Aboriginal groups. Initial contacts were also made with some selected Aboriginal communities across Canada.

During this stage, an important task for the project team was also to prepare the necessary templates for plan review. These templates are described in more detail later in this document (see sections 2.1.3 and 2.1.4).

2.1.2 Identification of Aboriginal Groups and Land Use and Management Plans

The objective of this work was to identify, and later shortlist at least 10 Aboriginal Community Land and Resource Management Plans from across the country while obtaining a good cross-section of Aboriginal groups in Canada. An effort was made to represent as wide a geographical and indigenous perspective of Canada Aboriginal communities as possible.

Contacts were made with selected Aboriginal groups by project team members and existing plans that are not available to the public was in some cases, requested by the project team from the Aboriginal group. Initially, the project team reviewed the Prince Albert Grand Council's Athabasca Land Use Plan and waited to hear from their leadership with regards to their full participation in the study which has since been accepted. The Algonquins of Barriere Lake and the Tsleil-Waututh in Southern BC have both agreed to participate in our study; however these two communities are still processing our request to secure copies of their plans (they contain sensitive information and are not fully in the public domain).

During this process, the project team has more closely examined a total of seventeen Aboriginal groups and their land use plans. In-depth research was conducted more so in Western Canada, mainly in Alberta in relation to the Métis plans where different Aboriginal groups were identified but no adequate land use plans were located. Efforts continue in the area of Atlantic Canada as well, in order to identify additional plans that can be used as a backup solution to the Innu plan.

The table below lists the plans identified by region and culture. Plans identified are both geographically and culturally representative as possible.

TABLE 1: Identified plans (and/or groups) by region and culture. Currently short listed plans are highlighted in bold.

GEOGRAPHIC REGION / CULTURE	INUIT	FIRST NATION	MÉTIS
Atlantic Canada (1)		**Forest Ecosystem Strategy Plan for District 19, Labrador / Nitassinan [Innu Nation]**	
Eastern Canada (2)		**Algonquins of Barriere Lake Comprehensive Land Use Plan** **Whitefeather Forest Land Use Strategy [Pikangikum First Nation]**	
Central Canada (2)		**Asatiwisipe Land Management Plan [Poplar River]** **The Prince Albert Grand Council's plan for the Athabaska region**	Pinehouse-dipper Land Use Study [Pinehouse First Nation]
Western Canada (2)		**Haida Gwaii Land Use Plan [Haida]** **Tsleil-Waututh Plan in Southern BC** Hupacasath Kitasoo	
Northern Canada (3)	**Keewatin Land Use Plan** North Baffin Land Use Plan Kativik Regional	**Dehcho Interim Measures & Plan** Draft North Yukon Land Use Plan [Vuntut Gwitchin First Nation]	**Sahtu Land Use Plan [Sahtu Dene & Métis Comprehensive Claim]**

	Government		

2.1.3 Plan selection process

During the process of selecting the appropriate regional land use plans, the project team tried to implement a standardized approach to the plan selection and review process. The project team tried to diversify the plans for review by attempting to include coastal and inland plans as well as urban-based plans that include areas with high-population density and consequently higher density of geospatial datasets available, eventually providing a good contrast to our other regions.

It also needs to be emphasized that the short listed plans were not necessarily selected because they were of exceptionally good quality, from a methodology or data point of view. The plans were selected based solely on obtaining a good geographic and cultural representation of Aboriginal groups in and throughout Canada with no reference to rigor from a scientific or legal point of view.

During the plan selection process, the initial number of plans per geographic region as defined by GeoConnections was respected. As a result, some of the more interesting plans, such as the Yukon plan, were not included in order to ensure broader representation of different Aboriginal groups.

The following sections (2.1.3.1-5) represent a comprehensive list of plans identified by geographic region and Aboriginal group. The plans short listed at the end for review and workshops are underlined. The section also provides a rationale for selection of each plan and a rationale of why some of the plans may have been excluded.

2.1.3.1 Atlantic Canada (1)

Forest Ecosystem Strategy Plan for District 19, Labrador / Nitassinan (Innu Nation). The Innu plan incorporates Silva Forest Foundation's (Herb Hammon's) ecosystem-based modeling, a special methodology which is unique in Canada. It was identified as a high-quality plan and an important one to include in the review.

Other potential plans identified in Atlantic Canada that could serve as backup plans:

Membertou Band (Sydney, Nova Scotia): The project team has requested the information on the Membertou plan. The land use plan has not been obtained yet despite several attempts made by the Project Manager.

Eskasoni First Nation, just outside Sydney NS; this plan has been identified as a possible backup plan; however, no attempt has been made to contact the group regarding the Project.

2.1.3.2 Eastern Canada (2)

Algonquins of Barriere Lake Comprehensive Land Use Plan; The Algonquins of Barriere Lake plan is one of Canada's most comprehensive land use plans and therefore an important one to include in the study. The Algonquins are already scheduled for a workshop in mid-March to address land use planning issues and the project team will take advantage of this opportunity and conduct a community-based workshop at that same time.

Whitefeather Forest Land Use Strategy (Pikangikum First Nation); The Whitefeather Forest plan is Ontario's only boreal land use plan. The maps prepared for this plan won the National Cartography Award in 2005 by the Canadian Cartographic Association (CCA).

The area of Southern Ontario was explored in more detail in order to locate a suitable Aboriginal land use plan in an urban area. Contacts were made with the Six Nations in Brantford, Ontario regarding the possible use of their Source Water Protection Plan. The research team had a conference call to discuss whether this plan should be included in our review and it was concluded that the Source Water Plan was too site specific and different from all of the other more comprehensive land use plans. One of the strengths of our study will be the cross-comparison of different methods to achieve similar goals. A Source Water Protection study does not fit within this matrix.

2.1.3.3 Central Canada (2)

Asatiwisipe Land Management Plan (Poplar River); It was decided to use the Poplar River land use plan (Manitoba) as the project representative study for Central Canada. This plan is largely a park management plan and serves as a supporting document in an application by the community for protection as a UNESCO Heritage conservation area.

The Prince Albert Grand Council's plan for the Athabaska region was selected for its reputation in being a comprehensive land use plan that fully integrated Saskatchewan's largest cultural land use and occupancy study (1100 map overlays with over 65,000 mapped sites) with a rich array of biophysical and resource data. This is also a stage 1 of a 3 stage land use study, which will have an impact on almost 1/3 of the Province of Saskatchewan. We would certainly be remiss if we didn't include this study in our assessment.

Pinehouse-Dipper Land Use Study (Pinehouse First Nation) includes a traditional land use study. This plan would fulfill the Métis representation in the project and was originally selected for review. However, during the review process it was revealed that the community participation rate was very low. The plan was developed using the top-down approach that didn't involve the community. It was concluded that the review of this plan may actually give the impression that the plan is better than it actually is and therefore this plan was removed from the short list and currently replaced by the Prince Albert Grand Council's plan.

Lac La Ronge Band was identified to have a land use plan in place that can be eventually accessed by contacting the Band Policy on Traditional and Contemporary land use.

In Saskatchewan, few studies seem to be "community owned". The Ministry of Environment has been conducting most of the studies. In addition, the University of Alberta, University of Saskatchewan and the Saskatchewan Métis Society have done selected community traditional use studies. Most communities are Métis or small reserves while the "true" land use area is mostly legally owned by the Crown. Existing plans eventually focus on small territories and as a result, no suitable regional plans were found.

2.1.3.4 Western Canada (2)

Haida Gwaii Land Use Plan; The Haida land use plan is the outcome from a co-chaired land use planning process between the First Nation and the Province of British Columbia. The plan also incorporated data resulting from millions of dollars of research investments from the Coast Information Team, an independent third-party research consortium of world renowned scientists and biologists. The plan is unique in its management prescriptions of cedar and how it represents planning in the midst of a Title case. The plan received a lot of attention within First Nation networks. We felt that this land use plan was important to review in British Columbia and therefore, two BC plans that were identified by GeoConnections (Kitasso and Hupacasath) were removed from our study.

Tsleil-Waututh Plan in Southern British Columbia was identified as a most suitable sample plan from an urban environment. It is more of a bioregional atlas, with economic, cultural, and environmental layers and visions included in the atlas then actually a land use plan. A special request needed to be issued in order for the project team to have access to the plan.

Alberta hosts Canada's only recognized Métis government - the Métis Settlements General Council. They have done some cultural mapping and have land management jurisdiction over about half million hectares of land. This option was investigated further, as they would be the most legitimate Métis group to include in this study. However, no official land use plans have been completed including the Métis 1935 of Fort McMurray.

As previously stated, the Kitasoo and Hupacasath plans were pulled from the shortlist as the Haida plan and the Tsleil-Waututh plans fulfill the British Columbia cultural criteria, however, both have been left as a backup for the western Canada criteria.

2.1.3.5 Northern Canada (3)

Dehcho Interim Measures & Plan; the Dehcho plan combines a rich variety of community-based and external data and is considered to be one of the most comprehensive Aboriginal land use plans in Canada. The group is politically very active right now due to the MacKenzie Gas Pipeline Project. The project teams initially chose to review either the Dehcho or the Sahtu plans, but not both.

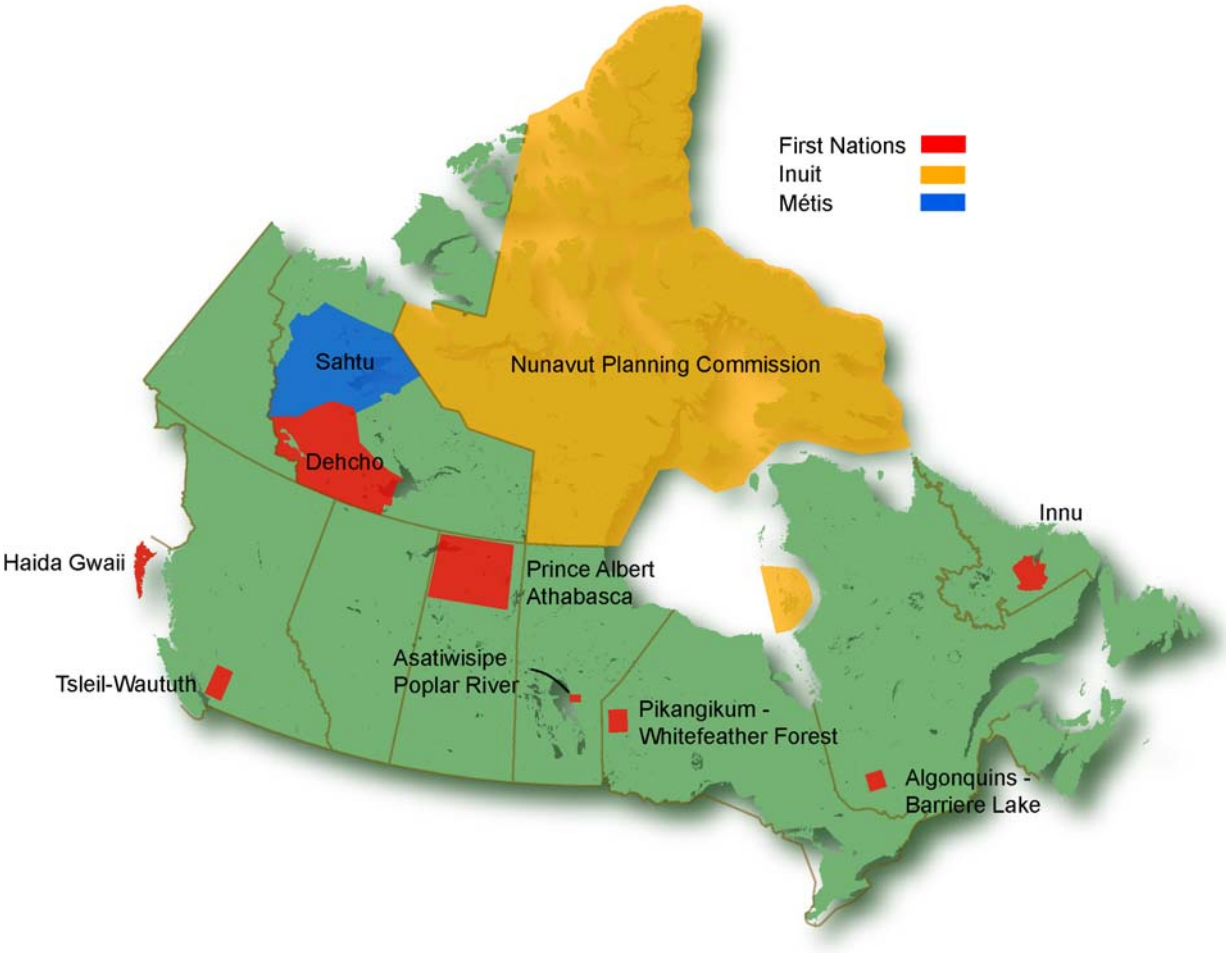
The Sahtu plan falls within the Sahtu Dene & Métis Comprehensive Claim, which also accommodates the Métis component of the project. This plan was on backup until a possible Métis plan was found in the Alberta region. With no real success on the Alberta Métis front, the project team decided to move ahead with the Sahtu plan which includes the Métis of Norman Wells. This as a consequence resulted in the dismissal of the Yukon plan in order to keep the number of plans in Northern Canada down to three.

