

**PROJECT DESCRIPTION**  
**TYPE B WATER LICENSE RENEWAL**  
**FAREWELL CAMP AND STOCKPILE SITE**

Prepared for:  
Shell Canada Limited  
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## **EXECUTIVE SUMMARY**

Shell Canada Limited (Shell) is applying to renew their Type B Water License for Farewell Camp and Stockpile Site (Camp Farewell). The camp is located within the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel near Harry Channel in the Kendall Island Bird Sanctuary (KIBS), Northwest Territories. Camp Farewell has been in existence since 1969, and has been used intermittently since then as a base for approved research, exploration and development activities.

IEG Environmental (IEG) has been commissioned by Shell to prepare the water license renewal application and this Project Description. In addition to supporting the renewal application, the Project Description is a requirement for the Environmental Impact Screen Committee (EISC). An application to renew the CWS permit to operate in the Kendall Island Bird Sanctuary (KIBS) will also be submitted.

Camp Farewell is self-contained, providing electrical and heating services, facilities for accommodation, fuel storage, equipment handling, water use and approved sewage treatment and disposal. The camp is able to accommodate up to 150 people and covers an area of 12.4 hectares.

Specific features at the camp are:

- permanent accommodation for 35 people, plus kitchen and dining area, gym, men's and women's restrooms, coffee room, sauna, offices, first aid room, a recreation area, water intake structures and an approved sewage treatment system
- temporary camp accommodation for up to 115 people
- incinerator
- 2 million litre bermed tank farm, with secondary containment
- a barge-landing site
- a 140 m by 200 m storage area
- a 610 m by 30.5 m gravel airstrip

Water supply is for domestic purposes, and is obtained from the Mackenzie River in the winter and the Unnamed Lake to the north in the summer.

Shell does not intend to change the use of Camp Farewell. The existing footprint will not be increased and there are no upgrades to existing facilities proposed. Future use of the camp may dictate/necessitate upgrading specific facilities, however any such upgrades will follow the required regulatory review process, as Shell has been diligent to follow in the past.

Shell and its subcontractors are committed to following the operational guidelines and environmental protection measures outlined in this Project Description in order to minimize the risk of potential environmental impacts.

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## **1.0 TITLE AND PURPOSE**

### **1.1 Title**

Project Description for the Type B Water License Renewal for Farewell Camp and Stockpile Site (Camp Farewell).

### **1.2 Purpose and Scope of this Document**

The purpose of this document is to support the Shell Canada Limited (Shell) Type B Water License renewal application for Camp Farewell and to provide site-specific potential biophysical impacts and mitigation measures to support the water license renewal application. The attached *Farewell Camp and Stockpile Site Operations and Maintenance Plan* has been developed specifically for Camp Farewell and is an integral part of this Project Description. This plan has been previously approved by the Northwest Territories (NWT) Water Board.

## **2.0 CONTACT NAME AND ADDRESS – CORPORATE INFORMATION**

### **2.1 Contact Name and Address**

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Email: [randall.warren@shell.com](mailto:randall.warren@shell.com)

### **2.2 Corporate Commitment**

Shell commits to the continued use and operation of Camp Farewell as described in this document.

### 3.0 REGULATORY APPROVALS

Camp Farewell is located on federal Crown land and is under lease to Shell. Two leases were issued, No. 107 C/4-2-10 and No. 107 C/4-1-7. They are both valid until 2008. Copies of the lease agreements are found in Appendix A.

Table 3-1 provides a list of approvals, licenses and permits that are required to continue operation of Camp Farewell.

**Table 3-1: Permit and License Requirements for the Continued Operation of Camp Farewell**

| INSTRUMENT  | AGENCY   | LEGISLATION  | BACKGROUND   |
|---|--|--|--|
| Approval of Project Description and Environmental Protection Plan | Executive Assistant<br>Environmental Impact Screening Committee<br>P.O. Box 2120,<br>Inuvik, NT X0E 0T0  | <i>Inuvialuit Final Agreement</i>  | Submit Project Description including Environmental Protection Plan   |
| Type B Water License  | Gordon Wray, Chair<br>NWT Water Board<br>2 <sup>nd</sup> Floor Goga Cho Building<br>4916 47 <sup>th</sup> Street<br>P.O. Box 1500<br>Yellowknife NT X1A 2N1<br>Tel: 867-765-0106<br>Fax: 867-765-0114  | <i>Northwest Territories Water Act</i><br><i>Northwest Territories Water Regulations</i> | The existing water license no. N7L1-1762 was issued to Shell December 1, 2000, with an amendment dated November 28, 2001 (Appendix B). This License will expire on November 30, 2005. The renewal application will be submitted with this Project Description. |
| Fisheries Authorization or Letter of Advice                       | Marc Lange<br>Senior Environmental Assessment Officer<br>Fisheries and Oceans Canada<br>Suite 101 5204 - 50th Avenue<br>Yellowknife NT X1A 1E2<br>Tel: 867-669-4912<br>Fax: 867- 669-4940  | <i>Fisheries Act</i>   | As part of the water licensing review process, the Project Description and Type B Water Licence renewal application will be forwarded to Fisheries and Oceans Canada who will provide feedback on the project. A specific approval is not required.            |
| Water Intake Authorization  | Marc Lange<br>Senior Environmental Assessment Officer<br>Fisheries and Oceans Canada<br>Suite 101 5204 - 50th Avenue<br>Yellowknife NT X1A 1E2<br>Tel: 867-669-4912<br>Fax: 867- 669-4940  | <i>Fisheries Act</i>   | As part of the water licensing review process, the Project Description and Type B Water Licence renewal application will be forwarded to Fisheries and Oceans Canada who will provide feedback on the project. A specific approval is not required.            |
| Canadian Wildlife Services Bird Sanctuary Permit                  | Paul Latour, Habitat Biologist<br>Environment Canada<br>Canadian Wildlife Service<br>Environmental Conservation Branch Prairie & Northern Region<br>Suite 301, 5204 – 50 Avenue<br>Yellowknife, NT X1A 1E2<br>Tel: 867-669-4769<br>Fax: 867-873-6776 | <i>Migratory Birds Convention Act</i><br><i>Migratory Birds Sanctuary Regulations</i>    | Multiyear Canadian Wildlife Service Bird Sanctuary Permit to be submitted at the same time as the Class B Water Licence renewal application.   |

