



- ***Kitimat – Summit Lake (KSL)
Pipeline Looping Project***

PROJECT DESCRIPTION

Revised – February 2006

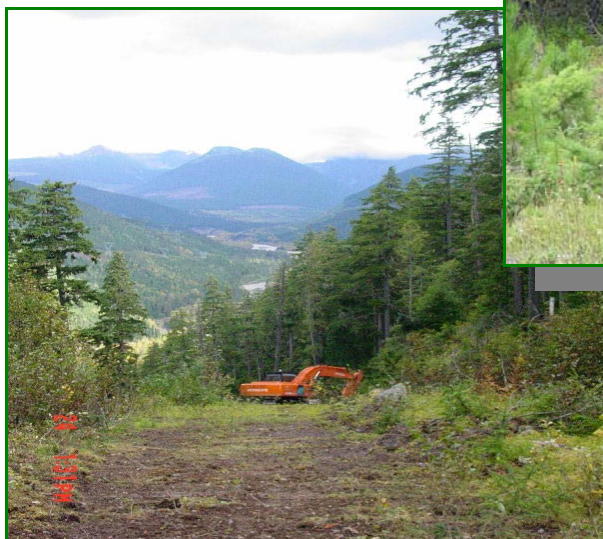


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1.0 BACKGROUND INFORMATION

1.1 Introduction

Pacific Northern Gas Ltd. (PNG or Company) proposes to loop a portion of its existing B.C. Utilities Commission (BCUC) regulated natural gas pipeline system. This project, referred to as the “Kitimat – Summit Lake Looping Project”, the “KSL Project,” or the “Project,” is expected to involve the construction of approximately 470 km of 762 mm (30 inch) diameter 1440 psig pipe between Summit Lake (north of Prince George) and Kitimat. Figure 1 illustrates the general location of the existing PNG pipeline. The Project may include one or more new compressor stations located along the pipeline.

The purpose of the proposed pipeline loop is driven by two key factors. Firstly, the proposed pipeline facilities will increase the capacity of the PNG system for the purpose of transporting natural gas from the proposed Kitimat LNG Inc. (KLNG) liquefied natural gas regasification terminal near Kitimat to the Duke Energy pipeline system at Summit Lake. Secondly, the proposed loop will decrease PNG’s current dependence on the Duke Energy facilities thereby enabling PNG to provide a more secure supply of natural gas to its customers at competitive rates.

Figure 1. General location of the existing PNG transmission natural gas pipeline system



1.2 B.C. Regulatory Framework

PNG expects to obtain an Environmental Assessment Certificate (EAC) for the project as part of the *B.C. Environmental Assessment Act* (BCEAA) processes as administered by the B.C. Environmental Assessment Office (EAO). In addition, there will be specific aspects of the construction and operating phases of the project that will require permits, licences and approvals commensurate with the *Oil and Gas Commission Act* administered by the B.C. Oil and Gas Commission (OGC). The proposed pipeline loop will traverse provincial “Crown” lands and private lands in British Columbia including the traditional territory of a number of Aboriginal Nations. The Project will require a B.C. Utilities Commission (BCUC) *Certificate of Public Convenience and Necessity (CPCN)*.

The construction of the loop will trigger the need for an environmental assessment pursuant to the *Canadian Environmental Assessment Act* (CEAA). PNG intends to prepare and submit an Application to the EAO that will provide the basis for the preparation of an Assessment Report by the EAO as well as a Screening Report by CEAA and responsible Federal Authorities.

Federal Authorities with regulatory interests associated with the Project may include, as a minimum:

- Canadian Environmental Assessment Agency (CEA Agency)(*CEAA*);
- Fisheries and Oceans Canada (DFO)(*Fisheries Act*);
- Transport Canada (*Navigable Waters Protection Act*);
- Environment Canada (*Canadian Environmental Protection Act*, and *Migratory Birds Convention Act*).

1.3 Authorizations Required

Authorizations required for the Project to proceed may include but are not necessarily limited to:

- EAC under the *B.C. Environmental Assessment Act*;
- CPCN under *The Utilities Commission Act of B.C.*;
- *B.C. Oil and Gas Commission* authorizations;
- approval under Section 35(2) of *The Fisheries Act* (Minister of Fisheries and Oceans);

- approval under Section 5(1)(a) of the *Navigable Waters Protection Act* (Minister of Transport);
- Approval under the *Water Act* for work “in and about a stream” (Oil and Gas Commission);
- Approval under the *Forests Act* for timber harvesting and disposal on “Crown” land;
- Fish Research Licence and collection permits from B.C. Environment;
- Approval under Section 14 of the *Heritage Conservation Act* for an Heritage Inspection Permit; and
- Various permits from municipal and provincial authorities pertaining to burning and clearing.

1.4 Distribution of Project Description

This project description has been prepared for submission to the B.C. Environmental Assessment Office (EAO) in accordance with the requirements of the B.C. Environmental Assessment Act. As part of its role, the EAO will then distribute the project description to other provincial, federal and local government agencies, as appropriate.

1.5 Consultation

PNG is committed to involving First Nations, local communities and other interested parties through an open and interactive public consultation process that is fully integrated with the project review. Accordingly, PNG is designing a comprehensive project consultation and communications program with Phase 1: Early Notification commencing in September 2005.

The consultation program will include Aboriginal governments, landowners, local governments, environmental organizations, responsible federal and provincial authorities, as well as commercial interests.

Proven consultation and communications approaches and mechanisms will be used that satisfy regulatory requirements and respond to the needs of interested parties, including:

Communications Materials

- information advertisements
- public event advertisements
- project fact sheets/backgrounders/newsletters
- presentation materials
- website materials
- public resource files

Consultation Activities

- meetings with selected parties
- one-on-one/small group meetings
- presentations
- public open houses

Contact/feedback Mechanisms

- toll-free information line
- e-mail address/ mailing address/facsimile
- website with link to e-mail address

1.6 Environmental and Socio-Economic Review

The Application to the EAO, that will be required to meet the needs of the BCEAA, will be prepared in accordance with the Terms of Reference directing the scope of factors to be assessed for the project. The environmental and socio-economic assessment prepared by PNG will provide the information required for the preparation of an Assessment Report by the EAO and a Screening Report by CEAA and Federal Authorities and will include an assessment of the potential impacts to Aboriginal Nations and proposed mitigation.

Consideration of the following factors in the environmental assessment are likely to be mandatory:

- alternative means of achieving the project objectives, including a “No Action” alternative;
- 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 above effects (impacts);
- comments from First Nations that are received;
- comments from the public and other stakeholders that are received;
- measures that are technically and economically feasible and that would avoid or mitigate any significant adverse environmental effects of the Project; and
- any other relevant matters such as the need for the Project and alternative means of carrying out the Project.

