

## Preliminary Information

Package of the

**NORTHERN GAS**

**PIPELINE PROJECT**



D012091

**Volume I**



**PRELIMINARY INFORMATION PACKAGE**

**FOR**

**THE NORTHERN GAS PIPELINE PROJECT**



**PRELIMINARY INFORMATION PACKAGE FOR THE  
NORTHERN GAS PIPELINE PROJECT**

**VOLUME I**

**TABLE OF CONTENTS**

I. INTRODUCTION .....	1
A. Project Description.....	1
B. Capital Structure.....	4
C. Consortium Approach .....	5
D. Aboriginal Ownership and Benefits.....	5
E. Tolls and Access.....	6
F. Alaska .....	7
G. Regulatory Matters.....	7
H. Conclusion .....	8
II. PROJECT OVERVIEW.....	9
A. Introduction.....	9
B. Corridor Selection Considerations .....	9
C. Selection of the Preferred Corridor .....	11
D. Considerations for Detailed Routing.....	12
III. EARLY PUBLIC NOTIFICATION AND CONSULTATION .....	14
A. Overview.....	14
B. Timelines for the Implementation of EPNC .....	15
1. Short Term .....	15
2. Long Term .....	15
C. Selected Comments and Responses .....	16
IV. PROJECT COMPONENTS AND FACILITIES .....	18

A. Description of the Project Components and Facilities.....	18
1. Components of the NGPP .....	18
(a) General Description .....	18
(b) Permanent Facilities.....	20
(c) Temporary Facilities and Infrastructure Related to Construction.....	21
(d) Project Capacity Plan and Standards .....	22
(e) Work Area Configuration .....	23
V. PROJECT LOCATION AND ACTIVITIES.....	24
A. Maps.....	24
B. Construction Plan .....	24
C. Construction Schedule.....	34
D. Key Activities Schedule.....	34
E. Proposed In-service Dates .....	34
F. Estimates of Material and Human Requirements .....	34
1. Material and Human Requirements .....	34
VI. SOCIAL, ECONOMIC AND CULTURAL ASSESSMENT .....	35
A. Social and Economic Effects of the Development of the NGPP .....	35
B. Overview of Current Territorial Aboriginal Jurisdictional, Administrative and Business Interests .....	35
1. Inuvialuit.....	35
2. Gwich'in.....	37
3. Sahtu .....	37
4. Deh Cho .....	39
5. Northern Alberta .....	40
C. Key Socio-economic Issues .....	40
1. Overview.....	40

2. Anticipated Benefits of the NGPP .....	42
(a) Capacity Building .....	42
(b) Direct Employment and Income Effects.....	43
(c) Land Sponsor Fees.....	43
(d) Business Opportunities, Partnerships and Spin-Offs .....	43
(e) Indirect Effects.....	45
(f) Induced Development Activities.....	45
(g) Economic Impact on Non-Aboriginal Peoples .....	45
VII. KEY ENVIRONMENTAL ISSUES.....	46
A. Introduction.....	46
B. Environmental Features – Physical and Biological Components Likely to be Affected by the NGPP .....	46
C. Proposed Project Scope.....	52
D. Key Issues affecting Design, Construction and Operation .....	53
1. Beaufort Offshore .....	53
2. Yukon Coastal Plain .....	54
3. Porcupine Plateau.....	55
4. Victoria and Albert Mountains .....	55
5. Peel Plateau.....	56
6. Mackenzie River Delta .....	57
7. Peel Plain .....	58
8. Anderson Plain.....	58
9. Franklin Mountains.....	59
10. Mackenzie Plain.....	60
11. Great Slave Plain.....	60
12. Alberta Plateau.....	61

13.	Fort Nelson Lowland .....	61
14.	Peace River Lowland .....	62
15.	Alberta Plain .....	63
	E. Scope of the Environmental Assessment Component of the Comprehensive Study .....	63
	F. Cumulative Effects Assessment .....	65
	VIII. SUMMARY .....	67

## **FIGURES:**

Figure 1	Location Map .....	3
Figure 2	Options to Corridor Selection Map .....	13
Figure 3	NGPP Construction Corridor and Physiographic Regions Map .....	25

## **TABLES:**

Table 1	Preliminary Project Schedule .....	19
Table 2	Project Capacity Plan .....	22
Table 3	Corridor Construction Regions and Issues .....	26
Table 4	Material and Manpower Requirements .....	34
Table 5	Environmental Features .....	46

## **APPENDICES:**

Appendix "A"	Glossary
Appendix "B"	Financing Letters
Appendix "C"	Early Public Notification and Consultation (EPNC) Contacts
Appendix "D"	Notice of Project
Appendix "E1"	Pipeline Construction Activity Schedule – Phase 1
Appendix "E2"	Pipeline Construction Activity Schedule – Phase 2
Appendix "F"	Community Profiles
Appendix "G"	Sensitive Areas

## **VOLUME II**

### **TABLE OF CONTENTS**

*NRGPC Northern Gas Pipeline Project Corridor Atlas*, Rev. 4, December 20, 2001

## **I. INTRODUCTION**

### **A. Project Description**

After three decades and several abortive attempts, the dream of bringing natural gas from both Prudhoe Bay, Alaska and the Mackenzie River Delta in the Northwest Territories to consumers in the rest of North America can now be realized. The combination of a growing demand for natural gas and the maturation of current reservoirs in both the U.S. and Canada has produced a renewed interest in the large reserves of natural gas available in the Arctic. All stakeholders, including current producers, exploration companies, end-users, governments and the people living in the North, support the early connection of these natural gas resources to Southern markets. ArctiGas Resources Limited Partnership<sup>#</sup>, as Program Manager on behalf of Northern Route Gas Pipeline Corporation<sup>#</sup>, is proposing the Northern Gas Pipeline Project<sup>#</sup>, which is a pipeline project, a financial structure, an ownership structure, and an organizational arrangement that will result in the lowest cost pipeline able to bring Alaskan North Slope and Northwest Territories natural gas to Southern markets. This pipeline will provide a much needed and dependable source of natural gas supply to downstream North American markets, while also creating an economically viable platform for long-term exploration and development of the natural gas reserves currently stranded in the Alaskan North Slope and Northern Canada.

Through construction sequencing, the proposed project will accommodate Canadian gas first, with Alaskan gas following approximately one year later. The pipeline will provide open access to all producers, and will help to generate jobs in Canada and the U.S., as it has been designed to utilize existing Canadian and U.S. steel mill capacity. In Canada, the project will also maximize the benefits to Northern Aboriginal<sup>#</sup> peoples: they will own the Canadian segment of the pipeline; they will receive completion and land sponsor fees pursuant to agreements creating the pipeline Right-of-Way<sup>#</sup>; and they will receive economic benefits through participation in the front-end technical services, construction and operation of the project.

The proposed project structure takes advantage of existing proven reserves, available economies of scale, proven technology and innovative cost control strategies. This approach will expedite construction of the pipeline and ensure long-term exploration and development despite volatile price markets. This, in turn, will provide for more stable investment and employment markets. This project will benefit both Canada and the U.S. in terms of an increased number of jobs, increased gas exploration and development, and a greater integrated natural gas supply.

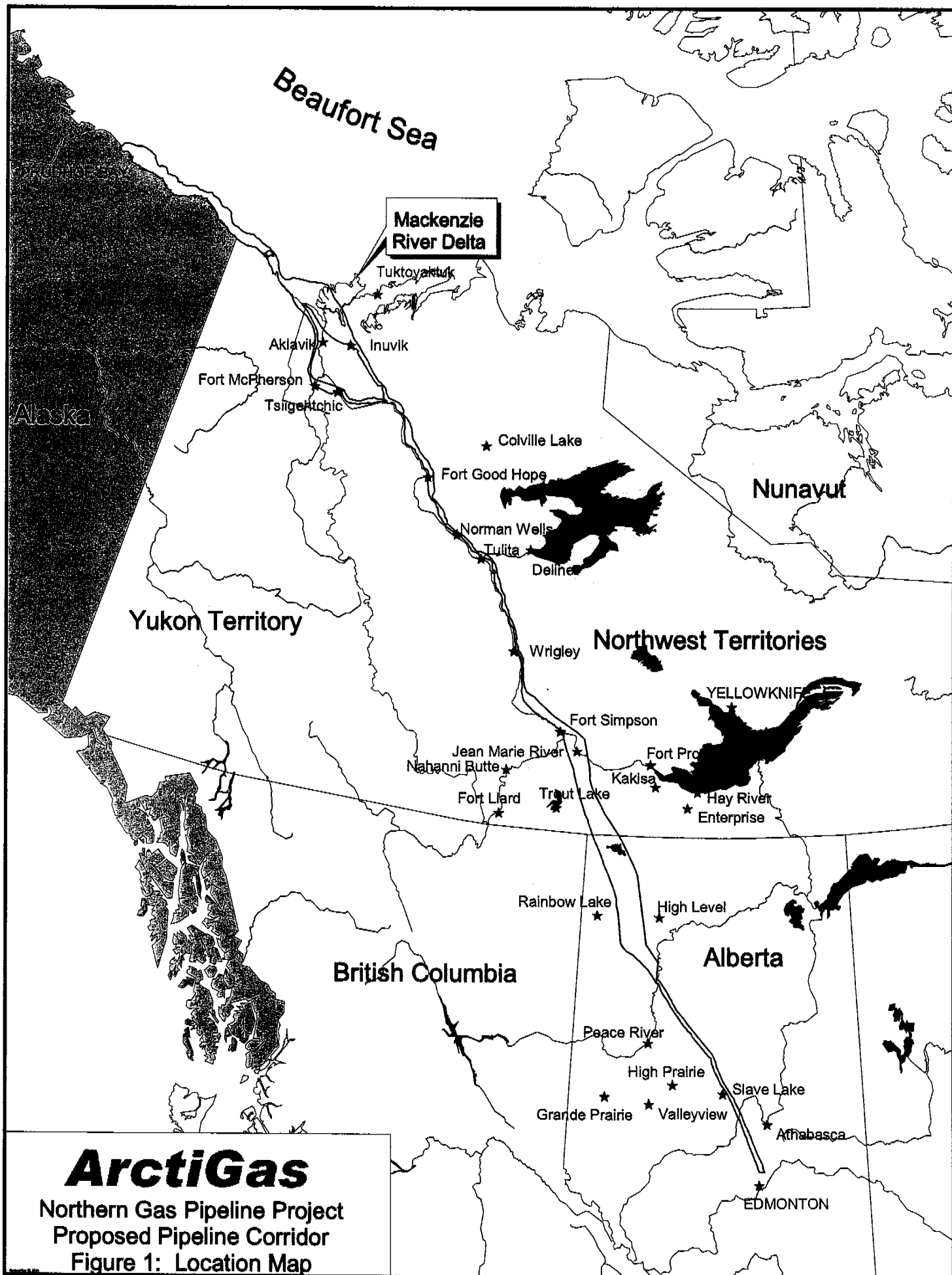
Northern Route Gas Pipeline Corporation and ArctiGas Resources Limited Partnership propose a pipeline corridor within which the final pipeline route will be established. The proposed corridor starts in the vicinity of Prudhoe Bay, proceeds offshore in the shallow Beaufort Sea to the Mackenzie River Delta, continues southeast in the Mackenzie River Valley into Alberta, to a point near Edmonton. From this location, the gas would be carried to final destinations by the existing and expanded pipeline networks. It has been established by ArctiGas Resources Limited Partnership on behalf of Northern Route Gas Pipeline Corporation, and confirmed by independent studies<sup>1</sup>, that this is the most economic and beneficial route for delivery of Alaskan

---

<sup>1</sup> Canadian Energy Research Institute, "A Comparison of Natural Gas Pipeline Options for the North", October 2000.



North Slope and Northern Canadian gas. This is a similar route to that proposed some twenty-five years ago by other entities, with the exception that at that time, the proposed pipeline would have been onshore from Prudhoe Bay to the Mackenzie River Delta. At that time, the Berger Commission (1977) recommended that the Yukon North Slope be protected as a National Park, and that no pipeline be permitted to be built onshore. Since then, thousands of kilometres of offshore pipelines have been built, including some in Arctic locations. Clearly, gas producers believe that construction of gas pipelines in the Arctic is feasible, otherwise they would not be spending millions of dollars on Arctic exploration. (Refer to Figure 1 – Location Map, page 3).



ArctiGas Resources Limited Partnership and its consultants believe that detailed environmental studies will demonstrate that the environmental impact of the offshore portion of the pipeline will be acceptable. The greater part of the Canadian segment of the offshore pipeline will be located at water depths ranging from 1.5 to 10 metres (~4 to 30 feet). The ocean floor will be trenched to a depth of approximately 5 metres (15 feet), the pipe will be laid in the trench and the excavated material will be used to backfill the trench. Construction will be scheduled so as not to interfere with recognized windows of wildlife migration and subsistence issues. Upon completion of construction, it is anticipated that nothing will be evident above the ocean floor. The Berger Commission conducted extensive hearings into, among other concerns, the environmental impact of a pipeline in the Mackenzie River Valley, and at that time concluded that there were no environmental obstacles to preclude a pipeline in the Mackenzie River Valley. Since then, an oil pipeline has been built from Norman Wells, Northwest Territories south into Alberta. Additionally, the Ikhil Gas Pipeline was built from the Ikhil gas field southwest to Inuvik. These projects have verified that environmental challenges can be managed.

## **B. Capital Structure**

In addition to proposing the least cost means of transporting northern gas, Northern Route Gas Pipeline Corporation and ArctiGas Resources Limited Partnership are proposing an ownership, organizational and financial structure that provides significant benefits over the traditional structures used for pipelines. The typical financial structure of pipelines is composed of approximately 30 to 40 percent equity financing while the remainder is debt financing. The equity component is required in large part to mitigate the risk associated with proven gas reserves being insufficient to pay for the full cost of the pipeline and its operations. Due to the risk, the equity component commands a higher rate of return than the interest on the debt. The interest demanded by bondholders is determined by the quality of the shipping commitments made to the pipeline owner.

The circumstances of the Alaskan North Slope gas reserves are, however, distinctly atypical. At the anticipated design capacity for the pipeline of 5.2 Bcf/d<sup>#</sup>, there are sufficient proven gas reserves to last longer than the term of any bond financing. The design capacity and proven reserves, together with the credit quality of the producers owning these reserves and the shippers who are expected to desire access to the project, make it possible to efficiently fund the capital cost of the proposed pipeline entirely with debt in the form of construction and development period notes and long-term, investment grade non-recourse revenue bonds backed by shippers commitments. In order to obtain the necessary credit ratings and approvals to support this financing approach, business terms will be governed by indentures, long-term tariff agreements and the Program Management Agreement<sup>#</sup> (as discussed below). Northern Route Gas Pipeline Corporation and ArctiGas Resources Limited Partnership are assured by respected investment bankers that financing the proposed pipeline by 100 percent debt is feasible (see Appendix "B" – Financing Letters).

This debt financing approach provides two significant benefits: the component of the pipeline tolls directed to cover capital costs will be lower with no high cost equity; and significant Aboriginal ownership of the Canadian segment of the pipeline can be facilitated without the need for equity investment by the Aboriginal owners of Northern Route Gas Pipeline Corporation. While unique for pipelines, this type of revenue bond financing is common for major

<sup>#</sup>This term is defined in Appendix "A" – Glossary

infrastructure projects such as airports, municipal utility works, toll roads, toll bridges and sports stadiums. Over one trillion dollars of this type of financing is currently in place in Canada and the United States. In most cases, the specific infrastructure project is proposed in response to public needs or economic development, and is developed, built and managed by a company specially created for that purpose. For example, Prince Edward Island's Confederation Bridge is privately managed, maintained and operated by Strait Crossing Development Inc.

### **C. Consortium Approach**

To provide stakeholders with an opportunity to be involved in decisions that are critical to their interests, key stakeholders will be offered ownership opportunities in ArctiGas Resources Limited Partnership or its affiliates. These participating stakeholders will comprise the ownership consortium for ArctiGas and its affiliates, which in turn, will have program management responsibilities for the pipeline project in both Canada and the U.S. ArctiGas Resources Limited Partnership and its affiliates expect that participating stakeholders will ultimately include Alaskan and Canadian producers, exploration companies, pipeline operators, financial institutions, end users, and Canadian and Alaskan Aboriginal businesses. It is planned that no single stakeholder will have majority control. The consortium will be committed to creating the lowest cost pipeline in the most efficient and responsible way possible.

Northern Route Gas Pipeline Corporation believes that participation by various stakeholders in ArctiGas Resources Limited Partnership or its affiliates will go a long way towards overcoming the inherent conflicts that may arise between stakeholders in both countries, while also benefiting from the expertise of the stakeholders. Existing pipeline companies often feel that they should own and control a pipeline since that is their core business. Producers often believe that their tolls pay for a pipeline, and therefore they should have control of that pipeline. Exploration companies hoping to find new gas reserves often feel that control of a pipeline by major producers puts them at risk, since they are competitors. Aboriginal businesses often state a need to ensure full participation in the economic benefits of a pipeline and in the critical issues affecting their lands and resources. The consortium approach will allow these conflicts to be more easily resolved, rather than using the courts, regulatory tribunals or political arenas. In the 1970's such conflicts led to the expenditure of hundreds of millions of dollars, culminating in a legislated non-economic pipeline that was never built. This proposal by Northern Route Gas Pipeline Corporation will avoid this happening again.

### **D. Aboriginal Ownership and Benefits**

In effect, Northern Route Gas Pipeline Corporation and ArctiGas Resources Limited Partnership are proposing that this pipeline project be considered a large scale infrastructure project for the common good of all the stakeholders. The stakeholders would include: producers wishing to monetize their reserves; exploration companies wanting an efficient transportation system to be in place; consumers needing secure, long-term supplies; pipeline companies that will take away the gas from the Edmonton, Alberta area pipeline interconnections; governments aiming to stimulate economic development and provide energy security; and persons and businesses along the proposed corridor.



Northern Route Gas Pipeline Corporation has entered into a Program Management Agreement with ArctiGas Resources Limited Partnership, whereby ArctiGas Resources Limited Partnership will provide program management services for the structuring, development, financing, permitting, engineering, construction, operation and eventual abandonment of the pipeline. Arctic Resources Company, Ltd., an affiliate of ArctiGas Resources Limited Partnership, expects to enter into similar agreements for the Alaskan segment of the pipeline with a to-be-formed entity that will similarly benefit Alaskans. The "owner" of the Canadian segment of pipeline will be Northern Route Gas Pipeline Corporation, a company incorporated under the *Canada Business Corporations Act*, whose ownership will be restricted to the various Aboriginal Landowners<sup>#</sup> along the proposed pipeline corridor. Alternatively, depending on financing and tax consideration, the Canadian segment of the pipeline may be owned by a limited partnership; Northern Route Gas Pipeline Corporation will act as general partner and the same Aboriginal Landowners will be limited partners.

Following this approach, Aboriginal interests along the corridor will be well represented, as they are of paramount importance to the success of the proposed pipeline project. The proposed pipeline project will maximize advantages to the shippers, gas reserves owners and Aboriginal Landowners, while simultaneously minimizing their economic risks to them as equity participation is not required. This approach allows them to reap the financial rewards of a pipeline that they have been involved with since inception, without requiring up front capital contributions that may be presently unavailable or difficult to obtain.

The Program Management Agreement sets out the parameters that are to be incorporated in the Benefits Plans<sup>#</sup> that Northern Route Gas Pipeline Corporation will negotiate with various Aboriginal communities. The Benefits Program<sup>#</sup> includes items such as employment opportunities, summer employment for students, employment support systems, business opportunities and tendering criteria. Aboriginal Landowners<sup>#</sup> will also negotiate and enter into Land Access Agreements<sup>#</sup> with Northern Route Gas Pipeline Corporation, whereby the required access to a Right-of-Way is granted. Under these Land Access Agreements, Landowners will receive land sponsor fees, which payments are calculated on a "per mcf<sup>#</sup>" basis based on the volumes of gas transported. The benefits of the proposed project to local Aboriginal groups are maximized by: their ownership of Northern Route Gas Pipeline Corporation; the completion fees and the land sponsor fees, the latter being paid throughout the life of the project; the opportunity to participate in the ownership of ArctiGas Resources Limited Partnership or its affiliates along with other stakeholders; the business and other opportunities associated with the Benefits Plans; and importantly, through the economic and development opportunities that will result from transporting both Alaskan and Canadian production. The proposed project is unique for these reasons.

#### **E. Tolls and Access**

Transportation tolls for the Northern Gas Pipeline Project will be attractive relative to alternative projects because of the low cost route and economies of scale. Additionally, capital costs will be reduced by the debt financing approach. As is the case with most infrastructure projects, user fees (in this case pipeline tolls) will be sufficient to cover all costs, since the project, net of all completion and land sponsor fees, will essentially be a non-profit operation. Involving shippers and other stakeholders in the consortium will allow these parties to have influence over those

<sup>#</sup>This term is defined in Appendix "A" – Glossary

costs and expenses to be recovered through tolls. They will also have input regarding the selection of various contractors and subcontractors (within the bounds of Canadian and U.S. law, and the Benefits Program). The largest component of the tolls will fund the interest and principal requirements of the debt and the operating costs of the pipeline. The tolls will also include an amount to cover the land sponsor fees payable to Aboriginal Landowners and the fees payable to ArctiGas Resources Limited Partnership for its services pursuant to the Program Management Agreement. The pipeline will be open access, allowing all producers to transport gas if there is capacity available. As a result of the ownership, debt financing and the consortium approach to the project, Northern Route Gas Pipeline Corporation expects the project will provide the lowest tolls possible for U.S. and Canadian shippers.

#### **F. Alaska**

The project that Northern Route Gas Pipeline Corporation is proposing will also transport Prudhoe Bay, Alaska gas to United States markets. This will provide security of supply in the United States, while also generating revenue to Alaskan producers, residents and government. The large amount of gas that will be transported from Alaska is expected to lead to more jobs in production and service industries, as well as increased exploration and development once a transportation system is in place.

#### **G. Regulatory Matters**

The purpose of this Preliminary Information Package<sup>#</sup> is to request that the National Energy Board<sup>#</sup> initiate activities as a Responsible Authority<sup>#</sup> for the Canadian segment of the proposed project in advance of receipt of Northern Route Gas Pipeline Corporation's application for a Certificate of Public Convenience and Necessity<sup>#</sup> pursuant to section 52 of the *National Energy Board Act*<sup>#</sup>.

All information requests by regulatory agencies should be directed to ArctiGas Resources Limited Partnership.

The contacts for the Northern Gas Pipeline Project are as follows:

- (a) for Northern Route Gas Pipeline Corporation:

#8 Mackenzie Drive  
P.O. Box 519  
Norman Wells, Northwest Territories  
X0E 0H0

Attention: Larry Tourangeau, President  
Telephone: (867) 587-4006  
Facsimile: (867) 587-4008

<sup>#</sup>This term is defined in Appendix "A" – Glossary

(b) for ArctiGas Resources Limited Partnership:

1230 Aquitaine Tower  
540 – 5th Avenue S.W.  
Calgary, Alberta  
T2P 0M2

Attention: Bruce Hall, Managing Director  
Telephone: (403) 920-0333  
Facsimile: (403) 920-0306

As an interprovincial and international work and undertaking, the project is subject to the jurisdiction of the National Energy Board in Canada and the appropriate U.S. regulatory agencies in the United States. Northern Route Gas Pipeline Corporation anticipates filing an application with the National Energy Board for a Certificate of Public Convenience and Necessity on or about Q3, 2003. ArctiGas Resources Limited Partnership anticipates that an application in respect of the U.S. segment of the project will be filed with the appropriate U.S. regulatory agencies on or about Q1, 2004. The application to the appropriate U.S. regulatory agencies is intended to be the first step in obtaining the necessary approvals for the U.S. segment of the project. Any references to the U.S. segment of the project contained herein are for explanation and illustration purposes only.

#### **H. Conclusion**

Northern Route Gas Pipeline Corporation believes that the corridor proposed in this Preliminary Information Package results in the lowest cost project and will contribute to lower tolls. The proposed corridor means that both U.S. and Canadian gas can be transported in the same system, providing significant economies of scale and lower tolls, thereby providing the greatest incentive for exploration and development of natural gas reserves along the pipeline corridor. This will result in the creation of the greatest number of long-term jobs in both Canada and Alaska.

Northern Route Gas Pipeline Corporation and ArctiGas Resources Limited Partnership are committed to bringing the project described herein to fruition. The information contained in this Preliminary Information Package provides an overview of Northern Route Gas Pipeline Corporation's proposal and illustrates the feasibility and viability of the proposed project. To that end, Northern Route Gas Pipeline Corporation and ArctiGas Resources Limited Partnership respectfully request that the National Energy Board, along with all other interested regulatory agencies, commence the creation of a scoping package for the Northern Gas Pipeline Project.

## **II. PROJECT OVERVIEW**

### **A. Introduction**

The Northern Gas Pipeline Project (the "NGPP" or the "Project") is a proposal to construct and operate a new natural gas pipeline from Prudhoe Bay, Alaska, to a point in the vicinity of Edmonton, Alberta, via the Mackenzie River Delta and Mackenzie River Valley, Northwest Territories. The proponent of the NGPP is Northern Route Gas Pipeline Corporation ("NRGPC"), a corporation organized pursuant to the laws of Canada. It is proposed that the shareholders of NRGPC will be representative entities of the Aboriginals through whose lands the NGPP will pass. NRGPC has entered into a Program Management Agreement ("PMA") with ArctiGas Resources Limited Partnership ("ArctiGas"), whereunder ArctiGas will manage all phases of the NGPP, on behalf of NRGPC. ArctiGas will also administer and manage a Benefits Program and various Land Access Agreements, all to be entered into between NRGPC and various Aboriginal representatives and Landowners.

The Canadian segment of the Project is about 2,400 km in length (Cross Delta alternative<sup>#</sup>), extending from the Canada/Alaska border in the Beaufort Sea to the Mackenzie River Delta near Inuvik, Northwest Territories, to the pipeline interconnections in Northern Alberta. The Prudhoe Bay offshore portion will be approximately 300 km in length, while the Canadian offshore portion will be approximately 200 km in length, for a total of 2,700 km (Cross Delta alternative). The initial design capacity of the NGPP will be up to 5.2 Bcf/d. The total initial capital cost is estimated at approximately U.S. \$7.8 billion (based on the Cross Delta alternative). Start-up for Phase 1<sup>#</sup> of the Project is projected to be Q3, 2007 for the Northwest Territories. Start-up for Phase 2<sup>#</sup> is projected to be Q3, 2008 for Alaska. (Refer to Table 1 – Preliminary Project Schedule, page 19).