The Draft North Yukon Land Use Plan (Vuntut Gwitchin First Nation) contains lots of maps and represents a good source of geospatial data. This plan was originally short listed for review by the project team but was later replaced by the Sahtu plan to satisfy the Métis component.

Keewatin Land Use Plan; This plan was initially prepared between 1989 and 1991 prior to the signing of the Nunavut Land Claims Agreement (NLCA). It was then updated by the Nunavut Planning Commission (NPC) in conformity with its authority under the NLCA. However, it has always been envisaged that a new and comprehensive planning process be undertaken. Adrian Boyd, who is in charge of land use land policy and content suggested it would be more productive if the project team reviewed three Request for Proposals (RFP) issued on December 10, 2007 by the NPC as a follow up on needs assessment that they have already conducted. These RFP's concern cumulative impacts management, wildlife resource and habitat values, and socio-demographic and economic sector analysis. The NPC has agreed to participate in our work in order to assist them to identify further data gaps and new data sources.

Due to multiple plans north of 60 that are far superior in terms of mapping and geospatial data, the Kativik Regional Government (KRG) Regional Master Plan adopted in 1998 is still on the list as a backup if success in meeting with the Nunavut Planning Commission (NPC) is felt to be insufficient.

FIGURE 1: Map showing Geographic Distribution of selected Aboriginal land use plans across Canada



2.1.4 Review of Plans and Associated Maps

Before the actual review of the short-listed plans and associated maps, criteria for review needed to be established. These criteria were later used to develop review templates in order to ensure consistency during the review process and for future comparison purposes.

It was concluded that the plan review must contain a human component as well as the geospatial data component. Determining the focus of the plan, the context in which the plan was created, is the plan realistic or not and is there an existing body with implementation capacity in place were all important questions to be answered before and during the actual plan review.

This process produced the information gathering template and established a protocol for later review of plans and maps. Guidelines were developed for the plan review. It was decided that the review of each plan will be based on two distinct templates that will be used in reviewing the land use plans:

1. Review of plans in the form of a technical annotated bibliography; and
2. Review of maps contained in the plans in the form of a data summary spreadsheet

2.1.4.1 Review of plans

The review of plans template captures the following information in a two page format for each plan in form of a technical annotated bibliography:

- Project title and date;
- Availability
- Lead Aboriginal entity (Inuit, Métis, First Nation);
- Partner organizations;
- Project team members, including technicians, researchers, consultants and their contacts; the list of project team members and their associated roles / responsibilities for each plan will be of particular importance to the project team to help target individuals for one-on-one follow-up interviews.
- Scope of project, including the following:
  a) geographic location;
  b) geographic scale of the plan;
  c) main methodological approach;
  d) policy opening – why the plan was created and the policies in place to support the plan implementation. This was identified as one of the most important issues.
- Focus of the plan
- Use of GIS and mapping technologies;
  - Mapping technologies used was added in the plan review due to the project team member's familiarity or knowledge of the plan. This information will be verified during the community workshops;
  - Potential datasets and data gaps; this included identification of the potential datasets (such as geospatial data mentioned in reports but not actually used on the maps). These potential gaps were identified in broad strokes during the plan review process and it is expected that the gaps will be filled-in during the community consultations process;
  - Non-spatial data used; the project team aimed to identify the existence of some other, non-spatial data, such as interviews, multimedia etc;
  - Geospatial data used in plans and maps; this information was gathered using a separate template and in form of a spreadsheet (see Section 2.1.4.2 for geospatial data template). The idea was to identify all the maps (and geospatial data) contained in the reports as well as separate documents (appendices, larger-scale maps etc); including data sources and formats, spatial layers and data used.
- Follow-up calls to Aboriginal communities were placed in order to obtain some additional or missing information that could not have been identified during the plan review process.

Several common themes surfaced during our follow-up calls:

1. Many of the communities had GIS capacity to complete their plans, but this capacity has since diminished significantly – resulting in several dead-ends as GIS staff is no longer employed by the communities. We need to keep this in mind when organizing our community workshops, as the key technicians who worked on the plans may no longer be available for meetings.
2. Just about all of the communities relied heavily on third-party consultants and Government for mapping and GIS support. Given our tight timelines, it has been difficult to connect the lines of dialogue between community leadership who has approved participation in our study and to relay this information to their consultants to be able to share information with us.
3. Because of the reliance on third parties for data and GIS support (Innu with Silva Forestry; Pikangikum with Taiga; Prince Albert Grand Council with CPAWS; Haida with the Coast Information Team, etc.), we almost need to double on consultations to properly connect with all the practitioners who worked behind the scenes in supporting these plans. We intuitively knew this prior to the start of our work, but we are now faced with this reality as the list of people to connect keeps growing. We should consider revising our shortlist of land use planning practitioners and decide how to connect meaningfully with them during the workshop phase of our work.
4. Communities have clearly identified their planning process and methodologies – not data – as the main strength and challenge in completing their plans. Many communities are surprised that we are focusing on the data when break-through accomplishments were made in relationships, policy and decision making. We would gage community interest in this work as fairly low. This should be taken seriously in our workshop design.

The project team has so far completed the review of ten land and resources management plans: 1-Innu, 2-Haida Gwaii, 3-Pikangikum; Whitefeather Forest; 4-Dehcho; 5-Keewatin; 6-Asatiwisipe/Poplar River; 7-Sahtu; 8-Prince Albert Grand Council; 9-Algonquins, and 10-Tsleil-Waututh. The full results of the plan review can be found in Appendix 3.

A brief overview was drafted addressing the definition of “land use planning”, and a discussion of differences in approach and methodologies with respect to data. This document: “Canadian Aboriginal Land Use Planning – Overview “can be found in Appendix 2.

2.1.4.2 Review of associated maps and geospatial data

Geospatial data can be categorized in a variety of ways, including source, theme, scale and format. These data could also be categorized by the methods used to collect the data (remotely sensed, field surveys, social research science, etc.). Of these categorizations, “theme” presents the most challenging and requires definitions to clarify its meaning. To help illustrate decisions that were made in preparing this report, we will use the example of caribou habitat data. Caribou habitat data can be logically categorized under a natural heritage theme. However, if the information was collected through local interviews with Elders and trappers, would we then categorize the data under a cultural heritage theme? What if the data combined local knowledge with Western scientific methods to map the habitat? To answer this question, we would need to have some understanding as to the methodologies used to collect the data. However, the work involved in conducting background research into *how* each dataset within our review was collected would be well beyond the scope of our research.

We thus narrowed-down the data categories into two principle categories and four thematic categories. The principle categories are: (1) framework; and (2) thematic. Here, we use framework to mean any data that provide context and reference information that are well-defined and readily observable natural or manmade physical features, not subject to interpretation or speculation (*CGDI, 2001*). These layers include many of the same features that are visible on topographic maps, such as roads, rivers and elevation. Framework data, in addition to natural or manmade physical features, may also include alignment layers used for geometric control. Thematic refers to data which have been evaluated, interpreted and are not normally found on common base maps and includes all types of conceptual layers (used to describe and administer a country (such as boundaries, ecological zones, etc.)

Our four thematic categories are: (1) natural heritage; (2) cultural heritage; (3) biophysical; and (4) administrative / development. These categories reflect *what* the data describes, not *how* the data was collected. Both framework and thematic data are assigned one of the four categories. Using these categories, the above example of caribou habitat data would fall within the natural heritage theme, regardless of how the data were collected. The following presents definitions for each:

Natural heritage: Data which describes flora and fauna, species and their habitats. An example would be caribou habitat.

Cultural heritage: Data which describes a community use, occupancy or knowledge system of lands and resources. An example would be caribou trapping areas.

Biophysical: Data which describes landscape features and their processes. An example would be slope stability.

Administrative / Development: Data which describes land management boundaries or modifications to the landscape for conservation / economic development purposes. An example would be parks.

For each geospatial dataset, we also captured information regarding the source (data distributor, not necessarily the data collector); scale (scale of the final data layer, not necessarily the scale at which the data was collected); date (data release date); format (vector or raster); confidentiality; contacts (for the data provider) and notes.

The geospatial information was captured in form of a data summary spreadsheet. There is one Worksheet per plan (See Appendix 4) for full results of the maps and spatial data review. The resulting spreadsheet currently contains spatial information for eleven plans that were reviewed to date.

The results of this plan review could also serve as a land use planning first-point of discovery tool for other communities. As many Aboriginal communities in Canada are thinking about initiating a land use planning process for their Territories, our final report could serve as a reference document to data, methods, and contacts for what has worked elsewhere. We recommend that our report be packaged are shared via the Web, however, we recognize that this is not part of our mandate within the scope of the Project.

During the review process, special attention was also paid to the use of satellite imagery in the land use plans. There does not seem to be much use of earth observation imagery in the presently reviewed plans. However, some of these plans are older and imagery was not freely available / and quite expensive at the time the plans were prepared.

Attention is also being paid to the use of any spatial analysis in the plans through identification of secondary or third stage products derived from data included in the maps.

The project team has also identified that it would be useful to record the status of attribute data for some geospatial themes (for example different forest cover types). This will take place mainly in the workshop stage.

2.1.4.3 Dealing with Scale

There are no formal standards in place for categorizing the scale of land use plans. Plans may describe large regions of land (1:500,000), but use site specific data (1:20,000) for their inventories and analysis. Some studies, such as the Innu plan, use three spatial scales as "filters" for looking at specific ecological functions. The Haida plan, although regional in scale (1:250,000), presented many recommendations at the scale of the watershed (1:50,000).

For our review, we had to make a decision with regards to what the "scale" is referencing, whether it be the data, the study area or the outcomes (i.e. management recommendations). In our written summary, we chose to reference the scale of the plan's study area. In our data spreadsheet, we chose to reference the scale of the plans contributing data. We used the following common scale references in our review:

(1) Site specific scale, also known as operational scale or stand scale at 1:5,000 to 1:20,000;
(2) Watershed scale at 1:20,000 to 1:50,000; and,
(3) Regional or landscape scale at 1:250,000 to 1:1,000,000.

2.2 Lessons Learned

Confidentiality issues related to geospatial data have slowed down the acquisition of two land use management plans for the Algonquins of Barriere Lake Integrated Resource management Plan and the Tsleil-Waututh Indian River Land Use Plan of Southern British Columbia. As a result, the project team received the two plans late; however work as initially scheduled will continue.