## 4.0 LOCATION

Camp Farewell is located within the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel near Harry Channel in the Kendall Island Bird Sanctuary (KIBS), Northwest Territories. It is approximately 125 km northwest of Inuvik and approximately 135 km west of Tuktoyaktuk.

Location coordinates are:

- Latitude 69° 12' 30.0" N, Longitude 135° 06' 04.4" W (UTM 496167.23 7677487.45N NAD 27)

Figure 4-1 and Figure 4-2 show the camp location at a 1:50,000 and 1:250,000 scale respectively.



Legend

Camp Farewell

Kendall Island Bird Sanctuary

0

0.5

1

2

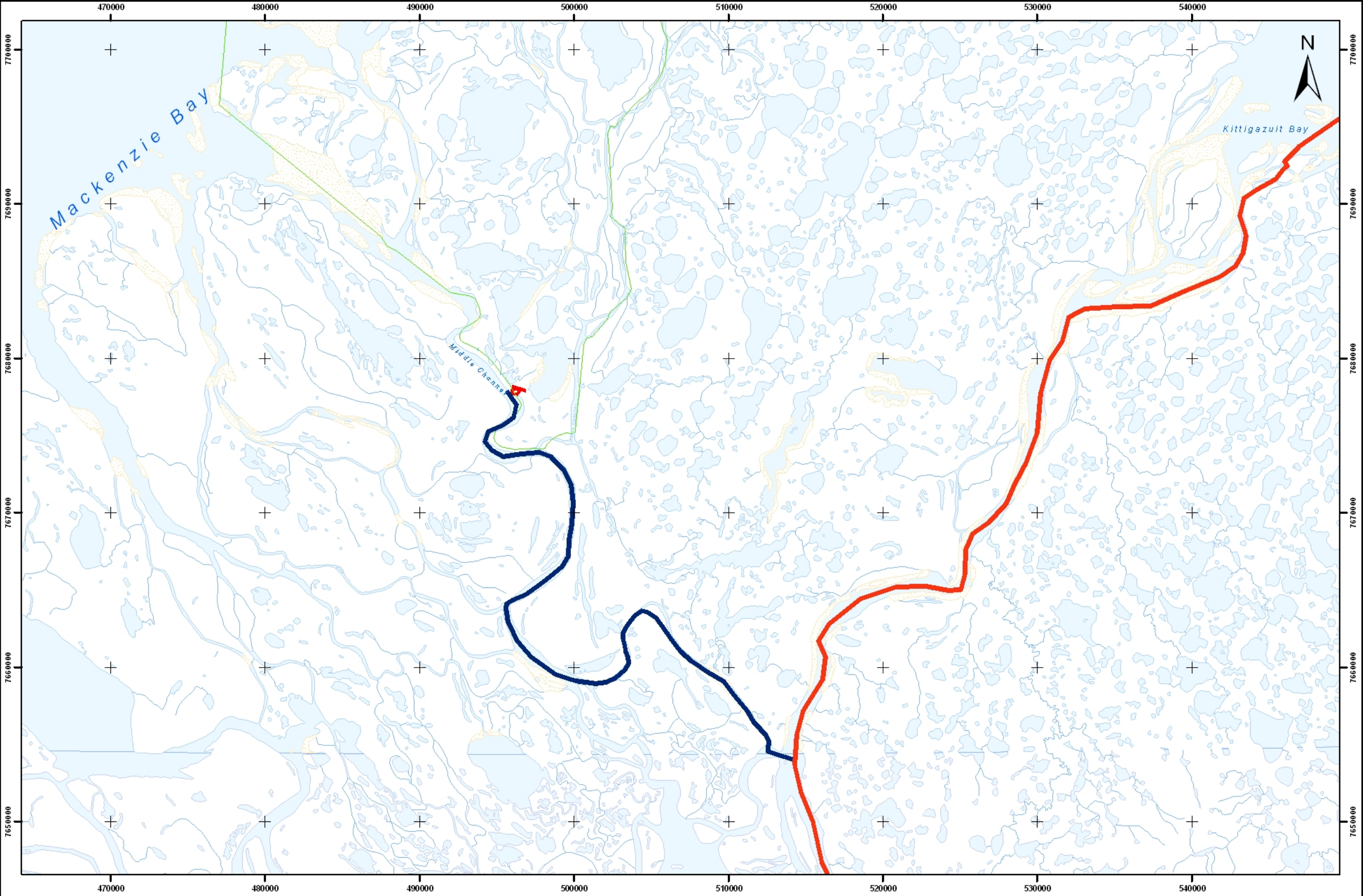
3

Kilometers







Location of Camp Farewell (1:50,000)