### **B. Corridor Selection Considerations**

Numerous considerations that were employed for assessing the route by previously proposed projects are condensed into the list that follows. The NGPP employed the same considerations at the regional level of assessment because they remain relevant today and fulfill the current legislative requirements.

As a precondition of routing, Justice Thomas Berger wrote in the Berger Report<sup>#</sup> that "Routing must not be decided by the company simply in terms of engineering and cost. Rather, tentative locations and routes should be progressively refined by a process of successive company proposals and regulatory responses that take these factors into account."<sup>2</sup>

NRGPC's considerations for corridor selection are as follows:

- Gas producer and owner self-interest relative to opportunity for access to throughput;
- Pipeline owner fiscal self-interest relative to cost and payout;

---

<sup>2</sup> Berger, T.T., *Northern Frontier Northern Homeland. The Report on the Mackenzie Valley Pipeline Inquiry*, vol. 1 (1977a), (Ottawa: Minister of Supply and Services, 1977) at p. 8 [hereinafter Berger].

<sup>#</sup>This term is defined in Appendix "A" – Glossary



- Jurisdictional interest(s) of the Federal, Territorial, Provincial, Municipal and Aboriginal governments;
- Geo-political interest(s) of the Federal, Territorial, Provincial, Municipal and Aboriginal administrations;
- Public stakeholder interest; and
- Pipeline and facility construction feasibility relative to design, engineering, construction and operation.

As early as 1971, the Government of Canada and the private sector concluded that delivery of natural gas from Prudhoe Bay, the Mackenzie River Delta, and along the Mackenzie River Valley would be achieved within one of two corridors. The two corridors arrived at were:

- "i. Along the Mackenzie River Valley region (in a broad sense) from the Arctic coast to the provincial boundary, or
- ii. Across the Northern part of the Yukon Territory, either adjacent to the Arctic coast or throughout the Northern interior region, from the boundary of Alaska to the general vicinity of Fort McPherson, and thus to join the Mackenzie 'corridor'".<sup>3</sup>

Justice Berger concluded that:

"...oil and gas development in the Mackenzie Delta-Beaufort Sea Region is inevitable,"<sup>4</sup>

and:

"The Mackenzie Valley is a natural transportation route that has already seen several decades of industrial development".<sup>5</sup>

Furthermore, in 1971, four independent study groups<sup>6</sup> concluded that the reach of the Mackenzie Valley, roughly between Fort Simpson and Norman Wells on the east side of the Mackenzie River, was the route to bring Northern oil and gas to Southern markets. They also concluded that the route on the east side of the river was preferable to that on the west side because of amenable terrain, existing access, and infrastructure.

---

<sup>3</sup> Department of Indian Affairs and Northern Development, *Expanded Guidelines for Northern Pipelines*, as tabled in the House of Commons, June 28, 1972, at p. 9.

<sup>4</sup> Berger, Introduction at p. xvi.

<sup>5</sup> Berger, Introduction at p. xvi.

<sup>6</sup> PemCan Services, *Gas Systems Study Group Transportation Corridor Study: Final Report Physical Description - Technical Considerations*, vol. 11, copy 43 (1971), [MVPRL (1971)].

However, Justice Berger recommended that a corridor across the Arctic Coastal Plain not be constructed due to environmental effects and technical uncertainty. Similarly, he also recommended that no corridor be constructed across the outer Mackenzie Delta.<sup>7</sup>

### **C. Selection of the Preferred Corridor**

NRGPC reviewed the options listed below as part of the corridor selection process. NRGPC proposes a phased development to deliver natural gas from the areas of supply, the priority being determined by contracted delivery. This priority pre-supposes a natural order of interest in regional routing as follows:

#### **1. Option 1**

Prudhoe Bay southerly and adjunct to the Alaska Highway through Alaska, Yukon Territory, British Columbia, and overland to the vicinity of Edmonton.

Option 1 accommodates the interests of the Alaskan producers, the State of Alaska, and the governments of the Yukon Territory, British Columbia and Alberta. It does not address the delivery of Canadian gas from the Mackenzie River Delta, the owners and stakeholders in their communities or the government of the Northwest Territories. It is constructible and does not preclude future pipelines or associated infrastructure.

#### **2. Option 2**

Prudhoe Bay and eastward on the land (Coastal Plain or North Slope) of Alaska; tidal zone of Alaska and Yukon Territory; inshore or offshore in the Arctic Ocean of the Government of Canada and the United States to the Mackenzie River Delta (inner or outer Delta zones), Northwest Territories and southward within the Delta or adjacent to it, then southward in parallel to the Mackenzie River and overland to the vicinity of Edmonton (paralleling where possible the existing Enbridge and Rainbow pipelines).

Option 2 accommodates the delivery of Canadian gas from the Mackenzie River Delta and American gas from Prudhoe Bay, Alaska. It addresses the owners as stakeholders, and their associated communities (in contrast with Options 1 and 3). It also addresses the interests of the governments of the Northwest Territories and Alberta. It does not address the interests of the State of Alaska, Yukon Territory or British Columbia. It is constructible and the land portion does and will lend itself to future pipelines and associated infrastructure. The marine section of the pipeline faces limitations on future use.

#### **3. Option 3**

Regional Option 1 with a lateral pipeline connection adjunct to the Dempster Highway to the Mackenzie River Delta.

---

<sup>7</sup> Berger, Introduction at p. xii-xiii.

Option 3 accommodates the delivery of Canadian gas from the Mackenzie River Delta and American gas from Prudhoe Bay, Alaska. It does not address the owners as stakeholders and their associated communities. It addresses the interests of the State of Alaska, the governments of the Yukon Territory, the Northwest Territories, British Columbia and Alberta. The Dempster Highway lateral is constructible and would not preclude future pipelines or associated infrastructure.

Based on a review of relevant literature, preliminary cost, and other considerations, and for the purposes of discussion, NRGPC has selected the Option 2 corridor with the Cross Delta alternative for further consideration as the preferred corridor. There are many options within this selected Option 2 for routing and locating the Work Area<sup>#</sup>. (Refer to Figure 2 – Options to Corridor Selection Map, page 13).

#### **D. Considerations for Detailed Routing**

Construction feasibility and environmental and stakeholder considerations are inextricably connected in the marine and Mackenzie River Delta segments of any pipeline routing within the selected corridor. Stakeholder consultation in the land segment of the Northwest Territories is of paramount importance to NRGPC. The preferred alternative on land at this time is to parallel or otherwise occupy, for the purposes of construction and operation, existing linear developments.

NRGPC will relocate the Work Area at any location to minimize adverse effects, but will retain the fiscal practicality and construction integrity of the workspace. Some considerations that would prompt relocation are:

- Intervention with traditional knowledge and use of the land;
- Encroachment upon cultural and heritage sites;
- Geotechnical considerations;
- Scheduling considerations;
- Wildlife and fishery habitat<sup>#</sup> and population considerations;
- Listed or protected species<sup>#</sup>, communities or populations;
- Existing or proposed protected areas;
- Jurisdictional land use and bylaws; and
- Public, private or occupant encroachment.

<sup>#</sup>This term is defined in Appendix "A" – Glossary





### **III. EARLY PUBLIC NOTIFICATION AND CONSULTATION**

#### **A. Overview**

The purpose of NRGPC's early public notification and consultation ("EPNC")<sup>#</sup> program, that is required under Part II of the NEB's *Guidelines for Filing Requirements* ("GFR")<sup>#</sup> and the Canadian Environmental Assessment Agency's *Guide to the Preparation of a Comprehensive Study*, is to:

- Inform the public about the Project;
- Identify and incorporate public concerns and values into the Project;
- Provide an opportunity for all parties with an interest in or affected by the Project to contribute to and influence the Project;
- Identify issues and concerns of those stakeholders potentially affected by the Project and resolve such issues and concerns;
- Seek public input into the Environmental Assessment<sup>#</sup> and socio-economic impact assessment; and
- Seek public input into the route selection.

The recognizable benefits to NRGPC of the EPNC, with its maximized level of public involvement, are:

- Strengthening the quality and credibility of an Environmental Assessment;
- Identifying and addressing concerns of the people;
- Understanding what is important to people affected by the Project;
- Sourcing local and traditional knowledge that could impact or be impacted by the Project;
- Collecting data for socio-economic issues;
- Informing people of project plans in their areas and the potential impact of the plans and Project;
- Identifying options for resolutions of concerns;
- Establishing a visible commitment regarding public involvement;
- Building credibility and trust to arrive at consensus;
- Reducing the possibility of public concerns that could prolong approval or implementation phases;
- Ensuring that community needs and preferences are met; and
- Better designing a publicly acceptable Project.

NRGPC and ArctiGas have already conducted frequent and meaningful consultations that will continue through all phases of the NGPP. The consultation techniques have included: one-on-one meetings; phone calls; correspondence; council meetings; U.S. Senate presentations; governmental agency meetings; business meetings; industry meetings; community meetings; public open house meetings; information sheets; project booklets; a web site; press briefings; and other media announcements.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

In compliance with Canadian EPNC requirements, NRGPC and ArctiGas have identified numerous stakeholders, including impacted communities, Landowners, trapper associations, communities, Aboriginal councils and representative entities, local businesses, environmental groups, federal, provincial, territorial and municipal governments, community land agencies, and adjacent Landowners. Since the NGPP traverses several boundaries and borders (provincial, territorial, and federal), the National Energy Board ("NEB") has been identified as the lead federal agency to with whom this Preliminary Information Package will be filed.

Forrest E. Hoglund, Hon. Harvie Andre, Dr. Bruce Hall, Bob Murphy and Sam Judge, all representatives of ArctiGas and its affiliates, and proponents of the Project, began documenting public consultations as early as June 1999. The focus of their EPNC was to introduce the NGPP to industry, elected officials, community leaders, government officials and agencies and the media in both Canada and the United States. As the NGPP became more defined, there was a concerted effort to convey details to stakeholders. These efforts included identifying and contacting the various local agencies and land corporations, meeting with Aboriginal councils and representative entities, and hosting and attending public meetings in various communities. A list of stakeholders contacted and communities visited in the EPNC process is set out in Appendix "C" – Early Public Notification and Consultation (EPNC) Contacts. Additional communities and stakeholders will be consulted throughout the ongoing EPNC process. Attached as Appendix "D" is the Project Notice, which ArctiGas, on behalf of NRGPC, began distributing to the stakeholders of the NGPP in 2001.

## **B. Timelines for the Implementation of EPNC**

### **1. Short Term**

In the short term, NRGPC and ArctiGas will continue with the EPNC until the Certificate of Public Convenience and Necessity ("CPCN") application is filed with the NEB. After that time, consultation will continue as discussed below. As the Project develops, significantly more input and direction will be received from the Aboriginal and non-Aboriginal stakeholders along the proposed pipeline corridor. Increased participation in the Project will assist NRGPC and ArctiGas to identify additional stakeholders and to provide appropriate responses to these stakeholders regarding their issues and concerns.

All required regulatory notifications (NEB Section 87 notices, for example) will be delivered in a timely, proactive manner.

### **2. Long Term**

Throughout the regulatory review and approval process and the Project construction, operation, and eventual abandonment, NRGPC and ArctiGas will continue the consultation process. When required, NRGPC and ArctiGas will also perform public notification and consultation activities with any newly identified stakeholders.

Ongoing and increasing support for the Project is expected to translate into more effective communication with all stakeholders. Stakeholders have requested that NRGPC emphasize,

within the EPNC process, communication of the Project to the young people. Achieving this goal will be a cornerstone of the ongoing EPNC process.

### **C. Selected Comments and Responses**

The following is a summary of the major comments identified through the EPNC process to date and NRGPC's and ArctiGas' responses:

- **The pipeline Project must be economical on its own merits.** NRGPC agrees.
- **The pipeline could encourage oil and gas exploration activities along the corridor.** NRGPC believes that such a result is likely.
- **Will the routing parallel the existing pipeline?** Yes, the routing will parallel the existing pipeline to the extent possible. There are areas where local concerns may dictate that existing pipelines should not be followed. Routing details for the proposed final pipeline location within the currently proposed corridor will be determined by NRGPC, following consultation with local communities.
- **What transportation options were assessed?** Options reviewed were: gas to liquids transportation, liquefied natural gas, Trans Alaska Pipeline System, mid-Alaska pipeline route, and minor variations of the proposed NGPP corridor.
- **What impact will the pipeline have on the Porcupine Caribou herd?** The NGPP corridor is along the Northern and coastal fringes of the herd's range.
- **What is the impact of the pipeline on marine species?** Field marine studies will be conducted to provide an understanding of any potential impacts. This information will also be applied to help determine any mitigative measures required to minimize any detrimental effects.
- **Will compression be required for the marine portion of the pipeline?** Current hydraulic analysis of the pipeline shows that intermediate compression is not required between Prudhoe Bay and landfall.
- **Is there a need for chillers or coolers along the pipeline?** Hydraulic analysis indicates that there may be a requirement for a gas cooling system to be installed during the Phase 2 Construction, prior to the final ramp-up of volumes of the Project.
- **Will communities be able to assist in the location of the final pipeline route?** Yes, communities will be able to assist in the location of the final pipeline route through direct input during the ongoing EPNC.
- **Can Aboriginal-owned entities own a pipeline?** Yes, Aboriginal-owned entities can own a pipeline as a shareholder of NRGPC. NRGPC was incorporated under the *Canada Business Corporations Act* for the purpose of being the owner of the NGPP.

- **Will the pipeline be constructed above or below ground?** Except where impractical, the pipeline will be buried. Locations such as compression stations and meter stations will be above ground.



## **IV. PROJECT COMPONENTS AND FACILITIES**

### **A. Description of the Project Components and Facilities**

#### **1. Components of the NGPP**

##### **(a) General Description**

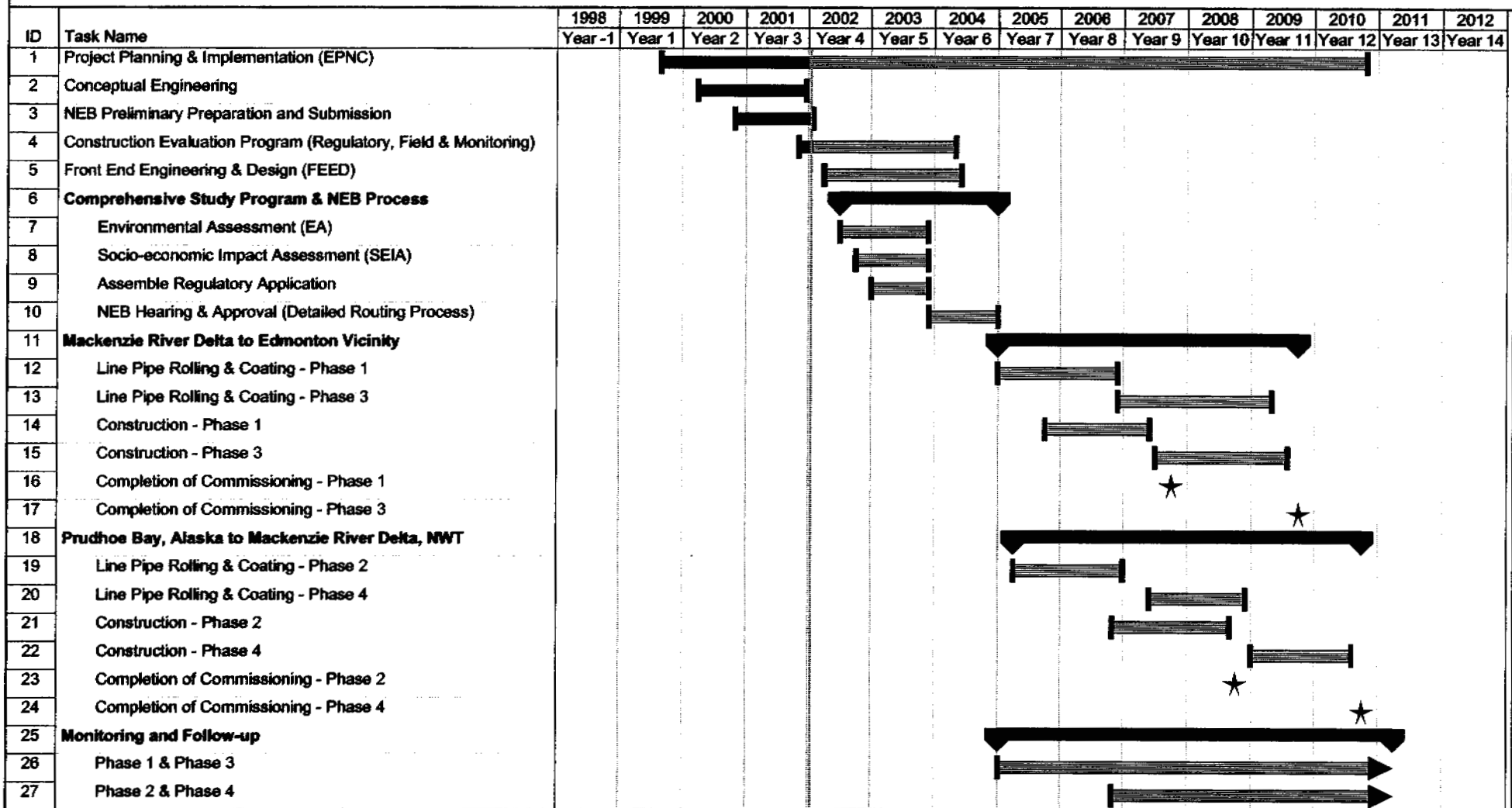
The proposed NGPP will be designed to accommodate natural gas from Prudhoe Bay, Alaska and the Northwest Territories, and deliver this gas to a point in the vicinity of Edmonton, Alberta. From this Alberta hub, existing and expanded pipeline systems will deliver gas to sales points throughout North America.

The pipeline system will consist of two parallel pipelines resulting in a completely looped system. The initial pipeline will be 914 mm (36-inch) outside diameter ("OD")<sup>#</sup>. The second pipeline will be 914 mm (36-inch) OD or larger, depending upon both supply and demand conditions and industry capabilities to construct larger diameter pipelines at that time. For a more detailed description of the NGPP, refer to Table 1 – Preliminary Project Schedule, page 19.

The pipeline will be constructed and put into service in sequential, overlapping phases. This schedule will accommodate continuous construction and logistics activities throughout the four phases, with one major mobilization and demobilization. The phases will be scheduled to match available production volumes as well as downstream market demands.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

## Northern Gas Pipeline Project Preliminary Project Schedule Table 1



Project: Northern Gas Pipeline Project  
Date: Sun 1/13/02 Rev. 12

Task



Progress



Milestone



Summary



**(b) Permanent Facilities**

**(i) Pipeline**

**(a) Offshore**

The extension from Prudhoe Bay to the Mackenzie River Delta will be two 914 mm (36-inch) OD pipelines. These pipelines will be located in the sea bottom at a sufficient depth to minimize the risk of damage to the pipeline and mitigate any other potential impacts. The exact alignment and its depth of cover are the subject of ongoing scientific evaluation, upcoming site investigations and field evaluations.

The Beaufort Offshore and Mackenzie River Delta segments of the pipeline will contain no intermediate valve assemblies, meter stations, or compressor stations. The pipeline will terminate at a pig receiving station designed to catch pipeline pigs and inspection tools, that will be launched from a pig launching facility located in Prudhoe Bay. The Beaufort Offshore and Mackenzie River Delta segments of the pipeline will be negatively buoyant. For details regarding the NGPP corridor refer to Volume II – *NRGPC Northern Gas Pipeline Project Corridor Atlas*.

**(b) Onshore**

The onshore segment of the pipeline will be buried, beginning at Inuvik, Northwest Territories and ending in the vicinity of Edmonton, Alberta. (Refer to Volume II – *NRGPC Northern Gas Pipeline Project Corridor Atlas*).

**(ii) Metering Facilities**

Custody transfer metering stations will be constructed at each receipt and delivery location on the pipeline system.

**(iii) Operations and Maintenance Facilities**

Operations and maintenance bases may be or have been proposed to be established in the Northwest Territories at Inuvik, Norman Wells and Fort Simpson, and in Alberta at Rainbow Lake and Edmonton. The pipeline operation will be controlled from an operations centre in Calgary and a backup site in Edmonton.

**(iv) Compressor Stations**

A compressor station will be established at Inuvik, Northwest Territories. From this point, booster compressor stations will be installed at appropriate intervals to maintain design flow. Electric and turbine driven stations will be evaluated as part of the front-end engineering and design. The amount of installed compression will be established after the initial "open season" nominations for pipeline transportation volumes.

It is not anticipated that the nominations obtained during the initial open season will require cooling of the gas stream to achieve design operating conditions. Should cooling facilities be required, they will be installed with Phase 2 Construction. Phase 3 Construction<sup>#</sup> and Phase 4 Construction<sup>#</sup>, with Prudhoe Bay volumes and additional Northwest Territories volumes coming on-stream, will require additional compression and gas cooling facilities. South of Fort Simpson, Northwest Territories, gas cooling may not be a technical requirement, however, it may be employed to achieve pipeline efficiency improvements.

**(v) Valve Assemblies, and Pig Launching and Receiving Facilities**

The pipeline will include pig launching and receiving facilities to allow for routine cleaning and inspection of the lines.

**(c) Temporary Facilities and Infrastructure Related to Construction**

**(i) Camps**

Construction personnel will be housed in temporary camps that will be strategically positioned along the pipeline to support the pipeline system construction. The camp facilities will permit the accommodation of all personnel associated with construction.

**(ii) Storage Areas**

Storage areas will be required along the Work Area to temporarily store items required to implement the NGPP, including: pipe; equipment; construction equipment; camp facilities; fuel; construction maintenance facilities; and miscellaneous items such as skids, granular material, sand bags, and concrete weights.

**(iii) Airstrips**

NRGPC intends to utilize existing airstrips and upgrade them as necessary; therefore, NRGPC does not intend to build new airstrips. If new airstrips are required, they will be constructed in similar fashion to winter roads with snow or ice base as the landing surface.

**(iv) Access and Work Pads**

NRGPC will occupy and/or construct a network of access. In the event that this access is required to support construction in the summer, it will be upgraded as necessary.

In the winter, NRGPC intends to construct work pads on frozen ground or use native materials to construct such work pads. When and if NRGPC is required to build on unfrozen ground, granular or native material based work pads will be utilized. A design for all work pads will be developed to preserve the integrity of the Work Area.

**(v) Roads**

Construction of a full-length winter road adjacent to the pipeline will be required for construction of the Project. The construction of all-weather roads in support of operations, maintenance, and

<sup>#</sup>This term is defined in Appendix "A" – Glossary

service will be required between communities, facilities, and support airfields. The costs and benefits of additional all-weather roads between Wrigley and Inuvik will be analysed and reviewed with other stakeholders.

**(d) Project Capacity Plan and Standards**

**(i) Project Capacity Plan**

The objective of the Project Capacity Plan is to provide industry with advance notice so that an orderly "ramp-up" of capacity may be initiated, in order to:

- Avoid a supply shock to natural gas markets;
- Provide time for development of takeaway capacity in Alberta;
- Provide earliest possible pipeline in-service dates;
- Provide latest dates for nomination commitments;
- Control costs; and
- Allow existing Canadian pipe manufacturers and pipeline contractors to participate to the maximum extent possible in the Project and associated infrastructure.

The pipeline system will be phased-in as follows with open seasons scheduled as shown below in NRGPC's Project Capacity Plan:

**Table 2 – Project Capacity Plan**

	<b>Phase</b>	<b>Open Season Date</b>	<b>Open Season Nomination</b>	<b>Pipeline In-service Date</b>	<b>Capacity Bcf/d</b>
1	MD to Edmonton	Q4 – 2003	MD	Q3 – 2007	0.8
2	PB to MD	Q4 – 2003	PB	Q3 – 2008	2.0
3	MD to Edmonton	Q4 – 2005	MD & PB	Q3 – 2009	0.4
4	PB to MD	Q4 – 2005	MD & PB	Q3 – 2010	2.0
	Note: MD = Mackenzie River Delta and Valley PB = Prudhoe Bay				

The preliminary design capacity for the Project is 5.2 Bcf/d, consisting of 4.0 Bcf/d from Alaska and 1.2 Bcf/d from the Northwest Territories based on two (2) 914 mm (36-inch) OD pipelines.

## **(ii) Standards**

The pipeline will be designed, constructed, and operated in accordance with the following: the *NEB Act* and all regulations promulgated thereunder; the CSA Z662 (latest edition) Oil and Gas Pipeline Systems; all other applicable Federal, Territorial, and Provincial Regulations; and any other applicable or necessary standards, specifications, laws, regulations, permits, approvals, consents, or licenses.

Primary referenced standards include:

- |                       |   |
|-----------------------|---|
| ● Line Pipe           | CSA Z245.1 (Latest Edition) Steel Line Pipe                 |
| ● Valves              | CSA Z245.15 (Latest Edition) Steel Valves                   |
| ● Fittings            | CSA Z245.11 (Latest Edition) Steel Fittings                 |
| ● Flanges             | CSA Z245.12 (Latest Edition) Flanges                        |
| ● Electrical          | CSA ZC22.1 (Latest Edition) Canadian Electrical Code Part 1 |
| ● Pipe Wall Thickness | CSA Z662 (Latest Edition)                                   |
| ● Compressor Stations | CSA Z662 (Latest Edition)                                   |

## **(e) Work Area Configuration**

### **(i) Offshore**

For the Canadian segment, NRGPC prefers to locate the marine segment of the Project within the in-shore zone of the Beaufort Sea. However, the Work Area configuration remains to be confirmed.