In order to access the plans, the project team needed to ask the Band leadership for permission. The plans both contain a lot of sensitive cultural data that both groups want to protect. A specific information request to access the work needs to be made and a Memorandum of Understanding (MOU) will be signed by the Makivik Corporation in order for the project team to proceed with the plan access and review. It should also be noted that both groups were sent the review of their land use plans prior to the inclusion in / submission of any report to GeoConnections. At the time of this report, all necessary steps taken to ensure privacy for these groups has been taken and the reviews included in Appendix 3 have been approved for submission.

We may have challenges dealing with the Nunavut Planning Commission (NPC) in regards to the Keewatin plan. Nobody who worked on the original plan is currently employed at NPC, in addition, one previous staff member recommended to the project team who had some involvement is currently in a lawsuit over wrongful dismissal and therefore, this avenue is currently not available. Through speaking with NPC staff, the 2 signed plans in Nunavut are being dismissed and a Nunavut wide plan is currently in the process of being created. NPC staff would like our assessment to reflect the new plan currently underway, and not that of the Keewatin plan (or the North Baffin Plan). We have assured NPC that the Keewatin plan and the 3 RFPs issued in December 2007 were reviewed to obtain a base and additional information can be added and discussed through meeting.

When comparing the plans across the country, none of the Inuit plans found (Keewatin, North Baffin, Kativik Regional Government) were as in depth as their counterparts across the country. All three aforementioned Inuit plans were adopted in the late 1990s, and for whatever reasons (access to data during that time, lack of data in the north, etc.) the plans do not have a substantial amount of geospatial data included.

Challenges also included searching for a Métis plan in Alberta. Because Alberta has the only recognized Metis government the Métis Settlements General Council, the project team thought that it would be most beneficial to use a plan from Alberta to meet the Métis criteria. The Sahtu plan was identified from the beginning as a comprehensive and well written plan, and was therefore included at the last minute to conform to the Métis component.

The project team has also found that plans on the west coast are more abundant and easier to access than those in Maritime Canada. A number of groups in New Brunswick are at the beginning stages of community plans, however, we felt that these did not fit into the project scope and were therefore not chosen for review. Southern Ontario was an additional place identified that may be worthwhile to look into, however, as with the Maritimes, many groups are in the beginning stages of community planning.

As expected, many of the plans found are First Nations plans – Inuit and Métis plans are difficult to find, partially due to shear numbers of First Nations groups as compared to Inuit and Métis.

2.3 Changes to the Work Plan for the Next Milestone

There are no major changes to the original work plan. All the phase one activities were carried out as originally planned. Data confidentiality issues have slowed down the acquisition of two plans (Algonquin of Barriere Lake and Tsleil-Waututh). These two plans were not previously included in the Milestone 1 report; however, they are included in this revised version of the report. These plans were reviewed as soon as they become available. The slower acquisition of the two plans did not slow down phase two activities of workshop planning which will be carried out as originally planned. The Algonquin workshop is scheduled for March 14 and the Nunavut Planning Commission workshop on March 20, 2008.

2.4 List of Attachments

APPENDIX 1: Project Background Document or "Press Release"

APPENDIX 2: Canadian Indigenous Land Use Planning – Overview

APPENDIX 3: Plan Review document

APPENDIX 4: Data Review Spreadsheet

APPENDIX 5: Nunavut Planning Commission (NPC) RFP geospatial datasets

APPENDICES

Appendix 1

Project Background Document or "Press Release"

INTRODUCING A NEW PROJECT IN SUPPORT OF ABORIGINAL COMMUNITY LAND AND RESOURCE MANAGEMENT

Makivik Corporation, created to represent the Nunavik Inuit following the 1975 James Bay and Northern Quebec Agreement, has been awarded a contract by GeoConnections (Natural Resources Canada) to conduct a geospatial data needs assessment and data identification and analysis. Makivik Corporation will partner with two firms, Strata360 in Montreal and Hatfield Consultations in Vancouver. Both these firms have extensive prior experience working with Aboriginal communities and organizations in Canada and worldwide.

Background

Geospatial information is becoming increasingly important in helping Aboriginal communities across Canada address important issues related to land and water resource planning and management. Many groups across Canada have already learned the power and utility of maps as a way to present traditional knowledge and land use in support of their land claims and to influence new directions in resource and land management.

Today the benefits of mapping are rapidly expanding by the opportunities for incorporating digitally based information now available from global positioning systems (GPS), Geographic Information Systems (GIS), and remote sensing using satellite and aerial photo imagery. This is creating an entirely new approach to planning and decision making for land and water resource management. It is also leading to a need to establish processes for sharing geospatial data between user groups across Canada.

To effectively administer, and economically empower their communities, resources and lands, Aboriginal leaders, managers and land planners must have location-based information and they must be able to securely obtain and share this information with their communities and partners in a timely and efficient manner. Sound practices and processes for incorporating both traditional and western knowledge systems are also vital in assisting decision making in Aboriginal communities.

GeoConnections, a national partnership program led by Natural Resources Canada, was created in 1999 with the goal of improving the capacity for Canadian users to share and apply geospatial information through the Internet. From 1999 to 2005 the focus of the GeoConnections program was to develop a Canadian Geospatial Data Infrastructure (CGDI). The CGDI was designed to facilitate the discovery, sharing and use of Canadian geospatial information and services. The 2005 Federal Budget provided a renewed mandate for GeoConnections until 2010. This second phase of the program will work to expand the CGDI with a focus on applications in the four identified priority areas of:

- Public health
- Public Safety and Security
- Sustainable Development and the environment
- Matters of Importance to Aboriginal People.

Our Project

Our project was developed to respond to the Matters of Importance to Aboriginal People priority area.

A data needs assessment and analysis will be conducted. This will involve the review of 10 selected existing Aboriginal community land and water resource management plans. These will be representative of Aboriginal groups and geographic regions across Canada. This review will identify and develop a preliminary list of key geospatial data sets that are critical for land and water resource management by Aboriginal people. The reviews will be shared among the selected groups. The review will be followed by on-site

discussions conducted with each of the representative groups to further analyze the data needs and associated challenges.

Phase two of the project will focus on an assessment of the state of data (formats, quality, currency of data sets) and the identification of the most appropriate and authoritative sources. A report will be produced that will be shared with all project participants.

Your Participation is Key

As a selected group, your participation at the discussion stage is important to the success of this project. It is here where you can input your experiences and needs. Participation can benefit you in the following ways:

- Developing a better understanding of the benefits, challenges and sustainable methods for using geomatics and the on-line geospatial data and services for decision-making;
- Working towards solutions for land and water resource management and co-management and community planning needs;
- Identifying key datasets needed by your communities and organizations and gaps in the available data supply;
- Influencing program development and delivery within GeoConnections, for example, by making these datasets a priority;
- Making these data available to Aboriginal organizations and communities; and
- Sharing experiences and raising community awareness with respect to using geospatial web services

If you would like to know more about this project, please contact:

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Appendix 2

Canadian Indigenous Land Use Planning – Overview

Canadian Aboriginal Land Use Planning – Overview

For over 5,000 years, humankind has structured its social and physical environments to adapt to cultural and environmental necessities. The effort to achieve a satisfactory balance between basic functions, both cultural and biophysical, constitutes the earliest form of community planning. From the ancient cities of Mesopotamia, to the towns and cities of the Roman Empire, civilization has developed a structure to maintain control and efficiency over the physical, natural and cultural worlds.

It wasn't until the late 1800's, however, that issues of health and quality of life began to be directly considered and planned for in relation to our built environment. With the industrial revolution, conflicting social values (e.g. housing, clean air, access to green space) clashed with economic goals and outcomes (e.g. new factories, air pollution). A new, broadly defined area of professional activity emerged to encapsulate this work, led by practitioners such as Patrick Geddes and Thomas Adams in Britain and the founding of the British Town Planning Institute in 1914 (Hodge, 1989).

Here in Canada, "planning" is defined as the scientific, aesthetic, and orderly disposition of land, resources, facilities and services with a view to securing the physical, economic and social efficiency, health and well-being of urban and rural communities (CIP, 2000). Within this field of practice, "land use planning" is just one tool used by planners to try to reconcile and balance multiple values (environmental, economic, and cultural) for how lands and resources are protected and / or developed.

One of the outcomes of land use planning is the land use plan itself. The term "land use plan" is often interchangeable with "land management plan", "comprehensive resource management plan", and "integrated management plan". The latter two terms reflect an idea rooted in the Gaia Hypothesis (Lovelock, 1979), ecosystem theory and principles of biodiversity theory which recognizes the interconnections between all living things and their direct relationship to the physical environment. Many Aboriginal Canadians believe that these theories closely reflect a traditional land management approach that they have been practicing in land management "since time immemorial".

The land use plan is often characterized by the spatial weighting of conservation, cultural and economic values, with specific management recommendations made for areas of similar ranking. Areas that share similar ranking are often termed "management zones". Plans can be creative in the categorization of zoning, but common zones used in Canadian land use plans include: special management zones; general use zones; conservation zones and multiple-use areas. The quandary with many Aboriginal land use plans is how to effectively compartmentalize the landscape into zones for land management purposes, while at the same time, recognizing the holistic interconnections between all systems within a living landscape.

The land use planning *process* is ideally an inclusive exercise whereby local communities, stakeholders and governing bodies come together to share their values and visions for how the land (and waters) should be used. Other guiding principles of successful planning processes include transparency, participatory in nature, comprehensive issue identification and the systematic gathering and assessment of descriptive information for a region. As much of this descriptive information is place-specific, mapping and GIS has become the logical tool used for managing and assessing information within the land use planning process.

Although Aboriginal communities have been mapping their cultural uses and values since the 1970's (e.g. Labrador Inuit Association's *Our Footprints are Everywhere*, 1977), the integration of these values with other economic and environmental interests into land use plans is a relatively new practice. Two pioneering projects include the Kaska Dene's comprehensive planning in the 1980's and the Algonquins of Barriere Lake integrative planning in the 1990's.

Through recent assertions and recognition of Aboriginal Title and Treaty rights, Aboriginal communities in Canada are now active in adapting formal land use planning tools to develop comprehensive plans for their Territories and Treaty areas. The methodologies used for these plans vary greatly, as do the reasons and context for their undertaking. Regardless of the differences in methods, there are some commonalities: the plans are deeply rooted in a cultural context of place, the plans typically prioritize conservation and cultural uses over commercial interests and the plans clearly describe the role of the communities and local decision making systems in the implementation and monitoring of the plans.

For many Aboriginal communities, the land use plan becomes one of the first-filters used to support decision making in dealing with third-party consultations. Consultations arise out of the legal duty for the government (and industry indirectly) to consult with Aboriginal communities, as supported by recent court rulings (*Delgamuukw v. British Columbia*, 1997; *Haida Nation v. British Columbia*, 2004; *Taku River Tlingit First Nation v. British Columbia*, 2004; *Mikisew Cree First Nation v. Canada*, 2005). When formally recognized and implemented by provincial or territorial governments through legislation or policy, the Aboriginal land use plan can become a strategic tool to help *accommodate* Aboriginal rights and Treaty interests through active land management practices.

The plans reviewed in our study used different methodological approaches in planning, including an issue-based approach (e.g. Keewatin), an ecosystem-based management approach (e.g. Innu, Haida), and a conservation-area design approach (e.g. Athabasca). The motivations for initiating the plans varied greatly, many catalyzed out of conflict (e.g. Poplar River, Dehcho), others through newly acquired rights and management powers (e.g. Sahtu, Keewatin).

The policy and legislative context to "give the plans legs" are also worth noting, as plans in the absence of formal policy recognition are difficult or impossible to implement. Here, the underlying theme to all of these plans is the recognition of Aboriginal Title and Treaty Rights, where provincial and federal governments are adapting existing policies and regulatory frameworks to accommodate an Aboriginal community's right to manage or co-manage their own lands and resources. The transition isn't smooth; in many cases old regulatory frameworks simply don't provide the flexibility to accommodate Aboriginal models of governance. The Province of Manitoba, for example, is currently updating its *Crown Land Use Act* to give greater authority to communities in the management of Aboriginal Use Areas. Until then, the Manitoba Parks Act is being used to place-hold Poplar River's planning area as Protected Area Reserves.