The environmental assessment will consider the potential effects of the Project within the spatial and temporal boundaries within which the Project may potentially interact with, and have an effect on components of the environment. These boundaries will vary with the issues and factors considered, and will reflect:

- the construction, operation, maintenance, and decommissioning phases of the proposed physical works and/or physical activities (often referred to as the full life-cycle of the Project);
- the natural variation of a population or ecological or socio-economic component;
- the timing of sensitive life cycle phases in relation to the scheduling of the proposed physical works and/or physical activities;
- the time required for an effect to become evident;
- the time required for a population or ecological or socio-economic component to recover from an effect and return to a pre-effect condition;
- the area directly affected by proposed physical works and/or physical activities; and

- the area within which a population or ecological or socio-economic component functions and within which a project effect may be felt.

The environmental assessment will also consider 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.

1.7 Contacts

Contact	Address
Greg Weeres, P.Eng. Vice President Pacific Northern Gas Ltd.	950 – 1185 West Georgia Street Vancouver, B.C. V6E 4E6 Phone: (604) 691-5677 Fax: (604) 697-6210 Email: gweeres@png.ca
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2.0 ENVIRONMENTAL ASSESSMENT

2.1 Introduction

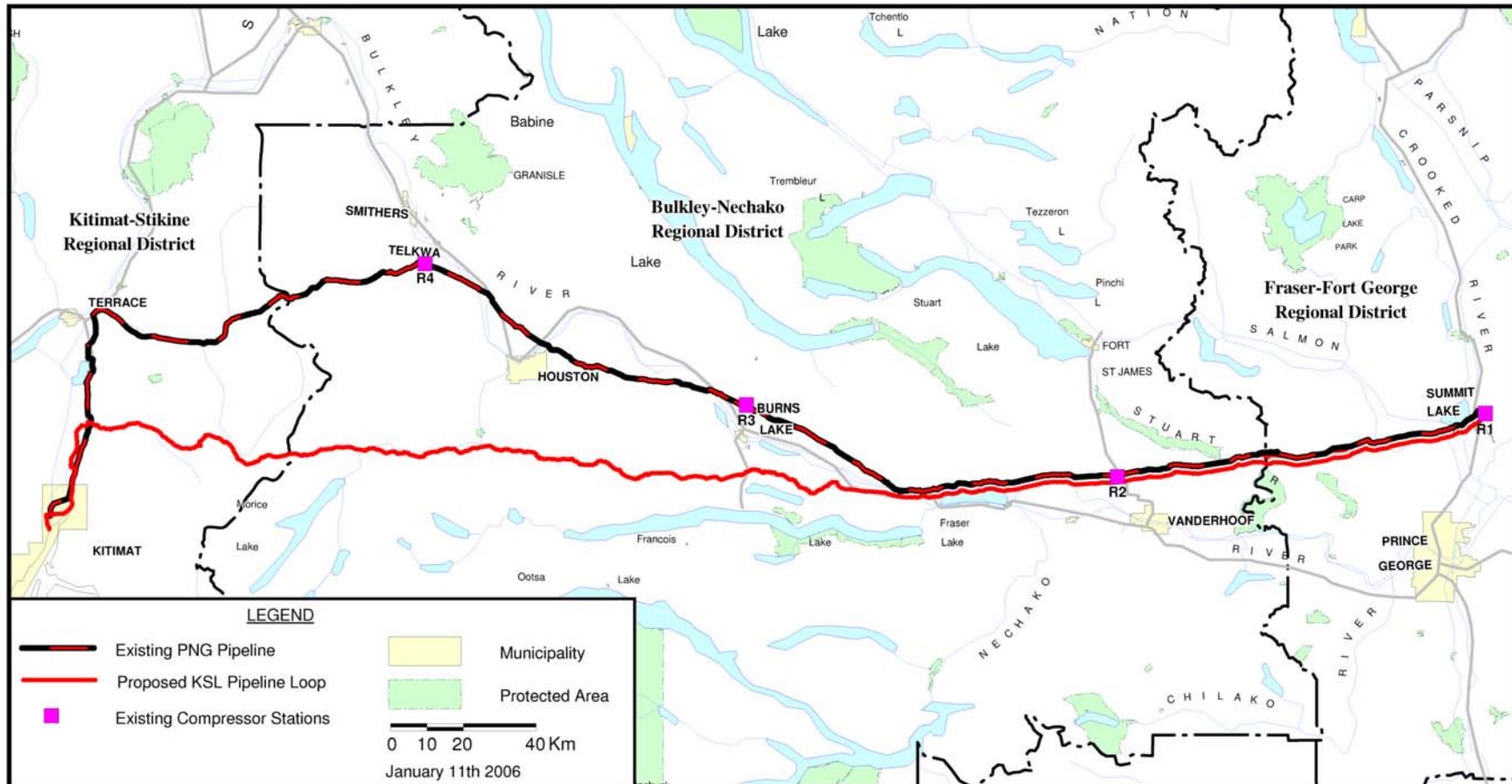
The proposed loop is approximately 470 km in length. The eastern half of the project is designed to be constructed primarily within or adjacent to the rights-of-way of the existing PNG pipeline system between the community of Endako (just west of Fraser Lake) and Summit Lake and the western half, generally within new right-of-way adjacent to existing linear developments between Kitimat and Endako.

The existing PNG mainline consists of various sized pipe and loops ranging from 273.0 mm (10 inch) to 406.4 mm (16 inch) diameter. The un-looped sections of the PNG mainline are primarily located within an 18.3 m (60 ft) right-of-way while the looped sections are primarily located within a 30.5 m (100 ft) right-of-way. Due to terrain conditions, the existing pipeline(s) meanders somewhat within the right-of-way boundaries and consequently is not always at a constant offset from the sides of the statutory right-of-way. Figure 2 shows the location of the proposed pipeline loop.

As a result of geotechnical concerns in the so-called “Telkwa Pass” section of the existing pipeline route which have been identified by PNG’s project consultants, PNG has concluded that it is necessary for the KSL Project to avoid the Telkwa Pass area and to follow a more southern alignment east of Kitimat through to the Endako/Fraser Lake area in order to access a new crossing through the Coast Mountains. This proposed alignment results in the KSL Loop following the Kitimat River drainage east to near its headwaters in the Coast Mountains and traversing the Coast Mountain Range north of Nimbus Mountain, dropping into the Chlore River drainage (part of the Skeena River drainage) on the east side of the divide.

This divergence from the existing PNG right-of-way as illustrated in Figure 2, avoids the difficult terrain through the Telkwa Pass as well as environmentally sensitive areas in the Zymoetz (Copper) River valley. In addition, the southern alignment is approximately 24 km shorter in comparison to following the existing PNG alignment. The existing pipeline will continue to operate in order to maintain natural gas service to PNG customers along the existing route.