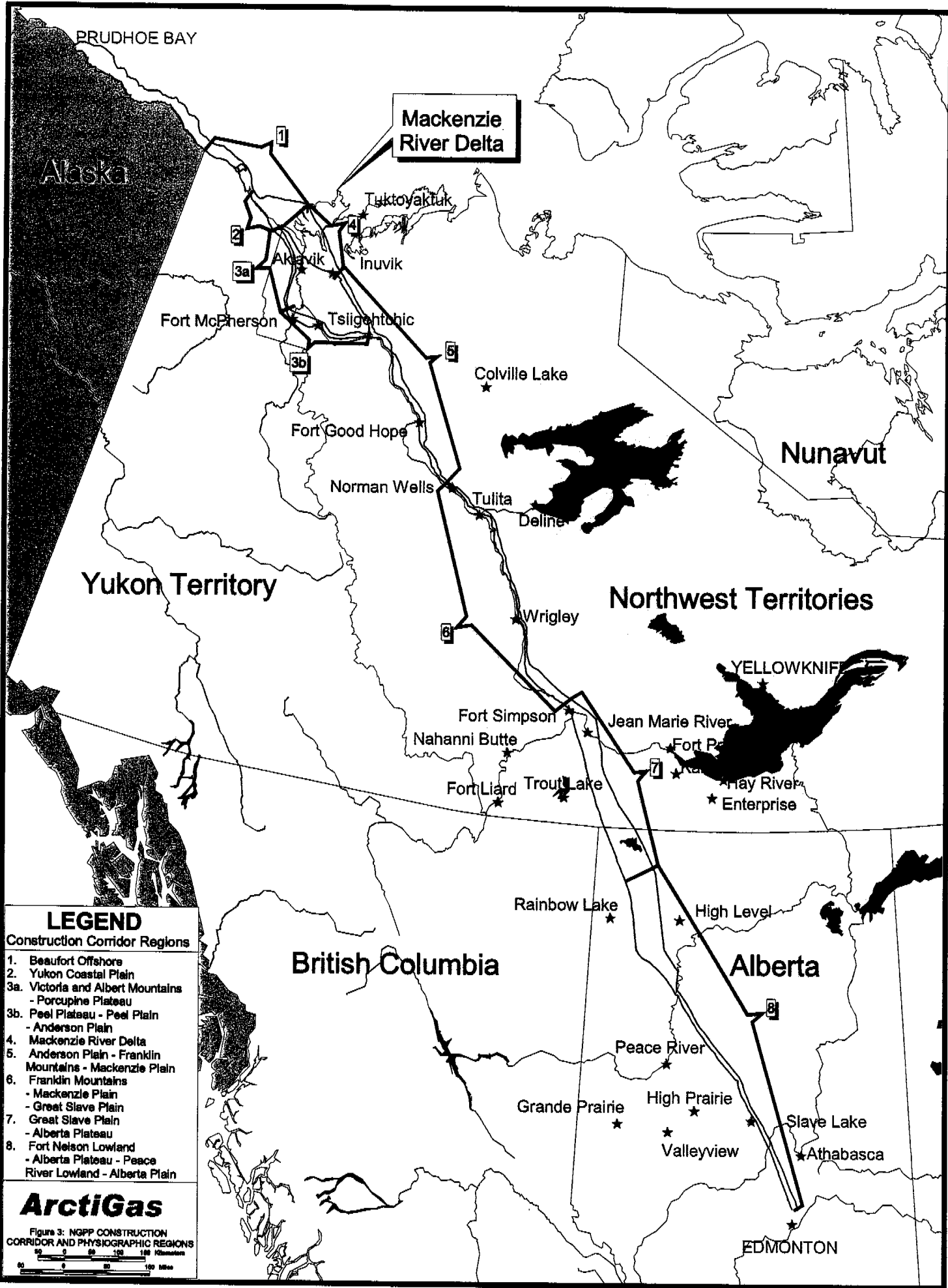
### **(ii) Onshore**

The Work Area comprises a conventional land easement or Right-of-Way and adjacent Temporary Workspace<sup>#</sup>. The Temporary Workspace will be occupied during construction and then revert to the Landowner once the conditions of the Landowner have been satisfied.

The onshore portion of the Project will require a Right-of-Way that is approximately 30 metres wide, comprised of 10 metres for each pipeline and a 10 metre spacing between the two. A further 10 metres of Temporary Workspace will be required on either side of the Right-of-Way for a total Work Area width of 50 metres. The Temporary Workspace will eventually revert to the Landowner. Additional Temporary Workspace may be required at certain locations, the specifics of which will be determined in advance of and described in the CPCN application.

<sup>#</sup>This term is defined in Appendix "A" – Glossary





## **V. PROJECT LOCATION AND ACTIVITIES**

### **A. Maps**

For detailed maps outlining the proposed corridor of the NGPP, please refer to the *NRGPC Northern Gas Pipeline Project Corridor Atlas*, Rev. 4, December 20, 2001, Volume II of this Preliminary Information Package.

### **B. Construction Plan**

For planning purposes, the NGPP corridor has been subdivided into eight (8) proposed corridor construction regions, as outlined in Table 3 – Corridor Construction Regions and Issues, page 26. The essential, but not all inclusive, issues to which the construction planning in each region will be directed are set out below. The physiographic regions are taken from the *National Atlas of Canada, 2001 ed.*<sup>8</sup>. Refer to Figure 3 – Construction and Physiographic Regions Map, page 25.

---

<sup>8</sup> Canada, *National Atlas of Canada*, 4th ed. (Natural Resources Canada, 1974).

The table below outlines the corridor construction regions, its construction issues and the corridor alternative associated with each corridor construction region. A more detailed description of the physiographic regions follows the table.

**Table 3 – Corridor Construction Regions and Issues**

<b>Corridor Construction Region</b>	<b>Physiographic Region</b>	<b>Construction Issues</b>	<b>Corridor Alternative Affected</b>
1	Beaufort Offshore	Ice Working Surface Location of Trench Depth of Burial Seasonal schedule re: land use and resources	Common
2	Yukon Coastal Plain	Workspace Access Permafrost <sup>#</sup> Watercourses Seasonal schedule re: land use and resources	West Delta
3a	Victoria and Albert Mountains – Porcupine Plateau	Wetland – Watercourses Permafrost Seasonal schedule re: land use and resources	West Delta
3b	Peel Plateau - Peel Plain - Anderson Plain	Wetland – Watercourses Permafrost Seasonal schedule re: land use and resources	West Delta
4	Mackenzie River Delta	Wetland – Watercourses Permafrost Seasonal schedule re: land use and resources	Cross Delta
5	Anderson Plain - Franklin Mountains – Mackenzie Plain	Wetland - Watercourses Permafrost Seasonal schedule re: land use and resources	Common

<sup>#</sup>This term is defined in Appendix "A" – Glossary

<b>Corridor Construction Region</b>	<b>Physiographic Region</b>	<b>Construction Issues</b>	<b>Corridor Alternative Affected</b>
6	Franklin Mountains – Mackenzie Plain - Great Slave Plain	Workspace Watercourses Permafrost Access Seasonal schedule re: land use and resources	Common
7	Great Slave Plain – Alberta Plateau	Workspace Wetland-Watercourses Access	Common
8	Fort Nelson Lowland – Alberta Plateau - Peace River Lowland - Alberta Plain	Access Permafrost Wetland-Watercourses	Common

#### **Corridor Construction Region #1 (Beaufort Offshore)**

This region will perhaps be the most challenging for the NGPP from a construction perspective and has the potential for the greatest environmental impacts. The Beaufort Sea constitutes the western part of the Arctic Ocean Basin, with the offshore construction corridor situated on the section known as the Beaufort Shelf. Each winter, the land fast ice<sup>#</sup> anchors itself to the shore and may extend seaward as far as the 20-metre water depth. Out to the 10-metre depth, the ice is generally level and stable enough that it has been used frequently over the past thirty years as a base for platform construction. Beyond the land fast ice is the shear zone<sup>#</sup> where the pack ice drifts with the ocean currents and produces a more dynamic and hazardous surface. The eastern part of this region is in proximity to the intersection of Beluga Whale Management Zones 1a and 2, while at the western end are Ivvavik National Park, on the Yukon Territory mainland, and Herschel Island Territorial Park, in the shallow offshore. This section of the Beaufort Sea is generally ice-free from August to October.

NRGPC has retained a team of scientific and construction experts to determine the best method for design and construction of the pipelines from Prudhoe Bay to landfall in the vicinity of Inuvik, Northwest Territories. NRGPC is proceeding with a series of field programs designed to gather further knowledge of construction techniques and to fully establish the required location of the offshore and the Mackenzie River Delta segments of the pipeline. It is anticipated that by conducting field programs, NRGPC will be able to utilize the gathered knowledge to validate construction techniques, resulting in greater efficiency. The objectives for this testing, and the terms of reference for the study program in this matter, are as follows:

- Develop pipe burial criteria;

<sup>#</sup>This term is defined in Appendix "A" – Glossary

- Identify and confirm the best winter primary construction and contingency techniques for shallow 1.5 to 3.0 metre depth; and
- Identify and confirm the best construction and contingency techniques for a depth of 3.0 to 20 metres or greater.

In this construction region, establishing a suitable uninterrupted ice-working surface will be critical in achieving construction schedule requirements. The location of the trench and depth of burial in relationship to underlying permafrost, water depth, and proximity to the shoreline will be fundamental in determining winter trenching techniques. The remoteness of the worksite is a major issue as it relates to logistics support.

### **Corridor Construction Region #2 (Yukon Coastal Plain, the eastern section of Arctic Coastal Plain)**

This region has numerous active braided flood plains where ice rich organic materials overlie granular deposits. It is entirely within the continuous permafrost<sup>#</sup> zone and has a fine-grained active layer<sup>#</sup> that is generally less than one metre thick. The surface is dominantly low-lying and poorly drained with up to 50 percent of its area occupied by patterned and polygonal fens. There are many watercourses along the corridor, but the only moderately large crossing will be at the Blow River. At present this region is part of the Yukon North Slope Special Conservation Area (where it falls within the area used by the Porcupine Caribou herd) and is a Designated Management Category D area under the Inuvik Inuvialuit Community Conservation Plan.

NRGPC anticipates the need for additional Temporary Workspace during construction due to complex topography within the region. As well, conservation of the permafrost layer during construction and thereafter is an issue. Appropriate crossing techniques for watercourses and ice rich slopes are also issues pertinent to both construction and the operational integrity of the pipelines. Limited access and the absence of infrastructure are logistical issues for construction. Finally, maintenance of traditional land use, including the Porcupine Caribou herd, will be an issue during construction.

Ditchline integrity (that is, thaw settlement) must be carefully monitored and maintained for several seasons after construction.

### **Corridor Construction Region #3a (Victoria & Albert Mountains (also referred to variously as the British-Richardson or Richardson Mountains) - Porcupine Plateau)**

This region extends southward along the western edge of the West Delta until the corridor turns eastward toward Fort McPherson. It encompasses the eastern fringes of the British-Richardson Mountain chain, where the terrain is steep to rolling with bedrock control and exposed gradients with drainage that is well entrenched in numerous steep sided, narrow valleys. In this region, unconsolidated materials are frozen with an active layer of less than one metre.

The Porcupine Plateau stretches across the rolling foothills of inter-mountain valleys and is entirely within the zone of continuous permafrost associated with patterned ground and an active layer of less than one metre thick (generally coarse, ice rich mineral materials). Numerous

<sup>#</sup>This term is defined in Appendix "A" – Glossary

braided floodplains are present, along with thin, discontinuous, hummocky and dissected glacial drift and organic deposits. This region is a Designated Management Category D area under the Inuvik Inuvialuit Community Conservation Plan and also falls within the Gwich'in Special Management Areas. In addition, it is mapped as part of the Primary Winter Range of the Porcupine Caribou herd. This factor may impose certain timing considerations on construction activities.

The issues pertinent to construction in this region are similar to Corridor Construction Region #2 (Yukon Coastal Plain), with a greater emphasis on addressing complex topography and associated ice rich materials. Bearing these issues in mind, detailed routing is also an issue of land use.

### **Corridor Construction Region #3b (Peel Plateau - Peel Plain - Anderson Plain)**

This region extends roughly from west of Fort McPherson, where the corridor deflects from its southerly path to run eastward, crossing both the Peel River and the Mackenzie River near Tsiigehtchic (Arctic Red River) and running along the north side of the Mackenzie River until the junction of the West Delta alternative<sup>#</sup> and the Cross Delta alternative is reached, south of Travaillant Lake.

The Peel Plateau consists of rolling foothills descending to the upper Mackenzie River Delta and is completely within the continuous permafrost zone with an active layer less than 1.2 metres. The surface is a complex of patterned organic veneers and blankets with exposed mineral material. There are numerous braided and incised floodplains within the Peel River drainage.

In contrast to the Plateau, the Peel Plain is a flat, poorly drained plain extending from Mountain River to the Mackenzie River Delta, situated southwest of the Mackenzie River. It is characterized by undulating morainal and organic deposits and is located in the continuous permafrost zone. Wetlands comprise 25 percent of the area in the North, increasing to 50 percent in the South. Well-drained areas are found in the Grandview Hills and a few morainic hills are found between Fort McPherson and Tsiigehtchic where elevations may reach 225 metres asl<sup>#</sup>.

The Anderson Plain, which lies on the north side of the Mackenzie River, is a broadly dissected, undulating terrain distinctly different from the Peel Plain. The highest parts are adjacent to the Mackenzie River, at a height of 225 metres asl, with a broad regional slope northward to 150 metres asl. A complex glacial history has produced an intricate array of frontal moraines, meltwater channels, outwash, glaciofluvial and glaciolacustrine deposits superimposed upon the irregular upland surface. Permafrost is extensive but discontinuous.

Peel Plateau, Peel Plain and Anderson Plain are all within the Gwich'in Special Management Areas. The Porcupine Caribou herd Primary Winter Range may extend into the western fringes of both the Peel Plateau and Peel Plain which, as noted previously, may impose certain timing restrictions on construction activities. To the east, the Anderson Plain constitutes the extreme western range of the Bluenose West Caribou herd; this may also generate timing constraints. The Rat River Protected Area lies within the Peel Plain, while the Travaillant Lake, Mackenzie-Tree River Protected Area is at the eastern end of this section of the Anderson Plain. Nagwichoonjik National Historic Site is bounded by Point Separation on the west (due north of

<sup>#</sup>This term is defined in Appendix "A" – Glossary



Tsiigehtchic) and the confluence of the Thunder River with the Mackenzie River on the east. It is a Gwich'in<sup>#</sup> traditional use and culturally significant area consisting of old and existing campsites, a stone quarry at Thunder Creek and networks of trails running inland from the north bank of the Mackenzie River.

Wetlands dominate the stretch between Fort McPherson and Tsiigehtchic, particularly on the south side of the Dempster highway, while major water crossings include the Rat River, Peel River, Mackenzie River, Travaillant River and, possibly, Arctic Red River (the latter depends on where the Mackenzie River crossing is situated).

Construction across frequent and extensive wetlands is an issue that is exacerbated by limited access to the work area. The optimum location to access and cross the Mackenzie River is also an issue. Frequent watercourses are intersected both east and west of the Mackenzie River. In the context of terrain and access, extra temporary workspace is also an issue.

#### **Corridor Construction Region #4 (Mackenzie River Delta)**

The Mackenzie River Delta, sea level from the outer marine to inter-tidal marine freshwater and freshwater shoreline, is in this region. It is a complex of shifting channels and uninterrupted lakes and is within the continuous permafrost zone. The presence and thickness of the active layer is subject to dynamic processes of marine and freshwater effects, thermal degradation and hydraulic deposition. This region is a Designated Management Category D area under the Inuvik Inuvialuit Community Conservation Plan and is in close proximity to the intersection of Beluga Whale Management Zones 1a and 2.

Here, as in Corridor Construction Region #1 (Beaufort Offshore), ArctiGas has initiated studies to determine the least-impact methods of constructing pipelines. Winter 2002 field studies are currently being scoped and will be conducted in February and March 2002. The objectives for these evaluations and the terms of reference for the study program in this matter are as follows:

- Examine various "on-land" (in permafrost) construction techniques;
- Examine various "in-channel" (shallow permafrost) construction techniques;
- Identify, evaluate and demonstrate least-impact techniques; and
- Conduct scientific evaluation to assess risks and provide thermal and stress design parameters for analysis.

The design of the field evaluation program has identified major construction issues such as construction and maintenance of a temporary work surface, and maintenance of separation of water bodies from the work surface and ultimately from the backfilled trench. ArctiGas is aware that existing patterns of land use must be maintained.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

### **Corridor Construction Region #5 (Anderson Plain – Franklin Mountains – Mackenzie Plain)**

Extending from Inuvik to Norman Wells is a unique feature described as the Northern Mackenzie River Terrace. This region will require winter traffic only with minimal grading of the Right-of-Way. Ditch line stabilization will be required on slopes and frost heave mitigation will be required at watercourse crossings. Aerial and horizontal directional drill crossing will be investigated as preferable techniques to open cut crossings. Major challenges in this region will be winter road usage, access, logistics and work progress.

The Anderson Plain is the principal landscape region between Inuvik and Norman Wells extending to approximately 50 km south of Fort Good Hope. At this point, and for another approximately 50 kilometres, the corridor passes through the Franklin Mountains before entering a lengthy section where it straddles the boundary between the Franklin Mountains to the east and the Mackenzie Plain to the west (this extends south to the Camsell Bend).

The Anderson Plain, lying on the east flank of the Mackenzie River, is a broadly dissected, undulating terrain unit. The highest elevations are adjacent to the Mackenzie River with a broad regional slope northward. A complex glacial history has produced an intricate array of frontal moraines, meltwater channels, outwash, glaciofluvial and glaciolacustrine deposits superimposed upon the irregular upland surface. Permafrost is extensive but discontinuous. There are notable occurrences of riverbank slumping and thaw-induced erosion present around Little Chicago and extensive areas of solifluction running south to Fort Good Hope.

To the south and east are the Franklin Mountains, extending from approximately halfway between Fort Good Hope and Norman Wells to the mouth of Willow Lake River where it enters the Mackenzie River south of Wrigley. Elevations range from 150 metres asl to 600 metres asl. The terrain is comprised of mountainous rocky outcrops dissected by steep, lineated slopes that are interspersed with areas of rocky plateaus, glacial drift, drumlinoid features, peat plateaus and smaller hummocky peat deposits. The near surface permafrost is discontinuous but extensive.

Closely associated with the Franklin Mountains is the Mackenzie Plain, which extends from Fort Good Hope to south of the Camsell Bend on the west side of the Mackenzie River and, for most of this distance, also occupies a narrow band on the east side of the Mackenzie River. It is a broad, undulating to rolling, drift-covered plain of low relief incised between the Franklin Mountains to the east and the Mackenzie Mountains to the west. Surficial materials are generally silty-clay to sandy-clay glaciolacustrine and glaciofluvial materials, ranging from flat along the river to steep scree slopes in the mountains. The terrain is approximately 50 percent wetlands, water logged peat plateaus with extensive but discontinuous near-surface permafrost (occurs between 0.5 and 1.0 metres), and expanses of well-drained mineral soils. From Wrigley south to the Camsell Bend, the valley widens and there is a change from steep to moderately sloping areas with permafrost at greater than 1 metre. The terrain is a mix of well-drained on the slopes to seasonally waterlogged in the flatter areas.

There are numerous small pothole lakes (and chains of lakes running parallel to the Mackenzie River) along the floodplain; much of the area is low-lying wetlands depending on distance east of the river. Significant watercourse crossings include the Thunder, Tieda, Loon, Indian Hare,

Tsintu, Donnelly, Great Bear, Saline, Ochre, River Between Two Mountains, Willow Lake and Dathalweelee Rivers.

The Northern extremity of this segment of the corridor is in the Gwich'in Special Management Areas whilst the remainder is under the purview of the Sahtu Dene and Metis Comprehensive Land Claim Agreement<sup>#</sup>. The section of the corridor encompassing the Anderson Plain constitutes the extreme western range of the Bluenose West Caribou herd; this may impose timing constraints on construction.

All points of existing access will be utilized to support construction. However, the complex topography will require additional temporary workspace. Integrity of permafrost and ice rich slopes are issues for construction and thereafter. Less frequent, but significant, wetlands and frequent watercourse crossings are issues for construction. Maintenance of traditional land use, including the Bluenose Caribou herd, is also an issue.

This section follows the corridor of the winter road, the proposed Mackenzie Highway, the northern section of the Enbridge Norman Wells oil pipeline and is adjacent to the Mackenzie River. All of these existing access points will be used as access to the Right-of-Way.

#### **Construction Corridor Region #6 (Franklin Mountains - Mackenzie Plain - Great Slave Plain)**

This region extends from Norman Wells to Fort Simpson and is distinct because the route will utilize linear disturbances that will afford the opportunity to prepare the existing work surface for construction.

Please see Corridor Construction Region #5 (Anderson Plain – Franklin Mountains – Mackenzie Plains) for a discussion of the corridor to its closest proximity to Camsell Bend. From this point the corridor turns eastward and continues along the north side of the Mackenzie River until the vicinity of Fort Simpson, where it crosses the Mackenzie River and resumes its southeasterly path.

Where the Mackenzie River loops to head east toward Great Slave Lake, the pipeline corridor passes from the Mackenzie Plain into the Great Slave Plain. The Great Slave Plain is a broad, level plain characterized by flat to rolling topography from 200 to 300 metres asl, although some of the plateaus may reach 500 metres asl in elevation. Surficial materials are peat-covered, clayey lacustrine deposits overlying till. The relative lack of relief results in generally poor drainage, and wetlands comprise about 30 percent of the surface area. Permafrost is present but intermittent.

The recently signed Deh Cho First Nations Framework Agreement<sup>#</sup> and Deh Cho First Nations Interim Measures Agreement<sup>#</sup> may influence development in this region. River crossings are few but include the Trail River and, of course, the Mackenzie River.

This region, except for a remote environment, and occurrences of complex topography and watercourses, reflects the more conventional construction practices associated with Northern

<sup>#</sup>This term is defined in Appendix "A" – Glossary

Alberta and British Columbia. Integrity of the workspace and land use will be facilitated by existing access to and along the work area.

### **Corridor Construction Region #7 (Great Slave Plain - Alberta Plateau)**

This region extends from Fort Simpson south and east to the Hay River crossing in Alberta. Although remoteness remains an issue, this is generally classified as conventional Northern Canada winter construction.

The Alberta Plateau is an undulating to rolling upland plain ranging between 400 and 500 metres asl (west to east). Loamy till/morainal deposits 10-20 metres thick in the uplands are interspersed with wetlands that make up 50 to 70 percent of the area. Permafrost is shallow and intermittent. Water crossings include the Jean Marie (possibly twice), Trout (possibly twice), Redknife (perhaps) and Petitot Rivers.

The recently signed Deh Cho First Nations Framework Agreement and Deh Cho First Nations Interim Measures Agreement may influence development in this region. Treaties 6 and 8 may also have an affect.

This region presents similar issues to Corridor Construction Region #6 (Franklin Mountains - Mackenzie Plain - Great Slave Plain), but in contrast, is more favourable in terms of topography, watercourses and permafrost and potentially involves less ice rich material. However, the region is remote and essentially without conventional access except the adjacent Enbridge Norman Wells Oil Pipeline right-of-way. Access problems are exacerbated by frequent and long areas of wetland.

### **Corridor Construction Region #8 (Fort Nelson Lowland - Alberta Plateau - Peace River Lowland - Alberta Plain)**

This region extends from the Hay River crossing to the vicinity of Edmonton, Alberta. No specific construction challenges are present in this region, therefore, winter and summer construction are both possible.

The Fort Nelson Lowland is a broad valley averaging 300 metres asl, intersecting the Alberta Plateau. It is characterized by thick organic materials overlying glaciolacustrine silts and clays. Drainage is generally poor due to the fine textures. Permafrost is shallow and intermittent where present.

The Peace River Lowland is gently undulating in surface expression. This unit slopes from 700 to 300 metres asl - west to east. Surface materials are primarily clayey lacustrine with some areas of fine tills and extensive glaciofluvial sands. Drainage is impeded on the finer textures.

The Alberta Plain is a low relief, gently undulating upland plain ranging between 400 and 500 metres asl. Surface materials are composed of thick, loamy till, clayey glaciolacustrine, sandy glaciofluvial and organic materials. The lack of relief results in poor drainage, thus organic wetlands make up 50 percent of the surface area. Permafrost is rare but may be found in the deeper peatlands.

The construction season will be predominantly winter due to the extensive occurrences of muskeg. The inherent issues are similar to those in Corridor Construction Region #7 (Great Slave Plain - Alberta Plateau). Several significant watercourses and areas of wetland are encountered. This region includes substantial areas of arable and improved agricultural land on which topsoil conservation and land use will be issues.

### **C. Construction Schedule**

Refer to Table 1 – Preliminary Project Schedule, page 19.

### **D. Key Activities Schedule**

Each construction phase will be comprised of different activities, which will differ between seasons and locations. For further details, refer to Appendix "E" – Pipeline Construction Activity Schedules, Phases 1 and 2.

### **E. Proposed In-service Dates**

Refer to Table 2 – Project Capacity Plan, page 22, for the proposed in-service dates for the NGPP.

### **F. Estimates of Material and Human Requirements**

#### **1. Material and Human Requirements**

Permanent materials will predominantly consist of pipe and compression equipment. Order of magnitude estimates of the major categories of materials required for the Canadian segment of the NGPP are provided below to help define the scope of the NGPP.

Preliminary estimates indicate that in the order of 50 million human work hours will be required to complete the NGPP. NRGPC will endeavour to maximize local opportunities and content as described under the socio-economic and benefits assessment. These figures are also provided in the table below.

**Table 4 – Material and Manpower Requirements**

<b>Phase</b>	<b>Approximate Pipe (Tonnes)</b>	<b>Approximate Maximum Total Compression Power Installed (kW)</b>	<b>Compressor Stations</b>	<b>Mainline Sectionalizing Valves</b>	<b>Manpower (hours)</b>
1	800,000	100,000	10	30	19 million
2	300,000	350,000	0	0	6 million
3	800,000	350,000	10	30	19 million
4	300,000	700,000	0	0	6 million

## **VI. SOCIAL, ECONOMIC AND CULTURAL ASSESSMENT**

### **A. Social and Economic Effects of the Development of the NGPP**

The social and economic effects of the NGPP will be significant and far-reaching because of the magnitude of the Project relative to the current economies and the need for harmonization of such a Project with both traditional and emerging economies.