|                     |                 |                                      |                   |  |           |
|---------------------|-----------------|--------------------------------------|-------------------|--|-----------|
| PROJECTION<br>UTM 8 | DATUM<br>NAD 83 | CONTRACTOR NAME<br>IEG ENVIRONMENTAL |                   | NOTES<br>Background Data NTS map sheet 107C with permission of Her Majesty the Queen in Right of Canada. |           |
| DRAWN<br>RR-B       | CHECK<br>KM     | DATE<br>JUNE 15, 2005                | SCALE<br>1:50,000 | MAP FIGURE NUMBER<br>FIGURE 4-1  | REV.<br>0 |



**Legend**


|   |                               |   |                             |
|---|-------------------------------|---|-----------------------------|
|  | Camp Farewell                 |  | Inuvik/Tuktoyaktuk Ice Road |
|  | Kendall Island Bird Sanctuary |  | Camp Farewell Ice Road      |

0 3 6 12 18 Kilometers



|                     |                 |
|---------------------|-----------------|
| PROJECTION<br>UTM 8 | DATUM<br>NAD 83 |
| DRAWN<br>RR-B       | CHECK<br>KM     |

**Location of Camp Farewell and Ice Road Access(1:250,000)**

|                                      |                    |   |   |
|--------------------------------------|--------------------|---|---|
| CONTRACTOR NAME<br>IEG ENVIRONMENTAL |                    |  | NOTES<br>Background Data NTS map sheet 107C and 107B with permission of Her Majesty the Queen in Right of Canada. |
| DATE<br>JUNE 15, 2005                | SCALE<br>1:250,000 |   |   |

## **5.0 CAMP OPERATION SUMMARY**

### **5.1 Camp Operation Schedule**

Shell has operated Camp Farewell as a camp and stockpile site in support of research, exploration and development activities over the last 35 years. This site has been used intermittently; however Shell has continually held leases and permits to operate this site. Shell plans to continue to use and operate Camp Farewell in support of exploration, development and research activities.

Because of the nature of the use of the camp, project-specific schedules are not available until a specific project, which proposes to use Camp Farewell, is submitted for regulatory approval.

### **5.2 Camp Overview**

Camp Farewell has been in operation since 1969 and has been used intermittently since then. Camp Farewell is a self-contained camp, providing electrical and heating services and facilities to handle all aspects of habitation including accommodation, meals, fuel storage, equipment handling, water withdrawal and waste disposal for camp use. The camp is able to accommodate up to 150 people and covers an area of 12.4 hectares.

Specific features at the camp are:

- permanent accommodation for 35 people, plus kitchen and dining area, gym, men's and women's restrooms, coffee room, sauna, offices, first aid room, a recreation area, water intake structures and an approved sewage treatment system
- temporary camp accommodation for up to 115 people
- incinerator
- bermed tank farm with storage capabilities for 2 million litres
- a barge-landing site
- a 140 m by 200 m storage area
- a 610 m by 30.5 m gravel airstrip