As for the role of mapping and spatial information, all of the plans reviewed in our study (with the exception of the Keewatin Plan) include a rich portfolio of maps cataloguing the natural, cultural and biophysical resources of the region. Mapping was used to help overlay, rank and prioritize multiple values, with land use zoning used as a common tool to balance land use interests. Most Aboriginal communities have partnered with external agencies and organizations to assist in the GIS and mapping for their plans. Local information management capacity (and keeping this capacity in place) remains an ongoing theme with most Aboriginal communities (a theme with non-native communities as well). This will likely remain a challenge as more and more Aboriginal communities initiate land use planning, and collect new information to reconcile multiple and often competing interests and values.

Appendix 3

Plan Review Document

Review of Land Use Plans

NOTES:

Note 1: The project team does not have permission to distribute the Tsleil-Waututh bioregional atlas or their watershed plan, nor do we have permission to distribute the Algonquin plan.

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1. The Innu Nation: *Forest Ecosystem Strategy Plan for Nitassinan, District 19* (March 10, 2003)

Project title and date;	**Forest Ecosystem Strategy Plan for Nitassinan (District 19). March 10, 2003**
Availability	http://www.innu.ca/forest/sec4.htm
Lead Aboriginal entity;	Innu Nation
Partner organizations;	Innu First Nation and the Government of Newfoundland and Labrador
Project team members;	Innu Nation: Jay Forsyth and Larry Innes Department of Forest Resources and Agrifoods (DFRA): Keith Deering and Len Moores GIS support: Dwayne Golding, Scott Higgins and Lacina Coulibaly
Scope of Project a) Geographic location;	District 19 contains 7 million hectares of land in south-central Labrador. The strategic plan pertains directly to District 19A, a land area comprising 2.1 million hectares surrounding Goose Bay, bounded by the Mulligan and Red Wine Rivers to the north, the extent of the Kenamu River watershed to the east, the extent of the Gulf watershed to the south and longitude 61'45' to the west.
b) Geographic scale of the plan;	The Innu Plan is unique in that the planning team broke the large planning unit down into three distinct scales: the landscape scale (or regional scale) at 1:250,000 to 1:50,000; the watershed scale at 1:50,000; and the stand level (or operational level) at 1:12,500. The planners used each level as a "filter" to identify and protect the ecosystem structures and functions which are best reflected at these different map scales (Appendix 4).
c) Main methodological approach;	This Strategy Plan follows an Ecosystem-Based Planning approach, which requires a careful representation of ecological, cultural and economic values. Ecosystem-Based Planning is a relatively new approach to forest management in Canada. It is based on protecting, maintaining, or where necessary, restoring fully functioning ecosystems at different spatial scales over long time frames. The EBP approach of "priority decision-making" ensures that ecological and cultural values are considered first, forming a protected landbase framework. Outside of the protected landbase, areas are identified for sustainable economic development and management decisions. Following this approach, the Strategy Plan is organized into three main chapters, reflecting Ecological, Cultural, and Economic Landscapes. An additional chapter was also added to include research and monitoring requirements

d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	On January 30, 2001, the province of Newfoundland & Labrador and the Innu Nation signed a historic agreement. The Province of Newfoundland and Labrador recognized the significance of the unsettled Innu Nation land claim in this District, and how decisions made under this plan could affect those interests. Accordingly, the Forest Process Agreement was designed to enable and facilitate effective communication, information sharing, and the resolution of issues between the Province and the Innu Nation concerning interim planning and management, the development of sustainable forestry practices, and ecosystem-based management plans. This Forest Ecosystem Strategy Plan for District 19 is an important result of that agreement.
Focus of the plan;	To create an ecosystem-based forest management plan for District 19 that protects ecological and cultural integrity, productive capacity, resiliency and biodiversity while advancing economic opportunities for the sustainable development of forest-based industries.
GIS a) Mapping technologies used;	GIS was used in this plan to help organize the spatial layers to illustrate landscape and cultural priorities which were overlayed to create an Ecological Protected Area Networks (EPAN) at three different levels of planning, and a Cultural Protected Areas Network. Once these areas were netted out, the resulting maps highlight the total land base within the planning area that will be available for timber harvesting. The land base analysis was generated through a priority decision-making approach, described in more detail in *Appendix E* of the plan.
b) Potential datasets / missing data;	The aerial photos used in the forest inventory are outdated. It is also suggested that viewshed maps (how the landscape appears from one spot) be created to identify and protect aesthetically important locations.
c) Non-spatial data used;	A summary of the community consultations is included in the appendices. Other non-spatial data used includes demographic statistics of forestry workers, as well as tables and graphs describing annual forestry harvests over time.
d) Data used in plans and maps;	See spreadsheet

2. The Haida Nation: *Strategic Land Use Plan for Haida Gwaii / Queen Charlotte Islands (*September 13, 2007)

Project title and date;	**Strategic Land Use Plan for Haida Gwaii / Queen Charlotte Islands** **September 13, 2007**
Availability	http://www.haidanation.ca/ http://ilmbwww.gov.bc.ca/lup/lrmp/coast/qci/index.html
Lead Aboriginal entity;	Haida Nation
Partner organizations;	Haida Nation and the Province of British Columbia
Project team members;	A 29 person committee, the Community Planning Forum (CPF involved various stakeholders, including representatives from environmental organizations and the forestry industry. Mapping provided by the Haida Nation, the Province of British Columbia (was Ministry of Sustainable Resource Management, now the Integrated Land Management Bureau), the Coast Information Team, the Gowgaia Institute, Cortex Consulting and others.
Scope of Project a) Geographic location;	The Queen Charlottes are an archipelago of 150 islands, eighty kilometres from the central British Columbia mainland. It has a unique ecology of massive old growth forests and species found nowhere else, earning it the title of the "Galapagos of the North".
b) Geographic scale of the plan;	The Haida plan is a study set at a landscape or regional scale, with management targets and recommendations set at the scale of the watershed (1:50,000).
c) Main methodological approach;	Fundamental to the planning process was the agreement that the Haida Nation would develop a Land Use Vision to inform and guide the development of the Land Use Plan for the Islands. The Vision includes six maps requiring priority protection: significant tsuuaay (cedar) forests, riparian areas important for tsiin (salmon), habitats important for taan (bear), kil (plants), and xiit'lit (plants), and sk'waii (beach). Consistent with this vision, the planning process adopted an ecosystem-based management (EBM) planning approach to ensure the existence of healthy, fully functioning ecosystems that will fulfill spiritual and cultural needs and support community and economic wellbeing for current and future generations. All of the management recommendations in the plan are connected to this framework and are grouped in accordance with the three key components of EBM: (1) Ecosystem Integrity; (2) Spiritual and Cultural Values; and (3)

	Community and Economic Wellbeing.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	Interest in developing a strategic Land Use Plan for the Islands dates back more than a decade. Concerns with land and resource management practices and community sustainability led to the Islands Community Stability Initiative (ICSI) in 1995. The ICSI consensus report included recommendations for protected areas, determination of sustainable harvest levels, tenure reform, and a community resource board. In the late 1990's, the Provincial Government attempted to initiate a Land and Resource Management Planning process. The model for the process was not supported by the Haida Nation, and the process never began. It wasn't until 2001, when the Council of the Haida Nation and the Province of BC agreed to co-design and co-manage a process that the foundation was laid to begin a strategic land use plan on the Islands. Two protocol agreements were signed in April of 2001 that provided this foundation: the General Protocol on Land Use Planning and Interim Measures (Appendix A), and the Haida Protocol on Interim Measures and Land Use Planning between the Council of the Haida Nation and the Province of British Columbia. The Haida Gwaii / Queen Charlotte Islands Land Use Planning process was unique in that it was co-managed by the Council of the Haida Nation and the Provincial Government. No other strategic land use plans in the province have had a First Nation as a partner in process design and implementation.
Focus of the plan;	The plan and management recommendations embodies the notion of "respect for all living things" found in the Haida Land Use Vision. It is defined as a collaborative, strategic approach to managing human activities that seeks to maintain healthy, fully functioning ecosystems including human communities. The following goals and principles were agreed to as the basis for developing all of the Land Use Plan recommendations that follow in this document: (1) Protect, maintain and restore ecosystem integrity; (2) Maintain spiritual and cultural values; (3) Enhance sustainable economic opportunity within the inherent limits of the land to provide opportunity; and (4) Foster social and community wellbeing.
GIS a) Mapping technologies used;	GIS was used extensively for this plan, with data and spatial analysis provided by the Haida Nation, the Province of British Columbia, the Coast Information Team, the Gowgaia Institute, and others. A variety of software were used for the analysis, with ESRI products used as the main mapping platform.
b) Potential	The plan notes that the complete inventory of monumental cedars,

datasets / missing data;	terrestrial ecosystem maps, cultural surveys and the assessment of viewscapes are needed to refine the plan.
c) Non-spatial data used;	The Environmental Conditions Report fed into the planning process. It is a prediction of future climate and environmental effects should current forestry practices continue. Economic monitors (from logging and its lack of value-added exports, to harvest volume of non-timber forestry products such as mushrooms) are an example of other non-spatial data used in the plan.
d) Data used in plans and maps;	See spreadsheet

3. Pikangikum First Nation: Keeping the Land: a land use strategy for the Whitefeather Forest and adjacent areas (June, 2006)

Project title and date;	**Keeping the Land: A Land Use Strategy for the Whitefeather Forest and Adjacent Areas, June 2006**
Availability	http://www.whitefeatherforest.com/the_initiative/cb-lup-strategy.php
Lead Aboriginal entity;	Pikangikum First Nation
Partner organizations;	The Pikangikum First Nation and the Ontario Ministry of Natural Resources with mapping support from the Taiga Institute.
Project team members;	Alex Peters (General Manager, Whitefeather Forest); Andrew Chapeskie (Taiga Institute); John Sills, Ontario Ministry of Natural Resources
Scope of Project a) Geographic location;	Pikangikum First Nation (population: 2,200) is a remote-access community located approximately 100 kilometres north of Red Lake in north-western Ontario. The Whitefeather Forest is a northern boreal forest area traditionally used by the people of Pikangikum. The Whitefeather Forest planning area covers 1.3 million hectares north of Red Lake.
b) Geographic scale of the plan;	This is a regional plan, with base maps illustrated at a scale of 1:275,000. Designated land use maps are displayed at larger scales.
c) Main methodological approach;	Pikangikum's vision for "Keeping the Land" expresses a desire to maintain their customary stewardship responsibilities on their ancestral lands. In support of this vision, the Land Use Strategy addresses the following goals: (1) ensure Pikangikum First Nation customary stewardship responsibilities for Keeping the Land; (2) guide the protection and orderly development of lands and resources; (3) secure resource-based economic development and employment opportunities for the community; and (4) harmonize proposed new land uses with existing and customary land use practices. Zoning was used as a primary tool for designating specific sets of land use and management policies at the landscape level. Designations are implemented through either policy or regulation. There are three primary land use designations and one special land use category described for the WFPA: (1) General Use Areas; (2) Enhanced Management Areas; (3) Dedicated Protected Areas, and (4) Cultural Landscape Waterways.
d) Policy opening – why the plan was	The Whitefeather Forest Initiative, as part of the larger Northern Boreal Initiative, is a collaborative effort between the Ontario Government, Pikangikum First Nation, environmental groups such as

created and the policies in place to support the plan implementation;	the Taiga Institute, and industry partners. Under the auspices of NBI, a planning initiative established in 2000 in response to First Nations' requests for input and economic sustainability in the forestry industry, WFI is the first community-based plan for development North of 50. An Environmental Bill of Rights (EBR) Environmental Registry posting in November 2006 gave notice that MNR and Pikangikum First Nation will seek the required Environmental Assessment Act coverage for forest management on the Whitefeather Forest through a request to the Ministry of Environment (MOE) for a declaration order. A major amendment to Crown Land Use Policy will implement the land use direction for the establishment of protected areas, enhanced management areas and general use areas as described in the approved strategy.
Focus of the plan;	While the plan attempts to balance forest and economic development interests with conservation and cultural uses, the main thrust of this plan is ecological sustainability, which ties in to cultural and economic sustainability. Protecting caribou habitat involved a considerable amount of the research that went into the plan.
GIS a) Mapping technologies used;	The maps prepared for the plan won a national cartography award in 2005 by the Canadian Cartographic Association (CCA). The plan also won the MNR's People Recognizing Innovation Dedication and Enthusiasm (PRIDE) award in 2007. A large spatial Indigenous Knowledge Database was constructed, drawn from the input and experience of community Elders. A Vegetation Resource Inventory was used in combination with local and traditional knowledge to determine current and suitable caribou habitats.
b) Potential datasets / missing data;	The Indigenous Knowledge database is still undergoing construction.
c) Non-spatial data used;	Detailed caribou whereabouts were expressed graphically. Audio files exist from Elder workshops, trapper interviews and other community consultations.
d) Data used in plans and maps;	See spreadsheet