Figure 2. Proposed KSL Looping Project



2.2 Environmental Features to be Addressed in the Assessment

Environmental and biophysical features that will be addressed in the environmental assessment are as follows:

Biophysical Element	Environmental Features to be Addressed in the Environmental Assessment
Physical Environment	<ul style="list-style-type: none"> • areas of ground instability (<i>i.e.</i>, landslides, mudflows, slumping, avalanches, subsidence, fault zones and earthquakes) • potential for acid-generating rock, potential effects of exposure of such rock and proposed mitigation • areas of potential erosion or flooding • areas of high fire potential • areas of contamination
Soil and Soil Productivity	<ul style="list-style-type: none"> • general description of soil characteristics and the current level of soil disturbance • quantify reclamation capability of soils, including erosion control (other than revegetation), soil reclamation, drainage tile repair, and soil compaction alleviation • identification of contaminated soils
Vegetation	<ul style="list-style-type: none"> • description of vegetation species and communities of ecological, economic or human importance, and the existing level of disturbance, diversity, relative abundance and distribution of these species prior to construction • quantification of merchantable timber • identification of weed infestations • description of revegetation and reclamation procedures, including techniques, seed mixes, fertilizers, contingency plans and maintaining reclaimed areas • description of criteria for evaluating reclamation success
Water Quality and Quantity	<ul style="list-style-type: none"> • identification of water resources and water quality • identification of water supply sources and water disposal methods • description of contaminants associated with the project that could effect water quality • description of mitigation for potential effects on well water quality and quantity

Biophysical Element	Environmental Features to be Addressed in the Environmental Assessment
Fish and Fish Habitat (see Section 2.4)	<ul style="list-style-type: none"> • identification of fish species and life stages of ecological, economic or human importance in the study area; including timing issues related particularly to salmon spawning • description of seasonal ranges, sensitive periods, habitat use, movements, and general population status of fish species • identification of protection and enhancement policies for fish and fish habitat • identification of the need for Harmful Alteration Disturbance and Destruction authority as per subsection 35(2) of the <i>Fisheries Act</i>, and discussion of communications with DFO • detailed description of sensitive areas and habitats, including wetlands and riparian habitat • description and justification of water crossing techniques and criteria for determining proposed techniques • description of reclamation procedures and criteria for evaluating reclamation success
Wetlands	<ul style="list-style-type: none"> • quantification and description of wetlands (including regional abundance, distribution, current level of disturbance) • identification of wetland capacities to perform hydrological, water quality and habitat functions
Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> • identification of wildlife species of ecological, economic or human importance • description and quantification of wildlife habitat types, location, suitability, structure, diversity, relative use and abundance • address issues of noise disturbance to wildlife from compressor stations • description of population status, life cycle, seasonal ranges, habitat requirements, movements, and sensitive periods • identification of wildlife management areas, sanctuaries or other protected areas • description of current level of disturbance associated with wildlife and habitat
Species at Risk or Species of Special Concern	<ul style="list-style-type: none"> • identification of species and their status and habitat (particularly critical habitat) • determination whether species or critical habitat could be affected by project activities, and if so, description of potential effects, reasonable alternatives, and mitigation measures to limit effects on critical habitat

Biophysical Element	Environmental Features to be Addressed in the Environmental Assessment
Air Quality	<ul style="list-style-type: none"> • overview and qualitative assessment of public concerns • characterization of local and regional meteorological conditions • description of existing air quality • quantification of potential air emissions of concern associated with the proposed project, and measures to be implemented to reduce or prevent impacts on air quality • description of participation in national or regional air emission tracking and report programs • address any potential impacts to arboreal lichens
Acoustic Environment	<ul style="list-style-type: none"> • overview of public concern and provision of a qualitative assessment • description and quantification of increase in noise levels associated with the project
Human Occupancy and Resource Use	<ul style="list-style-type: none"> • description of patterns of human resource use and occupancy in the study area, and potential interactions or effects resulting from the project • description of local or regional land use plans and development plans, and how the project complies with such plans • identification of potential impacts to surface water quality and quantity used for domestic, commercial, agricultural or recreational purposes • identification and description of navigable waters, associated requirement for approvals under the <i>Navigable Waters Protection Act</i>, and overview of correspondence with Transport Canada officials • identification and quantification of visual and aesthetic impacts
Heritage and Archaeological Resources	<ul style="list-style-type: none"> • description of known heritage resources in the study area, determination of potential for undiscovered heritage resources, and contingency plans for such a discovery during project construction • overview of impact assessments and consultation with regulators
Traditional Land and Resource Use	<ul style="list-style-type: none"> • description of current traditional land uses, aboriginal groups with traditional territory in the project area, and identification of potential project impacts on traditional use • description of traditional land use study methodology and overview of consultation
Social and Cultural Well-Being	<ul style="list-style-type: none"> • description of the socio-cultural setting of the study area, including predominant cultural groups, demographic features of local populations and workforce, concerns of residents, families and workers in the study area • overview and assessment of potential impacts and interaction with the local community, residents and businesses
Human Health	<ul style="list-style-type: none"> • description and quantification of project components that could potentially impact human health • overview of public concerns • description of mitigation to prevent or reduce potential health effects

Biophysical Element	Environmental Features to be Addressed in the Environmental Assessment
Infrastructure and Services	<ul style="list-style-type: none"> • description of existing local and regional infrastructure in the study area, including roads and highways, railways, utilities, and treatment facilities for water, wastewater and solid waste • description of local and regional services, including accommodation, recreation, waste disposal, emergency services and health care services • consideration of effects of the project on above infrastructure and services, as well as current traffic patterns, and the need for new or expanded services or infrastructure related to the project
Employment and Economy	<ul style="list-style-type: none"> • description of the location and regional employment status, development plans, and ability of local and aboriginal residents to provide labour and services • plans to encourage local and aboriginal employment, procurement and contracting opportunities • description of training programs the company is supporting to enhance employment opportunities for local and aboriginal residents • estimation of anticipated levels of local and regional economic participation in the project compared to the total project requirements • quantitative assessment of project impacts on local, regional, provincial or federal government revenues from tax levies or other means during project construction and operation

2.3 Present Land Use

Current land uses in the Project area include outdoor recreation, hunting and fishing, forestry, commercial, residential and agriculture. The Project is not expected to cross any Indian Reserves.

The existing PNG mainline right-of-way is located on “Crown” land over 85% of the route. Approximately 60% of the right-of-way is on un-surveyed “Crown” land. Approximately 1% of PNG’s current right-of-way on “Crown” land is in what could be classified as developed areas. Approximately 15% of PNG’s mainline is on fee simple or private land, with 90% of this fee simple land being farm land, with the remaining 10% usually being semi-rural development.

It is expected that the proposed southern alignment for the KSL Looping Project will have a similar breakdown of land uses, with likely a higher amount of “Crown” land (likely over 90% of the route).

The route crosses the traditional territory of a number of Aboriginal Nations (as indicated below) and crosses three regional districts – the Kitimat/Stikine, the Bulkley/Nechako, and the Fraser Ft. George Regional Districts. The project lies within the Prince Rupert and Prince George land titles districts. The following five Forest Service districts of the Northern Interior Forest Region cover the proposed project: Kalum, Nadina, Ft. St. James, Vanderhoof, and Prince George.