NRGPC will prepare and submit to the NEB a Comprehensive Study<sup>#</sup> as required by the GFR. The Comprehensive Study will include a socio-economic assessment. NRGPC anticipates filing the Comprehensive Study during approximately Q3, 2003. The socio-economic assessment will be conducted so as to: define the scope of the assessment; identify the issues to be reviewed; identify data gaps; acquire necessary data; issue a response; and monitor and audit performance milestones. The proposed environmental and socio-economic assessment will consider the issues and concerns identified by the stakeholders through the public consultation program, in concert with the mandatory factors listed in the NEB's GFR, and issues and concerns identified through ongoing regulatory consultation with the various regulatory agencies involved.

### **B. Overview of Current Territorial Aboriginal Jurisdictional, Administrative and Business Interests**

NRGPC believes that the Aboriginal groups discussed below are the groups primarily affected by the Project. It should be noted that in addition to the institutions discussed below, there are also co-governing institutions who will receive copies of this preliminary information package.

#### **1. Inuvialuit**

In 1984, the Inuvialuit<sup>#</sup> became the first Aboriginal Canadians from the Northwest Territories to negotiate a comprehensive land claims settlement; it is titled the Inuvialuit Final Agreement ("IFA")<sup>#</sup>. In the IFA, the Inuvialuit retained a mix of surface ownership, petroleum rights and a variety of other rights and benefits. The Inuvialuit Regional Corporation ("IRC") was created to receive the lands and financial compensation for the Inuvialuit and to administer the IFA.

The IRC executes its corporate objectives through the Inuvialuit corporate group, comprised of a social development corporation, a land corporation, an investment corporation, a petroleum corporation and a development corporation. These corporations are owned entirely by the IRC. Additionally, the Inuvialuit Education Foundation sponsors many scholarship funds and apprenticeship programs directly related to Inuvialuit business opportunities.

The Inuvialuit corporate group continues to:

- Focus upon employment, education, training and business development for beneficiaries;
- Initiate programs to promote language, culture and traditional use practices;
- Ensure government compliance with the IFA, by instituting formal mechanisms;

<sup>#</sup>This term is defined in Appendix "A" – Glossary



- Communicate with and take direction from the beneficiaries through the community corporations; and
- Preserve the land claims capital by investing wisely for the benefit of future generations of Inuvialuit.

While there has been significant business development in the Inuvialuit Settlement Region ("ISR")<sup>#</sup> since the signing of the IFA, it is important to remember that a project such as the NGPP will have effects, despite the previous business success of the communities in the ISR. It is imperative that considerations of the impact of the NGPP on communities in the ISR not only focus on communities that are not currently involved in business ventures, but also recognize that there will be effects in other areas.

The following list includes the major Inuvialuit institutions that may be involved in any pipeline development, by participating in the deliberations that could affect the granting or refusal of approvals or permits:

- Inuvialuit Regional Corporation;
- Wildlife Management Advisory Council (North Slope);
- Wildlife Management Advisory Council (NWT);
- Fisheries Joint Management Committee;
- Sachs Harbour Hunters and Trappers Committee;
- Holman Island Hunters and Trappers Committee;
- Paulatuk Hunters and Trappers Committee;
- Tuktoyaktuk Hunters and Trappers Committee;
- Inuvik Hunters and Trappers Committee;
- Aklavik Hunters and Trappers Committee;
- Sachs Harbour Community Corporation;
- Holman Island Community Corporation;
- Paulatuk Community Corporation;
- Tuktoyaktuk Community Corporation;
- Inuvik Community Corporation; and
- Aklavik Community Corporation.

(Source, [www.irc.inuvialuit.com](http://www.irc.inuvialuit.com))

## **2. Gwich'in**

The Gwich'in Tribal Council signed the Gwich'in Comprehensive Land Claim Agreement<sup>#</sup> with the Government of Canada and the Government of the Northwest Territories in April, 1992. The Gwich'in generally reside in the communities of Fort McPherson, Tsiigehtchic (formerly Arctic Red River), Aklavik and Inuvik. The Gwich'in Settlement Area ("GSA")<sup>#</sup> borders the ISR to the north and the Sahtu Settlement Area ("SSA")<sup>#</sup> to the south.

The following list includes the major Gwich'in institutions that would be involved in any pipeline development activities, by participating in the deliberations that would affect granting or refusal of approvals or permits:

- Gwich'in Tribal Council;
- Gwich'in Land Administration;
- Gwich'in Land Use Planning Board;
- Gwich'in Renewable Resources Board;
- Nihtat Gwich'in Council (Inuvik);
- Inuvik Native Band;
- Renewable Resources Council (Inuvik);
- Ehdiiitaat Gwich'in Council (Aklavik);
- Aklavik Indian Band;
- Renewable Resources Council (Aklavik);
- Gwichya Gwich'in Council (Tsiigehtchic);
- Tsiigehtchic First Nation
- Renewable Resources Council (Tsiigehtchic);
- Tetlit Gwich'in Council (DGO);
- Tetlit Gwich'in Council Band; and
- Renewable Resources Council (Fort McPherson).

## **3. Sahtu**

The Sahtu Dene and Metis<sup>#</sup> signed a Comprehensive Land Claim Agreement in September, 1993. The communities of Colville Lake, Fort Good Hope, Tulita, Deline and Norman Wells are

<sup>#</sup>This terms is defined in Appendix "A" – Glossary

located within the Sahtu Settlement Area. The Comprehensive Land Claim Agreement provided the Sahtu Dene and Metis with significant surface and subsurface rights, significant policies and systems for the protection and administration of their traditional lands, and certain payments. The SSA borders the GSA on the north and the territory of Deh Cho<sup>#</sup> on the south.

The following list includes the major Sahtu institutions that might be involved in any pipeline development, by participating in the deliberations that could affect granting or refusal of approvals or permits:

- The Sahtu Secretariat Incorporated;
- Sahtu Dene Council;
- Sahtu Land Use Planning Board;
- Sahtu Renewable Resources Board;
- Yamoga Lands Corporation;
- Fort Good Hope Metis Nation Local #154 Land Corporation;
- Fort Good Hope Dene Band;
- Fort Good Hope Hunters and Trappers Association;
- Ayoni Keh Land Corporation;
- Behdzi Ahda First Nation;
- Ernie McDonald Land Corporation;
- Norman Wells Renewable Resources Council;
- Tulita Land Corporation;
- Fort Norman Metis Land Corporation;
- Tulita Dene Band;
- Tulita Renewable Resources Council;
- Déline Land Corporation;
- Déline Dene Council; and
- Déline Renewable Resources Council.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

#### **4. Deh Cho**

Deh Cho First Nations comprise all the Aboriginal peoples of the Deh Cho region that lies immediately to the south of the SSA. The Deh Cho signed the Deh Cho Framework Agreement and the Deh Cho Interim Measures Agreement with the Federal Government and the Government of the Northwest Territories on May 23, 2001. This agreement recognizes the Deh Cho Process<sup>#</sup> as a governance and land management process. Deh Cho First Nations is the Aboriginal government that represents the Deh Cho communities and their traditional land uses. The Deh Cho Assembly is comprised of elders, Deh Cho First Nations Leadership and representatives of community members, who are appointed or elected at large by the communities. The Deh Cho Assembly elects a Grand Chief to represent the members.

The Deh Cho are currently involved in ongoing negotiations with the federal government with respect to self-government and land management matters. At the Deh Cho Special Assembly held at Pehdzeh Ki, Northwest Territories from August 27 to August 30, 2001, the Deh Cho Resolution #01 was carried. This Resolution includes various provisions that may affect pipeline development, such as jurisdiction over lands, resource-revenue sharing, a requirement for support for the pipeline from harvesters, full Deh Cho participation in any Environmental Assessment, access fees for use of the land, and a requirement for the negotiation of Impact Benefit Agreements.

The following list includes the major Deh Cho organizations that may be involved in any pipeline development, by participating in the deliberations that could affect the approval process:

- Pehdzeh Ki First Nation (Wrigley);
- Lidlii Kue First Nations (Fort Simpson);
- Fort Simpson Metis Local #52;
- Jean Marie River First Nation;
- Sambaa Ké Dene Band (Trout Lake);
- Ka'a'gee Tu First Nation (Kakisa);
- Deh Gah Got'ie Dene Council (Fort Providence);
- Fort Providence Metis Local;
- Nahanni Butte First Nation;
- West Point First Nation (Hay River);
- Hay River Dene Band;
- Acho Dene Koe (Fort Liard);

<sup>#</sup>This term is defined in Appendix "A" – Glossary

- Fort Liard Metis Local #67; and
- Deh Cho First Nations (Fort Simpson).

## **5. Northern Alberta**

NRGPC is gathering information for the following groups, and will initiate information sessions with them regarding the Project:

- Treaty 8 Tribal Council in Alberta;
- Treaty 6 Tribal Council in Alberta;
- Metis Settlements General Council; and
- Metis Nation of Alberta Association.

## **C. Key Socio-economic Issues**

### **1. Overview**

The NGPP will have significant social and economic effects, some of which may have the potential to be far reaching because of the disproportionately large magnitude of the Project relative to the more modest current community services, infrastructure and economies. The discussion of key socio-economic issues will centre on these social and economic effects and the impact of the NGPP on local communities. Initially, NRGPC has identified impacted communities as those communities listed in Appendix "F" - Community Profiles.

The Berger Report emphasized the importance of the traditional Aboriginal economies and the need for balanced development of non-renewable and renewable resources. Since that time, Aboriginal peoples have undertaken extensive studies of traditional activities. Additionally, Aboriginal peoples have begun to move away from the traditional use economy. Consequently, the Aboriginal people have the capacity to participate in current resource development while maintaining traditional land use. NRGPC believes that the proposed Aboriginal ownership of the NGPP will provide unique opportunities for the consultation and influence that are sought after by the Aboriginal owners and stakeholders in respect of all aspects of the NGPP. This high level of involvement will help ensure that resource development is balanced by respect for Aboriginal traditional activities, economies and the land.

NRGPC and ArctiGas recognize the importance of Traditional Ecological Knowledge/Traditional Knowledge and Use ("TEK/TKU")<sup>#</sup> in all consultations with affected stakeholders. Further, NRGPC and ArctiGas intend to utilize all available TEK/TKU with regard to the NGPP and is endeavouring to obtain the same through the ongoing EPNC process. On behalf of NRGPC, ArctiGas is attempting to gain access to various databases and other sources of TEK/TKU that have been compiled by Aboriginal institutions; however, at the time of writing this Preliminary Information Package such access has not yet been granted.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

ArctiGas, on behalf of NRGPC, has identified environmentally or culturally sensitive sites and are in the process of attempting to utilize TEK/TKU to ascertain further sites of importance. The sensitive sites that have been identified to date are found in Section VII D of this Preliminary Information Package, and are marked with an "\*". For further information, refer to Appendix "G" - Sensitive Areas.

From the results of EPNC held to date, ArctiGas, on behalf of NRGPC, has identified the following issues relating to the Project:

- Managing cumulative effects in time and space on communities from the NGPP and associated petroleum production field development, particularly in the Mackenzie River Delta;
- Engaging multi-jurisdictions of Aboriginal and non-Aboriginal interests throughout the planning, construction and operation phases of the NGPP;
- Managing the response to the expectations of the impacted communities nurtured by years of anticipation, for cost and benefit, expense and reward associated with a Northern pipeline project;
- Verifying the capacity and willingness of existing impacted community social services and infrastructure to respond to the activities of NRGPC during planning, construction and operation phases of the NGPP;
- Responding to the lack of capacity of existing social and economic infrastructure to respond to the needs and activities of the NGPP;
- Managing the consequences of rapid growth;
- Monitoring the responses of the impacted communities to the opportunity for sustainable capacity building from investment by NRGPC in ancillary infrastructure (for example, transportation, communication, structures);
- Developing a mechanism for the continuous engagement of appropriate local and regional Aboriginal and non-Aboriginal organizations;
- Reconciling the disparate interests among impacted communities;
- Developing an effective benefit strategy that addresses disparate issues and interests ranging from local to regional, individual to corporate and inter-jurisdictional during project planning, construction and operation;
- Developing a mechanism for the harmonization of the PMA and the Land Access Agreements with comprehensive land claims agreements and the Deh Cho Process;
- Complying with the conditions of comprehensive land claims agreements and the Deh Cho Process; explicit conditions are consultation, traditional knowledge and use, special areas and

benefits associated with ownership, rights and regulatory jurisdiction/management and enforcement within comprehensive land claims agreements and the Deh Cho Process;

- Dealing with the legacy of short term and sustainable social and economic benefits from the NGPP;
- Creating opportunities for harmonization of the NGPP with traditional and emerging economies of the impacted communities; and
- NRGPC's managing the expectations from impacted communities for induced infrastructure as a consequence of the NGPP.

NRGPC and ArctiGas have agreed on the principles that should form the basis of Benefits Plans and will begin negotiations with the impacted communities in the near future.

The cornerstones of the Benefits Program will be:

- Compliance with comprehensive land claims agreements;
- Aboriginal participation;
- Consultation and participation;
- Conflict mediation;
- Employment; and
- Tracking of the benefits under the Benefits Program.

Furthermore, the Benefits Plans may/will address:

- Business opportunities;
- Employment initiatives;
- Student education and employment programs; and
- Training opportunities.

## **2. Anticipated Benefits of the NGPP**

### **(a) Capacity Building**

The Project development phase will focus on establishing some of the capabilities that will be required during the subsequent construction and operations phases of the NGPP. In the last decade, the capacity of communities in the Northwest Territories to participate in the emerging oil and gas economy has significantly increased. The key objective of capacity building will be negotiating the optimum level of local participation that can be achieved and maintained. The



NGPP must be implemented in such a way so as to ensure that this capacity continues to increase and optimize sustainable economic activities once the construction phases are complete.

Particular emphasis will be put upon participation in the planning phase of the NGPP, so as to optimize participation in all other phases. This planning phase involves identifying the goals and aspirations of each impacted community and comparing those goals and aspirations with the pipeline process, with a view to optimizing the short and long-term positive effects relative to those aspirations. This phase also includes careful consultation with all stakeholders to ensure that the best information possible is incorporated into the final route selection process. In addition, pre-construction activities, such as surveying, geotechnical investigations, centreline cutting on the Right-of-Way, environmental support and other necessary activities will be subject to the terms of the Benefits Plans.

These pre-construction activities will provide opportunities to establish additional partnerships and community-based businesses and to prepare for the more intensive activities that will follow during the construction phases. They will also assist in identifying training requirements, employment opportunities and the most promising business and partnering opportunities in each community. Pre-construction opportunities and consultation will also help to focus on the planning, construction and operational phases of the NGPP.

#### **(b) Direct Employment and Income Effects**

CERI has estimated<sup>9</sup> economic expenditures of Cdn.\$1.48 billion on the initial field development in the Mackenzie River Delta region to support production of 1.6 Bcf/d from that area. Much of this initial field development activity could occur during the same time frame as pipeline construction. This is projected to result in 20,980 person years of employment within Canada, of which 7,150 person years would occur within the Northwest Territories, Yukon Territory and Alberta.

#### **(c) Land Sponsor Fees**

A major benefit to Aboriginal Landowners who enter into Land Access Agreements with NRGPC will be the land sponsor fees payable to the Landowner, pursuant to such Land Access Agreements. Land sponsor fees will be calculated on a "per mcf" of transported gas basis. NRGPC estimates that land sponsor fees, after full ramp-up of the entire Project, will be an aggregate of approximately U.S. \$70 million per year.

#### **(d) Business Opportunities, Partnerships and Spin-Offs**

The planning phase of NGPP, by virtue of the Benefits Plans, will permit and encourage community participation. The opportunities may include, but are not limited to:

- Support of regulatory applications, including the Comprehensive Study;

---

<sup>9</sup> Canadian Energy Research Institute, "A Comparison of Natural Gas Pipeline Options for the North", October 2000. Table 7, p. xvii.

- Route determination for the Right-of-Way;
- Access determination to the Work Area;
- Temporary Workspace determination;
- Survey and site investigations;
- Logistical support for field investigations;
- Translation services;
- Facilitating community services; and
- Field support.

The front-end engineering, environmental and design and construction phases of the Project will provide significant partnering or spin-off opportunities for the Aboriginal peoples and other residents of the Northwest Territories. A partial list of opportunities that may be available includes, but is not limited to:

- Land clearing and land access infrastructure;
- Road preparation;
- Winter road construction and maintenance;
- Stockpile site preparation;
- Staging services;
- Camps, camp catering and other camp support;
- Air support (helicopter and fixed wing);
- Machinery services and operators;
- Mechanical, civil and electrical services;
- Supply of construction materials such as skids, weights and sand bags;
- Supply and stockpile of backfill material; and
- Re-vegetation and final cleanup.

A preliminary list of opportunities during the operations phase includes:

- Monitoring of pipeline operations and integrity;

- Service and maintenance of the pipeline and pipeline infrastructure;
- Aerial reconnaissance;
- Legal surveys;
- Environmental monitoring; and
- Environmental enhancement projects.

As the pipeline design is finalized for each section, ArctiGas, on behalf of NRGPC, will prepare work packages to identify in detail the opportunities for Aboriginal businesses or joint ventures, in accordance with the Benefits Program.

**(e) Indirect Effects**

Indirect effects occur when the incomes generated through direct expenditures during the construction phases of the Project are spent within the local economy. Based on previous studies<sup>10</sup>, the Gross Domestic Product multiplier has been estimated at 1.3. In other words, every \$1 million spent directly on a pipeline project results in an additional \$1.3 million of incremental GDP. As the capital costs of the NGPP are finalized, the detailed socio-economic impact review will provide additional quantification of these indirect economic and employment effects.

**(f) Induced Development Activities**

The oil and gas industry can be expected to pursue an expanded range of exploration and development activities in addition to pipeline construction. This will affect the traditional economy and will contribute additional business opportunities to the wage economy, a benefit that may be shared between the Aboriginal and non-Aboriginal peoples. The transient nature of this economy may be mitigated for the people who continue to live in the North full time.

**(g) Economic Impact on Non-Aboriginal Peoples**

The NGPP, by virtue of its magnitude relative to the Northern economy, will have a significant effect on all Northern residents. Non-Aboriginal people will benefit from the significant business and employment opportunities that will result from the Project and from the spin-off effects of the Project. Benefits will also flow to non-Aboriginal peoples in Southern regions as orders for pipe, compressors, and other materials unavailable in the North are made available to Southern businesses.

---

<sup>10</sup> See for example, Canadian Energy Research Institute, "Oil and Gas Activity in the Northwest Territories." March 2000.

## **VII. KEY ENVIRONMENTAL ISSUES**

### **A. Introduction**

In the context of environmental issues, the NGPP and the physiographic regions it traverses are jointly considered to identify critical environmental issues by region. The scope of the Comprehensive Study will include these issues and will be further refined upon stakeholder consultation and input. The Comprehensive Study must also consider the mitigation techniques that will be utilized to address adverse environmental impacts in each region. The Comprehensive Study will address the Canadian segment of the NGPP, commencing at the Canada/Alaska border and terminating in the vicinity of Edmonton, Alberta.

### **B. Environmental Features – Physical and Biological Components Likely to be Affected by the NGPP**

The following table sets out the physical and biological components as they relate to the Canadian segment of the NGPP only.

**Table 5 – Environmental Features**

<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
<b>Beaufort Offshore.</b> Inshore, shallow ice scour to 30 metre contour. Inter-tidal zone.	Beaufort Sea Listed and protected species <sup>#</sup> . Key life stage <sup>#</sup> habitat and migration.	Traditional sustainable and commercial use. Energy exploration. Marine transport. Herschel Island Territorial Park.	Inuvialuit Final Agreement. Government of Canada.
<b>Yukon Coastal Plain.</b> Inshore, shallow ice scour to 30 metre contour. Inter-tidal zone. Onshore. Offshore deep. Marine inshore. Low relief, innumerable lakes in poor drainage. Low wave and ice cut bluffs, beaches and spits. Elevation from 0 metres asl to 100 metres asl.	Arctic Tundra. Listed and protected species. Key life stage habitat and migration.	Traditional sustainable and commercial use. Energy exploration. Marine transport. Ivvavik National Park.	Inuvialuit Final Agreement. Government of Canada.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
<p>This region is located on the Arctic Coastal Plain.</p> <p>Polygons, scars, net and stripes, pingos and mounds pattern the surface.</p> <p>The region has numerous active braided flood plains (more than any unit) where ice rich organic materials overlie granular deposits.</p> <p>The region is entirely within the continuous permafrost zone.</p> <p>The fine-grained active layer is generally less than 1 metre thick.</p>			
<p><b>Porcupine Plateau.</b></p> <p>Elevation from 100 metres asl to 300 metres asl across rolling foothills of inter-mountain valleys.</p> <p>Entirely within the zone of continuous permafrost associated with patterned ground and an active layer of less than 1 metre thick.</p> <p>Generally, coarse ice rich mineral materials.</p> <p>Numerous braided floodplains.</p>	<p>Sub-arctic.</p> <p>Listed and protected species.</p> <p>Key life stage habitat.</p>	<p>Traditional sustainable and commercial use.</p> <p>Energy exploration.</p> <p>Ivvavik and Vuntut National Parks.</p>	<p>Inuvialuit Final Agreement.</p> <p>Gwich'in Comprehensive Land Claim Agreement.</p>
<p><b>Victoria and Albert Mountains.</b></p> <p>Elevation from 200 metres asl to 500 metres asl across rolling and steep bedrock controlled and exposed gradients.</p> <p>Unconsolidated materials are frozen with an active layer less than 1 metre.</p> <p>Drainage is well entrenched in</p>	<p>Alpine and sub-arctic elements.</p> <p>Listed and protected species.</p> <p>Key life stage habitat and migration.</p>	<p>Traditional sustainable and commercial use.</p> <p>Energy exploration.</p> <p>Vuntut National Park.</p>	<p>Gwich'in Comprehensive Land Claim Agreement.</p>

<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
numerous steep sided narrow valleys.			
<b>Peel Plateau.</b> Rolling foothills relief descending to the upper Mackenzie River Delta. Entirely within the continuous permafrost zone with active layer less than 1.2 metres. Complex of patterned organic veneer and blanket and exposed mineral material. Numerous braided and incised floodplains within the Peel River drainage.	Elements of edaphic treeline and sub-arctic. Listed and protected species. Key life stage habitat and migration	Traditional sustainable and commercial use. Energy exploration.	Gwich'in Comprehensive Land Claim Agreement.
<b>Mackenzie River Delta.</b> At sea level from outer marine to inter-tidal marine freshwater and freshwater shoreline. Uninterrupted lakes and channels. Entirely with the continuous permafrost zone but presence and thickness of active layer subject to dynamic processes of marine and freshwater effects; thermal degradation and hydraulic deposition.	Listed and protected species. Key life stage habitat and migration.	Traditional sustainable and commercial use. Habitation and settlement. Transportation and utilities. Energy exploration. Wildlife refuges.	Inuvialuit Final Agreement. Gwich'in Comprehensive Land Claim Agreement.
<b>Peel Plain.</b> Remarkably flat, poorly drained plain extending from Mountain River north to the Mackenzie River Delta and lying southwest of the Mackenzie River. It is characterized by undulating morainal and organic deposits and is in the	Listed and protected species. Key life stage habitat and migration.	Traditional sustainable and commercial use. Habitation and settlement. Transportation and utilities. Energy exploration.	Gwich'in Comprehensive Land Claim Agreement.