4. The Dehcho First Nation: Respect for the Land: the Dehcho land use plan (June 2, 2006)

Project title and date;	**Respect for the Land: The Dehcho Land Use Plan, June 2, 2006**
Availability	http://www.dehcholands.org/home.htm
Lead Aboriginal entity;	Dehcho First Nation
Partner organizations;	The plan was drafted by the Dehcho Land Use Planning Committee. It is pending approval by the governments of the Northwest Territories and Canada.
Project team members;	Heidi Wiebe, Paul Wilson, Monika Templin, Priscilla Canadien & Sophie Bonnetrouge. Note that a lot of GIS work was undertaken by Petr Cizek.
Scope of Project a) Geographic location;	The Dehcho territory is located in the southwest corner of the Northwest Territories. It is surrounded by the Sahtu Settlement Area and the Tlicho (Dogrib) Settlement Area to the north, the Treaty 8 territory to the east, Alberta (AB) and British Columbia (BC) to the south, and the Yukon Territory to the west. It covers approximately 215, 615 km2 and is home to approximately 7000 people. The Mackenzie River or Dehcho (meaning big river) dominates the landscape, carrying water from Great Slave Lake (Tucho) to the Mackenzie Delta.
b) Geographic scale of the plan;	This is a regional scale study, with most maps represented at 1:275,000. Land use zones are designated and displayed at finer scales, including management prescriptions at the site or operational level.
c) Main methodological approach;	Extensive research was initiated to document the ecological and cultural values of the Dehcho territory and the potential for various land uses – agriculture, tourism, oil and gas, mining and forestry (see Appendix 6). Dehcho First Nations also provided a summary of traditional land use and occupancy information from an extensive mapping project conducted between 1996 and 2002. An Economic Development Assessment Model was developed and research was undertaken to develop cumulative effects indicators and thresholds. Community consultations included an additional day to map community interests in forestry, tourism, oil and gas, mining, agriculture, discuss issues and clarify critical areas for Conservation (p. 87). Through an iterative mapping process, land use zones were developed to describe five key land categories and their primary use: (1) Conservation Zones; (2) Special Management Zones; (3) General Use Zones; (4) A Protected Areas Strategy Zone;

	and (5) A Special Infrastructure Corridors.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	The Dehcho Interim Measures Agreement (IMA) was signed in 2001 to address the concerns of the Dehcho First Nations regarding resource development pressures (in particular, the MacKenzie Valley pipeline development) within the Dehcho territory while they negotiate a Final Agreement (claim). In the interim period leading up to a final agreement, the IMA provides for significant Dehcho First Nations participation in land and water regulation in the Dehcho territory with the Northwest Territories. The Dehcho Land Use Planning Committee was established through the IMA with the mandate to develop a Land Use Plan for the Territory. Until there is a Final Agreement, the Plan will be implemented by the Parties under policy direction from the appropriate Ministers. Governments are expected to carry out their duties in conformity with the approved Land Use Plan. The land use restrictions will be implemented through a new set of land withdrawals under S.23 of the Territorial Lands Act. That is, all Conservation Zones and those Special Management Zones that prohibit certain land uses will be included in a new set of land withdrawals that will replace the existing ones (p.5). The Plan is intended to advance the negotiation of agreements on land, resources and governance between Canada, the GNWT and the Dehcho First Nation(s). Accordingly, approval and implementation of the Plan is without prejudice to any positions that may be taken, or agreements made in those negotiations.
Focus of the plan;	The purpose of the Plan is to promote the social, cultural and economic well being of residents and communities in the Dehcho territory, having regard for the interests of all Canadians (p.86).
GIS a) Mapping technologies used;	The reliance on GIS for this plan was quite substantive. 68 maps were included in the Background Report, ranging from the designated land use zones, mining, predicted temperature change, corridor density analyses and species habitats. A community mapping session was conducted and the resulting maps were digitized into a GIS. Most of the mapping was done in the community by Peter Cizek.
b) Potential datasets / missing data;	Data pertaining to mineral development potential studies are identified as gaps, possibly filled by completed Non-renewable Resource Assessments (NRA) and Mineral and Energy Resources Assessments (MERA). Up to date satellite photos would help with determining vegetation classifications and better depict caribou habitat. Food harvests are also mentioned as ideal datasets that could be tabulated for each community.
c) Non-spatial data used;	Models were used to assess the economic cost of not developing a specific resource site, and potential economic benefit to a

	community of doing so instead. Cumulative Effect Analyses were used to determine how developments such as roads and hydro-corridors interact with and impact wildlife populations. Community demographics, including future population and employment predictions were used substantially in the Background Report.
d) Data used in plans and maps;	See spreadsheet

5. Nunavut Planning Commission: *Keewatin Regional Land Use Plan* (June 20, 2000)

Project title and date;	**Keewatin Regional Land Use Plan June 20, 2000**
Availability	http://npc.nunavut.ca/eng/regions/Keewatin/getplan.html * Other land use plans from the Nunavut Planning Commission can also be found on the http://npc.nunavut.ca website by viewing each region
Lead Aboriginal entity;	Nunavut Planning Commission (NPC)
Partner organizations;	The plan was designed by the Nunavut Planning Commission and approved by the Governments of Nunavut and Canada.
Project team members;	Bob Lyall, Louis Pilakapsi, Peter Suwaksiork, Bob Aknavigak, Loseeosee Aipellie, Jobie Nutaraq and Akalayok Qavavau. Luke Suluk added mapping support.
Scope of Project a) Geographic location;	The southern boundary of the Keewatin planning region is the 60th parallel. However, it is acknowledged that Inuit in the Keewatin have an aboriginal interest in an area of northern Manitoba and northern Saskatchewan. It is also acknowledged that the Dene in northern Manitoba and Saskatchewan have an aboriginal interest in the southernmost part of the planning region. These interests have been reflected in the preparation of the plan and will be further defined through the land claim process. The western boundary of the planning region is the boundary of the Nunavut land claim settlement area (p.8).
b) Geographic scale of the plan;	The plan is regional in scope, with a recognition that impacts are not limited to the boundaries of the study area (e.g. air pollution from China and elsewhere).
c) Main methodological approach;	This regional land use plan is not like a municipal plan that allocates restrictive uses to specific land areas. Given the regional nature of the plan, and given the level of actual development and of resource data at the time, the former planning commission – which was created for the purposes of carrying out this work – decided that this method of resource and land use allocation for the Keewatin region was inappropriate (p.26). The NPC instead dealt with the major land and resource issues that were raised by the communities (e.g. non-renewable resource development should have no significant adverse effects on the environment, wildlife or wildlife habitat (p.55)), government and industry by proposing a series of recommended actions to be taken by governments, communities and land users. Note that this is a revised plan, with the original *Keewatin Regional Land Use Plan* drafted between 1989 and 1991, before the NLCA came into effect.

d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	The NPC is established under the NLCA, and the federal law called the Nunavut Land Claims Agreement Act. Under the NLCA, the NPC is responsible for land use planning in the NSA (p.23). The NPC is not a permitting agency; land use planning under the NLCA is a policy-making function whose regulatory effect is intended to be broad. This understanding of the NPC's mandate is confirmed by s. 11.3.1 of the NLCA, which defines a land use plan as a "document ... for the establishment of objectives and guidelines for short-term and long-term development" (p.2). However, it is important to note that all development project proposals must be reviewed by the NPC for conformity with land use plans (where they exist) before the Nunavut Impact Review Board can proceed with screening. (Part 3: s.12) The original plan was designed to be integrated with the *Nunavut Land Claim Agreement*. The NLCA is now being implemented and there is a requirement to ensure that all existing land use plans comply with its provisions. To that end, a process was developed to review this plan and ensure that it complied with the Agreement (p.2). The NPC's mandate under the NLCA is not only based on public policy, it is also based on the recognition of the treaty rights of Inuit (p.24).
Focus of the plan;	The primary purpose of land use planning in the Nunavut Settlement Area shall be to protect and promote the existing and future well being of those persons ordinarily resident and communities of the Nunavut Settlement Area taking into account the interests of all Canadians; special attention shall be devoted to protecting and promoting the existing and future well being of Inuit and Inuit Owned Lands (p.3).
GIS a) Mapping technologies used;	The plan focused more on broad issues and their recommendations, rather than landscape and cultural values of specific areas. As such, the plan did not use extensive mapping or data in the planning process. Contained within the plan are four maps: (1) spring walrus harvesting; (2) polar bear denning; (3) caribou calving grounds; and (4) heritage sites.
b) Potential datasets / missing data;	Community mapping sessions detailing archaeological camps, travel routes, migrations of wildlife were conducted. Data was also collected depicting abandoned mines and possibly contaminated sites requiring cleanup, which will be prioritized based on severity of pollution. Satellite photos suggesting wildlife habitats are also forthcoming.
c) Non-spatial data used;	Community demographics and projections were taken from Statistics Canada and Nunavut's Bureau of Statistics.
d) Data used in	See spreadsheet

plans and maps;	