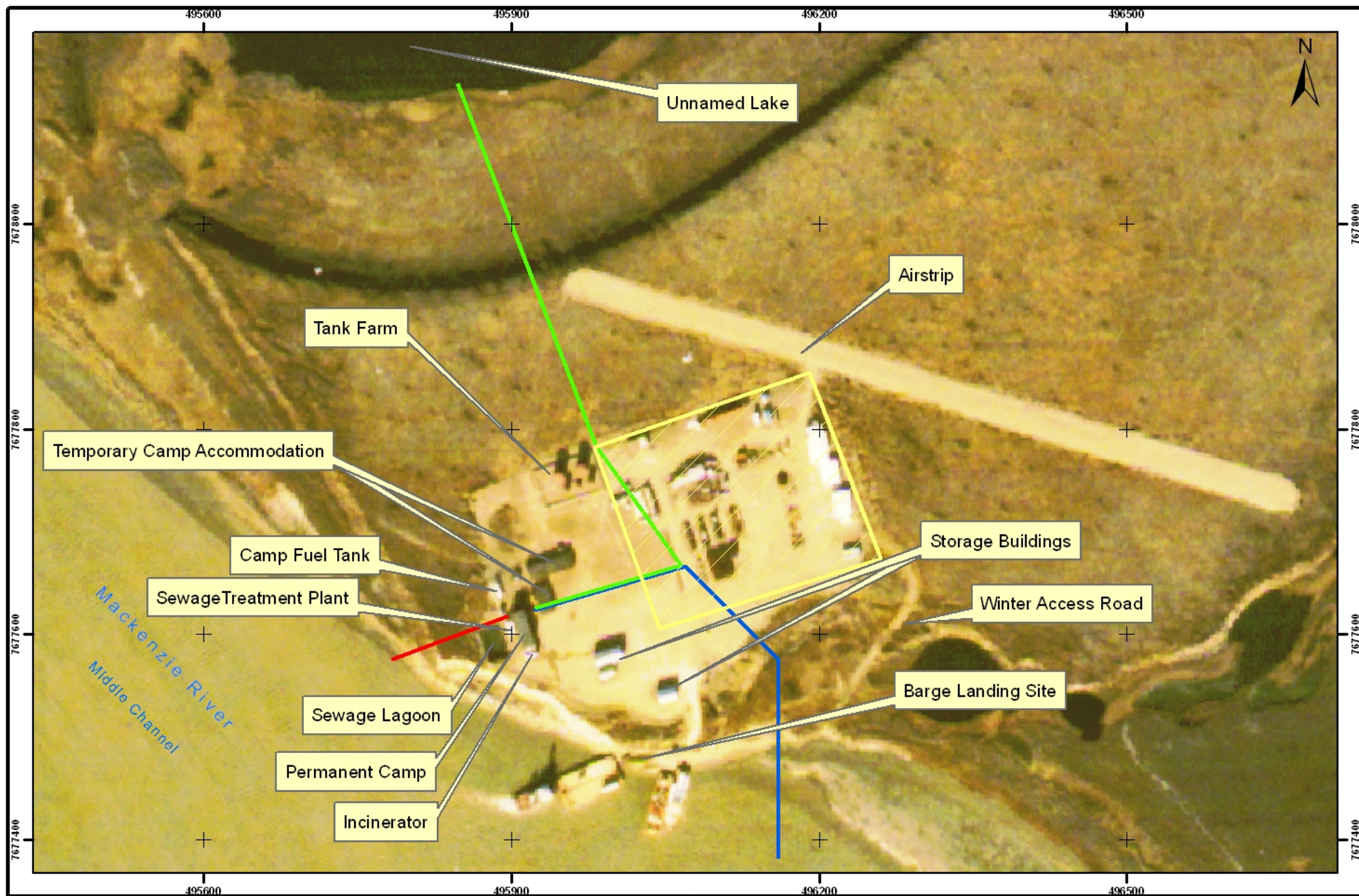
Figure 5-1 provides a site plan of Camp Farewell.

### **5.3 Access and Transportation Methods**

A combination of transportation methods are used to access Camp Farewell, and will continue to be used to transport equipment, materials and personnel to the site. They are:

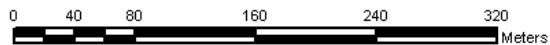
- barge and boat
- winter roads
- airstrip and helipad

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### Legend

- Approximate Location of Unnamed Lake Water Intake
- Approximate Location of Mackenzie River Water Intake
- Approximate Location Wastewater Discharge
- Stockpile Site



### CAMP FAREWELL SITE PLAN

|                     |             |                       |                  |                                      |  |   |  |
|---------------------|-------------|-----------------------|------------------|--------------------------------------|--|---|--|
| PROJECTION<br>UTM 8 |             | DATUM<br>NAD 83       |                  | CONTRACTOR NAME<br>IEG ENVIRONMENTAL |  | NOTES<br>Geotiff mosaic colour balanced, acquired on 25.09.2002 |  |
| DRAWN<br>RR-B       | CHECK<br>KM | DATE<br>JUNE 15, 2005 | SCALE<br>1:5,000 | MAP FIGURE NUMBER<br>FIGURE 5-1      |  | P.B.L.<br>0   |  |

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### **5.3.1. *Barges***

Barges will continue to be used as necessary for transporting equipment and supplies required for the operation of Camp Farewell. The barge season is mid-June to late-September. The existing barge landing site will continue to be used (Figure 5-1).

### **5.3.2. *Winter Access Roads***

The existing Inuvik-Tuktoyaktuk public ice road is used to access Tununuk Point. An additional ice road is constructed from Tununuk Point to Camp Farewell. The Camp Farewell ice road is cleared and flooded as necessary. It is an integral part of the requirements of a project using Camp Farewell as a support base. Ice road access is shown on Figure 4-2.

### **5.3.3. *Airstrip***

The existing gravel airstrip at Camp Farewell (Figure 5-1) is approximately 610 m long by 30.5 m wide. It will continue to be used for small fixed-wing (Twin Otter) or helicopter access to transport supplies, equipment and personnel to and from the camp.

Currently the airstrip is maintained when the camp is active. The most recent grading took place in the summer of 2002.

Depending on future use of the camp, the feasibility of lengthening the strip from 610 m to 650 m would be considered. This would be to meet current recommended safe lengths for the intended aircraft. An upgrade to the airstrip would follow the required regulatory review process.

## **5.4 *Water Use***

The Water Management Plan provided in Appendix B provides a discussion of water conservation measures, and a detailed description of, water use and treatment at Camp Farewell. A summary of the plan is provided in this section.

### **5.4.1. *Water Conservation***

Shell Canada's commitment to sound environmental management planning includes water conservation. Specific measures that will be employed at Camp Farewell are described in the Water Management Plan, Appendix B.

### **5.4.2. *Water Requirements***

The estimated quantity of water required on a daily basis at Camp Farewell is 150 m<sup>3</sup>, the same volume approved under the current water license number N7L1-1762. Fresh water sources being used at Camp Farewell are the Middle Channel of the Mackenzie River during winter camp operation and the Unnamed Lake to the north for summer camp operation (Figure 5-1).