<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
<p>continuous permafrost zone.</p> <p>Wetlands comprise 25 percent of the area in the north increasing to 50 percent in the South.</p> <p>Well-drained areas are found in the Grandview Hills and a few morainic hills between Fort McPherson and Tsiigehtchic where elevations may reach 225 metres asl.</p>			
<p><b>Anderson Plain.</b></p> <p>Broadly dissected, undulating terrain distinctly different from the Peel Plain.</p> <p>The highest parts are adjacent to the Mackenzie River, 225 metres asl, with a broad regional slope northward to 150 metres asl.</p> <p>Permafrost is extensive but discontinuous.</p>	<p>Listed and protected species.</p> <p>Key life stage habitat and migration.</p>	<p>Traditional sustainable and commercial use.</p> <p>Habitation and settlement.</p> <p>Transportation and utilities.</p> <p>Energy exploration.</p>	<p>Gwich'in Comprehensive Land Claim Agreement.</p> <p>Sahtu Dene and Metis Comprehensive Land Claim Agreement.</p>
<p><b>Franklin Mountains.</b></p> <p>Extends from Norman Wells to Wrigley on the east side of the Mackenzie River.</p> <p>It ranges from 150 metres asl to 600 metres asl, rising with distance east of the Mackenzie River.</p> <p>Comprised of mountainous rocky outcrops dissected by steep, lineated slopes.</p> <p>Interspersed areas of rocky plateaus, glacial drift, drumlinoid features, peat plateaus and smaller hummocky peat deposits.</p> <p>The near surface permafrost is discontinuous but extensive.</p>	<p>Listed and protected species.</p> <p>Key life cycle habitat.</p>	<p>Traditional sustainable and commercial use.</p> <p>Habitation and settlement.</p> <p>Transportation and utilities.</p>	<p>Sahtu Dene and Metis Comprehensive Land Claim Agreement.</p>

<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
<p><b>Mackenzie Plain.</b></p> <p>Extends from Fort Good Hope to Wrigley on the west side of the Mackenzie River. Also on east side of the Mackenzie River in a narrow band between the Mackenzie River and the Franklin Mountains.</p> <p>A broad, undulating to rolling drift-covered plain, generally lying below 500 metres asl, it is an area of low relief incised between the Franklin Mountains to the east and the Mackenzie Mountains to the west.</p> <p>Generally silty-clay to sandy clay glaciolacustrine and glaciofluvial materials, ranging from flat along the river to steep scree slopes in the mountains.</p> <p>The terrain is approximately 50 percent wetlands, water logged peat plateaus with extensive but discontinuous near-surface permafrost (occurs between 0.5 and 1.0 metres), and well-drained mineral soils.</p> <p>From Wrigley south and southeast to Camsell Bend the valley widens and there is a change from steep to moderately sloping areas with permafrost at greater than 1 metre, terrain is a mix of well-drained to seasonally waterlogged in the flatter areas.</p>	<p>Listed and protected species.</p> <p>Key life cycle habitat.</p>	<p>Traditional sustainable and commercial use.</p> <p>Habitation and settlement.</p> <p>Transportation and utilities.</p>	<p>Sahtu Dene and Metis Comprehensive Land Claim Agreement.</p>



<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
<p><b>Great Slave Plain.</b></p> <p>Broad, level to low relief plain is characterized by flat to rolling topography from 200 to 300 metres asl, although some of the plateaus may reach 500 metres in altitude.</p> <p>Surficial materials are peat covered, clayey lacustrine deposits overlying till on gently rolling topography.</p> <p>Wetlands comprise about 30 percent of the surface area.</p> <p>Drainage is generally poor and permafrost intermittent.</p>	<p>Listed and protected species.</p> <p>Key life cycle habitat.</p>	<p>Traditional sustainable and commercial use.</p> <p>Habitation and settlement.</p>	<p>Sahtu Dene and Metis Comprehensive Land Claim Agreement.</p> <p>Deh Cho traditional lands.</p>
<p><b>Alberta Plateau.</b></p> <p>An undulating to rolling upland plain ranging between 400 metres asl and 500 metres asl (west to east).</p> <p>Loamy till/morainial deposits 10 – 20 metres thick in the uplands, interspersed with wetlands that make up 50 to 70 percent of the area.</p> <p>Permafrost is shallow and intermittent.</p>	<p>Listed and protected species.</p> <p>Key life cycle habitat.</p>	<p>Traditional sustainable use.</p>	<p>Deh Cho traditional lands.</p> <p>Treaty 8 lands.</p>
<p><b>Fort Nelson Lowland.</b></p> <p>A broad valley at 300 metres asl intersecting the Alberta Plateau.</p> <p>Thick organic materials overlie glaciolacustrine silts and clays, drainage is generally poor due to the fine textures.</p> <p>Permafrost is shallow and intermittent, where present.</p>	<p>Listed species.</p> <p>Key life cycle habitat.</p>	<p>Sustainable traditional use.</p>	<p>Deh Cho traditional lands.</p> <p>Treaty 8 lands.</p>

<b>Physiography and Terrain Setting</b>	<b>Biological Setting</b>	<b>Land Use Setting</b>	<b>Jurisdiction and Setting</b>
<p><b>Peace River Lowland.</b></p> <p>Gently undulating in surface expression, this unit slopes from 700 metres asl to 300 metres asl from west to east.</p> <p>Surface materials are primarily clayey lacustrine with some areas of fine tills and extensive glaciofluvial sands.</p> <p>Drainage is impeded on the finer textures.</p>	<p>Key life cycle habitat.</p>	<p>Sustainable traditional use, arable use, energy and forestry.</p> <p>Habitation, settlement, and infrastructure.</p>	<p>Treaty 8 lands.</p> <p>Private and other land ownership.</p>
<p><b>Alberta Plain.</b></p> <p>A low relief, gently undulating upland plain ranging between 400 and 500 metres asl.</p> <p>Composed of thick loamy till, clayey claciolacustrine, sandy glaciofluvial and organic materials.</p> <p>The lack of relief results in poor drainage thus organic wetlands make up 50 percent of the surface area.</p> <p>Permafrost is rare but may be found in the deeper peatlands.</p>	<p>Listed species.</p> <p>Key life cycle habitat.</p>	<p>Arable, energy and forestry use.</p> <p>Habitation, settlement, and infrastructure.</p>	<p>Treaty 8 land.</p> <p>Treaty 6 land.</p> <p>Private and other land ownership.</p>

### **C. Proposed Project Scope**

Based on the information above, NRGPC believes that the following project components should be considered in the Comprehensive Study of the NGPP:

- (a) the "Principal Project", including the construction and operation of:
  - (i) approximately 2400 km (200 km offshore, 2,200 km onshore) of natural gas pipelines from the Canada/Alaska border in the Beaufort Sea via the Cross Delta alternative or West Delta alternative to a location in the vicinity of Edmonton, Alberta;

- (ii) an initiating compressor station, established in the vicinity of either Inuvik (Cross Delta alternative) or Fort McPherson (West Delta alternative), from which point booster compression stations will be installed at 150 to 225 km intervals along the pipeline;
- (iii) custody transfer metering stations, constructed at each receipt and delivery location;

Note: There will be no intermediate valve assemblies in either the offshore or Cross Delta alternative sections of the pipeline;

- (b) the "Accessory Physical Works," which include other associated physical works or physical activities that must be undertaken to carry out the physical works and physical activities described in item (a) above and are as follows:
  - (i) construction and operation of permanent roads, communications system and power supply as may be required to service mainline valve site(s), meter station(s), compressor stations and other pipeline facilities; and
  - (ii) construction, operation and decommissioning of various temporary construction workspace, equipment laydown areas, construction camps, winter airstrips, barge landing facilities and access roads;
- (c) the "Other Undertakings" in relation to the physical works identified in (a) and (b) above, which will be those required for the design, construction, installation and operation of the physical works identified in (a) and (b) above.

References to "Principal Project", "Accessory Physical Works" and "Other Undertakings" are as conceptually set out in the *Canadian Environmental Assessment Agency Operational Policy Statement* OPS-EPO/1-1998, September 25, 1998.

#### **D. Key Issues affecting Design, Construction and Operation**

Based upon consultation and the proposed Project scope, reviewed in the context of the physical and biological components affected by the NGPP (refer to Table 5 – Environmental Features, page 46), NRGPC has identified the following environmental issues for each of the listed physiographic regions that it believes are the key issues that integrate physical and biological settings with land use and jurisdiction:

##### **1. Beaufort Offshore**

###### *In-shore Shallow and Inter-tidal Shallow*

- The Inuvialuit are traditional users of the lands through which the Project passes; they have the right to negotiate the use of this land for the Project under the IFA.
- Proximity to and compliance with the management and integrity of Herschel Island Territorial Park and Ivvavik National Park.\*

- Compliance with the terms of the Designated Management Category D under the Inuvik Inuvialuit Community Conservation Plan, that is, lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year.\*
- The land fast ice boundary (which is the boundary between where ice is frozen to the sea floor, as opposed to floating) and seasonal wildlife movement dependence. A critical area of biological concern is the shear zone at the edge of land fast ice with respect to migrating birds, polar bear, Arctic fox, beluga whale, bowhead whale and seals.
- The potential for impact on freshwater, marine and estuarial life with respect to anadromous<sup>#</sup> fish and benthic<sup>#</sup> species (that is, the estuary Malcolm and Firth Rivers and Herschel Island).
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Ice scour probability and/or incidents of upset with respect to contamination of the aquatic environment.

## **2. Yukon Coastal Plain**

- Compliance with the terms of the IFA, whereby the Inuvialuit are the owners of the lands through which the Project passes and have rights to the land and its use.
- The proximity to and compliance with the management and integrity of Ivvavik and Vuntut National Parks.\*
- The intersection and compliance with the integrity of Yukon North Slope (east of Babbage River) Special Conservation Regime.\*
- Compliance with the Designated Management Category D under the Inuvik Inuvialuit Community Conservation Plan, that is, lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year. \*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- The potential for sensory disruption, habitat loss and/or fragmentation with respect to freshwater, marine and estuarial species.
- Avian population dynamic – sensory disturbance, habitat destruction and/or fragmentation and alteration/disruption of migratory patterns.
- Critical life stage timing and habitat interdependence (including, but not limited to: beluga whale; polar bear; muskox; caribou; fox, raptor; and snowy owl).

<sup>#</sup>This term is defined in Appendix "A" – Glossary

- Permafrost.
- Archaeological, heritage, and cultural sites.\*

### **3. Porcupine Plateau**

- Compliance with the terms of the IFA, whereby the Inuvialuit are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- Compliance with the terms of the Gwich'in Comprehensive Land Claim Agreement, whereby the Gwich'in are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- The intersection and compliance with the integrity of the Yukon North Slope Special Conservation Regime.\*
- Compliance with the Designated Management Category D under the Inuvik Inuvialuit Community Conservation Plan, that is, lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year.\*
- Compliance under the Gwich'in Special Management Areas.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey–predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Mammal population dynamics (including, but not limited to: caribou; grizzly bear; wolf; and fox).
- Migratory waterfowl and neo-tropical avian habitat dependence (including raptors) – sensory disturbance, habitat destruction and/or fragmentation.
- Freshwater fishery population – sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.

### **4. Victoria and Albert Mountains**

- Compliance with the terms of the Gwich'in Comprehensive Land Claim Agreement, whereby the Gwich'in are owners of large tracts of lands through which the Project passes and have rights to the land and its use.

- Compliance with the Gwich'in Special Management Areas.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Mammal population dynamics (including, but not limited to: Dall sheep; grizzly bear; and caribou).
- Migratory waterfowl and neo-tropical avian habitat dependence – sensory disturbance, habitat destruction and/or fragmentation.
- Freshwater fishery population – sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.

## **5. Peel Plateau**

- Compliance with the terms of the Gwich'in Comprehensive Land Claim Agreement, whereby the Gwich'in are owners large tracts of the lands through which the Project passes and have rights to the land and its use.
- Compliance with the Gwich'in Special Management Areas.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Mammal population dynamics (for example, including but not limited to: caribou; grizzly bear; and moose).
- Migratory waterfowl and neo-tropical avian habitat dependence - sensory disturbance, habitat destruction and/or fragmentation.
- Freshwater fishery population - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.

## **6. Mackenzie River Delta**

- Compliance with the terms of the IFA, whereby the Inuvialuit are owners of large tracts of the land through which the Project passes and have rights to the land and its use.
- Compliance with the terms of the Gwich'in Comprehensive Land Claim Agreement, whereby the Gwich'in are owners large tracts of the lands through which the Project passes and have rights to the land and its use.
- Potential jurisdictional issues surrounding redrafting of the Inuvialuit-Gwich'in Overlap Agreement with respect to the two (2) preceding items.
- Compliance with the Designated Management Category D under the Inuvik Inuvialuit Community Conservation Plan, that is, lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year.\*
- Proximity to or intersection with Beluga Whale Management Zones 1a and 2 and compliance with the management constraints therein (that is, critical life stage timing, habitat, movement and interdependence, calving grounds, sensory disruption and/or alteration of these patterns).\*
- Proximity to and compliance with the Management Plan for proposed IBP<sup>#</sup>-Berger Dolomite-Campbell Lake Site.
- Key habitat for migratory birds in the Mackenzie River Delta, specifically the Kendall Island Sanctuary.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Mammal population dynamics (including, but not limited to: caribou; moose; and muskox).
- Critical migratory waterfowl and neo-tropical avian habitat dependence - sensory disturbance, habitat loss and/or fragmentation.
- Critical freshwater and anadromous fishery population - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.

<sup>#</sup>This term is defined in Appendix "A" – Glossary

## **7. Peel Plain**

- Compliance with the terms of the Gwich'in Comprehensive Land Claim Agreement, whereby the Gwich'in are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- Proximity to and compliance with the management plan for the Rat River Protected Area.\*
- Compliance with the Gwich'in Special Management Areas.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships, critical life stage timing; movement/migration patterns; and species interdependence.
- Mammal population dynamics (including, but not limited to: caribou; grizzly bear; and moose).
- Migratory waterfowl and neo-tropical avian habitat dependence, sensory disturbance, habitat loss and/or fragmentation.
- Freshwater fishery population - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.

## **8. Anderson Plain**

- Compliance with the terms of the Gwich'in Comprehensive Land Claim Agreement, whereby the Gwich'in are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- Compliance with the Gwich'in Special Management Areas.\*
- Compliance with the terms of the Sahtu Dene and Metis Comprehensive Land Claim Agreement, whereby the Sahtu Dene and Metis are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- Proximity to and compliance with the management plan for the Travaillant Lake, Mackenzie-Tree River Protected Area.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.



- Mammal population dynamics (including, but not limited to: caribou; grizzly bear; and moose).
- Migratory waterfowl and neo-tropical avian habitat dependence, sensory disturbance, habitat loss and/or fragmentation.
- Freshwater fishery population - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage and traditional sites.\*
- Permafrost.
- Wetlands.

## 9. Franklin Mountains

- Compliance with the terms of the Sahtu Dene and Metis Comprehensive Land Claim Agreement, whereby the Sahtu Dene and Metis are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- Proximity to and compliance with the management plan for Gibson's Ridge and Bear Rock archaeological sites.\*
- Proximity to and compliance with the management plan for the proposed IBP – Berger Protection Area at Willow Lake.\*
- Proximity to and compliance with the management plan for the Kelly Lake Protected Area.\*
- Mammal population dynamics (including, but not limited to, black bear and moose), sensory disturbance, habitat destruction and/or fragmentation.
- Prey-predator dependence (for example, moose-predator) - sensory disturbance, alteration/disruption of movement.
- Migratory waterfowl - sensory disturbance, habitat loss and/or fragmentation (that is, Ramparts River, Camkay Creek, Brackett Lake).
- Critical raptor habitat (Peregrine falcon) - sensory disturbance, habitat loss and/or fragmentation.
- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage and traditional sites (archaeological sites at: Loon River, Fort Good Hope, Chick Lake, Bear Rock and Bear Rock Lakes, Nota Creek, Great Bear River, Big Smith Creek, Little Canyon Creek, Saline River, Willow Lake River).\*

- Permafrost.
- Wetlands.

#### **10. Mackenzie Plain**

- Compliance with the terms of the Sahtu Dene and Metis Comprehensive Land Claim Agreement whereby the Sahtu Dene and Metis are owners of large tracts of the lands through which the Project passes and have rights to the land and its use.
- Proximity to and compliance with the management plan for the proposed IBP-Berger Protection Area at Brackett Lake and River.\*
- Proximity to and compliance with the management plan for the proposed IBP – Berger Protection Area at Willow Lake.\*
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey–predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Migratory waterfowl, critical raptor and neo-tropical avian issues - sensory disturbance, habitat loss and/or fragmentation.
- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.

#### **11. Great Slave Plain**

- Compliance with the Deh Cho Process, whereby the Deh Cho have rights to the land through which the Project passes and have rights to the land usage.
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey–predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Mammal population dynamics (including, but not limited to, black bear and moose).
- Proximity to and compliance with the management plan for the Horn Plateau/Bulmer Lake, a possible Government of Northwest Territories Special Place designation.\*
- Critical raptor habitat - sensory disturbance, habitat loss and/or fragmentation.

- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Wetlands.
- Integrity of habitation and community.

## **12. Alberta Plateau**

- Compliance with the Deh Cho Process, whereby the Deh Cho have rights to the land through which the Project passes and have rights to the land usage.
- Mammal population dynamics (including, but not limited to, black bear and moose), sensory disturbance, habitat destruction and/or fragmentation.
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey–predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Critical raptor habitat, sensory disturbance, habitat loss and/or fragmentation.
- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage and traditional sites.\*
- The integrity of the Jackfish Point Indian Reserve #214.\*
- The integrity of the Bistcho Lake Indian Reserve #213.\*
- Permafrost.
- Wetlands.
- Integrity of habitation and community, particularly the Gift Lake Reserve.\*

## **13. Fort Nelson Lowland**

- Compliance with Treaty 8 and Metis Settlements consultation.
- The integrity of the Hay Lake Indian Reserve #209.\*
- The integrity of the Amber River Indian Reserve #211.\*

- The integrity of the Upper Hay Lake Indian Reserve #212.\*
- Proximity to and compliance with the management plan for the Hay-Zama Lakes Wildland Protected Area.\*
- The integrity of wetland-organic terrain complex.
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey–predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption of migratory patterns.
- Archaeological, heritage, and traditional sites.\*
- Permafrost.
- Integrity of habitation and community.

#### **14. Peace River Lowland**

- Compliance with Treaty 8, Metis Settlements, Crown land disposition and private Landowner consultations.
- Activity within the Lubicon Lake land claim area.
- The integrity of wetland-organic terrain complex.
- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption to migratory patterns.
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey–predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Archaeological, heritage, and traditional sites.\*
- The integrity of the Paddle Prairie Metis Settlement.\*
- Proximity to and compliance with the management plan to preserve the integrity of Notekewin Provincial Park.\*
- Proximity to and compliance with the management plan for the Hawk Hills Protected Area.\*
- Integrity of private lands - specifically arable lands.

## **15. Alberta Plain**

- Compliance with Treaty 8 and Treaty 6, Metis Settlements, Crown land disposition and private Landowner consultation.
- Freshwater fishery populations - sensory disruption, habitat loss and/or fragmentation and disruption to migratory patterns.
- General issues surrounding potential impacts on: habitat quality and quantity; habitat loss and/or fragmentation; prey-predator inter-relationships; critical life stage timing; movement/migration patterns; and species interdependence.
- Integrity of habitation and community.
- The integrity of the Sawridge Indian Reserve 150G and 150H.\*
- The integrity of the Utikoomak Indian Reserves 155, 155A and 155B.\*
- The integrity of Gift Lake Metis Settlement.\*
- Proximity to and compliance with the management plan to preserve the integrity of Slave Lake Provincial Park.\*
- Proximity to and compliance with the management plan to reserve the integrity of Cross Lake Provincial Park.\*
- Integrity of private lands - specifically arable lands.
- Archaeological, heritage, and traditional sites.\*
- Alberta Protected Areas that may fall on or near the proposed corridor, including: Mitsue Lake, Otawau River, Grizzly Ridge Wildland, Otawau, Saulteaux, Hondo, Cross Lake, Hubert Lake Wildland, Baptiste Lake, Spruce Island Lake, Armstrong Lake, Nestow, Clyde Fen, Bridge Lake, Tawatinaw, Anton Lake, Halfway Lake, Taylor Lake, Fairy Dell Creek, George Lake Area, George Lake, Crippsdale, Redwater River.\*

### **E. Scope of the Environmental Assessment Component of the Comprehensive Study**

The CEAA<sup>#</sup> and the NEB's GFR require that a Comprehensive Study, comprised of an Environmental Assessment and a socio-economic assessment, be conducted for a variety of projects. An extension of this must address the cumulative effects from the proposed Project in combination with other projects or activities that have been or will be carried out. The NGPP will be constructed in a new Right-of-Way and NRGPC anticipates that a Comprehensive Study under the CEAA will be required. Due to the regulatory complexity in the Northwest Territories, NRGPC understands that a number of agencies and boards may be involved in approving the NGPP. It appears likely that the NEB will be the lead Responsible Authority ("RA"), but other entities also have responsibilities with respect to reviewing, screening, assessing and approving

<sup>#</sup>This term is defined in Appendix "A" – Glossary

the NGPP. This Preliminary Information Package reflects priorities that are based upon consultation with Aboriginal Landowners and stakeholders pertaining to corridor selection.

NRGPC will prepare and submit to the NEB a Comprehensive Study, of which the Environmental Assessment is a component, for the previously described Principal Project, Accessory Physical Works and Other Undertakings, and anticipates filing same on or about Q3, 2003. The Comprehensive Study will consider the issues and concerns identified by the stakeholders through the consultation program in concert with the mandatory factors listed in s.16 of CEAA and the factors listed in the GFR.

The RA must determine the scope of a project and the factors to be considered in a Comprehensive Study. Section 16 of the CEAA sets out the following factors to be considered in a Comprehensive Study:

- The environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project, and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- The significance of the environmental effects referred to above;
- Comments from the public that are received in accordance with the CEAA and its regulations;
- Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;
- Any other matter relevant to the screening, comprehensive study, mediation or assessment by a review panel, such as the need for the project and alternatives to the project, that the RA or the Minister of Environment deem relevant;
- The purpose of the project;
- Any alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternative means;
- The need for, and the requirements of, any follow up program; and
- The capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future.

"Environmental effects" are defined in s.2(1) of the CEAA, in respect of a project, as:

- "(a) any change that the project may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or

thing that is of historical, archaeological, palaeontological or architectural significance, and

- (b) any change to the project that may be caused by the environment;

whether any such change occurs within or outside Canada."

The Environmental Assessment should also encompass the components identified in this definition.

The Environmental Assessment of the Principal Project, Accessory Physical Works and Other Undertakings will evaluate the potential effects of each Project phase, as well as accidents and malfunctions on the Valued Ecosystem Components<sup>#</sup>. A Valued Ecosystem Component is any part of the environment that is considered important by the proponent, the public, scientists or governmental bodies involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern.

#### **F. Cumulative Effects Assessment**

The Environmental Assessment will consider any cumulative environmental effects that are likely to result from the Project in combination with other projects or activities that have been or will be carried out (such as other projects or activities for which formal plans or applications have been made). The Environmental Assessment will, for study purposes, have spatial and temporal boundaries set out as part of the study program.

The two elements of environmental protection planning and assessment that are being undertaken by NRGPC are: the selection of the preferred pipeline corridor and route to address concerns expressed by stakeholders during the EPNC and to avoid sensitive environmental features wherever possible; and the development of measures to mitigate, avoid, eliminate, and/or minimize potential adverse effects of the Project. The primary mitigation measure is avoidance, particularly of culturally and environmentally sensitive areas. Additional guiding principles of a mitigation plan are:

- Creating the minimum footprint for easement and workspace;
- Utilizing a year-round construction cycle;
- Utilizing "season ahead" work space preparation, which includes access and Right-of-Way preparation a year ahead of other activities;
- Incorporating existing linear clearing (Canadian National Telecommunications (CNT) Line right-of-way, winter roads, Enbridge pipeline right-of-way; and Rainbow pipeline right-of-way) into proposed workspace, where practical;
- Offsetting adverse impacts of the NGPP's construction activities (commencing with Right-of-Way preparation and concluding with commissioning) by creating a pooled environmental

<sup>#</sup>This term is defined in Appendix "A" – Glossary

protection fund, to be used to create or enhance habitat and/or populations adversely impacted by unavoidable residual effects from Project activities; and

- Spearheading the preservation of critical habitat<sup>#</sup> and heritage sites under all relevant settlement, process and final agreements.

<sup>#</sup>This term is defined in Appendix "A" – Glossary



## **VIII. SUMMARY**

NRGPC and ArctiGas are committed to seeing the NGPP implemented. The Project proposed herein is economical, feasible, timely, and supported by a variety of stakeholders. Both NRGPC and ArctiGas believe that the NGPP is the best way to effectively transport Alaskan North Slope and Northern Canadian natural gas to Southern markets. Utilizing, amongst other things, considerable public input and a variety of knowledge sources (both scientific and traditional), the NGPP can be designed, constructed and operated in such a way so as to minimize any adverse effects of the Project while simultaneously maximizing the benefits of the Project to Aboriginals, Landowners and other stakeholders. Again, NRGPC and ArctiGas hereby respectfully request that the NEB, along with all other interested regulatory agencies in Canada, commence the process of creating a scoping package for the Canadian segment of the NGPP.