6. Poplar River First Nation: *Asatiwisipe Aki Management Plan* (June, 2005)

Project title and date;	**Asatiwisipe Aki Management Plan June 2005**
Availability	http://www.poplarriverfirstnation.ca/poplar_river_land.htm
Lead Aboriginal entity;	Poplar River First Nation
Partner organizations;	the Anishinabek of Poplar River, with support from Whelan Enns Associates Inc., Hilderman Thomas Frank Cram Landscape Architecture & Planning (mapping and technical support), the Natural Resources Defence Council, and Manitoba Conservation and others.
Project team members;	The Land Management Plan Project involved a large team consisting of Ed Hudson, Sophia Rabliauskas, Noel Bruce, Ray Rabliauskas, Vera Mitchell, Kelsie Bruce, Irma Hudson, Alex Hudson, Cornelius Bruce, Arlene Bruce, Ernest Bruce, and Elders: Victor Bruce, Francis Valiquette, Marcel Valiquette, John C. McDonald, Albert Bittern, Abel Bruce, Alec Hudson Sr and Raymond Valiquette. The planning firm Hilderman Thomas Frank Cram was enlisted to help prepare the plan; specific credit was given to Art Hoole and Rob Nedotiafko.
Scope of Project a) Geographic location;	The plan addresses the entire 861,718 hectares of the Poplar River Anishinabek Traditional Territory, between 50 and 55 degrees latitude and extends East from Lake Winnipeg to nearly the Ontario border. The community of Poplar River is 400 km North of Winnipeg. The plan is largely a park management plan, seeking permanent protection of the area.
b) Geographic scale of the plan;	This is a regional land use plan, with maps grounded in the scale of 1:250,000.
c) Main methodological approach;	The plan describes the lands and resources from a cultural and biophysical perspective, combining local and scientific knowledge. The plan then presents management laws, provisions and policies for how these values are to be protected.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	This plan is an outcome of successive efforts by the Poplar River First Nation to assert its rights in the protection of its Traditional Territory. In 1998, Manitoba Government signed an MOU with the Assembly of Chiefs and the Manitoba Keewatinowi Okimakanak regarding protected areas. Through this agreement, Poplar River nominated protected lands in 1999. With interim protection in place, Poplar River initiated a management planning process to ensure the long-term protection and stewardship of the entire Traditional Territory. Most of the area is considered open provincial Crown lands with the interim protection of the park reserve in place until late 2009. The plan also serves as a supporting document in an application by

	the community for protection as a UNESCO Heritage conservation area.
Focus of the plan;	The goal of the plan is to protect the land from industrial developments and to sustain natural ecological processes for present and future generations (p.5). The plan has a strong conservation focus, with only small scale economic development supported in the vision. "The Traditional lands are to remain free of forestry, mining, hydro and other industrial developments (p.6)".
GIS a) Mapping technologies used;	Mapping was primarily used to inventory local environmental and cultural values. Some analysis was done where moose sightings and kill sites were overlaid and correlated with a provincial forest inventory to develop a moose habitat suitability index.
b) Potential datasets / missing data;	None mentioned.
c) Non-spatial data used;	Demographics were used to predict what the community makeup might be in the future. An extensive native species list and associated habitat condition is included in the plan's appendices.
d) Data used in plans and maps;	See spreadsheet

7. The Sahtu Land Use Planning Board: *Sahtu Land Use Plan Draft 1* (February, 2007)

Project title and date;	**The Sahtu Land Use Plan Draft 1 (February, 2007)**
Availability	http://www.sahtulanduseplan.org/website/web-content/index.html
Lead Aboriginal entity;	The Sahtu Land Use Planning Board was created by the Sahtu Dene and Metis Comprehensive Land Claim Agreement (Section 25.2) and empowered by the Mackenzie Valley Resource Management Act (Part 2). The Board is responsible for developing and implementing a land use plan for the Sahtu Settlement Area. The Sahtu Land Use Planning Board is an independent institution of public government.
Partner organizations;	The Sahtu Planning Board is comprised of two members nominated by the Sahtu Secretariat Inc. and one member nominated by each of the Territorial and Federal Governments. A chairperson is nominated by the other four members. Most of the mapping for the plan was supported by the Sahtu GIS Project. The Project was established to equally involve each of the co-management boards set up under the Sahtu Dene and Metis Comprehensive Land Claim Agreement (1993) and the Government of the Northwest Territories.
Project team members;	Planning Board: Barry Hunter (Senior Planner); Susan McKenzie (Natural Resources Specialist); Deborah Simmons (Community Liaison); Sahtu GIS Project: Alasdair Veitch, Environment and Natural Resources Government of the Northwest Territories Project Manager of the Sahtu GIS Project
Scope of Project a) Geographic location;	The plan is focused on balancing development and conservation interests in the region, which impacts several communities in a region comprised of 30 large watersheds.
b) Geographic scale of the plan;	The plan is regional in focus, organized into three Sahtu Settlement Area Districts: (1) Déline District; (2) K'ahsho Got'ine District; and, (3) Tulita District. The total Sahtu Settlement Area is 283,588k sq. km.
c) Main methodological approach;	The Sahtu Land Use Planning Board began its planning by working with communities, industry and other stakeholders to define their goals and visions and to identify issues. Meetings, open houses, workshops and household interviews were held with over 700 people from Sahtu communities, industry and environment groups. While the Sahtu Land Use Planning process is primarily community focused, the Board held discussions with resource and tourism industries, as well as environmental groups. The vast majority of

	people wanted to see a balance between development and conservation (p.10). Once the values were recorded and inventoried through mapping, the planning team then categorized the landscape into 3 main management zones: (1) Conservation Zone; (2) Special Management Zone; and, (3) Multiple Use Zone. Management directives were then created for what is, and is not, permitted in each zone with ecological and cultural justifications for each.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	This Sahtu Land Use Plan is established under the authority of the *Mackenzie Valley Resource Management Act* (1998), with the objectives and principles guided by the *Sahtu Dene and Metis Comprehensive Land Claim Agreement*. The Agreement introduced a new system of land and water management for the Sahtu settlement area. This is a system of co-operative management or co-management, aimed at ensuring direct and meaningful participation of Sahtu residents in the management and regulation of their land and resources. This is in contrast to the previous system where the Federal and Territorial Governments were the primary management authorities and Sahtu residents were largely excluded from decision-making about the land (p.10).
Focus of the plan;	Maintaining a balance between development and conservation was the most talked about vision. Residents saw the need to develop resources for the security of future generations. They also recognize that conservation is key to ensuring land is sustainable. This is largely reflected in the use of zoning to identify large areas to be set-aside for conservation priorities.
GIS a) Mapping technologies used;	The Board built a comprehensive library and Geographic Information System (GIS) in partnership with the Sahtu GIS Project that describes the natural, social, and cultural resources of the Sahtu. Land Use Mapping projects identified trails and types of land use. People were generous in providing detailed information, including identifying harvesting and cultural areas, providing traditional names and stories about their trips on the land (p.11). Note that the Sahtu GIS Project has also worked on an atlas for the region called, "*The Sahtu Atlas: Maps and Stories from the Sahtu Settlement Area in Canada's Northwest Territories*" (2005).
b) Potential datasets / missing data;	Wildlife, fish, caribou, bedrock geology, hydrocarbon potential, oil and gas licensing, and mineral potential maps were identified as needing additional work to inform the plan.
c) Non-spatial data used;	None to mention.
d) Data used in plans and maps;	See spreadsheet

8. The Prince Albert Grand Council: DRAFT Athabasca Land Use Plan, Stage 1 (March, 2006)

Project title and date;	**DRAFT Athabasca Land Use Plan, Stage 1**
Availability	http://www.environment.gov.sk.ca/Default.aspx?DN=77e08791-38ff-4b6c-bbd3-79c2af8320cc
Lead Aboriginal entity;	The Prince Albert Grand Council
Partner organizations;	The Athabasca land use plan represents a partnership between the Saskatchewan government and the seven Athabasca communities of Camsell Portage, Uranium City, Fond du Lac, Stony Rapids, Black Lake, Hatchet Lake and Wollaston Settlement. The partners have agreed to work together on the planning and management of land and renewable resources in the Athabasca region of northern Saskatchewan.
Project team members;	Athabasca Interim Advisory Panel members: Hatchet Lake: Paul Denechezhe, Phillip Josie, Angus Tsannie, the late Baptiste Besskkaystare, Adam Benoanie, Bart Tsannie Black Lake: Modest Bigeye, Ambrose Sandypoint, Billy Sandypoint, Donald Sayazie, Phillip Sayazie, Jimmy Laban, Antonette Donard Fond du Lac: Louie R. Mercredi, Billy Adam, Bart McDonald, Georgie McDonald, Leon Fern, the late August.Mercredi and Germain Adam Stony Rapids: The late Edwin Mercredi, Georges T. Mercredi Uranium City: Dennis Landan, James Augier, Jimmy Mercredi Wollaston Post: Terri Daniels Camsell Portage: Gabriel Stenne Canadian Parks and Wilderness Society: Alan Appleby Saskatchewan Mining Association: John Tosney Saskatchewan Northern Affairs: Dorothy MacAuley, Carol Rowlett Saskatchewan Environment: John Schisler, Dianne Allen Prince Albert Grand Council: Don Deranger, Edward Benoanie, Emile Hansen, Diane McDonald
Scope of Project a) Geographic	The planning area is located in the Northern-most part of the province of Saskatchewan. The Stage 1 planning area is a 50 km wide road

location;	corridor covering a 15,000 square kilometres. It includes the northern portion of Highway 905, and runs along both sides of the seasonal road from Points North to Stony Rapids, and the winter road between Stony Rapids and Fond du Lac. This plan does not affect Treaty and Aboriginal Rights, and allows existing dispositions to continue.
b) Geographic scale of the plan;	This study is unique in that the scale of the planning is set to a 50 km buffer (25 km on each side) along a road corridor (stage 1), encompassing 15,000 square kilometres of land and water. Stage 2 will add another 21,722 square kilometres and stage 3 will add 79,278 square kilometres. Combined, this is a large regional scale study affecting a large portion of Northern Saskatchewan.
c) Main methodological approach;	The Panel oversaw a diverse group of planners and residents in through a six stage planning process: (1) Initiation (meeting with communities, communication strategy, etc.); (2) definition of goals and objectives; (3) collection and analysis of information; (4) finding solutions that could resolve issues; (5) discuss and agree upon recommendations; and (6) write up and approval of the land use plan. It is worth noting that stage 3 brought saw the completion of an comprehensive traditional use and occupancy research initiative, where 415 people were interviewed (approximately 20% of the adult population) from the region This research resulted in a level of TLUO information unprecedented in Saskatchewan: 1100 map overlays with over 65,000 mapped sites and places and hundreds of hours of audio cassette recordings (Appendix 7). Issues were prioritized and specific actions and policies were developed to address each issue. Land use zoning was used as an outcome of layering multiple priority values onto the landscape. The zones are: (1) special management areas; (2) conservation areas; (3) community and infrastructure areas; and (4) multiple use areas. Within each zone, the Panel made recommendations regarding the permitted use of each area. Management and implementation recommendations were made to conclude the plan.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	In 1995, the Canadian Coast Guard eliminated dredging and navigational aids on the Athabasca River and Lake Athabasca, thereby making the barging of supplies into the region more difficult and uncertain. In response, the Canadian Coast Guard, the Athabasca communities and the Province worked together to build a new service road to the region. This opened in 1998. Given that this road would bring increased development and changes to land and water activities, Athabasca leadership and the Saskatchewan government developed The Agreement (see *Appendix 11*). It specifies the preparation of a land use plan that aims to minimize the negative impacts of development and increase the

	benefit to people in the region. It also specifies the establishment of a local management structure, exploring options for delegating the Minister's authority (p.18). The Agreement created an Interim Advisory Panel (IAP, the Panel), with the majority of seats allotted to people from the region. The Panel's role is to steer the development of the plan; this document is a product of their work. In signing *The Agreement*, the provincial government committed to explore options to delegate renewable resource management decisions to a local management structure (p.21). The plan has been approved by the Advisory Panel and widely supported by environmental and community groups; the plan is waiting approval from the Province of Saskatchewan.
Focus of the plan;	Planning for the region is conducted in three stages. The Stage 1 planning area covers a 15,000 km2 area, 25 km on each side of the Athabasca seasonal and winter road, including the northern portion of Highway 905. When a Stage 1 plan is finalized, the AMS will be established to manage the Stage 1 area and planning will commence for the Stage 2 area (21,722 km2). Stage 3 (79,278 km2) expands planning and management to the entire region after five years from the commencement of Stage 1 planning (p.18).
GIS a) Mapping technologies used;	Thousands of maps were created for this study, developed by the Grand Council, the Province, interest groups and consultants. Most groups used ArcView 3.x. CPAWS used a GIS to map areas of interest for potential new protected areas using an overlay technique looking at: (1) enduring features; (2) ecological factors; (3) ecological features; and (4) cultural use and occupancy. Buffers and corridors were mapped to ensure linkages and connections between protected areas.
b) Potential datasets / missing data;	None to mention.
c) Non-spatial data used;	Detailed background history of people and the region, with some population and census statistics discussed in the background documents. Other non-spatial information includes narrative on global warming, acid rain, abandoned mines and species inventories for the region.
d) Data used in plans and maps;	See spreadsheet