The following Aboriginal Governments, Tribal Councils and affiliated First Nations, as well as other First Nations have traditional interest in the project area:

Wet'suwet'en Hereditary Chiefs, Office of the Wet'suwet'en (Smithers and Moricetown)

Carrier-Sekani Tribal Council (Prince George), representing, *inter-alia*,

- **Nadleh Whut'en First Nation** (Fort Fraser)
- **Saik'uz First Nation** (Vanderhoof)
- **Nak'azdli First Nation** (Fort St. James)
- **Burns Lake First Nation** (Burns Lake)
- **Wet'suwet'en First Nation** (Broman Lake)

Tsekani First Nation (McLeod Lake)

Lheidli Tenneh First Nation (Prince George)

Stellat'en First Nation (Fraser Lake)

Skin Tyee Nation (Southbank)

Cheslatta Carrier Nation (Southbank)

Nee-Tahi-Buhn First Nation (Francois Lake)

Kitselas First Nation (Terrace)

Allied Tribes of Lax Kw'alaams (Prince Rupert, Fort Simpson), representing

- **Lax Kw'alaams First Nation**
- **Metlakatla First Nation**

Haisla Nation (Kitimat)

2.4 Major Watersheds and Stream Crossings

Table 1 provides a general outline of the major watersheds and stream crossings, and information on fish species present along the proposed route for the KSL Project. The major watersheds crossed by the pipeline route are illustrated on Figure 3.

Figure 3. Major Watersheds Crossed by the KSL Loop

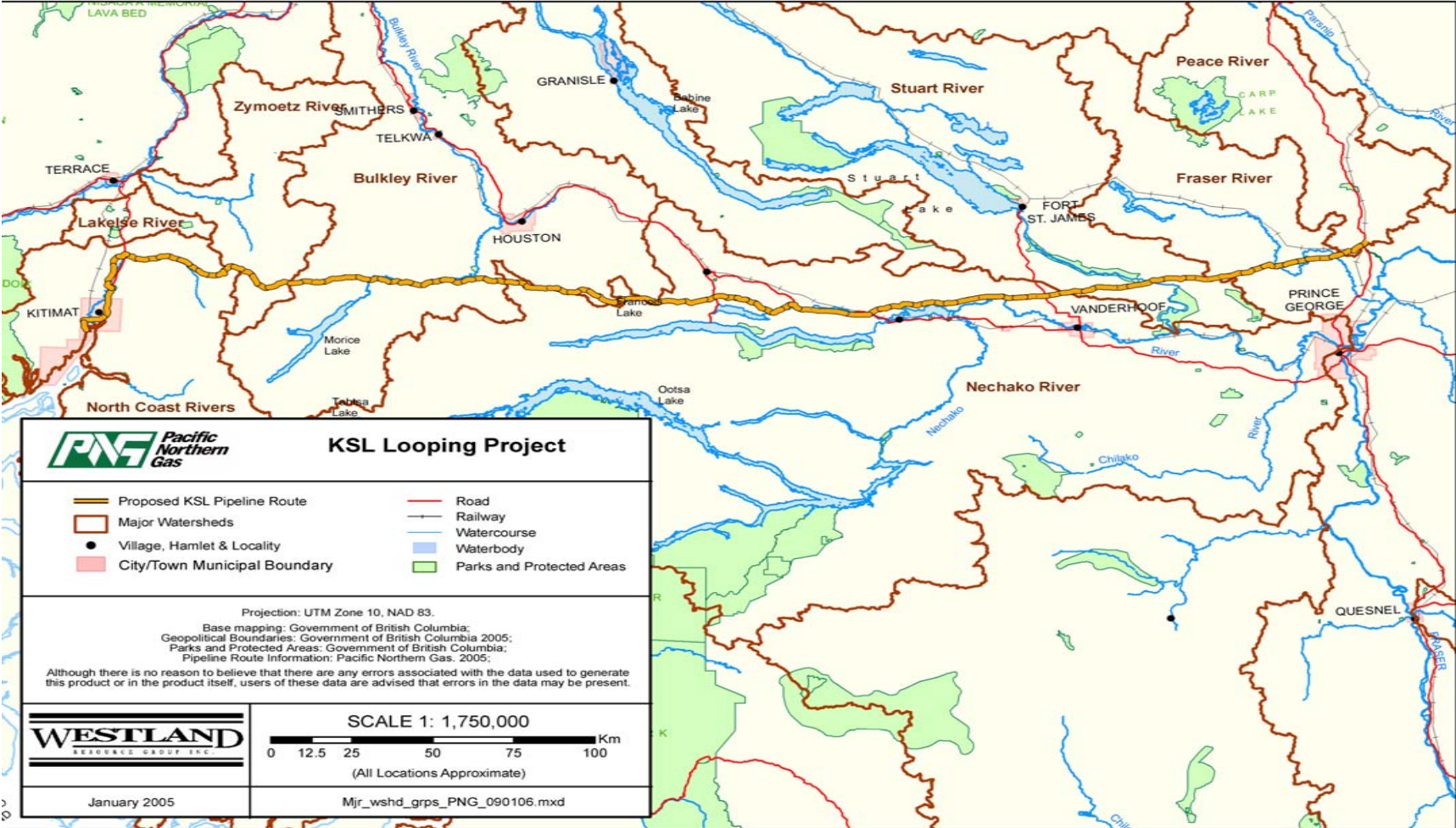


Table 1
Major Stream Crossings from Kitimat to Summit Lake on Southern Route

Watershed	Named River	Stream Classification	Likely Fish Species Present	Approximate KP
KITIMAT RIVER	Kitimat River	S1	Chinook, Chum, Pink, Sockeye, Coho, Steelhead, Rainbow, Cutthroat, Cutthroat (Anadromous), Dolly Varden, Eulachon, Kokanee, Pacific Lamprey, Coastrange Sculpin, Prickly Sculpin, Staghorn Sculpin, Threespine Stickleback	6
	Hirsch Creek	S3	Chinook, Chum, Coastrange Sculpin, Coho, Cutthroat, Dolly Varden, Lamprey, Pink, Rainbow, Sockeye, Steelhead	13.5
	Kitimat braided channel (2 crossings)	S1	see above	23 23.7
	Deception Creek	S3	Chum, Coho, Pink, Rainbow	30.5
	Cecil Creek	S4	Chinook, Chum, Coastrange Sculpin, Coho, Cutthroat, Dolly Varden, Lamprey, Pink, Rainbow, Steelhead, Stickleback	33
	Chist Creek	S4	Chinook, Chum, Coho, Cutthroat, Dolly Varden, Pink, Rainbow, Sockeye, Steelhead	42.2
	Hunter Creek	S4	Chinook, Chum, Coho, Dolly Varden, Rainbow	64.2
ZYMOETZ RIVER (SKEENA)	Clore River	S2	Burbot, Chinook, Coho, Cutthroat, Dolly Varden, Kokanee, Mountain Whitefish, Rainbow, Steelhead (Winter-run)	95.8