## APPENDIX "A"

### GLOSSARY

"**Aboriginal**" or "**Aboriginals**" means the Gwich'in, the Inuvialuit, the Sahtu Dene and Metis and the Deh Cho, or any of them;

"**active layer**" means the upper zone of soil in higher latitude locations that experiences daily and seasonal freeze-thaw cycles;

"**anadromous**" means the characterization of migrating fish growing in the sea and ascending freshwater streams to spawn; species of fish that inhabit both freshwater and saltwater;

"**ArctiGas Resources Limited Partnership**" or "**ArctiGas**" means the limited partnership organized pursuant to the laws of Alberta, and signatory to the PMA;

"**asl**" means above sea level;

"**Bcf/d**" means one billion (1,000,000,000) cubic feet per day at standard temperature and pressure;

"**Benefits Program**" means the benefits plan guidelines set out in Appendix "A" to the PMA, as administered by ArctiGas on behalf of NRGPC;

"**Benefits Plans**" means any agreement entered into between NRGPC and an Aboriginal group, community or representative entity, or as required by regulatory agencies, which may or may not encompass the Benefits Program;

"**benthic**" means of or living on or in the bottom of a water body;

"**Berger Report**" means the document titled *Northern Frontier, Northern Homeland – The Report of the Mackenzie Valley Pipeline Inquiry* (1977), Volumes 1 and 2;

"**Canadian Environmental Assessment Act**" or "**CEAA**" means the legislation entitled *Canadian Environmental Assessment Act*, S.C. 1992, c. 37, and any regulations promulgated thereunder;

"**Certificate of Public Convenience and Necessity**" or "**CPCN**" means a Certificate granted by the National Energy Board pursuant to section 52 of the *National Energy Board Act*, R.S.C. 1985, c. N-7;

"**coastal zone**" means a zone of interaction between the land and the marine environment. On land, it encompasses the sector containing the majority of shoreline uses that have a direct influence on coastal habitats and resources. Away from shore, the coastal zone should be limited to the area where the majority of uses occur, such as inshore fishing, coastal navigation, and aqua-culture;

**"habitat"** means the natural environment of a plant or animal organism; the place or type of site where plant, animal, or microorganism populations normally occur. The concept of habitat includes the particular characteristics of that place, such as climate and the availability of water and other life requisites (such as soil nutrients for plants and suitable food and shelter for animals), which make it especially well suited to meet the life cycle needs of the particular wildlife;

**"IBP"** means International Biological Program, which was established under the auspices of the International Council of Scientific Unions and the International Union of Biological Sciences and is sponsored in the United States by the National Academy of Sciences and the National Academy of Engineering;

**"Inuvialuit"** means the people known as Inuvialuit, Inuit or Eskimo who are beneficiaries under the IFA;

**"Inuvialuit Settlement Region" or "ISR"** means the lands as more particularly set out in the Inuvialuit Final Agreement;

**"Inuvialuit Final Agreement" or "IFA"** means The Western Arctic Claim - The Inuvialuit Final Agreement between the Committee for Original Peoples' Entitlement and the Government of Canada;

**"key life stage"** means a distinct physiological phase in the development of an organism;

**"Land Access Agreements"** means any and all of the Land Access Agreements, entered into between NRGPC and a Landowner, for the purposes of obtaining Right-of-Way for the NGPP;

**"land fast ice"** means the ice that forms annually near the shore of the coastal zone and becomes attached to the sea bed and to the land;

**"Landowner" or "Landowners"** means those bodies corporate that are the beneficial owners of lands granted pursuant to a Yukon First Nation Final Agreement, the Inuvialuit Final Agreement, the Gwich'in Comprehensive Land Claim Agreement or the Sahtu Dene and Metis Comprehensive Land Claim Agreement and which own lands that are required for the construction and operation of the NGPP; and those members of the Deh Cho First Nations whose traditional territory will be traversed by the Project;

**"listed and protected species"** means a species or subspecies that has been added to the federal endangered and threatened species lists;

**"mcf"** means 1,000 cubic feet at standard temperature and pressure;

**"National Energy Board" or "NEB"** means the Canadian independent federal regulatory agency established pursuant to the *NEB Act*;

**"NEB Act"** means the legislation entitled *National Energy Board Act*, R.S.C. 1985, c. N-7, and all regulations promulgated thereunder;

**"Northern Gas Pipeline Project" or "NGPP"** means the proposed project to construct and operate a natural gas pipeline from Prudhoe Bay, Alaska, to a point in the vicinity of Edmonton, Alberta, via the Mackenzie River Delta and Mackenzie River Valley, Northwest Territories;

**"Northern Route Gas Pipeline Corporation" or "NRGPC"** means the corporation incorporated pursuant to the laws of Canada, and also the proponent of the NGPP;

**"OD"** means outside diameter;

**"permafrost"** means subsoil which remains below the freezing point throughout the year, as in polar regions; soil or rock that remains below 0°C for at least two consecutive years;

**"Phase 1 Construction"** means the construction and installation of a 36 inch OD pipeline from Edmonton, Alberta to the Mackenzie River Delta, Northwest Territories;

**"Phase 2 Construction"** means the construction and installation of a 36 inch OD pipeline from the Mackenzie River Delta, Northwest Territories to Prudhoe Bay, Alaska;

**"Phase 3 Construction"** means the construction and installation of a second 36 inch OD or larger pipeline from Edmonton, Alberta to the Mackenzie River Delta, Northwest Territories;

**"Phase 4 Construction"** means the construction and installation of a second 36 inch OD or larger pipeline from the Mackenzie River Delta, Northwest Territories to Prudhoe Bay, Alaska;

**"Preliminary Information Package"** means this submission to the NEB;

**"Program Management Agreement" or "PMA"** means the Agreement dated December 24, 2001 between NRGPC and ArctiGas;

**"Project"** means the NGPP;

**"protected species"** means those species whose population is declining in the wild, from human or other causes, that are protected by federal or provincial laws;

**"Responsible Authority" or "RA"** means the federal authority that ensures that an Environmental Assessment is conducted;

**"Right-of-Way"** means the legal right of passage over public or private lands or, the area in which this right is exercised and also the lands required for the construction, installation and permanent locations of the pipeline required by the NGPP;

**"Sahtu Dene and Metis"** means participants and organizations designated as such pursuant to the terms of the Sahtu Dene and Metis Comprehensive Land Claim Agreement;

**"Sahtu Dene and Metis Comprehensive Land Claim Agreement"** means the Comprehensive Land Claim Agreement between Her Majesty The Queen In Right of Canada and The Dene of Colville Lake, Déline, Fort Good Hope and Fort Norman and the Metis of Fort Good Hope, Fort

Norman and Norman Wells in the Sahtu Region of the Mackenzie Valley as represented by the Sahtu Tribal Council;

**"Sahtu Settlement Area" or "SSA"** means the lands as more particularly set out in the Sahtu Dene and Metis Comprehensive Land Claim Agreement;

**"shear zone"** means the area of contact between the land fast ice, which is frozen to the sea floor, and the moving ice pack which is located farther offshore and not anchored to the sea floor; it is, therefore, free to move and shift under the influence of ocean currents and wind patterns;

**"Temporary Workspace"** means temporary lands for the construction and installation of the Project, which revert to the owners upon completion;

**"Traditional Ecological Knowledge and Traditional Knowledge and Use" or "TEK/TKU"** means a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationships of living beings (including humans) with one another and with their environment. It is a body of information derived from a geographically and environmentally distinct group of people who have experienced, adjusted and transferred this data cross-generationally. The ability of each cultural group to transform the flora and fauna around them into elements of sustenance such as for food, clothing, shelter, medicine and tools is distinct and identifies them from one another. The knowledge is culturally diverse and its spiritual significance to each group varies;

**"Valued Ecosystem Component" or "VEC"** means any part of the environment that is considered important by the proponent, public, scientists or government involved in the assessment process; importance may be determined on the basis of cultural values or scientific concern;

**"West Delta alternative"** means the corridor that turns southward along the western edge of the Mackenzie River Delta, crossing the Peel River at Fort McPherson and the Mackenzie River in the vicinity of Tsiigehtchic, which then continues eastward along the Mackenzie River and joins the Cross Delta alternative in the vicinity of Travaillant Lake, Northwest Territories; and

**"Work Area"** means Right-of-Way and Temporary Workspace combined.

**"Comprehensive Study"** means an Environmental Assessment conducted pursuant to the terms of CEAA and a socio-economic assessment conducted in accordance with the terms of the NEB's *Guidelines for Filing Requirements*;

**"continuous permafrost"** means that found across the arctic regions and underlying essentially all exposed land areas, with unfrozen ground found only beneath larger lakes and rivers and in small areas of newly graded ground;

**"Cross Delta alternative"** means a section of corridor that extends from the vicinity of Shingle Point, Yukon Territory directly to Inuvik, Northwest Territories, where it continues southeastward generally following the route of the decommissioned CNT communication line;

**"critical habitat"** means an area containing important habitats, such as feeding and nesting areas, that are essential to preserving a formally protected species;

**"Deh Cho"** means the people of the Deh Cho First Nations;

**"Deh Cho First Nations Framework Agreement"** means the agreement among Deh Cho First Nations, the Government of Canada and the Government of the Northwest Territories dated May 23, 2001;

**"Deh Cho First Nations Interim Agreement"** means the agreement among Deh Cho First Nations, the Government of Canada and the Government of the Northwest Territories dated May 23, 2001;

**"Deh Cho Process"** means the ongoing process to resolve Deh Cho land management and self government issues in the Deh Cho region, and includes compliance with the Deh Cho First Nations Interim Measures Agreement and the Deh Cho First Nations Framework Agreement;

**"Environmental Assessment"** means an assessment of the environmental effects of a project, conducted in accordance with the CEAA;

**"EPNC"** means the early public notification and consultation program;

**"Guidelines for Filing Requirements" or "GFR"** means the NEB document of such title dated February 22, 1995, as amended from time to time;

**"Gwich'in"** means participants and organizations designated as such pursuant to the terms of the Gwich'in Comprehensive Land Claim Agreement;

**"Gwich'in Comprehensive Land Claim Agreement"** means the Comprehensive Land Claim Agreement dated April 22, 1992 between Her Majesty The Queen In Right of Canada and The Gwich'in As Represented By The Gwich'in Tribal Council;

**"Gwich'in Settlement Area" or "GSA"** means the lands as more particularly set out in the Gwich'in Comprehensive Land Claim Agreement;



# RBC Dain Rauscher

**John H. Rauscher, III**  
*Managing Director-FICM*  
Phone: (214) 989-1810  
Fax: (214) 989-1765

December 20, 2001

Mr. Robert D. Murphy, Jr.  
President  
Arctic Resources Company  
Three Riverway, Suite 1375  
Houston, TX 77056

Dear Bob:

I have prepared this letter as a follow-up to our recent discussions and review of projected cash flows prepared by Arctic Resources Company ("ARC") concerning the proposed Northern Gas Pipeline Project (the "Project") in order to address our understanding of the Project and its general financing feasibility.

We understand that the Project centers around ARC providing program management services for a natural gas pipeline proposed to connect natural gas reserves located on the North Slope of Alaska through the Northwest and/or Yukon Territories in Canada with downstream interconnects and/or markets. The ownership of the pipeline in Alaska is proposed to be by an Alaskan special purpose company and by an aboriginal-owned special purpose company in Canada organized under the name of Northern Route Gas Pipeline Corporation ("NRGPC").

As we understand the Project, you have indicated that the total pipeline construction costs are approximately \$7.9 billion and, together with other financing expenses and requirements, the aggregate amount of debt that may be required will be approximately \$9.4 billion. You have indicated that your construction cost estimates are based on information prepared by Cimarron Engineering Limited of Calgary, Alberta. We also understand that an analysis prepared by Purvin & Gertz estimated construction costs as being less than the estimated capital costs you are using. You have indicated that the primary security for the bonds will be provided through long-term toll agreements, generally with investment grade shippers, and that in certain instances you expect insurers to offer further credit enhancements to these agreements and/or to augment agreements with these shippers without an investment grade credit rating. The bonds are expected to be non-recourse revenue bonds with a high investment grade rating (approximately rated A). We also understand that a portion of the bonds will be used to reimburse certain project-related engineering, environmental, and regulatory expenditures made by certain parties prior to the issuance of the bonds. The revenues from the tolls will be required to be sufficient to cover all cash requirements of the Project, including operating expenses, debt service, program administrator expenses, various reserve requirements, and land sponsor fees estimated to be \$70 million per year following full production ramp-up for NRGPC. You have indicated that construction financing would begin in approximately 2005 with permanent financing 30-36 months afterwards.

The structure has been developed to accommodate the unexpected – such as operating problems once the pipeline is operational. In addition, we understand that ARC's structure contemplates that prior to selling intermediate or long term bonds, binding agreements with shippers, guarantors and credit

enhancers will be in place to provide the Project with the ability to automatically adjust the size of the borrowings and adjust the related pipeline tolls in order to absorb the cost of change orders or other surprises. In addition, we understand that the toll will include a component to permit reserves to be established to cover unexpected cash flow requirements.

We believe that, based on our understanding of the Project and current market conditions, a 100% debt financing for this Project is feasible. The credit capacity of the shippers and their related contractual obligations will be a strong foundation on which to begin building this highly leveraged financing. Third party credit support from credit enhancers will further enhance the Project's credit. Your approach, complemented by other credit controls within the program, should preclude the need for equity traditionally incorporated in pipeline financings and create an investment grade bond structure. Our opinion is based solely on the information and estimates provided to us by ARC and we have not attempted any independent investigation or due diligence at this time. This will become necessary as the Project progresses. Changes in construction costs, credit facility availability, and market conditions, among other assumptions, may require an adjustment in our opinion and/or the financing structure.

On January 10, 2001, Royal Bank of Canada, one of Canada's premier financial institutions, acquired Dain Rauscher Corporation. Royal Bank is a diversified global financial services group and a leading provider of services such as personal and commercial banking, investment services, insurance, and corporate and investment banking. Internationally, the bank's 49,000 employees serve more than 10 million individual, corporate and governmental clients.

Following the acquisition, Dain Rauscher became the primary United States securities platform for Royal Bank and continues to conduct business in the fixed income capital markets as RBC Dain Rauscher. Royal Bank shares Dain Rauscher's passionate commitment to superior client service and community leadership.

Royal Bank and its subsidiary RBC Capital Markets (formerly Dominion Securities) represent Canada's top-ranked dealer for fixed income and is a leader in governmental finance. This merger enhances Dain Rauscher's ability to deliver a full range of high-value financial solutions and resources to our fixed income clients.

We appreciate your consideration and interest in Dain Rauscher and its new Canadian partners and we look forward to the opportunity of working with you in the further development of this exciting and very important project.

Very truly yours,

A handwritten signature in black ink, appearing to read "John H. Rauscher, III", with a stylized flourish at the end.

John H. Rauscher, III  
Managing Director



# LEHMAN BROTHERS

STEPHEN A. CLABORN  
MANAGING DIRECTOR

December 17, 2001

Mr. Robert D. Murphy, Jr.  
Arctic Resources Company, Ltd.  
Three Riverway  
Suite 1375  
Houston, Texas 77056

Dear Mr. Murphy:

We have enjoyed discussing with you the proposal by Arctic Resources Company, Ltd. (ARC) to develop and manage the Northern Gas Pipeline Project that is to be owned by bankruptcy-remote special purpose entities to be established by Alaskan Native American and Canadian Aboriginals (the SPEs). We understand that Northern Route Gas Pipeline Corporation is to be the SPE in Canada. You have asked that we respond to you in writing regarding our interest in serving as the investment banker on the project for the SPEs and to comment on the feasibility of obtaining debt financing for the project. The purpose of this letter is to provide such a response.

As a brief summary, we understand the project is to consist of two 36 inch pipelines with a design capacity of 3.2 Bcf/day per pipeline that will transport natural gas from the North Slope Borough and the Mackenzie Delta to Northern Alberta (approximately 1700 miles). Total construction costs are estimated to be \$7.9 billion and total financing requirements are approximately \$9.4 billion. Approximately 80% of projected expenditures for the Project are in Canada. Financing is anticipated to be secured based on high ratings (A, AA and AAA quality) of the private shippers providing long-term tariff agreements and/or any insurers. Pre-bond issuance funding for certain development costs will be provided as advanced by interested parties including producers and other shippers and construction costs will be obtained through interim construction loans from a consortium of commercial banks and other lenders. The balance of the Project costs is to be 100% debt financed. You anticipate the first phase of the debt financing to start in 2006 at which time certain pre-bond issuance advances would be reimbursed from bond proceeds. The final phase of the debt financing is expected to be in 2008.

Regarding the feasibility of the financing, we do believe, based on our current understanding of the project and current market conditions, that the financing as proposed by ARC is feasible if properly structured to rely fundamentally on the credit of the shippers and/or insurers. This can be done and has been done, but it obviously requires the full cooperation of the shippers. There are a number of issues that will certainly be important in meeting your objective of developing a highly leveraged financing structure. The two most important issues are the precise obligations of the shippers as expressed in the tariff agreements and the manner in which the construction contracts are structured. Project construction and operation risks must be mitigated to the extent possible to maximize leverage. There are several ways to do this but any of them will require substantial levels of commitment from the shippers, the construction contractors and/or sources of third party credit support such as letters of credit and sureties. The combination of tariff

agreements, construction contracts and third party credit support agreements must effectively eliminate construction and operation risks in order to meet your financing objectives. The mitigation of construction risk issue is perhaps the most difficult issue in the financing, but we have dealt with it before and would expect to here if all of the parties to the transaction are cooperative. Other related issues such as timing, cranching and interim financing are important but are best discussed after we have more information and have all of the parties at the table.

Somewhat related to the prior issue is the matter of 100% debt financing. By virtue of ARC's approach there is, of course, "effective equity" related to the funding of development costs and the franchise. While the municipal market ordinarily accommodates 100%+ debt financing for projects supported by bonded "lease" type use agreements, it would be extraordinary in the realm of a large pipeline project financing. This will be an issue since bondholders will want to be sure that if there is a construction or operating period problem, a project participant with financial resources will be incentivized to solve it in a timely manner. Nonetheless, from what we understand by the ARC approach, this can be a solvable issue if all parties to the transaction resolve to deal with it. This will require the assumption of the various project construction and operation risks into one seamless transaction among the shippers, the construction contractors, the operator and potentially sources of third party credit support. Alternatively, we may consider subordinate and/or participating or guaranteed debt or other hybrid financing structures to meet potential market concerns that can't be dealt with otherwise.

Lehman Brothers is very interested in serving as investment banker on this interesting and exciting project. We believe we have the requisite industry expertise to serve you and the SPEs better than anyone else on Wall Street. We would form a multi-disciplinary team of our Public Finance Group and project financing headed by Stephen A. Claiborn, Managing Director in Houston, Steve Howard, Senior Vice President in New York City and John Veech in New York Project Finance. We have enclosed herewith brief biographies of the individuals to be involved. Additionally we believe that an appropriate marketing effort headed by Victor Forte, head of our Taxable Syndicate and Steve Milano in Municipals would enable you to secure the lowest available rates on the overall financing. Our recent transaction for the \$510 million Williams Companies pipeline demonstrates our recent competence on a similar project.

In summary, your description of the economic feasibility of the Project leads us to believe that your financing objectives can be met if ARC can pull together the myriad of parties that are necessary to the Project's success. We believe we understand what is required of the Project's investment banker financing the project and Lehman Brothers would like to play that role. This letter is obviously not a commitment to provide financing of any kind. Such a commitment would only be forthcoming subject to satisfactory completion of due diligence, mutual agreement as to all terms and conditions and approval by Lehman Brothers' commitment committee.

Thank you for your consideration of Lehman Brothers and we look forward to working with you on this very important Project.

Very truly yours,



Stephen A. Claiborn

SAC:ikg

cc: John Veech  
Steve Howard  
Gary Killian  
Maurice Daniels



December 21, 2001

Mr. Robert D. Murphy, Jr.  
President  
Arctic Resources Company  
Three Riverway, Suite 1375  
Houston, TX 77056

Dear Mr. Murphy:

On numerous occasions over the past several months we have discussed with you and your colleagues at Arctic Resources Company ("ARC") about the arrangement of a project to construct and operate a natural gas pipeline designed transport natural gas from the North Slope of Alaska and the Mackenzie Delta to the consuming markets of the lower forty-eight states. As we have developed a more complete comprehension of ARC's business strategy and its execution, BNP Paribas believes that based upon having secured the appropriate contractual arrangements with the North Slope and Mackenzie Delta producers, your proposal of creating a debt financing of up to 100%, for an Alaskan Native American and Canadian Aboriginal-owned pipeline asset is feasible. Furthermore, we also believe that in regard to progressing the project and its financing requirements, BNP Paribas is highly qualified to assist ARC in such an endeavor in its role as the Program Manager for the Native American and Canadian Aboriginal special purpose companies as both a Financial Advisor and an Arranger for the two companies. We understand that Northern Route Gas Pipeline Corporation has been formed as the Canadian special purpose company.

Our understanding of the project's scope is that it encompasses a 1,700-mile pipeline, incorporating some \$7.9 billion of capital expenditures and \$9.4 billion of total financing requirements. The financing will be accomplished through a public debt issuance program and will be structured around the integrity of transportation contracts with the Alaskan North Slope and Mackenzie Delta producers. These contracts will be structured to provide net cash flow sufficient to cover maintenance capex, interest carry and amortization, as well as a distribution stream to the pipeline's owners.

Despite the unique aspects of this project's scope, scale, route, and capital structure, we believe that the proposed business plan can be achieved. However, to be successful, the integrity of the transportation contracts is of paramount importance. Clearly, the credit capacity of the North Slope and Mackenzie Delta producers, which will be the transportation contract counterparties, establishes a very strong foundation upon which a financing structure can be developed. Nevertheless, investors must be assured that the



Mr. Robert D. Murphy, Jr.  
Page 2

terms of these transportation contracts synthesize the bonds into a credit risk which is essentially the same as a direct credit risk on the producers themselves. The investor must be effectively insulated from construction and operating risks over the life of the project.

While we believe that the proposed project and its presently contemplated financing structure can be accomplished, coordinating, balancing and respecting the interests and objectives of all of the constituencies involved in this transaction will require a highly experienced and qualified set of negotiating and structuring skills. Consequently, accomplishing this goal will require the assistance of qualified and experienced financing professionals.


Acting in an Advisory capacity, BNP Paribas' significant experience as a worldwide leader in project and infrastructure finance for the energy industry, including essentially every major pipeline transaction over the past decade, positions us as being eminently qualified to assure ARC and the Alaskan Native American special purpose company and Northern Route Gas Pipeline Corporation that this prerequisite will be successfully accomplished. Additionally, BNP Paribas is well poised to provide seamless execution of the entire financing transaction by acting as Arranger for placement of the bonds into the public debt markets across the globe.

As we have expressed to you previously, we believe that based on the information presented to us by you to date, the project possesses inherently financing capacity, and we look forward to conducting further due diligence with the goal of developing a definitive financing strategy.

This letter is intended to express BNP Paribas' interest in working with ARC and the Alaskan Native American special purpose company and Northern Route Gas Pipeline Corporation on the development of this project and the arrangement of the associated financing requirements. Please note that this letter is not intended to represent a financing commitment. Any financing commitment would require a full due diligence review and the prior approval of our credit committee.

We appreciate your interest in working with BNP Paribas and we look forward to assisting you in the development of this exciting and strategic project.

Sincerely,

  
Barton D. Schouest  
Managing Director  
Oil and Gas Group

  
Dan Cozine  
Managing Director  
Project Finance Group

## **APPENDIX "C"**

### **EARLY PUBLIC NOTIFICATION AND CONSULTATION (EPNC) CONTACTS**

#### **Parties contacted as part of EPNC Process**

#### **1. Aboriginal Groups**

<b><u>First Nation Name</u></b>	<b><u>Tribal Council</u></b>
Inuvialuit Regional Corporation	Inuvialuit Regional Corporation
Inuvik Native Band	Gwich'in Tribal Council
Tetlit Gwich'in Band	Gwich'in Tribal Council
Gwicha Gwich'in Band	Gwich'in Tribal Council
Aklavik Indian Band	Gwich'in Tribal Council
Fort Good Hope Dene Band	Sahtu Dene Council
Behdzi Ahda First Nation	Sahtu Dene Council
Tulita Dene Band	Sahtu Dene Council
Fort Good Hope Metis	Sahtu Secretariat Incorporated
Yamoga Land Corporation	Sahtu Secretariat Incorporated
Ayoni Keh Land Corporation	Sahtu Secretariat Incorporated
Ernie McDonald Land Corporation	Sahtu Secretariat Incorporated
Tulita Land Corporation	Sahtu Secretariat Incorporated
Fort Norman Metis Land Corporation	Sahtu Secretariat Incorporated
Jean Marie River	Deh Cho First Nations
Liidli Koe	Deh Cho First Nations
Pehdzeh Ki	Deh Cho First Nations
Sambaa K'e Dene Band	Deh Cho First Nations
Deh Gah Gotie Dene Council	Deh Cho First Nations

Ka'a'gee Tu First Nation	Deh Cho First Nations
Acho Dene Koe	Deh Cho First Nations
Fort Simpson Metis Local #52	Deh Cho First Nations
Fort Providence Metis Council	Deh Cho First Nations

**2. Hamlets, Towns, Villages, First Nation Designated Authorities, Designated Authorities, Counties and Municipal Districts**

Inuvik	Tuktoyaktuk
Aklavik	Wrigley
Fort Good Hope	Jean Marie River
Norman Wells	Trout Lake
Tulita	Fort Simpson
Fort Providence	Kakisa

# ***ArctiGas***

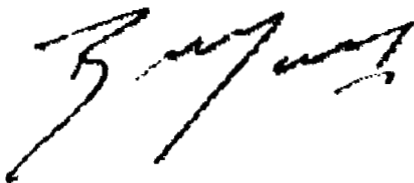
## **ATTENTION: IMPORTANT NOTICE**

ArctiGas Resources Limited Partnership is the Program Manager and Administrator for the Northern Route Gas Pipeline Corporation ("NRGPC") and the Northern Gas Pipeline Project ("NGPP"). NRGPC is proposing to construct the Canadian segment of a natural gas pipeline from Prudhoe Bay, Alaska to a point in the vicinity of Edmonton, Alberta.

This brochure will provide useful information with respect to this proposed project.

For additional information, please contact Bruce Hall during business hours in Calgary toll free at 1-866-920-0333.

Yours truly,



Bruce Hall  
Managing Director, ArctiGas Resources Corp.  
General Partner of ArctiGas Resources Limited Partnership



# Northern Gas Pipeline Project Location Map

## Legend

- Proposed Pipeline Corridor
  - Deh Cho Settlement Region
  - Gwich'in Settlement Region
  - Inuvialuit Settlement Region
  - Sahtu Settlement Region
  - National Parks
  - Alaska National Wildlife Refuge
- Political boundaries indicated on this map are not authoritative.



Albers Equal Area Projection  
Approximate Scale 1:8,500,000



## ArctiGas PROJECT CORRIDOR

The Northern Gas Pipeline Project ("NGPP") is a proposed linear development of approximately 2,700 kilometers in length within which a buried pipeline is proposed for installation, along with the construction of associated surface facilities.

The NGPP will accommodate the receipt and delivery of conditioned natural gas from Prudhoe Bay, Alaska, the Mackenzie River Delta, Canada, and from developing reserves along the Mackenzie River Valley.

The NGPP pipeline corridor will where possible parallel or otherwise occupy existing linear developments, thereby creating an incremental development within a corridor of minimum width. The final corridor selection will be defined through ongoing consultation with the landowners and affected stakeholders.



# ***ArctiGas***

## **NORTHERN ROUTE GAS PIPELINE CORPORATION ("NRGPC")**

### **NORTHERN GAS PIPELINE PROJECT ("NGPP")**

- a cornerstone of this project is 100% ownership for the Canadian segment of the pipeline by NRGPC, a wholly owned aboriginal Canadian corporation.
- the pipeline will transport conditioned natural gas from Prudhoe Bay, Alaska and the Northwest Territories to a point in the vicinity of Edmonton, Alberta. From this hub, the existing and expanded pipeline system will deliver the natural gas to sales points throughout North America as well to local consumers.
- the pipeline project will consist of two parallel adjacent pipelines. The initial pipeline will be a 914mm (36-inch) diameter pipeline. The second pipeline will be a 914mm (36-inch) or larger pipeline, depending upon the supply/demand situation at the time of construction of the second pipeline.
- the pipeline will be constructed and put into service in phases, which will closely match the volumes of natural gas transported, as such volumes become available for production and as downstream market demands increase.
- the pipeline will be an open access natural gas pipeline system, and will make provision for volumes from existing and future reservoirs along the pipeline corridor.
- NRGPC will undertake environmental and socio-economic assessments that will consider all mandatory factors listed in the National Energy Board's guidelines for Filing Requirements, the Canadian Environmental Assessment Act, as well as those issues and concerns identified through ongoing landowner, stakeholder, and other regulatory consultations.
- NRGPC will ensure that the landowners, stakeholders and other interested parties are given the full opportunity for meaningful ongoing input and comment on the NGPP.

## ArctiGas

### NORTHERN ROUTE GAS PIPELINE CORPORATION ("NRGPC")

#### NORTHERN GAS PIPELINE PROJECT ("NGPP")

- a cornerstone of this project is 100% ownership for the Canadian segment of the pipeline by NRGPC, a wholly owned aboriginal Canadian corporation.
- the pipeline will transport conditioned natural gas from Prudhoe Bay, the Mackenzie River Delta and the Mackenzie River Valley to a point in the vicinity of Edmonton, Alberta. From this hub, the existing and expanded pipeline system will deliver the natural gas to sales points throughout North America, as well as to local consumers.
- the pipeline project will consist of two parallel adjacent pipelines. The initial pipeline will be a 914mm (36-inch) diameter pipeline. The second pipeline will be a 914mm (36-inch) or larger pipeline, depending upon the supply/demand situation at the time of construction of the second pipeline.
- the pipeline will be constructed and put into service in phases, which will closely match the volumes of natural gas transported, as such volumes become available for production and as downstream market demands increase.
- the pipeline will be an open access natural gas pipeline system, and will make provision for volumes from existing and future reservoirs along the pipeline corridor.
- NRGPC will undertake environmental and socio-economic assessments that will consider all mandatory factors listed in the National Energy Board's Guidelines for Filing Requirements, the Canadian Environmental Assessment Act, as well as those issues and concerns identified through ongoing landowner, stakeholder, and other regulatory consultations.
- NRGPC will ensure that the landowners, stakeholders and other interested parties are given the full opportunity for meaningful ongoing input and comment on the NGPP.