Water is used for domestic purposes within the camp, excluding drinking water, which will be trucked or barged in. Water is not required for ice road construction.

When justified by camp use, an upgrade to the water treatment system will be proposed to improve the quality of water withdrawn to meet drinking water quality criteria. Any proposed upgrade would follow the required regulatory approval process.

#### **5.4.3. *Water Intake***

Water intakes are screened with 2.54 mm fine mesh to prevent entrainment of fish, in accordance with the Department of Fisheries and Oceans *Freshwater Intake End-of-Pipe Fish Screen Guideline* (1995).

For winter water use, water is withdrawn from the Middle Channel and transported by tank truck to the 27,250 L water storage tank located within the camp.

For summer water use, a temporary line from Unnamed Lake to the water storage tank is used. Water is withdrawn through the intake screen and pumped to a settling tank where sediment and solids settle out prior to water being used.

#### **5.4.4. *Wastewater Treatment***

Camp Farewell has a fully operational sewage treatment system in place. Wastewater (grey water) and sewage (black water) are combined and treated using the camp's extended aeration system and contingency lagoon.

The extended aeration system is a modified activated sludge process, which is a continuous or semi-continuous aerobic method for biological wastewater treatment. The process is based on the following:

- wastewater is aerated in a tank
- bacteria are encouraged to grow and multiply by providing oxygen, food (biological oxygen demand), and the right environment i.e., correct temperature and time
- treated wastewater flows into a secondary clarifier
- bacteria cells settle and are then removed from clarifier as sludge
- part of the sludge is recycled back to the activated sludge tank to maintain bacteria population
- remainder of sludge is transported to an approved sewage treatment facility

An as-built drawing of the extended aeration system is included with the Water Management Plan in Appendix B.

The plant has been designed for 120+ people. However, based on a nominal treatment capacity of 34.068 m<sup>3</sup>/day or a maximum of 16.8 kg BOD<sub>5</sub>/day, and a potable water use estimate of 0.227 m<sup>3</sup>/day per person (Imperial Oil 2004), the treatment plant can accommodate up to 150 people. The total volume of the system is approximately 68,137 litres.

A start-up time of two to four weeks is required to start the treatment system and demonstrate that the Water Licence requirements have been met prior to discharge to the Mackenzie

River. During start-up, system upset, and shutdown the lagoon is used for storage (Figure 5-1).

When justified by camp use, the installation of a polishing unit will be proposed. Any upgrade would follow the required regulatory notification process. The polishing unit should alleviate the need for storage. Once the effectiveness of the polishing unit is proven, the lagoon can be decommissioned and remediated, as identified in the Interim Abandonment and Restoration Plan (Appendix C).

Further details on the extended aeration process are provided in the attached *Operations and Maintenance Plan*. Specifically:

- Section 2 provides a detailed description of the activated sludge process.
- Section 4 provides the Operations and Maintenance Guide for the wastewater treatment system. This Operations and Maintenance Guide provides instructions for treatment plant start-up, operation and shut down, including a trouble-shooting guide.

#### 5.4.5. ***Wastewater Disposal***

Treated wastewater is discharged into Middle Channel of the Mackenzie River. Prior to discharge, the wastewater is tested to ensure it meets the effluent quality requirements as stipulated in Water Licence N7L1-1762. These effluent quality requirements are provided in Table 5-1.

**Table 5-1: Effluent Quality Requirements for Treated Wastewater Prior to Discharge**

| Sample Parameter       | Maximum Average Concentration |
|------------------------|-------------------------------|
| BOD <sub>5</sub>       | 70.0 mg/L                     |
| Total Suspended Solids | 70.0 mg/L                     |
| Faecal Coliforms       | 10E4 CFU/dL                   |
| Oil and Grease         | 5.0 mg/L                      |
| pH                     | Between 6 and 9               |

The release of effluent to the Mackenzie River will comply with *The Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories* (1992).

For camp operations that do not justify start-up of the treatment system, sewage will continue to be hauled by vacuum truck to the sewage treatment facility in Inuvik.

Excess sludge (sludge that is not recycled back into the system) will continue to be removed from the treatment plant and hauled to the sewage treatment facility in Inuvik.

#### **5.4.6. Monitoring**

The Surveillance Network Program (SNP) required in Water License N7L1-1762 is in place. The SNP requires sampling of water at Station Number 1762-1 every two weeks and analysis for the required parameters (Table 5-1).

Shell's Quality Assurance/Quality Control (QA/QC) Plan, describes sample location, handling and analytical requirements. The QA/QC Plan is found in Section 6 of the attached Operations and Maintenance Plan.

As indicated in Section 4.1.1, the lagoon is used storage during treatment plant start-up, upset, and shutdown. The riverbank adjacent to the lagoon is monitored annually for erosion.

### **5.5 Solid Waste Management**

Solid waste at Camp Farewell is handled as follows:

- Combustible non-plastic waste may be burned on-site in the approved incinerator attached to the permanent camp building (Figure 5-1). Larger construction debris such as pallets will be burned in a metal sloop. Ash from the incinerator and sloop will be transported to the Inuvik landfill, upon receiving approval.
- Non-hazardous camp waste that is not incinerated, such as plastics, will be stored in animal-proof containers for shipment to the Inuvik landfill.
- Where possible, recyclable material will be collected and recycled at approved facilities. This can include used oil and antifreeze, and scrap metal.