Table 1 continued

Watershed	Named River	Stream Classification	Likely Fish Species Present	Approximate KP
BULKLEY RIVER (SKEENA)	Gosnell Creek	S3	Bull Trout, Chinook, Coho, Cutthroat, Dolly Varden, Lake Chub, Lamprey, Longnose Dace, Mountain Whitefish, Peamouth Chub, Pink, Prickly Sculpin, Rainbow, Redside Shiner, Steelhead (Summer-run)	107.5 108
	Morice River	S1	Bull Trout, Chinook, Chum, Coho, Cutthroat, Dolly Varden, Longnose Dace, Longnose Sucker, Mountain Whitefish, Northern Pikeminnow, Pink, Pygmy Whitefish, Rainbow Trout, Sculpin, Sockeye, Steelhead	128.5
	Cedric Creek		Chinook, Coho, Cutthroat, Rainbow	141.5
	Lamprey Creek		Burbot, Chinook, Coho, Cutthroat, Dolly Varden, Lamprey (General), Longnose Dace, Longnose Sucker, Mountain Whitefish, Prickly Sculpin, Rainbow, Steelhead	148.5
	Fenton Creek	S4	Coho, Dolly Varden, Rainbow, Steelhead (Summer-run), Sucker	162.1
	Owen Creek	S4	Chinook, Coho, Dolly Varden, Lamprey, Longnose Dace, Longnose Sucker, Mountain Whitefish, Northern Pikeminnow, Pink, Prickly Sculpin, Rainbow, Redside Shiner, Sculpin, Steelhead (Summer-run)	164.8
	Parrot Creek	S4	Burbot, Lake Trout, Longnose Dace, Longnose Sucker, Mountain Whitefish, Prickly Sculpin, Rainbow Trout, Redside Shiner	177.9
FRANCOIS LAKE (NECHAKO)	Buck Creek	S4	Bull Trout, Burbot, Chinook, Pink, Coho, Cutthroat, Rainbow, Steelhead, Dolly Varden, Lamprey (General), Largescale Sucker, Longnose Dace, Longnose Sucker, Mountain Whitefish, Prickly Sculpin, Sockeye White Sucker	189.5
	Allin Creek	S4	Longnose Dace, Prickly Sculpin, Rainbow Trout	216

Table 1 continued

Watershed	Named River	Stream Classification	Likely Fish Species Present	Approximate KP
	Tchesinkut Creek	S3	subset of Endako River: Burbot, Chinook, Kokanee, Lake Chub, Leopard Dace, Longnose Dace, Longnose Sucker, Mountain Whitefish, Northern Pikeminnow, Prickly Sculpin, Rainbow, Redside Shiner, Sockeye	240.5
	Tchesinkut Creek	S3	see above	280.2
	Sam Ross Creek	S4	subset of Endako River: Burbot, Chinook, Kokanee, Lake Chub, Leopard Dace, Longnose Dace, Longnose Sucker, Mountain Whitefish, Northern Pikeminnow, Prickly Sculpin, Rainbow, Redside Shiner, Sockeye	299.6
	Endako River	S1	Burbot, Chinook, Sockeye, Rainbow, Kokanee, Lake Chub, Leopard Dace, Longnose Dace, Longnose Sucker, Mountain Whitefish, Northern Pikeminnow, Prickly Sculpin, Redside Shiner,	303
	Stern Creek	S3	subset of Fraser Lake: Burbot, Chinook, Dolly Varden, Lake Trout, Largescale Sucker, Mountain Whitefish, Northern Pikeminnow, Peamouth Chub, Rainbow, Sockeye	306.8
	Ormond Creek	S3	Chinook, Dolly Varden, Kokanee, Rainbow, Sockeye	316.8
NECHAKO RIVER (FRASER)	Tatsutnai Creek	S3	subset of Nechako: Brassy Minnow, Chinook, Coho, Dolly Varden, Leopard Dace, Longnose Sucker, Mountain Whitefish, Northern Pikeminnow, Peamouth Chub, Pink, Pygmy Whitefish, Rainbow, Redside Shiner, Slimy Sculpin, Sockeye, Sucker, White Sturgeon, White Sucker	332.2
	Kluk Creek	S4	Rainbow Trout	340
	Trankle Creek	S4	no info at present	348.7

Table 1 continued

Watershed	Named River	Stream Classification	Likely Fish Species Present	Approximate KP
	Redmond Creek	S4	no info at present	351.2
	Clear Creek	S4	Lake Chub, Longnose Sucker	358.4
STUART RIVER (FRASER)	Breadalbane Creek	S4	Chinook Salmon	378.9
	Stuart River	S1	Bridgelip Sucker, Burbot, Chinook, Dolly Varden, Kokanee, Largescale Sucker, Longnose Dace, Longnose Sucker, Northern Pikeminnow, Peamouth Chub, Prickly Sculpin, Rainbow, Redside Shiner, Sockeye, White Sturgeon, Whitefish (General)	390.2
	Gravel Creek	S1	no info at this time	398
	Chinohchey Creek	S3	Chinook, Rainbow	401.2
SALMON RIVER (FRASER)	Crocker Creek	S3	subset of Salmon River: Brassy Minnow, Burbot, Chinook, Dace (General), Dolly Varden, Kokanee, Mountain Whitefish, Northern Pikeminnow, Pink, Rainbow, Redside Shiner, Sculpin (General), Sucker (General)	426.3
	Salmon River (3 crossings)	S1	Brassy Minnow, Burbot, Chinook, Dace (General), Dolly Varden, Kokanee, Mountain Whitefish, Northern Pikeminnow, Pink, Rainbow, Redside Shiner, Sculpin (General), Sucker (General)	430.5 442.7 450.9

Notes:

1. List of fish species is from the provincial database and lists all known species in the watershed. Site-specific information will be collected as part of the environmental assessment process for this project.
2. Fish information for some streams is not available from the provincial database.

3.0 PROJECT DESCRIPTION

The business of Pacific Northern Gas Ltd. is the transmission and distribution of natural gas in west-central and northeastern British Columbia. The Company owns and operates a gas transmission and distribution system that extends from the Duke Energy system near Summit Lake west to Prince Rupert and Kitimat on the west coast. Pacific Northern Gas (N.E.) Ltd. owns and operates gas distribution systems in Tumbler Ridge and in the Dawson Creek and Fort St. John area in northeastern British Columbia. The Company also owns and operates a small propane vapour distribution system in Granisle, British Columbia, and over 300 kilometres of lateral transmission pipelines extending into the various communities served by the Company. There are five compressor units used to maintain pressure on the Company's transmission pipeline system at four compressor stations: two units are located at Summit Lake, and one each at Vanderhoof, Burns Lake and Telkwa. The total installed rating of the existing compressor units is 16,120 kilowatts (21,610 horsepower).