9. The Algonquins of Barriere Lake – Draft Report, Kiackinapikok Traditional Management Area (KTMA) Integrated Resource Management Plan (January, 2006)

Project title and date;	**Draft Report, Kiackinapikok Traditional Management Area (KTMA) Integrated Resource Management Plan**
Availability	The land use plan is unavailable to the public
Lead Aboriginal entity;	The Algonquins of Barriere Lake
Partner organizations;	This plan falls under the prevue of a trilateral agreement between the Algonquins of Barriere Lake, the Government of Canada and the Government of Quebec. Research and technical support for the plan was done in partnership with a variety of individuals and organizations, including Arbex Forest Resource Consultants (Arbex).
Project team members;	**Technical Team Members** Anne Bugnet ing.f. — MRN Bruce Byford R.P.F. — Arbex Ltd. Dorothy Dobrik — Arbex GIS Benoit Dion — MRNFQ Peter Douglas Elias Ph.D. — Advisor - Algonquins of Barriere Lake Hector Jerome — Algonquins of Barriere Lake Michel Segouin ing.f. — Produits Forestier Domtar Anouk Pohu ing.f. — MRN Michele Rodrick M.Sc.F. — Arbex GIS **Technical Team Advisors** Willie Nottaway — Algonquins of Barriere Lake Eugene Nottaway — Algonquins of Barriere Lake Jean-Paul Rat — Algonquins of Barriere Lake Michel Thusky — Algonquins of Barriere Lake Sue Roark-Calnek Ph.D. — SUNY Geneseo (Emerita) Russell Diabo — Advisor - Algonquins of Barriere Lake David Nahwegahbow — Advisor - Algonquins of Barriere Lake Pierre Larue ing.f. — MRNFQ **Plan Reviewers** Clifford Lincoln — Special Representative - Algonquins of Barriere Lake Chief Harry Wawatie — Algonquins of Barriere Lake Jean Fink — MRNFQ
Scope of Project a) Geographic	The Kiackinapikok TMA (KTMA) is located in the northwestern portion of the Trilateral Agreement Territory in northwestern

location;	Quebec. It centers approximately on the Reservoir Dozois at 47 30' latitude and 77 00' longitude. It encompasses 106,392 ha within the La Verendrye Wildlife Reserve, which includes the eastern part of the Reservoir Dozois, and it extends north to south from just north of Lac Kitchener to the southern tip of Baie La Verendrye of the Reservoir Dozois. East to west, Kiackinapikok extends from the northern edge of lac Barriere to the eastern shore of Lac Cocokwan. Highway 117 forms the southwest boundary of the TMA (p.12).
b) Geographic scale of the plan;	The geographic unit of this plan is based on a traditional management unit – one of 7 family-based management areas within the ABL Traditional Territory. These TMA's are consistent with watershed-scale studies, although the boundaries of this plan follow traditional administrative boundaries instead of height of land.
c) Main methodological approach;	The research is unique in Canada as it is the only study to fully integrate the usual habitat and biophysical studies with a comprehensive assessment of cultural research, including toponomy studies, use and occupancy research, social customs, traditional ecological knowledge, sensitive areas mapping (SAS), and harvest surveys. The study also takes into account an inventory and management of important species and their habitats, including moose, marten, snowshoe hare, ruffed grouse, pileated woodpecker, black bear, eagle and osprey, heron rookeries, spawning sites and rare species. The plan develops target operational goals for four themes: (1) traditional integrity; (2) sustainable development; (3) healthy forest ecosystems; and (4) diversity of use. Through a constraint-mapping approach, the study presents 5 scenarios regarding harvest restrictions, and management prescriptions for areas of concern. This plan is one of 7 integrated resource management plans drafted for each traditional management area. These plans have yet to be harmonized into a single Territory-wide management plan.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	In the early 90's, commercial forestry in the ABL territory came in direct conflict with the community's traditional uses and the need for sustainable management of habitat, lands and waters. To resolve this conflict, a deal was reached between the Algonquins and the Governments of Quebec and Canada called the *Trilateral Agreement*. Thought to be the first of its kind in North America, the *Agreement* set out a workplan and funding to create a 20-year Integrated Resource Management Plan (IRMP) that harmonized forestry operations with environmental concerns and the accommodation of traditional indigenous culture and activities for the Territory. These IRMP's are still in draft format and have yet

	to be fully adopted by Quebec and Canada.
Focus of the plan;	To provide for sustainable development of the Kiackinapikok (Gull Lake) Traditional Management Area, including its forest ecosystems and wildlife; to provide for the traditional integrity and development of the Algonquins of Barriere Lake (Mitchikanibikok Inik); and to provide for the economic interests of local and regional economies (p.l0). The plan balances cultural, environmental and economic interests, with a strong focus on setting forest management and forest development targets.
GIS a) Mapping technologies used;	Most of the data management, mapping and analysis for this study was done by Arbex Forest Resource Consultants in Ottawa using ESRI-based software. Additional scenario modeling was done using Remsoft software.
b) Potential datasets / missing data;	Refinements and testing of habitat models was identified as an area requiring additional study.
c) Non-spatial data used;	The plan incorporates information derived from a regional socio-economic studies, including extensive forest harvesting and forest economic valuations.
d) Data used in plans and maps;	See spreadsheet

10. The Tsleil-Waututh Nation – Indian River Watershed Integrated Land and Resource Management Plan (In Progress, 2008)

Project title and date;	**Indian River Watershed Integrated Land and Resource Management Plan**
Availability	The land use plan is unavailable to the public
Lead Aboriginal entity;	The Tsleil-Waututh Nation
Partner organizations;	The British Columbia Integrated Land Management Bureau
Project team members;	**Tsleil-Waututh First Nation** Chief Leah George-Wilson; Ernie George (Sr.); Richard George (Sr.); Michael George; Edward Thomas; Josh George; Jason Forsyth; Evan Stewart; Rita Negan; Pano Skrivanos; Dr. Doug Aberley; and Chris Knight **Province of British Columbia** **Integrated Lands Management Bureau** Peter Jones; Arlette Malcolm; ; Ministry of Forests and Range David Hails, Andre Germain Ministry of the Environment Jennifer McGuire
Scope of Project a) Geographic location;	The Indian River Watershed is the heart of the Traditional Territory of the Tsleil-Waututh. It is located at the head of the Indian Arm off of Burrard Inlet, 30 km Northeast of Vancouver, British Columbia. .
b) Geographic scale of the plan;	The *Plan* is set at the scale of the watershed at 21,882 hectares in size (*SRMP2 – Overview*).
c) Main methodological approach;	At the foundation of the *Plan* is the *Bioregional Atlas*, with close to 40 maps that tell the story of the watershed. Building on this comprehensive inventory, the *Plan* layers cultural values on top of watershed integrity and biodiversity values to develop a network of 'reserves' and land use zones, including a special management zone and an integrated forest management zone. The *Plan* sets out management objectives and actions for the protection of cultural and biodiversity values within these management zones, with additional sections looking at economic development opportunities and implementation mechanisms to help put the *Plan* into action.

	Specific topics addressed in the *Plan* include (*Agreement, 2005*): (1) identification of Tsleil-Waututh Nation cultural features, and strategies to manage or protect these features; (2) access management, including utility corridors; (3) protection and enhancement of salmonid habitat; (4) measures to conserve any red or blue-listed species, or regionally important wildlife; (5) identification of Tsleil-Waututh Nation economic opportunities including potential tourism opportunities, local energy supplies, and economic infrastructure; (6) identification of opportunities to improve forest productivity and the economic viability of forestry; (7) a forest health strategy; and, (8) mineral exploration and development.
d) Policy opening – why the plan was created and the policies in place to support the plan implementation;	The Indian River watershed is among the most heavily impacted areas in the Province. Historic logging practices, hydro transmission line construction and industrial activities in Burrard Inlet have had major adverse effects on the watersheds ecological integrity (*NTC Article Draft Feb 13-08*). In the late 1990's, the Tsleil-Waututh Nation (TWN) launched an initiative to bring together, Crown agencies and stakeholders that were active in the watershed. The initiative was aimed at bridging jurisdictional overlaps, increasing awareness of TWN traditional and contemporary cultural land use and occupancy, and to develop protocol agreements that fostered restoration of the watershed. As part of this initiative, the TWN brought these parties together at a landmark Watershed Restoration Conference in 1999. In December 2005, the Nation and the Province of BC signed a Partnership Agreement for the collaborative development of an integrated land and resource management plan for the watershed, led by the Nation. The Policy window for the creation of this plan came through the Government to Government process associated with the Sea to Sky Land and Resource Management Plan. Tsleil-Waututh saw these negotiations as an opportunity to place their longstanding vision for the Watershed into Action. To date, it is the only collaboration of its kind in the Province of British Columbia (*SRMP1-Introduction*).The *Plan* is currently being drafted.
Focus of the plan;	The purpose of the *Plan* is to: (1) identify a vision, values and goals for the watershed; (2) develop management objectives that are a showcase for sustainability; (3) clarify the direction of the Sea to Sky LRMP; and (4) incorporate Tsleil-Waututh interests into the Sea to Sky LRMP planning process (*SRMP1-Introduction*).

	The goal of the *Plan* is to address the following themes (*IRW Plan Structure Sept 11-07*): (1) cultural protection; (2) watershed integrity and restoration; (3) biodiversity protection; (4) economic opportunity creation; (5) safety and access facilitation; and (6) jurisdictional collaboration.
GIS a) Mapping technologies used;	All mapping for the *Bioregional Atlas* and the *Plan* was carried out by Tsleil-Waututh in the Treaty Lands and Resources Department (TLR). The TLR uses ESRI's ArcGIS software, supported by other graphics and design software. The data for the *Atlas* were gathered from a variety of sources, Traditional Government data and enriched with TWN land use and Occupancy information, Local knowledge and field reconnaissance. All maps generated during this process were reviewed by TWN elders, technical staff, leadership and community members. The maps created by the Tsleil-Waututh transcend traditional GIS-based maps, where the community has integrated text, illustrations and photos to tell stories using traditional cartographic tools. These maps become individual annotated bibliographies where all 'expert' knowledge (including local knowledge) is summarized by theme within the *Atlas*. When combined, the *Atlas* becomes a comprehensive knowledge bank to support planning and decision making.
b) Potential datasets / missing data;	More detailed hydro Riparian and assessment information.
c) Non-spatial data used;	The *Plan* and the *Bioregional Atlas* combine a wealth of non-spatial data, summarizing key findings in text and pictorial formats on the maps. Each map contains input from Tsleil-Waututh community members.
d) Data used in plans and maps;	See spreadsheet

Appendix 4

Data Review Spreadsheet

Appendix 5

Nunavut Planning Commission (NPC) RFP Geospatial Datasets

Nunavut Planning Commission (NPC) Request For Proposal Geospatial Datasets

The Nunavut Planning Commission (NPC) is an Institution of Public Government charged with preparing community-based land use plans which fulfill the objectives established by the Nunavut Land Claims Agreement (NLCA). The Nunavut Planning commission derives its mandate primarily from Article 11 of the NLCA. Its major responsibilities are to:

a) Establish broad planning policies, objectives and goals for the Nunavut Settlement Area in conjunction with the Government;
b) Develop, consistent with other provisions of this Article, land use plans that guide and direct resource use and development in the Nunavut Settlement Area; and
c) Generally, fulfill the objectives of the Agreement in the manner described, and in accordance with the general principles mentioned in Section 11.2.1, as well as such additional functions as may be agreed upon from time to time by Government and the DIO (NLCA 11.4.1).