If hazardous wastes are generated, they are typically project-related rather than as a result of camp operations. These wastes would be stored in a contained storage area and hauled to an approved facility for disposal. Transportation will be in accordance to Transportation of Dangerous Goods requirements.

Section 9 of the attached *Camp Farewell Operations and Maintenance Plan*, provides further detail on solid waste management and disposal.

### **5.6 Fuel and Hazardous Materials Storage**

#### **5.6.1. Fuel**

Camp Farewell has permanent bermed facilities for 2.0 million litres of diesel fuel storage (Figure 5-1). The tank farm consists of two 750 m<sup>3</sup> tanks and three 300 m<sup>3</sup> tanks. The tanks are single-walled with secondary containment. The tank farm was rebuilt in 2002, and a new secondary containment liner was installed. A tray system is located beneath the load-out, which allows all potential spills to be captured during fuel discharge.

During the winter fuel may be hauled from Inuvik in a tandem-axle fuel truck to Camp Farewell. The fuel trucks are equipped with spill-absorbents and clean-up equipment in the event of a spill while transferring fuel.

During the summer the fuel tanks are refilled from a fuel barge. Temporary lines are supplied by the barge and are visually monitored for the entire time the fuel is transferred.

Project-specific fuel requirements may include jet fuel for aircraft use and gasoline for vehicle use. Both are stored in 205 litre drums. If more than 20 drums of any one product are stored on site, a double walled tank will be installed.

Section 7 of the attached Operations and Maintenance Plan contains the Emergency Response plan which details spill response procedures.

#### **5.6.2. *Hazardous Materials***

Hazardous materials are not typically required for camp operation. If hazardous materials, other than fuel, are required for a project based out of Camp Farewell, they will be securely stored, with the proper documentation and labelling.

### **5.7 Personnel and Equipment Requirements**

The equipment and personnel requirements for Camp Farewell will be project specific. There are no permanent personnel stationed at Camp Farewell. All personnel are associated with specific projects. The site is monitored monthly when significant volumes of fuel are stored in the tanks. If no fuel is stored, the site is visited at minimum on an annual basis.

In accordance with Shell's Benefit Agreement with the Inuvialuit Regional Corporation (by virtue of the Inuvialuit Final Agreement), when the camp is operating, local businesses and people will have the opportunity to supply goods and services such as catering, heavy equipment and operators, water truck, wildlife monitors and labourers.

## **6.0 ALTERNATIVES**

An alternative to using Camp Farewell would be the operation of project-specific mobile camps and storage sites. This is further addressed under Cumulative Effects.

## 7.0 TRADITIONAL AND OTHER LAND USES

Camp Farewell is located within sensitive areas identified by the Community Conservation Plans (CCPs) for Tuktoyaktuk, Aklavik and Inuvik. The CCPs offer guidelines for development that reflect the views of the hunters, trappers and anglers in the communities. The guidelines are designed to ensure conservation of renewable Resources (Community of Tuktoyaktuk et al. 2000, Community of Aklavik et. Al 2000, Community of Inuvik et. Al 2000).

Land categories identified in the CCPs range from Category A, which are lands with no known significant and sensitive cultural or renewable resources, to Category E, which are lands where cultural or renewable resources are of extreme significance and sensitivity. Land designation for Camp Farewell is Category C and Category D. Category C is lands and waters where cultural or renewable resources are of particular significance and sensitivity during specific times of the year. Category D is lands and waters where cultural or renewable resources are of particular significance and sensitivity throughout the year.

Details of these areas are provided in Table 7-1.

**Table 7-1: Community Conservation Plan Areas Affected by Camp Farewell**

| Site Number | Area  | Importance to Community  |
|-------------|---|--|
| <u>706D</u> | <u>Kendall Island Bird Sanctuary</u> - Tuktoyaktuk, Inuvik, and Aklavik                   | <ul style="list-style-type: none"> <li>breeding / staging area for a number of bird species from May to September</li> <li>sensitive wetland habitat year-round</li> </ul>   |
| <u>304C</u> | <u>Spring Goose Harvesting</u> - Tuktoyaktuk  | <ul style="list-style-type: none"> <li>key area for subsistence hunting of geese in the spring</li> </ul>  |
| <u>312C</u> | <u>Fall Goose Harvesting</u> - Tuktoyaktuk  | <ul style="list-style-type: none"> <li>key area for subsistence hunting of geese in the fall</li> </ul>  |
| <u>322C</u> | <u>Critical Grizzly Bear Denning Areas</u> - Tuktoyaktuk                                  | <ul style="list-style-type: none"> <li>important from October to May for denning grizzly bears</li> </ul>  |
| <u>715C</u> | <u>Mackenzie River Delta Key Migratory Bird Habitat</u> -Tuktoyaktuk, Inuvik, and Aklavik | <ul style="list-style-type: none"> <li>nesting and breeding habitat for birds from May to September</li> <li>denning areas for grizzly bears from October to May</li> <li>surrounding waters are important habitat for beluga whales from June to September</li> <li>polar bear denning area from November to April, and</li> <li>past and present subsistence harvesting area, especially for beluga whales (June 15 to August 15) and waterfowl (June to September)</li> </ul> |

The Inuvialuit CCPs permit development in Category C and D lands, but recommend managing them to eliminate, to the greatest extent practical, potential damage and disruption.