Service is provided to over 39,000 residential customers and to a number of large industrial operations, including Eurocan Pulp & Paper Co. (owned by West Fraser Timber Co. Ltd.), and Alcan Smelters & Chemicals Inc. Most of PNG's industrial customers satisfy their gas requirements by purchasing gas directly from producers or other gas suppliers and contracting with PNG for the transportation of that gas through PNG's pipeline system.

PNG has safely and efficiently operated the natural gas transmission system that services its customers since going into operation in 1969.

3.1 Project Components

The project consists of a looping of the existing PNG pipeline between Kitimat and Summit Lake (near Prince George, B.C.) and the installation of one or more new compressor stations located at evenly spaced intervals along the pipeline. The approximately 470 km long pipeline looping will provide PNG with the ability to meet the demand to deliver gas from Kitimat to the Duke system at Summit Lake. It will meet the forecasted needs to receive up to 610 MMSCFD (million standard cubic feet per day) at Kitimat and deliver to the Duke mainline, and will reduce PNG's reliance on the Duke Pipeline system by increasing the security of gas supply to PNG customers. The project will keep the existing pipeline in-service and will make the PNG pipelines bi-directional and thereby enable natural gas to flow from west to east (as well as east to west) for delivery to (or from) the Duke Energy system.

3.2 Scope of the Project

For the purpose of the B.C. Environmental Assessment Act (BCEAA), the scope of the KSL Project includes all of the following facilities and activities associated with their construction, operation, maintenance and foreseeable changes, and where relevant, the abandonment, decommissioning and rehabilitation of sites relating to the pipeline and appurtenances:

- Approximately 470 km of 762 mm (30-inch) diameter pipe from Kitimat, B.C. to the vicinity of Summit Lake, B.C. (north of Prince George).
- One or more new compressor stations to be located at evenly spaced locations along the proposed pipeline system; each compressor station will comprise the following:
 - located within a fenced area on approximately 2 ha of land;
 - likely including four buildings: compressor unit(s) and auxiliary/control, power generation and fuel gas module.
- Isolation valves along the pipeline.
- Supervisory Control and Data Acquisition (SCADA) System linking pipeline and compressor station facilities to the control center.
- Necessary communication links and power supply to service compressor stations, meter stations and other pipeline facilities.
- Meter/odorant injection stations at Kitimat and Summit Lake and possibly a third near mid point.
- Various temporary construction workspace, access roads, potential work camps, pipe and material storage areas, and equipment laydown areas, to be reclaimed and revegetated, where appropriate, following construction.
- Pipeline maintenance activities and vegetation management along the right-of-way.

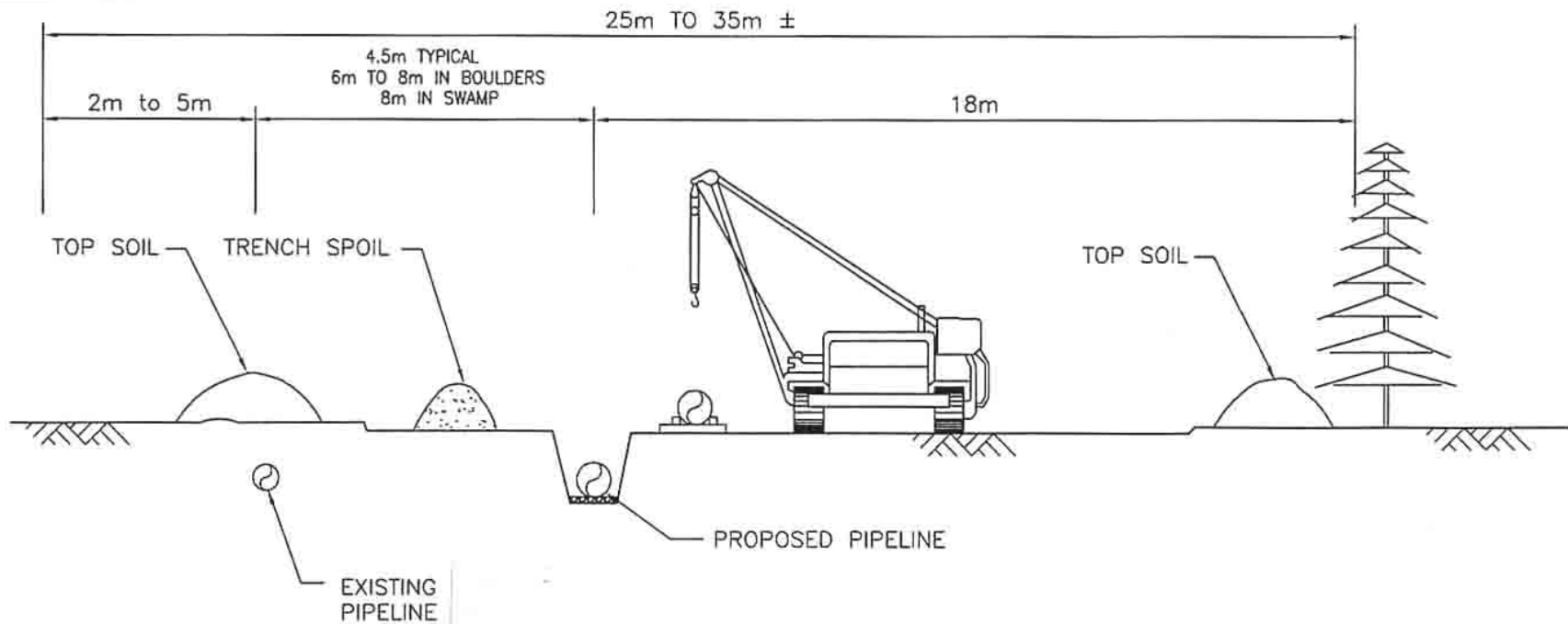
3.3 Right-of-Way Characteristics

The width of the existing PNG pipeline easement is generally 18 m (60 feet), however the easement may be wider (up to 30.5 m) where existing loops have been installed. The new loop segment between Summit Lake and Endako which parallels the existing pipeline may or may not be located within the existing easement at constrained locations; therefore some additional

easement is likely in certain locations to accommodate the existing pipeline and new loop. New pipeline right-of-way to accommodate the KSL Loop between Endako and Kitimat will be 18 m (60 feet) in width. Temporary workspace will also be required along the entire route of the loop to accommodate pipeline construction and additional workspace will be required at select locations (*e.g.*, for road, rail and watercourse crossings, sharp sidebends, etc.). The overall width of the proposed construction right-of-way (statutory right-of-way plus additional working space) is expected to be approximately 25 to 35 m (for the 18 m easement).

Figure 4 illustrates a typical cross section of the right-of-way showing the width of the area needed for construction in a conventional pipeline installation. Figures 5, 6 and 7 are photographs of the existing right-of-way showing typical landscapes along the route.

Figure 4. Typical installation method.