## ArctiGas

### GÓHDLI NDÉÉ ZHÍH TÁEH GHA SATSŌ K'O GEDEHGE TS'ÊHK'E EGHÁLÁEDA ("NRGPC") gúzhe

#### GÓHDLI NDÉÉ SATSŌ K'O K'EH EGHÁLÁEDA ("NGPP")

- Edəhndee gots'əh dene kéleh gedəhth'i, NRGPC gúzhe, Canada ts'əhk'e edi táeh gha satsŏ k'o gedehge k'eh egháláeda azhŏ egedí ét'ih glit'ih gha mendah senidaegeniəŏ ŏt'e.
- Prudhoe Bay gots'əh ésää ndéh zhíh gots'əh tá'eh kágezenih gots'əh satsŏ k'o t'áh Dehcho k'çç dehé undáá Edmonton got'sç ét'ih d'etá'ii gha. Ezhi gots'əh ésää undáá got'sç ét'ih satsŏ kó gúli zhágedihge gha, gots'ç kŏtah mek'çç zhágóla dúle tá'eh zhets'əh nágehndíh.
- Sats'ŏ k'o ŏki eágáh zhádéəə k'çç ageleh gha. Satsŏ k'o ala gedehge gha la 914mm (36-inch) kadéhká gha. Gots'əh mek'əh la sats'ŏ k'o 914mm (36-inch) kadéhká gha , űle nidé kútá'ii tá'eh t'áagot'í gha láondih nidé neká godlíh ageleh gha.
- Undáá gots'ç edi sats'ŏ k'o gedehge lŏŏ kodí menagŏt'əh ét'ih dúle tá'eh náendih gha seogeleh gha, gots'əh táeh edáodéhtá'ii gots'ç met'áh agot'í kútá'ii zheŏgehndíh gháádé tá'eh edánéht'é est'enidhē gha mek'éodezhŏ gha shu keogēhndih gha.
- Edi tá'eh gha sats'ŏ k'o la dúle undáddhé k'éəŏ tá'eh menidhē nidé dúle edi sats'ŏ k'o déəə k'çç ndéh zhíh tá'eh medáedéla zhágŏli ts'əh k'éndaa táeh ageleh.
- Edi NRGPC, Sats'ŏ K'o Ts'əhk'e eghálagidéh Ke la kadih ts'ahslii xáádé zhánizheh gots'əh golŏa kazhaŏndih edi sats'ŏ k'o gedéhge nidé mets'ihəŏ k'í ts'ññgodhi gha sóondih gha gok'agenehta gha. Ezhi gottháh shu kŏtah zhágóla gots'əh dene názhádéh edi sats'ŏ k'o gedehge ghŏ dáegenidhē gha azhŏ gots'ç zháogñndeh gha.
- Edi NRGPC Sats'ŏ K'o Ts'əhk'e eghálagidéh ke la kodí edi sats'ŏ k'o gedehge k'çç dene názhádéh dúle edáondí mek'eh eghálaeda ts'ç gogendeh gots'əh dúle meghálaeda lŏŏ k'éndaa zheghŏ káogende gha shu gots'ç godáhkáegedéniaŏ gha.

## ArctiGas

### NORTHERN ROUTE GAS PIPELINE CORPORATION ("NRGPC")

#### NORTHERN GAS PIPELINE PROJECT ("NGPP")

- Jii gwitr'it geenjit tr'oochit nilii t'at 100% t'iyah naniint'aii Canada ts'aii NRGPC giyahnuu k'iighe' aii dinjii zhuh kat ts'an zrit khehlok Canadian Corporation goovaazhii nilii.
- Jii iitsii gwizhah khaii juuk'an' Prudhoe Bay gwats'at, Ehdiitat gwats'at chan ts'at Nagwichoonjik gwats'at, y'eenuu Edmonton, Alberta gehkhee akaik'it gwats'at. Ezhik gwats'at zrit, aii iitsii gwizhah nichii ts'at gwiinchii gwatahtsaa vat'agwahdahch'yaa y'eenuu gwa'an chan ts'at zhik gwaa'an tthak geenjit natr'heethal.
- Jii gwitr'it zrit iitsii gwizhah neekaii nihkhehkhee gwiheelyaa tr'agwahahtsaa. Aii iitsii gwizhah tr'oochit zrit 914 mm (goo 36 inches) gwichyah gwiheelyaa. Aii iitsii gwizhah nighndoo chan nihk'it goo gehndoo nichii heelyaa, dagwahleii goo dagwahchii giiniindhan aii iitsii gwizhah nighndoo tr'agwahtsaii aii gwik'it gwiheelyaa.
- Aii iitsii gwizhah zrit gwik'it tr'agwahahtsaa ts'at gwit'agwahdahch'yaa, t'agwanhchii gwinjik khaii juuk'an' heelyaa zrit gwik'it tr'agwahahtsaa, akoots'at yendoo ji' jidii geenjit giiniidhan khainjii nihk'it heelyaa.
- Kaiik'it iitsii gwizhah gwinjik gwit'agwidahch'uu, khaii gugwahtsaii ji' gwizhit natr'heethal heelyaa ts'at gwinjik gwit'agwahdahch'yaa giiniidhan ji'geenjit.
- Aii NRGPC kat chan nakhwinagoo'ee ts'at dinjii tat aii iitsii gwizhah goovah dagwiheech'yaa geenjit giik'agahaandal akoots'at aii National Energy Board kat chan dagwidiinu' juhts'ants'at gwinjik gwitr'it t'atr'agwahah'yaa geenjit gadhan, aii gchkhhee ts'at Canadian Environmental Assessment Act gwinjik ts'at juudin kat nan ts'an nilii kat, nan tthaii nilii kat ts'at jidii vak'agwaadhat geenjit vidaotijaadri' kat ts'at juudin kat gwizhit geenjit dagidi'in geenjit giiniidhan kat chan.
- Jii dinjii kat juudin NRGPC gwizhit dangiinch'uu zrit juudin nan gwats'an nilii kat, nan tthaii nilii kat, ts'at izhuu kat juudin goots'at tr'igiikhii goo dagidi'in aii iitsii gwizhah hah goovah gugwaandak giiniidhan ji' gwik'it geenjit gagadhan heelyaa. Iitsii gwizhah gwinjik khaii gidi'in goo lei agugwahn'aih ji' tthak ts'at gwit'agwidahch'uu geenjit gadhan heelyaa.

## ArctiGas

### Tamana tughulugruak aulavikahuni Northernkun ughurugruam tughulia ("NRGPC")

#### Northern ughurugruam tughullianik havaktit "(NGPP")

- Iqigiurami uyagak havaktit ilukan pigivlugu ilangani Canadian tughulugruak ukiat NRGPCkut, tamana ilingita pigivlugu ukuat aboriginal Canadian Corporationkut.
- Tamana tughuluk aulaviginiaga hanaikimaniktuam ughugruam puvlam tavranga Prudhoe Baymin Mackenziem kuukpangagun umagmi tamaunulu Mackenziem kuukpangagun kimilgaangagun tavranga aglaan tamaunga Edmontonmun, Alberta tavranga tamaniituaglu iiguraglu tughulugruak hanaiktak tuyutigivigilugu nutim ughurugruak puvia tuniukakilugu ilukanun North Americanun inlanunlu.
- Malguiguhiruk tughulugruak aulaniaktuk havaniktak tughulu aktilanga 914 mm (36 inch) tuglia ahii 914 (36 inch) angihaguniluni kanutun aglaan atuktilangagun havakuming tughululiuktiluting tamana tuglia tughulugruak havekagumirung.
- Tamana tughulugruak havakihigat hanaiglugu atuguminakilgu humunlika, aktilangatun ughurugruam puvlam agrakiguming kanutinlu pakitchilatilakting puvlanik tamanalu kanutun atuktilangat aglilakpan tuniukaimagikigumiglui agilakpalu atugninga.
- Tughulugruak angmahiruk tamatumunga ughugruanun puvlanun tughuluanun tamanalu atuguminakttuak aktilangatun tamaniitaniktuaktuak tughulugruak hivuniptingnilu pakitat ughurut tamani.
- NRGPCtamakuat munagihigai hulika nunami inuniaguhiglu inuniaguhiglu tamani hunalika aglakimaruak tapkununga National Energy Bourdsnun maligurutigilugit tutkuktaghirat aglaktat, tamanalu maliguruti Canadian Environmental Assessment Act, tamakualu isurnagihuukangiit inuniagutit kuliaktuglugit hulika nnunakaktuanun napakutchikimaniktuat inuniaguhilu tamaniittuat ilihimaruat tamani.
- NRGPCkut naluniayumagikihigai Nunakaktuat Napakutaligalu alalu ilaliutihuktuat tamakunuga ikaguktuat tamkununa ukaguktuat pilahipiaglugu ilthuanungniaguktuat ukaghirakaghirut tapkunani NGPPkuni.

## APPENDIX "E1"

### PIPELINE CONSTRUCTION ACTIVITY SCHEDULE – PHASE 1

	NORTH OF FORT SIMPSON		SOUTH OF FORT SIMPSON	
Activity	Winter Construction	Summer Construction	Winter Construction	Summer Construction
Preclearing	W 2006	W 2006	W 2006	W 2006
Roll & Coat Linepipe	Q1 2005 to Q4 2006	Q1 2005 to Q4 2006	Q1 2005 to Q4 2006	Q1 2005 to Q4 2006
Stockpile Pipe	S 2005 / 2006	S 2005	S & F 2005 / 2006	String from Mill
Mobilize & Set Up Camps	S 2005 / 2006	S 2005 / 2006	S 2005 / 2006	S 2006
Stringing	W 2006 / 2007	W 2006	W 2006 / 2007	S 2006 / 2007
Welding	W 2006 / 2007	W 2006	W 2006 / 2007	S 2006 / 2007
Trenching	W 2006 / 2007	W 2007	W 2006 / 2007	S 2006 / 2007
Backfill	W 2006 / 2007	W 2007	W 2006 / 2007	S 2006 / 2007
Pressure Test	S 2007	S 2007	S 2007	S 2007
Pack Line with NG	S 2007	S 2007	S 2007	S 2007
Commission & Startup	S 2007	S 2007	S 2007	S 2007

#### KEY

W = Winter (November to April)

S = Summer

F = Fall

Q = Quarter

NG = Natural Gas

S 2005 / 2006 = Summer 2005 / Summer 2006

Note: Phase 3 constitutes the above schedule plus 2 years.

## APPENDIX "E2"

### PIPELINE CONSTRUCTION ACTIVITY SCHEDULE – PHASE 2

Activity	CONSTRUCTION SEASON	
	Summer Option Winter Construction	Winter Option Summer Construction
Roll & Coat Linepipe	Q1 2005 to Q4 2006	Q1 2005 to Q4 2006
Pipe Transport	S 2006 / 2007	S 2005 / 2006
Mobilize & Set Up Camps	S 2006 / 2007	S 2006 / 2007
Construction		
Lay Barge	S 2006 / 2007	N/A
Off Ice	N/A	W 2007 / 2008
Pressure Test	S 2008	S 2008
Pack Line with NG	S 2008	S 2008
Commission & Startup	S 2008	S 2008

#### KEY

W = Winter (November to April)

S = Summer

F = Fall

Q = Quarter

NG = Natural Gas

S 2006 / 2007 = Summer 2006 / Summer 2007

Note: Phase 4 constitutes the above schedule plus 2 years.

Appendix "F" COMMUNITY PROFILES.

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
<b>NWT</b>							
Aklavik (aka Barren Ground Grizzly Place)	West shore of Peel Channel in the Mackenzie River Delta.  Longitude 135 Latitude 68.13 <sup>1</sup>	Approx. 700 residents <sup>2</sup> . Majority Inuit and Dene. Average income (1997) \$18,000. Half of the population is under 25 yrs.  Language: Inuvialuktun and Gwich'in. <sup>3</sup>	Hamlet Inuvik <sup>4</sup>	Hospitality services, recreation complex, library, K-9 school, various churches, health centre and Community Social Services, volunteer fire, RCMP, newspaper, radio/TV/phone, housing and newspaper. <sup>5</sup>	Winter road. Air and mail service five times per week. Utilities: diesel power; trucked and treated potable water; septic tanks to holding ponds and gravity return to source; solid waste is collected, sorted and land filled. <sup>6</sup>	Based on subsistence, but evolving to transportation, tourism, mineral and petroleum. <sup>7</sup>	Gwich'in <sup>8</sup>
Colville Lake (aka Ptarmigan Net)	745 kms NW of Yellowknife  Longitude 126.07 Latitude 67.02 <sup>9</sup>	Approx. 100 residents. <sup>10</sup> Average income (1997) \$17,000.  Language: North Slavey <sup>11</sup>	Settlement Corp. Sahtu <sup>12</sup>	Hospitality services, housing, park/playground, museum, art gallery, K-9 school, GP doctor and nurse visit occasionally, fire protection limited to extinguishers, RCMP from Ft. Good Hope, and phone. <sup>13</sup>	No road access. Air and mail service from Ft. Good Hope. Utilities: diesel power; water is hailed in buckets from Colville Lake during summer months-ice blocks are melted in winter- small holding tank in school- individuals may treat water with chlorine and/or boil; honeybag p/u is the sewage method; and garbage disposal is the responsibility of the individual. <sup>14</sup>	Based on subsistence and tourism. <sup>15</sup>	Sahtu

<sup>1</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>2</sup> Aboriginal Canada Portal – Community Statistics

<sup>3</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>4</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>5</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>6</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>7</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>8</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>9</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>10</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>11</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>12</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>13</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>14</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>15</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

Appendix "F"

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Deline (aka Moving or Flowing Water)	Situated on the Great Bear Lake, 544 kms NW of Yellowknife.  Longitude 123.25 Latitude 65.1 <sup>16</sup>	Approx. 620 residents. <sup>17</sup> Average income (1997) \$20,000.  Language: North Slavey. <sup>18</sup>	Charter Community Sahtu <sup>19</sup>	Hospitality services, housing, arena/hall, rink, swimming pool, sports field, skiing, K-9 school, volunteer fire, RCMP, community social services office, church service, and radio/ satellite TV/ phone. <sup>20</sup>	Winter road, air service. Utilities: diesel power; and potable water intake/ wet well/ pumping facilities-stored and trucked to community; and septic sewage disposal. <sup>21</sup>	Based on subsistence, tourism, petroleum services, retail, outfitters, and air transport services. <sup>22</sup>	Sahtu <sup>23</sup>
Fort Good Hope (aka Rapids)	On the Mackenzie River, 805 kms NW of Yellowknife.  Longitude 128.38 Latitude 66.15 <sup>24</sup>	Approx. 644 residents <sup>25</sup> . Majority Dene. Average income (1997) \$18,000. Half of the population is under 25.  Language: North Slavey. <sup>26</sup>	Hamlet Sahtu <sup>27</sup>	Hospitality services, banking, housing, recreation complex, K-vocational school, health centre, volunteer fire, RCMP, community social services, various denominational churches, phone, radio, TV, no banking, pool, skiing, museum, and radio/satellite TV/phone. <sup>28</sup>	Winter road. Air and mail service three times per week. Utilities: reservoir filled by Mackenzie Lake, trucks distribute water to community; septic and pump out sewage to waste cell disposal; and diesel power. <sup>29</sup>	Based primarily on subsistence, but includes the Norman Wells oil industry. Local businesses include: building contractors, buses and taxis, building materials, general retail, recreational vehicles, accounting, janitorial services, vehicle rentals, expeditors and hospitality. <sup>30</sup>	Sahtu <sup>31</sup>

<sup>16</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>17</sup> Aboriginal Canada Portal

<sup>18</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>19</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>20</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>21</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>22</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>23</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>24</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>25</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>26</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>27</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>28</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>29</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>30</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>31</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Fort McPherson (aka At the Head of the Waters)	Located on the Peel River, 121 kms SW of Inuvik.  Longitude 134.53 Latitude 67.26 <sup>32</sup>	Approx. 878 residents <sup>33</sup> of whom the majority are Dene. Half of the population is under 35 years. Average income (1997) \$20,000.  Language: Gwich'in. <sup>34</sup>	Hamlet Inuvik <sup>35</sup>	Hospitality services, housing, recreation centre, K-9 school, con-ed available, health centre, volunteer fire <sup>36</sup> , RCMP, and community social services, radio/satellite TV/phone and recreation complex. <sup>37</sup>	All weather road with ferry. Air with mail service four times per week. Utilities: diesel power; and potable water pumped from Water Lake to treatment centre where trucked to buildings and piped to residential; septic tanks pumped into a disposal area draining into the Peel River; solid waste trucked and land filled. <sup>38</sup>	Primarily manufacturing (Fort McPherson Tent and Canvas Factory), tourism, subsistence and retail. <sup>39</sup>	Gwich'in <sup>40</sup>
Fort Simpson (aka Place Where Rivers Come together)	Located at the confluence of the Mackenzie and Liard Rivers. <sup>41</sup>  Longitude 121.21 Latitude 61.52 <sup>42</sup>	Approx. 1257 residents. <sup>43</sup> Majority Dene. Half of the population is under 35 years. Average income (1997) \$27,000.  Language: South Slavey. <sup>44</sup>	Village Deh Cho <sup>45</sup>	Hospitality services, banking, housing, recreation centre, K-12 school, con-ed available, hospital, volunteer fire, RCMP, community social services, various churches, radio/phone/TV, newspaper, recreation complex and library. <sup>46</sup>	All weather road. Scheduled air service, mail service five times per week. Utilities: diesel power; water drawn from Mackenzie River is treated and piped; septic and piped sewage to ponds; solid waste, domestic and commercial garbage collection to incineration and land fill. <sup>47</sup>	Transportation, subsistence, forestry and supply regional services via local businesses: publishing, building contracting, air transport, buses, taxis, highway maintenance, wholesale, retail, hospitality, oil pipeline servicing, real estate, outfitting, and vehicle rentals. <sup>48</sup>	Deh Cho <sup>49</sup>

<sup>32</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>33</sup> Aboriginal Canada Portal

<sup>34</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>35</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>36</sup> RCMP Community, Contract, and Aboriginal Policing Services

<sup>37</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>38</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>39</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>40</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>41</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>42</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>43</sup> RCMP Community, Contract, and Aboriginal Policing Services

<sup>44</sup> Aboriginal Canada Portal

<sup>45</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>46</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>47</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>48</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>49</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

## Appendix "F"



Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Inuvik (aka Place of Man)	Located on the Mackenzie River Delta 1086 kms NW of Yellowknife.  Longitude 133.43 Latitude 68.21 <sup>50</sup>	Approx. 3296 residents. <sup>51</sup> Majority non-aboriginal followed by Inuit. Half of the population is under 30 years.  Language: Inuvialuktun, Gwich'in and English. <sup>52</sup>	Town <sup>53</sup> Inuvik <sup>54</sup>	Hospitality services, banking, housing, full service, K-12 school, con-ed available, hospital, dental, volunteer fire, RCMP, community social services, radio/TV/ phone, recreation centre and library, youth drop-in centre and seniors' facilities. <sup>55</sup>	All weather road, air service, mail service, hydroelectric and natural gas power to town and surrounding area, full potable water supply and sewage treatment and collection facilities, solid waste collection and incineration/land fill. <sup>56</sup>	The major transportation, health, and education centre for the region. Local businesses include: oil & gas exploration/services, clothing manufacture, contracting, air transport, wholesale/retail, fabrics, vehicle services and hospitality. <sup>57</sup>	Inuvik <sup>58</sup>
Jean Marie River (aka Water Flowing Over Rocks)	Located at the confluence of the Mackenzie and Jean Marie Rivers.  Longitude 120.38 Latitude 61.31 <sup>59</sup>	Approx. 53 residents <sup>60</sup> Majority Dene. Even distribution of residents 0-65. Average income (1995) \$18,000.  Language: South Slavey. <sup>61</sup>	First Nation Designated Authority Deh Cho <sup>62</sup>	Hospitality services, housing, minimal recreation, K-9 school, con-ed available and radio/TV/phone. <sup>63</sup>	All weather road. Mail is collected in a courtesy bag in Fort Simpson. Utilities: diesel power; potable water drawn from Mackenzie and Jean Marie Rivers, chlorinated, and trucked to community; septic sewage pumped to cell; solid waste is incinerated. <sup>64</sup>	Crafts, subsistence and sawmill that provides timber for fuel and local construction. <sup>65</sup>	Deh Cho <sup>66</sup>

<sup>50</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>51</sup> Aboriginal Canada Portal

<sup>52</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>53</sup> Aboriginal Canada Portal

<sup>54</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>55</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>56</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>57</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>58</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>59</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>60</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>61</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>62</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>63</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>64</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>65</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>66</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Kakisa (aka Between the Willows).	Located on the East side of Kakisa Lake.  Longitude 117.25 Latitude 60.56 <sup>67</sup>	Approx. 36 residents of whom most are Dene.  Language: South Slavey. <sup>68</sup>	Designated Authority Deh Cho <sup>69</sup>	Hospitality services, community hall, campground, K-8 school, medical services/RCMP from Ft. Providence and Hay River and radio/TV/phone. <sup>70</sup>	All weather road. Mail service picked up at Fort Providence. Utilities: potable water from the Kakisa River and trucked to community; pit privies are the main source of sewage disposal; solid waste trucked to small landfill. <sup>71</sup>	Subsistence and tourism. <sup>72</sup>	Deh Cho <sup>73</sup>
Norman Wells (aka Where there is oil).	Located on the Mackenzie River 680kms NW of Yellowknife.  Longitude 126.5 Latitude 65.17. <sup>74</sup>	Approx. 798 residents. Majority non-Aboriginal followed by Dene half of whom are 25-50 years. Average income (1997) \$44,000.  Language is North Slavey and English. <sup>75</sup>	Designated Authority Sahtu <sup>76</sup>	Hospitality services, banking, recreation centre, K-9 school, con-ed available, volunteer fire, RCMP, community social services, radio/phone/TV and health centre. <sup>77</sup>	Winter road, air service, summer barge transport, mail services five times per week. Utilities: potable water pumped from Mackenzie River, treated and piped; septic and piped waste is cell treated; solid waste is collected, sorted, incinerated and land filled. <sup>78</sup>	Oil drilling and exploration. <sup>79</sup>	Sahtu <sup>80</sup>
Trout Lake	Located 442 kms SW of Yellowknife.  Longitude 121.15 Latitude 60.20 <sup>81</sup>	Approx. 68 residents of whom the majority are Dene, with half the population 15-25 years. Average income (1995) \$13,000.  Language: South Slavey. <sup>82</sup>	First Nation Designated Authority Treaty 11 Deh Cho <sup>83</sup>	Hospitality services, housing, community hall, K-9 school, con-ed available, medical/fire/RCMP available at Fort Liard and phone. <sup>84</sup>	Winter road. Mail delivered to Fort Simpson. Utilities: potable water is drawn from lake, treated and trucked to distribution; sewage disposed by outdoor privies; and solid waste incinerated/land filled <sup>85</sup>	Subsistence and tourism during summer. <sup>86</sup>	Deh Cho

<sup>67</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>68</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>69</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>70</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>71</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>72</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>73</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>74</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>75</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>76</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>77</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>78</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>79</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>80</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>81</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>82</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>83</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>84</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>85</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>86</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Tsiigehtchic (aka Mouth of the Iron River)	Located at the confluence of the Arctic Red and Mackenzie Rivers 96kms S of Inuvik.  Longitude 133.44 Latitude 67.27. <sup>87</sup>	Approx. 162 residents of whom the majority are Dene with half of the population under 35 years. Average income (1997) \$20,000.  Language: Gwich'in. <sup>88</sup>	Hamlet Gwich'in <sup>89</sup>	Housing, community centre, K-9 school, con-ed available, health centre, volunteer fire, RCMP/community social services available through Fort McPherson, and radio/phone/TV. <sup>90</sup>	All weather road and ferry. Mail service once per week. Utilities: potable water is drawn from the river, treated and trucked for distribution; sewage is collected via septic tank or bag to cells; and solid waste is landfilled. <sup>91</sup>	Subsistence and some retail. <sup>92</sup>	Gwich'in <sup>93</sup>
Tulita (aka Where the Waters Meet) (Fort Norman)	At the junction of the Great Bear and Mackenzie Rivers.  Longitude 125.34 Latitude 64.54 <sup>94</sup>	Approx. 450 residents with the majority Dene, half of the population is under 35 years. Average income (1997) \$19,000.  Language: North Slavey <sup>95</sup>	Hamlet Sahtu <sup>96</sup>	Hospitality services, housing, recreation and library centre, K-9 school, con-ed available, health centre, volunteer fire, RCMP, community social services and radio/phone/TV. <sup>97</sup>	Winter road, air and mail service. Utilities: potable water is pumped from the river, treated and trucked for distribution; sewage collection via septic tanks; solid waste collected, incinerated and land filled. <sup>98</sup>	Subsistence, petroleum and tourism. <sup>99</sup>	Sahtu <sup>100</sup>