When a project is proposed which will use Camp Farewell as a base, Shell will work closely with the Hunters and Trappers Committees to avoid traditional harvesting areas and camps that are in use during the proposed activity.

## 8.0 COMMUNITY CONSULTATION

The Hunters and Trappers Committees (HTCs) in Tuktoyaktuk, Aklavik and Inuvik were initially informed by telephone of the water licence renewal application. This initial notification was carried out between June 23 and 29, 2005. The telephone notification was followed up with a letter describing the Camp Farewell operation including the facilities on site, water requirements, the renewal application, and consultation information. The letters were mailed to the HTCs on June 29, 2005; copies of the letters can be found in Appendix D. The names of the individuals contacted with the HTCs is provided below:

| Hunters and Trappers Committee | Contact Person |
|--------------------------------|----------------|
| Tuktoyaktuk                    | James Pokiak   |
| Aklavik                        | Jerry Arey     |
| Inuvik                         | Ronnie Gruben  |

The HTCs responded verbally to the notification by indicating they had no immediate concerns but would wait for the Project Description to review, discuss and make their final comments.

## **9.0 ENVIRONMENTAL OVERVIEW**

### **9.1 Climate**

Camp Farewell is classified as having a high subarctic ecoclimate, with very cold winters and cool summers. Mean temperatures range from  $-27.6^{\circ}\text{C}$  in January to  $14.2^{\circ}\text{C}$  in July.

Winters in this area are long and there is a period of approximately two months when the sun does not rise above the horizon. During this period, very cold conditions prevail and may last for several weeks at a time. When temperatures reach such lows, the ability of the air to contain moisture is limited and very little precipitation falls. The mean annual precipitation is 249 mm (Environment Canada 2002).

### **9.2 Physiography and Bedrock Geology**

Camp Farewell is within the Tuktoyaktuk Coastal Plain Ecoregion of the Southern Arctic Ecozone. This ecoregion covers the outer Mackenzie River delta and Tuktoyaktuk Peninsula bordering the Beaufort Sea (ESWG 1995).

There are two main landscape types within the Tuktoyaktuk Coastal Plain Ecoregion. One is composed of distinctive delta landforms at the mouth of the Mackenzie River. These include wetlands, active alluvial channels, and estuarine deposits. Characteristic wetlands, which cover 25–50% of the area, are lowland polygon fens, both the low- and high-centre varieties. The second consists of the broadly rolling uplands. Discontinuous morainal deposits mantle much of the area, except near the coast where fine-textured marine sediments cover the surface. Occurring less frequently are outwash aprons of crudely-sorted sand and gravel, and raised beach ridges along the shores of preglacial lakes. The resulting undulating terrain is studded with innumerable lakes and ponds (ESWG 1995).

The region is underlain by continuous permafrost with high ice content in the form of ice wedges and pingos.

### **9.3 Soils and Permafrost**

Organic and Turbic Cryosols developed on level to rolling organic, morainal, alluvial, fluvio-glacial, and marine deposits are the dominant soils of the Tuktoyaktuk Coastal Plain Ecoregion (ESWG 1995). Typically these soils are said to be underlain by a continuous layer of permafrost ( $> 90\%$  permafrost), though more recent data describe the outer Delta and portions of Richards Island as being discontinuous permafrost with about 35–65% permafrost beneath the area (Heginbottom 1998).

In the Delta, permafrost thickness is generally less than 90 m thick, and contains deep unfrozen zones (taliks), which in some cases extend to the base of the permafrost. The depth of the active layer generally ranges from 30–100 cm but is largely a function of ground surface insulation, vegetation cover, level of ground disturbance and winter snow cover.

## 9.4 Vegetation

Permafrost detracts from soil productivity by chilling the soil and creating waterlogged conditions in the thawed active layer near the soil surface. Plant communities found in the vicinity of the project are relatively simple and are dominated by a few species that are well adapted to poor soil (low nutrient) conditions and the harsh climate.

Vegetation grows on a veneer of unfrozen organic or granular substrate overlying the permafrost boundary. Vegetation in the area is a complex pattern of delta shrub communities on active river terraces, sedge – cotton-grass communities in wet, less active areas and patterned ground composed of low centred polygons, which typically develop in poorly drained conditions. Most of the region is subject to seasonal flooding from the Mackenzie River with associated deposits of silt in low-lying areas. Exposed sediments, standing water and moving water are prominent features of the landscape.

## 9.5 Wildlife

### 9.5.1. *Birds*

Camp Farewell is located within the Kendall Island Bird Sanctuary (KIBS). KIBS was established in 1961 to protect valuable waterfowl breeding and staging grounds within the outer Mackenzie Delta. This area has been classified as a key migratory bird site in the Northwest Territories. The 600 km<sup>2</sup> sanctuary provides habitat for over 80 species of migratory birds, including up to 7,500 nesting snow geese. Large numbers of tundra swans, greater white-fronted geese, sandhill cranes, brant, dabbling ducks, and shorebirds also nest and mount within the sanctuary. Although the sanctuary is primarily known for waterbirds, several species of raptors, passerines and ground-dwelling birds are also present in the area. Other common species include snowy owl, gyrfalcon, peregrine falcon, osprey, common redpoll, gray jay, common raven, red-throated loon, northern shrike, ptarmigan, and fox sparrow.