NOTES:

1. ADDITIONAL 5m TO 10m REQUIRED FOR PRONOUNCED SIDE-HILLS.
2. MINIMUM WIDTH FOR SHORT CONGESTED INTERVALS IS 23m, LESS WHEN NO TOPSOIL SALVAGE.

Figure 5. Typical existing right-of-way in the Arden Creek area.



Figure 6. Typical existing right-of-way in the Vanderhoof area.



Figure 7. Typical existing right-of-way in the Kitimat Village area.



3.4 Project Activities

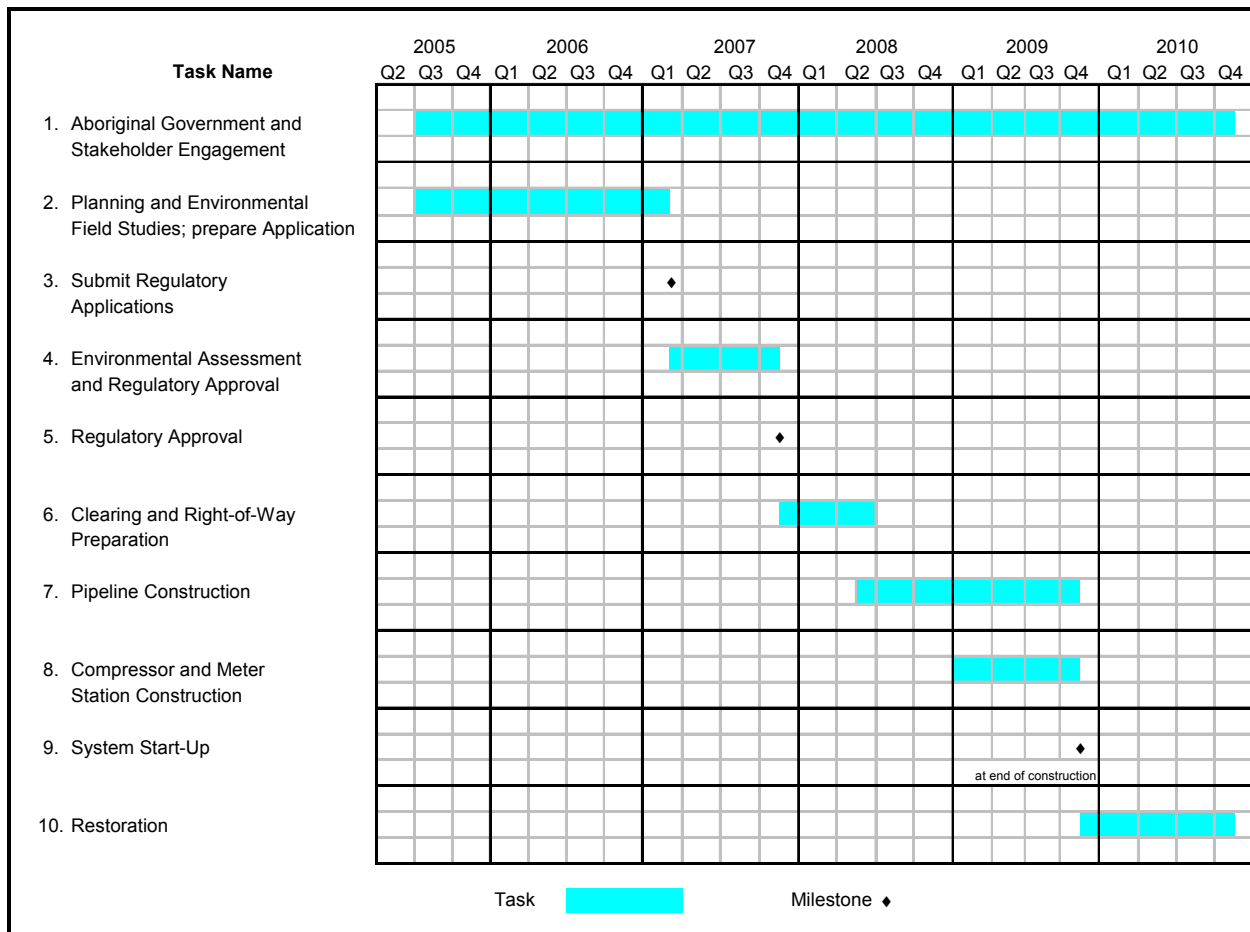
Pending a final decision to proceed with the project and obtaining required regulatory approvals, construction of the Project is currently scheduled to begin in late 2007 at the earliest, with completion of construction in the first quarter of 2009 (Figure 8). In an effort to minimize environmental impacts, PNG proposes to schedule right-of-way clearing for the winter of 2007 with pipeline construction to immediately follow in the first quarter of 2008.

Pipeline construction activities are progressive; therefore, the duration of activity at a given location is relatively short. Consecutive phases of the pipeline construction process are expected to overlap as construction progresses along the right-of-way (*i.e.*, right-of-way preparation, trench excavation, pipeline installation, backfilling and clean-up activities will all be occurring concurrently at different sections of the pipeline).

Compressor station and pipeline construction will commence concurrently. Site construction and equipment installation at the compressor station is expected to take several months.

In addition to the pipeline easement, and associated temporary workspace, lands will be required for staging and stockpile sites, equipment storage and borrow pits (to supply fill requirements) and possibly campsites to house construction workers. Compressor equipment will likely be located on “Crown” land acquired for that purpose.

Figure 8. Project Schedule



The following describes standard pipeline and compressor station activities, and typical equipment requirements.

3.4.1 Pipeline Construction

Construction Phase	Associated Activities
Engineering	The proposed pipeline will be designed and constructed in accordance with all applicable Canadian Standards Association (CSA) Standards and Oil and Gas Commission (OGC) regulations.
Construction Survey	Activities include line-of-sight clearing with chain saws, flagging and staking of the boundaries of the construction right-of-way, temporary workspace and facility sites as well as marking trench line and existing utilities. Avoidance areas, such as protected habitats or rare plant communities, will be appropriately fenced or flagged.
Clearing	Snow, trees, stumps, brush and other vegetation will be generally cleared from the construction right-of-way and extra temporary workspace. Salvageable timber will be cut, decked and hauled to local mills. Non-salvageable vegetative debris will be burned unless required for mulch, corduroy, rollback, etc. Equipment used during clearing activities will include chainsaws, feller-bunchers or other tree clearing equipment, as well as bulldozers and backhoes.
Topsoil Salvage	Topsoil will be salvaged to ensure that the soil capability is maintained. The width and depth of topsoil salvage depends on the land use, soil conditions, microtopography, regulatory agency requests, and grading requirements. Equipment used during topsoil handling activities includes bulldozers, graders and backhoes.
Grading	Following topsoil salvage, grading will be conducted on irregular ground surfaces (including temporary workspace) to provide a safe work surface. Graders, backhoes and bulldozers will be used for this activity. Blasting may be required where hard bedrock is encountered.
Stringing and Welding	The pipe will be transported by truck from the stockpile sites to the right-of-way. The pipe will be bent, lined-up, welded, joint-coated and inspected prior to being lowered into the trench. Equipment used during stringing and welding activities includes pipe trucks, booms, pick-up trucks, and x-ray or ultrasonic inspection equipment mounted on pick-up trucks.
Trenching	The trench will be excavated using tracked excavators to a depth sufficient to ensure the depth of cover is in accordance or in excess of applicable codes. Depth of cover will generally be 0.85 m. Trenching will generally occur after stringing, bending and welding. Road and railway crossings will be bored.
Lowering-In	The pipe will be lowered into the trench using sideboom tractors. Trench dewatering may be necessary at certain locations during lowering-in (<i>e.g.</i> , to ensure acceptable bedding for pipe, to prevent the pipe from floating or for performing tie-in welds).