The Keewatin Regional Land Use Plan chosen for this project was initially drafted between 1989 and 1991 before the NLCA came into affect, and after the signing of the NLCA the plan was quickly revised to meet certain criteria of the schedules seen in the NLCA. The NPC is currently initiation a land use planning process for all of Nunavut (the Nunavut Land Use Plan or NLUP), and is currently initiating data collection on key aspects of the Nunavut environment to facilitate discussions with communities and planning partners to ensure land use decisions are based on the best available information.

During initial conversation with the NPC about the UNA, their first reaction was not to participate mainly due to the fact that they were in the process of getting rid of the Keewatin Plan (the North Baffin and West Kitikmeot plans as well). Adrian Boyd, who is in charge of land use plan policy and content, suggested that they would feel more comfortable if the Project Team reviewed a number of Request for Proposals (RFP) issued on December 10, 2007 to include namely as the NPC has already performed a needs assessment, but the Project Team would be utilized to help identify data gaps, and to identify some of the sources of data previously identified by the NPC.

The three RFP's issued on December 10, 2007 are as follows:

RFP	**REFERENCE NUMBER**
Cumulative Impacts Management Framework	2007/08-02-CIMF
Wildlife Resource and Habitat Values	2007/08-03-WL
Socio-demographic and Economic Sector Analysis	2007/08-04-SDEA

In addition to the RFP's, NPC staff has also sent an excerpt from a draft document in November 2007 entitled "Nunavut Land Use Plan Research Areas" where they outline the type of information they want to be able to compile and discuss in the NLUP. Data and potential sources were identified and for the purpose of this project, an outline of the geospatial datasets are as follows:

DATASET	**SUBJECT**	**POTENTIAL SOURCE(S)**
Gravel	Community Infrastructure	Communities / CGS
Drinking Water	Community Infrastructure	Communities / CGS
Landfill	Community Infrastructure	Communities / CGS
Energy	Community Infrastructure	Communities / CGS
Transportation	Community Infrastructure	Communities / CGS
Communication / Utilities	Community Infrastructure	Communities / CGS
Harvesting areas (key species)	Traditional Use	Community Mapping Sessions
Cabins	Traditional Use	Community Mapping Sessions
Archaeological / historical sites	Traditional Use	Community Mapping Sessions

		Inuit Heritage Trust Prince of Wales Museum Can. Museum of Civilization
Inuit Owned Lands (IOL)	NLCA IOL	NTI, DIOs, communities
Federal / Territorial Parks	Conservation Protected Areas Areas of Interest	EC, GN Parks & Tourism Parks Canada, WWF Heritage Rivers, communities
IBP Sites	Conservation Protected Areas Areas of Interest	EC, GN Parks & Tourism Parks Canada, WWF Heritage Rivers, communities
Migratory Bird Sites	Conservation Protected Areas Areas of Interest	EC, GN Parks & Tourism Parks Canada, WWF Heritage Rivers, communities
Heritage Rivers	Conservation Protected Areas Areas of Interest	EC, GN Parks & Tourism Parks Canada, WWF Heritage Rivers, communities
AOI Community Protection	Conservation Protected Areas Areas of Interest	EC, GN Parks & Tourism Parks Canada, WWF Heritage Rivers, communities
Other Land Designations	Conservation Protected Areas Areas of Interest	EC, GN Parks & Tourism Parks Canada, WWF Heritage Rivers, communities
Habitat – Key species	Wildlife	NWMB, NPC Map Bios GN-DOE, CWS, DFO, Parks Canada, WWF, DU, Universities, IPY, Nunavut Research Institute
Critical areas – Key species	Wildlife	NWMB, NPC Map Bios GN-DOE, CWS, DFO, Parks Canada, WWF, DU, Universities, IPY, Nunavut Research Institute
Critical seasons – Key species	Wildlife	NWMB, NPC Map Bios GN-DOE, CWS, DFO, Parks Canada, WWF, DU, Universities, IPY, Nunavut Research Institute
Commercial Fish	Harvests	NWMB, Communities Existing Business
Commercial Wildlife	Harvests	NWMB, Communities Existing Business
Cruise ship (routes)	Tourism	Nunavut Tourism, Communities
Sport Hunting	Tourism	Nunavut Tourism, Communities
Guiding	Tourism	Nunavut Tourism, Communities
Sightseeing	Tourism	Nunavut Tourism, Communities
Aurora viewing	Tourism	Nunavut Tourism, Communities
Arctic Ecotourism	Tourism	Nunavut Tourism, Communities
Additional Sites (tourism?)	Tourism	Nunavut Tourism, Communities

Attractions?	Tourism	Nunavut Tourism, Communities
Terrestrial Shipping	Transportation	GN-EDT, Transport Canada CGS, NTCL, DIOS
Marine Shipping	Transportation	GN-EDT, Transport Canada CGS, NTCL, DIOS
Seasonal Routes	Transportation	GN-EDT, Transport Canada CGS, NTCL, DIOS
Gravel Locations	Granular Resources	Nunavut Geoscience, GN-EDT
Gravel Potential	Granular Resources	Nunavut Geoscience, GN-EDT
Communication	Communication / Power	GN-EDT, Qulliq Energy Corp.
Power Transmission	Communication / Power	GN-EDT, Qulliq Energy Corp
Utility Corridors	Communication / Power	GN-EDT, Qulliq Energy Corp
Mining Potential	Mining	NU Geoscience, INAC, NORMIN Database, Industry Associations
Existing Discoveries	Mining	NU Geoscience, INAC, NORMIN Database, Industry Associations
Oil & Gas Potential	Oil and Gas	NU Geosicence, CAPP INAC, NEB
Existing Discoveries	Oil and Gas	NU Geosicence, CAPP INAC, NEB
Hydro Potential	Energy	GN-EDT
Wind Potential	Energy	GN-EDT
Solar Potential	Energy	GN-EDT
Geothermal Potential	Energy	GN-EDT
Contaminated Sites	Waste Sites	INAC, EC, DND Communities
Cleaned Contaminated Sites	Waste Sites	

CGS - Dept of Community and Government Services, GN (Gov of Nunavut)
DIOs - Designated Inuit Organizations - this is NTI plus the 3 Regional Inuit Associations (RIAs) - Kitikmeot Inuit Association (KIA or KitIA), Kivalliq Inuit Association (KIA or KivIA), and Qikiqtani Inuit Association (QIA)
GN-DOE - Dept of Environment, GN
DU - Ducks Unlimited
GN-EDT - Dept of Economic Development and Transportation, GN

Cumulative Impacts Management Framework

The NPC's objective is to develop a Framework for Cumulative Impacts Management in Nunavut to serve as a basis for NPC cumulative impact referrals to NIRB, and which, when implemented through the Nunavut Land Use Plan, provides for a coordinated and systematic approach to cumulative impacts management in Nunavut, in conjunction with NIRB, the NWB, the Federal and Territorial Governments, and Inuit land managers.

GEOSPATIAL DATASET	**SUBJECT**	**POSSIBLE SOURCE**
Sensitive Areas	Development	Consultant to identify
Concentration	Development	Consultant to identify
Sensitive Seasons	Development	Consultant to identify

Wildlife Resource and Habitat Values

The NPC requires a consultant to research, compile and report on the wildlife resources and habitat values in Nunavut. The consultant will identify, collect and summarize written reports, data, maps and knowledge on the status and significance of wildlife resources; wildlife habitat values, issues and considerations for land use planning; existing and potential use of wildlife for commercial purposes; and research gaps and priorities. The consultant will compile all existing spatial wildlife resource and habitat data in Nunavut into a spatial database and produce maps illustrating critical wildlife habitat.

GEOSPATIAL DATASET	SUBJECT	POSSIBLE SOURCE
Fish	Present in Nunavut	Consultant to identify
Birds	Present in Nunavut	Consultant to identify
Aquatic wildlife	Present in Nunavut	Consultant to identify
Terrestrial wildlife	Present in Nunavut	Consultant to identify
Marine invertebrates	Present in Nunavut	Consultant to identify
Fish*	Inuit Subsistence	Consultant to identify
Wildlife*	Inuit Subsistence	Consultant to identify
Fish*	Commercially Viable	Consultant to identify
Wildlife*	Commercially Viable	Consultant to identify
Fish*	Important for Outfitting	Consultant to identify
Wildlife*	Important for Outfitting	Consultant to identify
Fish*	Importance for LUP	Consultant to identify
Wildlife*	Importance for LUP	Consultant to identify
Fish*	Special Status	Consultant to identify
Wildlife*	Special Status	Consultant to identify
Other Species	General desc. (distribution)	Consultant to identify
Wildlife	Current Commercial Activity	Consultant to identify
Wildlife	Seasonal Use Areas	Consultant to identify
Wildlife	Critical Wildlife Areas	Consultant to identify
Wildlife	Migration Routes	Consultant to identify
Land cover Classification	Land Cover	Consultant to identify
Wildlife	Habitat inventories	Consultant to identify
Habitat	Capability Analysis	Consultant to identify
Wildlife	Movements (scientific)	Consultant to identify
Wildlife	Habitat values	Consultant to identify
Wildlife	No Data	Consultant to identify
Wildlife	Data Gap	Consultant to identify
Wildlife	Inconclusive data	Consultant to identify

* This list must include at a minimum, caribou, polar bears, other bears (grizzly, black), seals (ringed, harp, bearded, and harbour), walrus, waterfowl, other migratory birds, fox, wolf, wolverine, char (including land-locked), trout, whitefish, whales (beluga, narwhal, and bowhead), muskox, and clams

Socio-demographic and Economic Sector Analysis

The NPC required the preparation of a literature review, socio-demographic forecast and analysis of economic opportunities and needs in Nunavut that will contribute to the information base to be utilized in the development of the Nunavut Land Use Plan

GEOSPATIAL DATASET	SUBJECT	POSSIBLE SOURCE
Existing Economic Use	Socio-Demographic / Economic	Consultant to identify

Future Opportunity	Socio-Demographic / Economic	Consultant to identify
Mining	Existing Economic Activity	Consultant to identify
Mining	Potential Economic Activity	Consultant to identify
Oil and Gas	Existing Economic Activity	Consultant to identify
Oil and Gas	Potential Economic Activity	Consultant to identify
Hydro	Existing Economic Activity	Consultant to identify
Hydro	Potential Economic Activity	Consultant to identify
Other Energy	Existing Economic Activity	Consultant to identify
Other Energy	Potential Economic Activity	Consultant to identify
Transportation / Shipping	Existing Economic Activity	Consultant to identify
Transportation / Shipping	Potential Economic Activity	Consultant to identify
Communication	Existing Economic Activity	Consultant to identify
Communication	Potential Economic Activity	Consultant to identify
Power Transmission	Existing Economic Activity	Consultant to identify
Power Transmission	Potential Economic Activity	Consultant to identify
Utility Corridors	Existing Economic Activity	Consultant to identify
Utility Corridors	Potential Economic Activity	Consultant to identify
Sport Hunting	Existing Economic Activity	Consultant to identify
Sport Hunting	Potential Economic Activity	Consultant to identify
Guiding	Existing Economic Activity	Consultant to identify
Guiding	Potential Economic Activity	Consultant to identify
Lodges	Existing Economic Activity	Consultant to identify
Lodges	Potential Economic Activity	Consultant to identify
Sightseeing	Existing Economic Activity	Consultant to identify
Sightseeing	Potential Economic Activity	Consultant to identify
Aurora Viewing	Existing Economic Activity	Consultant to identify
Aurora Viewing	Potential Economic Activity	Consultant to identify
Ecotourism	Existing Economic Activity	Consultant to identify
Ecotourism	Potential Economic Activity	Consultant to identify
Other Tourism Activities	Existing Economic Activity	Consultant to identify
Other Tourism Activities	Potential Economic Activity	Consultant to identify
Commercial Fisheries	Existing Economic Activity	Consultant to identify
Commercial Fisheries	Potential Economic Activity	Consultant to identify
Commercial Wildlife	Existing Economic Activity	Consultant to identify
Commercial Wildlife	Potential Economic Activity	Consultant to identify