<sup>87</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>88</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>89</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>90</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>91</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>92</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>93</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>94</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>95</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>96</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>97</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>98</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>99</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>100</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Wrigley (aka Clay Place)	The junction of the Mackenzie River and the Hodgson Creek, 466 kms NW Yellowknife.  Longitude 123.28 Latitude 63.14. <sup>101</sup>	Approx. 167 residents of whom the majority are Dene, half the population under 40 years. Average income (1997) \$20,000.  Language: South Slavey <sup>102</sup>	First Nation Designated Authority Deh Cho <sup>103</sup>	Hospitality services, housing, community hall, K-11 school, con-ed available, health centre, volunteer fire, RCMP, community social services available through Fort Simpson, and radio/phone/TV. <sup>104</sup>	All weather road and ferry, mail services once per week. Utilities: diesel power; trucked and treated potable water from the river; sewage collected via septic; and solid waste collection. <sup>105</sup>	Subsistence, retail, hospitality, building and contracting. <sup>106</sup>	Deh Cho <sup>107</sup>
<b>Alberta</b>							
Atikameg (aka Whitefish)	Approx. 247 kms. from Peace River, 285 kms NW of Edmonton, 210 kms NE of Grande Prairie I.D. 17 <sup>108</sup> Longitude 116.13 Latitude 55.76 <sup>109</sup>	Approx. 850 residents.  Language: Cree and English <sup>110</sup>	Hamlet <sup>111</sup>	Health services, ambulance, hospital/ social services in High Prairie, RCMP, radio/phone/TV, ice fishing, canoeing, fishing, hiking, camping, ski-dooing, horse-shoeing, skating, K-12 school and housing. <sup>112</sup>	All weather road. Mail service twice a week. Utilities: hydro electric power. <sup>113</sup>	Pending.	Pending

<sup>101</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>102</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>103</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>104</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>105</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>106</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>107</sup> Common Ground – Report of the NWT Economic Strategy panel, June 2000

<sup>108</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>109</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>110</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>111</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>112</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>113</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Bon Accord	12.8 kms N of Edmonton. M.D. 90 18-56-23-w4 <sup>114</sup> Longitude 113.5 Latitude 53.7 <sup>115</sup>	Approx. 1460 residents. <sup>116</sup>	Town County of Sturgeon <sup>117</sup>	Arena, community hall, seniors' drop-in centre, cultural centre, library, recreation parks(active and passive), sports field, volunteer fire/ ambulance, RCMP, K-9 school, family and community support services program, banking, phone/radio/ TV, newspaper, various denominational churches, housing, hospitality industry, couriers, community bus and taxis. <sup>118</sup>	All weather paved roads. Well serviced community. A number of well established businesses. The cottage industry is encouraged and well supported. Utilities: hydro electric power, potable water from wells; piped sewage collection; solid waste collection; separation and land filled garbage collection; and no business taxes, air/rail/bus, or mail services. <sup>119</sup>	Agriculture, petroleum and service centre for the surrounding area. <sup>120</sup>	Pending
Cadotte Lake	Approx. 204 kms NE of Grande Prairie, 360 kms NW of Edmonton I.D. 17 24-86-16-w5 <sup>121</sup> Longitude 117.7 Latitude 56.5 <sup>122</sup>	Pending.	Hamlet and partially located in the County of East Peace, and in proximity to the Woodland Cree First Nation Reserve #474 <sup>123</sup>	RCMP, volunteer fire, Greyhound, radio/TV/phone and K-12 school. <sup>124</sup>	All weather road. Mail service. Utilities: private wells and municipal key locks for water supplied by a water coop; septic collection and disposal service; hydro electric power, and natural gas. <sup>125</sup>	Forestry and petroleum. <sup>126</sup>	Algonquian Cree Metis Lubicon

<sup>114</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>115</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>116</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>117</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>118</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>119</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>120</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>121</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>122</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>123</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>124</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>125</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>126</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Chateh (aka Assumption)	Located on the Hay Lake Reserve. Approx. 90 kms NE of High Level I.D. 23 01-112-5-w6 <sup>127</sup> Longitude 118.6 Latitude 58.6 <sup>128</sup>	Approx. 1200 residents of whom the majority are Aboriginal. <sup>129</sup>	Hamlet Governed by a Band Council and related Administrative departments. County of Mackenzie. <sup>130</sup>	Youth drop-in centre, K-12 school, social assistance and related programs, nursing stations, and many seasonal and cultural activities. <sup>131</sup>	All weather road. Mail service. <sup>132</sup>	Most residents are employed with the Band or in traditional subsistence activities. <sup>133</sup>	Dene Tha <sup>134</sup>
Clyde	Approx. 50 kms N of Edmonton M.D. 92 35-59-25-w4 <sup>135</sup> Longitude 113.5 Latitude 54.2 <sup>136</sup>	Pending.	Village County of Westlock <sup>137</sup>	Full service to community. <sup>138</sup>	All weather roads. Mail. Utilities: hydro electric power; natural gas distribution; piped-septic sewage to cell; solid waste collection, separation and land fill. <sup>139</sup>	Agriculture and service to the vicinity. <sup>140</sup>	Treaty 8
Flatbush	Approx. 120 kms N of Edmonton I.D. 17 01-66-02-w5 Longitude 114.3 Latitude 54.7 <sup>141</sup>	Pending.	Hamlet County of Lesser Slave River <sup>142</sup>	Pending.	All weather road. <sup>143</sup>	Agriculture, forestry and service to the vicinity. <sup>144</sup>	Treaty 6/8

<sup>127</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>128</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>129</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>130</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>131</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>132</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>133</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>134</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>135</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>136</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>137</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>138</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>139</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>140</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>141</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>142</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>143</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>144</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

Community	Location	Demographic	Administrative	Services	Infrastructure	Economy	Aboriginal Settlement Area
Gift Lake (aka Where Gifts are Exchanged).	Approx. 95 kms NW of Slave Lake, 200 kms NE of Grande Prairie I.D. 17 28-79-12-w5 <sup>145</sup> Longitude 115.7 Latitude 55.7 <sup>146</sup>	Approx. 905 residents,  Language: Cree and English. <sup>147</sup>	Hamlet County of Big Lakes <sup>148</sup>	Health services/ ambulance/social services/RCMP from High Prairie, K-9 school, radio/ phone/TV, community health and recreational centre, food, shopping and gas station in High Prairie. <sup>149</sup>	All weather road. Mail service. <sup>150</sup>	Subsistence, petroleum and forestry. <sup>151</sup>	Treaty 8 Cree
Hondo	Approx. 155 kms N of Edmonton I.D. 17 23-70-01-w5 Longitude 114.1 Latitude 55.2 <sup>152</sup>	Pending.	Locality County of Lesser Slave Lake <sup>153</sup>	Limited service. <sup>154</sup>	Hydro electric power, natural gas and well water. <sup>155</sup>	Agriculture, petroleum and forestry. <sup>156</sup>	Treaty 8
Hotchkiss	Approx. 20 kms N of Manning, 950 kms N of Peace River I.D. 22 13-93-23-w5 <sup>157</sup> Longitude 117.5 Latitude 57.2 <sup>158</sup>	Pending.	Town County of Northern Lights. <sup>159</sup>	Pending.	Pending.	Petroleum and forestry. <sup>160</sup>	Treaty 8 Deh Cho

<sup>145</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>146</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>147</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>148</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>149</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>150</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>151</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>152</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>153</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>154</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>155</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>156</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>157</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>158</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>159</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>160</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

Jarvie	Approx. 90 kms N of Edmonton M.D. 92 <sup>161</sup> Longitude 113.9 Latitude 54.5 <sup>162</sup>	Pending.		Service center for district. <sup>163</sup>	All weather road and rail. <sup>164</sup>	Agriculture and forestry. <sup>165</sup>	Treaty 6
Keg River	Approx. 175 kms NE of Peace River I.D. 22 21-101-24-w5 <sup>166</sup> Longitude 117.7 Latitude 53.9 <sup>167</sup>	Approx. 300 residents,  Language: English, Ukrainian and Cree. <sup>168</sup>	Hamlet County of Northern Lights. <sup>169</sup>	Housing, community recreation centre, health clinic, hospital in Manning, RCMP in High Level, bank, K-12 school, and TV/radio/ phone. <sup>170</sup>	All weather road, air charter from High Level, mail service, and Greyhound. <sup>171</sup>	Forestry and petroleum. <sup>172</sup>	Treaty 8 Deh Cho
Legal	30 kms N of Edmonton M.D. 90 <sup>173</sup> Longitude 113.55 Latitude 53.9 <sup>174</sup>	Approx. 1 100 residents.  Language: English, French and Ukrainian. <sup>175</sup>	County of Sturgeon <sup>176</sup>	K-9 school, fire/ambulance, numerous service organizations, recreation centre, banking, radio/TV/ phone, multiple churches, hospitality services, housing, hospital in St. Albert, medical clinics, seniors' facilities and RCMP. <sup>177</sup>	All weather road and rail. Mail service. Utilities: treated and piped well water; piped sewage collection to cells; and solid waste collection. <sup>178</sup>	Agriculture and service distribution to vicinity. Satellite community to Edmonton. <sup>179</sup>	Treaty 6

<sup>161</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>162</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>163</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>164</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>165</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>166</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>167</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>168</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>169</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>170</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>171</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>172</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>173</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>174</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>175</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>176</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>177</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>178</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>179</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada



Little Buffalo (aka L'Hirondelle)	Approx. 75 kms NW of Peace River I.D. 17 11-86-14-w5 <sup>180</sup> Longitude 116.2 Latitude 56.6 <sup>181</sup>	Approx. 500 residents.  Languages: Cree and English. <sup>182</sup>	Hamlet County of East Peace <sup>183</sup>	Health services located in the school yard, social services/RCMP in Peace River, satellite TV/ radio/phone, K-12 school, recreation centre and limited housing. <sup>184</sup>	All weather road. Mail service at Cadotte Lake. <sup>185</sup>	Traditional subsistence. Forestry and petroleum. <sup>186</sup>	Lubicon Lake First Nation <sup>187</sup>
Manning (aka Land of the Mighty Moose)	Approx. 445 kms NW of Edmonton, 75 kms NW of Peace River, 200 kms NE of Grande Prairie I.D. 22 28-91-23-w5 <sup>188</sup> Longitude 117.5 Latitude 56.8 <sup>189</sup>	Approx. 1300 residents <sup>190</sup>	Town County of Northern Lights <sup>191</sup>	Phone/radio/TV, banking, newspaper, sports centre, seniors' drop-in centre, hospital, family and community support services, multiple churches, museum, hospitality services, housing, K-12 school, ambulance, dentist, fire and RCMP. <sup>192</sup>	All weather road, airport, rail. Mail service. Utilities: hydro electric; treated piped water; and piped sewage to treatment cells. <sup>193</sup>	Agriculture, forestry, oil & gas, beekeeping and tourism. <sup>194</sup>	Pending
Morinville	Approx. 17 kms N of Edmonton M.D. 90 <sup>195</sup> Longitude 113.9 Latitude 53.8 <sup>196</sup>	Approx. 6200 residents Average income (1996) \$52,000. <sup>197</sup>	Town County of Sturgeon <sup>198</sup>	Housing, banking, radio/TV/phone, RCMP, newspapers, multiple recreation centres, over 50 local clubs/volunteer groups, multiple churches, hospitality services, housing, K-12 school, medical/dental clinics, ambulance and volunteer fire. <sup>199</sup>	All weather road, railway. Mail services. Full utilities, water from Edmonton through supply line; waste/sewage services. <sup>200</sup>	Agriculture, transportation center and service center to the district. <sup>201</sup>	Treaty 6

<sup>180</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>181</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>182</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>183</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>184</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>185</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>186</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>187</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>188</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>189</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>190</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>191</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>192</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>193</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>194</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>195</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>196</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>197</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>198</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>199</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>200</sup> Alberta Government - Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>201</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

Notikewin (Battle River Prairie)	Approx. 85 kms N of Peace River, 210 kms NE of Grande Prairie I.D. 22 16-92-23-w5 <sup>202</sup> Longitude 117.6 Latitude 56.8 <sup>203</sup>	Further research required. <sup>204</sup>	Hamlet County of Northern Lights <sup>205</sup>	Further research required	Further research required	Further research required	Further research required
Paddle Prairie	Approx. 77 kms S of High Level, 190 kms N of Peace River I.D. 22 <sup>206</sup> Longitude 117.5 Latitude 57.8 <sup>207</sup>	Approx. 1028 residents <sup>208</sup>	Hamlet <sup>209</sup>	Health centre and radio/TV/phone. <sup>210</sup>	All weather road, utilities, mail service, waste/sewage services and Greyhound. <sup>211</sup>	Oil & gas, farming, forestry and construction. <sup>212</sup>	Further research required

<sup>197</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>198</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>199</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>200</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>201</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>202</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>203</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>204</sup> Alberta Forestry Lands and Wildlife Provincial Base Map  
<sup>205</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>206</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>207</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>208</sup> Alberta Forestry Lands and Wildlife Provincial Base Map  
<sup>209</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>210</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>211</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada  
<sup>212</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

Redwater	Approx. 30 kms NE of Edmonton M.D. 90 <sup>213</sup> Longitude 113.15 Latitude 53.9 <sup>214</sup>	Approx. 2100 residents. Average income (1996) \$50,000. <sup>215</sup>	Town County of Sturgeon <sup>216</sup>	Banking, radio/TV/ phone, couriers, newspapers, golf course, recreation centre, pool, baseball diamonds, skiing, camping, multiple churches, museum, Redwater Discovery Days in August, hospitality services, housing, k-12 school, hospital, medical/dental clinic, community health programs and fire/RCMP/ ambulance. <sup>217</sup>	Power, water/waste/sewage services, and air/rail/ highways/ bus. <sup>218</sup>	One of Canada's largest oilfields, in the corridor for large petrochemical developments, Imperial is major employer, other employment through oilfield service companies. <sup>219</sup>	Further research required
Slave Lake (aka Sawridge) (aka Where the Trail Meets)	Approx. 195 kms NW of Edmonton I.D. 17 31-72-05-w5 <sup>220</sup> Longitude 114.46 Latitude 55.17 <sup>221</sup>	Approx. 6 600 residents <sup>222</sup>	Town. County of Lesser Slave River/Lake. <sup>223</sup>	Full service regional center for education, health, employment, commercial and industrial services. Full outdoor/indoor recreation, library, regional government, banking, radio/TV/ phone, newspapers and multiple churches. <sup>224</sup>	Located on major highway, railway and utility corridor. Mail services. Utilities: hydro electric power; potable treated water; piped sewage and treated disposal; solid waste collected, sorted, incinerated and land filled. Heavy industry in support of forestry and petroleum. <sup>225</sup>	Forestry and petroleum. Federal Department of Regional Economic Expansion. Full regional service center. <sup>226</sup>	Treaty 6 and 8

<sup>213</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>214</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>215</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>216</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>217</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>218</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>219</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>220</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>221</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>222</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>223</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>224</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>225</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>226</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

Westlock	Approx. 55 kms NW of Edmonton M.D. 92 05-60-26-w4 <sup>227</sup> Longitude 113.8 Latitude 54.4 <sup>228</sup>	Pending	Town. County of Westlock <sup>229</sup>	Full service community, K-12 school, housing, medical and senior support. <sup>230</sup>	All weather road. Utilities: treated well water and pipe distribution; piped sewage and collection to cell; solid waste collection, separation and landfill. <sup>231</sup>	Agriculture, petroleum and district service. <sup>232</sup>	Treaty 6
Zama City	Approx. 85 kms north of Chateh 13-117-05-w6 <sup>233</sup>	Pending	Hamlet. County: Mackenzie <sup>234</sup>	Limited housing, service centre to industry, health services, hospital, RCMP and social services at High Level, library, skating, skiing, snow- mobiling, quadding, swimming, and campground. <sup>235</sup>	All weather road, charter air service and mail. <sup>236</sup>	Petroleum and forestry. <sup>237</sup>	Deh Cho <sup>238</sup>
Zama Lake	Approx. kms NW of High Level 22-112-08-w6 <sup>239</sup> Longitude Latitude	Pending.	County: Mackenzie Reserve #210 <sup>240</sup>	Further research required	Further research required	Petroleum <sup>241</sup>	Deh Cho <sup>242</sup>

<sup>227</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>228</sup> Alberta Forestry Lands and Wildlife Provincial Base Map

<sup>229</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>230</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>231</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>232</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>233</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>234</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>235</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>236</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>237</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>238</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>239</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>240</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>241</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

<sup>242</sup> Alberta Government – Promoting Business and Economic Development in Alberta, Alberta Economic Development and Industry Canada

## **References and Sources**

---

1. Common Ground – Report of the NWT Economic Strategy Panel June 2000  
Available at URL: <http://www.ssimicro.com>
2. Alberta Government – Promoting Business and Economic Development in Alberta,  
Alberta Economic Development and Industry Canada  
Available at URL: <http://www.albertafirst.com>
3. NWT Public Library  
Available at URL: <http://www.netpls.gov.nt.ca>
4. RCMP Community, Contract, and Aboriginal Policing Services  
Available at URL: <http://www.rcmp-ccaps.com>
5. Aboriginal Canada Portal – Community Statistics  
Available at URL: <http://www.aboriginalcanada.gc.ca>
6. Fort Vermilion School Division #52  
Available at URL: <http://www.fvsvd.ab.ca>
7. Alberta Forestry Lands and Wildlife Provincial Base Map, 1991

## APPENDIX "G"

### Sensitive Areas

**West Delta Alternate and Common Corridor, Sensitive Areas: Wildlife Use Areas, Identified Cultural and Archaeological Sites and Water Crossings and Wetlands.**

Map Number	Physiographic Region(s)	Potential Sensitive Areas.
6, 7 and 8 of 40	Yukon Coastal Plain Porcupine Plateau (PP) Victoria and Albert Mountains (V and A, also referred to as the Richardson Mountains or British Mountains)	Part of Yukon North Slope Special Conservation Area. In Designated Management Category D under Inuvik Inuvialuit Community Conservation Plan. Is in use area of Porcupine caribou herd. Is in primary winter range of Porcupine Caribou herd (PP, V and A). Fish spawning habitat, most streams in all regions. Grizzly bear habitat (V and A). Dall sheep habitat (V and A). Rare and endangered species – raptors, swans, Tule goose, buff-breasted sandpiper. From Shingle Point to Blow River is one large wetland. Blow River, Rapid Creek, Big Fish River at Yukon - NWT border, Cache Creek at Yukon - NWT border, Little Fish Creek and eastern tributary, Moose Channel and possibly 1 or 2 tributaries, Martin Creek, Willow River, up to 5 unnamed streams in proximity to Husky Channel, Longstick Creek, Rat River, Peel River, Stony Creek, possibly – depends where crossing of Peel River is located. Most of the West Delta is a complex of wetlands and channels.
<b>Fort McPherson</b>		
8, 9 and 10 of 40	Peel Plateau Peel Plain (south of river) Anderson Plain (north of river)	Primary winter range of Porcupine caribou herd is in western edge of both Peel Plateau & Plain. Rat River Protected Area (Peel Plain). Known archaeological sites south of the Willow River. Peel River is fish migration route and spawning habitat. Fort McPherson to Tsiigehtchic is extensive beaver-muskrat habitat. Mackenzie River is major fish and waterfowl staging and migration route. Tsiigehtchic to Tavaillant Lake is extensive swan and beaver-muskrat habitat. Use area of Bluenose west caribou herd. Travaillant Lake, Mackenzie – Tree River Protected Area. Nagwichoonjik National Historic Site is bounded by Point Separation on the west (due north of Tsiigehtchic) and the confluence of the Thunder River with the Mackenzie on the east. It is a Gwich'in traditional use and culturally significant area consisting of old and

		<p>existing campsites, a stone quarry at Thunder Creek and networks of trails running inland from the north bank of the Mackenzie River.</p> <p>Most of the area between Fort McPherson and Tsiigehtchic is a large wetland although the north side of the Dempster Highway appears to be drier.</p> <p>North of Dempster = Frog Creek and 2-3 tributaries OR south of Dempster = Frog Creek. Possibly Arctic Red River and tributary, depends where the crossing of Mackenzie River is situated.</p> <p>Tsiial Treia Creek, Pierre Creek, Rabbit Hay River.</p> <p>Area between ARR and Big Stone Lake is a point bar with numerous lakes</p> <p>Unnamed stream from Big Stone Lake into Mackenzie.</p>
10 and 15 of 40	Anderson Plain	<p>Western extremity of use area of Bluenose West caribou herd.</p> <p>Thunder River area = rare and endangered species: raptors, swans, Tule goose, buff-breasted sandpiper.</p> <p>Streams between Travaillant Lake and Little Chicago are fish spawning and rearing areas.</p> <p>Travaillant River, Thunder River (enters where Mackenzie River deflects to the south).</p> <p>Unnamed stream south of Little Chicago.</p>
15, 16 and 17 of 40	Anderson Plain Franklin Mountains	<p>Archaeological sites at Loon River, Fort Good Hope, Gibson Ridge.</p> <p>Tieda River area is major habitat concentration for raptors, swans, geese and ducks.</p> <p>Three unnamed streams and numerous pothole lakes between Little Chicago and Yelte Lake.</p> <p>Tieda River from Yelte Lake into Mackenzie, Loon River from Loon Lake into Mackenzie, Hare Indian River.</p>
<b>Fort Good Hope</b>		
17, 18 and 19 of 40	Mackenzie Plain Anderson Mountains	<p>Archaeological sites at: Chick Lake, Gibson Ridge, Bear Rock and Bear Rock Lake.</p> <p>Moon Lake vicinity is area for: caribou, raptors, fish spawning, swans, geese, ducks and general bird migration and staging.</p> <p>Oscar Lake area is fish spawning and rearing, raptor, beaver-muskrat habitat.</p> <p>Kelly Lake is across the Norman Range to the east of corridor.</p> <p>Christina – Prohibition Creek area is significant fish spawning, rearing and over-wintering site.</p> <p>Tsintu River, numerous pothole lakes, Donnelly River.</p> <p>Unnamed stream from Moon Lake into Mackenzie.</p> <p>Unnamed stream into Mackenzie at Judith Island.</p> <p>Between Moon Lake and Norman Wells = chain of small lakes parallel to the Mackenzie.</p>

<b>Norman Wells</b>		
19, 20, 21, 22 and 23 of 40	Mackenzie Plain Anderson Mountains	Archaeological sites at: Nota Creek, Great Bear River portage, Big Smith Creek, Ochre River. Status of Brackett Lake and River potential IBP site at Tulita (Fort Norman). Seagull Island south to Little Smith Creek: extensive beaver-muskrat, fish rearing and migration, geese, moose habitat. Numerous fish spawning and rearing streams. Blackwater River area = beaver and muskrat habitat. Nota Creek, Jungle Fish Creek, Bluefish Creek. Two unnamed streams northwest of Tulita. Great Bear River at Tulita, Big Smith Creek, Little Smith Creek, Saline River, Blackwater River, Ochre River.
<b>Wrigley</b>		
23 and 24 of 40	Mackenzie Plain Anderson Mountains	Hodgson Creek. River Between Two Mountains from Fish Lake into the Mackenzie River. Willow Lake River. Dathahweelee River north of the Camsell Bend.
<b>Camsell Bend</b>		
24, 25 and 26 of 40	Mackenzie Plain Great Slave Plain	Camsell Bend point bar is a low-lying wetland. Trail River, Harris River at Fort Simpson.
<b>Fort Simpson</b>		
26 and 27 of 40	Great Slave Plain Alberta Plateau	Mackenzie River. Jean Marie River, possibly twice. Area between Mackenzie River and Liard River from Fort Simpson to 61 degrees north is one big wetland. Trout River, possibly twice.
<b>34<sup>th</sup> baseline</b>		
27, 28 and 29 of 40	Alberta Plateau Fort Nelson Lowland	Trainor Lake = rare and endangered species: raptors, swans, Tule goose, buff-breasted sandpiper. (This is in the Redknife Hills so may be too far west to be within corridor.) Redknife River (possibly), Kakisa River (possibly twice). Unnamed tributary of Kakisa River, possibly. From 60 degrees to Bistcho Lake is one large wetland.
<b>Bistcho Lake</b>		
29, 30 and 31 of 40	Alberta Plateau Fort Nelson Lowland	Pettitot River into Bistcho Lake. Unnamed tributary to Pettitot River (possibly), tributaries of the Amber River. Hay River.



<b>Hay River crossing</b>		
31, 32, 33, 34, 35 and 36 of 40	Fort Nelson Lowland Peace River Lowland	Hawk Hills Protected Area, Notekewin Provincial Park. Sousa Creek, Chinchaga River, Keg River and tributaries, Peace River, Little Cadotte River.
36, 37 and 38 of 40	Peace River Lowland Alberta Plateau	Slave Lake Provincial Park, Lubicon Lake. Utikama River, Willow River, Otauwau River, Lesser Slave River.
<b>Lesser Slave Lake</b>		
39 and 40 of 40	Alberta Plateau Alberta Plain	Athabasca River, tributaries of Pembina River, Tawatina River, tributaries of Redwater River, tributaries of Big River.
40 of 40	Alberta Plain	End point of corridor in vicinity of Bon Accord.

**Note:** In general, north of Fort Simpson the point bar areas are low-lying, level wetlands dotted with pothole lakes and, frequently, streams running parallel to the Mackenzie River. In many places there is a distinct escarpment on the eastern side of the valley that has many slumps, potential slumps and areas of solifluction. These are mapped in the Mackenzie Gas Pipeline Environmental Atlas, Vol. 3

**Cross Delta Alternate, Sensitive Areas: Wildlife Use Areas, Identified Cultural and Archaeological Sites and Water Crossings and Wetlands.**

<b>Map Number</b>	<b>Physiographic Region(s)</b>	<b>Wildlife and Traditional – Cultural Constraints (Potential).</b>
4, 5 and 6 of 40	Yukon Coastal Plain Mackenzie Delta	Part of Yukon North Slope Special Conservation Area. Numerous fish bearing streams. Is in use area of Porcupine caribou herd. In Designated Management Category D under Inuvik Inuvialuit Community Conservation Plan. Is in use area of Porcupine caribou herd. Rare and endangered species – raptors, swans, Tule goose, buff-breasted sandpiper. Malcolm River, Firth River, Babbage River, Blow River, Eagle River, Rapid Creek, West Delta.
<b>Inuvik</b>		
6, 11, 12, 13, of 40 Assume route follows winter road.	Mackenzie Delta Anderson Plain	Status of Dolomite – Campbell Lake potential IBP Site. Dispersed caribou, bear, swan habitat. Fish over-wintering area. Confirm status of Caribou Lake Grazing Reserve. North Caribou and Lost Reindeer Lakes. Numerous pothole lakes.
<b>Travaillant Lake</b>		
14 of 40	Anderson Plain	Swan, goose, caribou area. Waterfowl staging and migration route. Travaillant Lake, Travaillant River and unnamed tributary.

**Note:** Map Numbers refer to maps as shown in the Corridor Atlas - Volume II