Construction Phase	Associated Activities
Backfilling	The trench will be backfilled using backhoes, graders, bulldozers or specialized backfilling equipment. Backfill material will generally consist of native trench spoil material. Displaced subsoils will be crowned over the trench to compensate for settlement and after settlement, any excess trench spoil will be feathered out over adjacent portions of the right-of-way.
Testing	The completed pipeline will be pressure tested in sequential segments, using water as the test medium. The water will be drawn from suitable sources and returned to the appropriate watersheds in accordance with permit requirements.
Clean-Up and Reclamation	Final clean-up and reclamation procedures will be initiated following construction, once weather and soil conditions permit, using bulldozers, backhoes and graders. Garbage or debris remaining along the right-of-way will be removed regularly and disposed of in compliance with local regulations. The right-of-way contours will be returned to a stable and maintenance free condition. Compacted subsoils will be ripped and the topsoil replaced. All disturbed upland areas will be seeded with an appropriate seed mix, and special reclamation measures will be applied as required.
Watercourse Crossings	Watercourse crossing methods will be decided in consultation with engineering and environmental specialists. Crossing methods typically used during watercourse construction include open cut, isolation (<i>e.g.</i> , dam and pump, flumes), boring and horizontal directional drill.

3.4.2 Compressor Station Construction

Construction Phase	Associated Activities
Engineering	The proposed compressor station will be designed and constructed in accordance with all applicable CSA and industry standards and OGC and other applicable regulations.
Site Preparation	Initial site preparation will involve surveying, clearing, salvage and storage of topsoil, excavating and removal of unsuitable fill, grading, site drainage, placement and compaction of a gravel surface on work areas, laying of foundation and installation of building support pads. Equipment used during site preparation activities will include chainsaws, feller-bunchers or other timber clearing equipment, as well as bulldozers, backhoes and mowers.
Facility Construction	Installation of the new compressor station will entail building new structures, installing equipment, tying new pipe into pipelines, pressure testing all piping, testing safety systems and instruments, final commissioning of new equipment and control systems.

3.4.3 Operations and Maintenance

Scheduling of operations and maintenance will coincide with regular aerial and ground patrol of the existing PNG pipeline and associated facilities. Operations and maintenance activities along the existing PNG system will be expanded to include the new Project facilities.

As part of routine operations and maintenance procedures, patrols will be conducted to visually inspect for environmental issues, evidence of pipeline damage, erosion and wash-out areas, areas of sparse vegetation, damage to permanent erosion control structures, exposed pipe, and other potential problems that may affect the integrity or safe operation of the pipeline and facilities. The operating pipeline will also be regularly inspected by internal in-line inspection tools. In the event that an actual or suspected pipeline integrity problem is identified, the buried pipeline will be exposed and inspected visually. Repairs will be made as needed. Maintenance digs will be conducted in a manner similar to the pipeline construction activities.

The pipeline right-of-way and areas within the compressor station site that are not required for ongoing operations and maintenance will be restored to pre-construction conditions. Vegetation control (including weeds), if warranted, will be conducted in accordance with PNG's standard practices for vegetation control, as approved by the appropriate agency.

3.4.4 Decommissioning and Abandonment

It is difficult at this time to predict when or how the Project facilities will be decommissioned and abandoned at the end of the Project's useful life. The existing pipeline has been successfully operating for approximately 40 years and will be safe and reliable for many more years. The useful life of the PNG Loop will be as long or longer. Decommissioning the Project facilities would be considered at some time in the distant future but cannot be meaningfully described at this time. The pipeline industry has experience with pipeline abandonment and guidance documents are currently available. There are three categories under which pipeline decommissioning and abandonment may fall, namely pipeline removal, abandonment-in-place, and a combination of abandonment-in-place and pipeline removal. These would have to be considered in light of conditions that might prevail at the time of decommissioning. Any decommissioning or abandonment activities will require prior approval by the BCUC, the OGC, and other relevant agencies.

3.5 Resources and Materials Requirements

3.5.1 Energy and Water Requirements

PNG's existing and proposed compressor stations are operated by natural gas and essentially do not require additional energy from electrical sources other than for minor utility needs for lighting and control, etc.

The environmental assessment will address water requirements and proposed sources as well as potential impacts, cumulative effects and proposed mitigation.

Withdrawal and return of water for hydrostatic testing will be undertaken in consultation with appropriate regulators, including the Department of Fisheries and Oceans, the Oil and Gas Commission, and BC Ministry of Environment. All applicable regulations, guidelines and codes of practice relating to water withdrawal and discharge will be adhered to.

Special measures may be required to protect water resources in "special areas" outlined by the Land and Resource Management Planning (LRMP) process.

3.5.2 Excavation and Fill Requirements

Excavation for pipeline construction in addition to the trench line will include grading of steep slopes or uneven terrain. Requirements for additional excavation will be addressed in the environmental assessment. Fill may be required along the proposed pipeline route where trench rock cannot be replaced directly over the pipeline. Grading and contouring will also be required at the proposed compressor station, in addition to importing gravel. The environmental assessment will address specific needs for excavation and fill and potential sources, in addition to any associated environmental effects and proposed mitigation including any special measures that may be required in "special areas" outlined in the LRMP process.

3.5.3 Toxic and Hazardous Materials

Specific identification of hazardous substances, potential impacts, spill prevention and emergency contingencies will be addressed in the environmental assessment. Hydrocarbons and hydraulic fluids are the primary toxic materials to be used during construction of the Project. Activities associated with Project construction that may involve other substances of concern include welding and weld testing, hydrostatic testing, and horizontal directional drill / bore and punch crossings. PNG has a number of systems in place (including, its pipeline integrity management, SCADA, aerial and ground patrol, and emergency response systems) to both

prevent incidents and ensure rapid and effective response to spills of hazardous materials such as gasoline and diesel fuel.

3.5.4 Waste Disposal

Waste will be controlled according to PNG's waste management plan. Storage and transportation of waste material will be conducted in accordance with the Transportation of Dangerous Goods, Workplace Hazardous Materials Information System ("WHMIS"), and any other provincial regulations. Waste will be collected daily during the construction phase of the Project, and will be disposed of at landfill sites appropriate for the nature of the waste.