Under Schedule 1 of the Species at Risk Act (SARA), there are 6 bird species listed whose range includes the NWT, as follows:

| Species                            | SARA Status                  |
|------------------------------------|------------------------------|
| Eskimo Curlew                      | Schedule 1 - Endangered      |
| Whooping Crane                     | Schedule 1 - Endangered      |
| Ross's Gull                        | Schedule 1 - Threatened      |
| Peregrine Falcon anatum subspecies | Schedule 1 - Threatened      |
| Ivory Gull                         | Schedule 1 - Special Concern |
| Yellow Rail                        | Schedule 1 - Special Concern |

From this list, the Peregrine Falcon is the only species whose range includes the Mackenzie Delta.

Additional species not listed above, but which are an NWT Species at Risk are the Short-Eared Owl and the Peregrine Falcon tundrius subspecies. The NWT Species at Risk status is determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

A vast majority of birds that are found in and around the Mackenzie Delta are migratory and are present from May to October. Consequently, they are not expected to be present during winter operation of Camp Farewell. Summer operation of the camp, however, may be a concern, with such issues as sensory disturbance and water removal from the Unnamed Lake to the north. Habitat loss is not an issue because Camp Farewell is a permanent camp, with no plans to increase its size.

### 9.5.2. *Mammals*

Terrestrial animals in the area include barren-ground grizzly bear, Arctic and red fox, wolverine, ermine, least weasel, mink, muskrat, Arctic ground squirrel, and several species of small rodents (lemmings and voles). Caribou are not thought to occur on Richards Island, because the area has very little lichen growth and is considered poor quality habitat.

Polar bears are generally restricted to areas with sea ice and are thus unlikely in the Camp Farewell area. However, maternity dens and secondary winter habitat occur along the coastline of the Mackenzie Delta and Richards Island.

Grizzly bears reside year round in the area, although at low density. Most local grizzly denning occurs on south and west facing lake/channel banks between sea level and 100 m above sea level within the bear's home range. Low-lying areas around lakes and channels also provide good spring foraging habitat. Grizzly bears also forage on bird eggs, and thus are attracted to KIBS during the spring waterfowl nesting season.

Under Schedule 1 of the Species at Risk Act (SARA), there are three mammal species listed whose range includes the NWT, as follows:

| Species  | SARA Status     |
|--|-----------------|
| Wood Bison   | Threatened      |
| Woodland Caribou (boreal population)               | Threatened      |
| Woodland Caribou<br>(Northern Mountain population) | Special Concern |

The range of these species does not include the Mackenzie Delta.

Additional species not listed above, but which are an NWT Species at Risk, are the Grizzly Bear, Polar Bear and Wolverine.

### 9.5.3. *Hydrology*

The Mackenzie River delta is a dynamic complex of lakes, islands, braided channels and oxbows. The hydrological regime is the primary factor controlling vegetation and wildlife habitat in the area. It is an estuarine delta with poorly developed levees, formed largely from sediments transported by the Mackenzie River over the last 13,000 years. The southwest sector also receives sediment from the Peel and Rat rivers. The major channels appear largely unchanged in the last century. The present delta is flat and dotted with numerous lakes, ponds and river channels, but also contains land varying from stable forested areas to tidal flats (MRBC 1981).

Ice covers the waters of the delta for approximately eight months of the year and can be up to 2.5 m thick in the main stem of the Mackenzie River. Ice break-up usually begins in late April-early May, and ice movement occurs before peak spring water levels. Water levels fall during late summer and into fall. The basic hydrology of the delta is a complex interaction of aggrading and degrading forces, with spring break-up the major hydrological event each year (MRBC 1981).

### 9.5.4. *Fish*

A large number of fish species occur within the freshwater and marine environments of the delta. Fish species that are likely to be present in the Mackenzie Delta are listed in Table 9-1 along with their spawning habitats and spawning times.

There are no fish species listed under Schedule 1 of the Species at Risk Act (SARA), whose range includes the NWT. Similarly there are no species that are an NWT Species at Risk that may be present in the Mackenzie Delta.

**Table 9-1: Fish Species Likely to be Present in the Mackenzie Delta**

| Species 1         | Latin Name                  | Habitat   | Spawning Period       |
|-------------------|-----------------------------|---|-----------------------|
| <b>FRESHWATER</b> |                             |   |                       |
| Burbot            | <i>Lota lota</i>            | Mouths of creeks. Winter and spring may be abundant in fresh or brackish waters of Kugmallit Bay's coastal embayment. | January – March       |
| Flathad chub      | <i>Platygobio gracilis</i>  | Shallow sandy bars in smaller tributary streams, survives well in turbid water.                                       | Spring and Mid Summer |
| Lake chub         | <i>Couesius plumbeus</i>    | Most of Canada west of Hudson Bay. Cool streams, lakes, ponds. Moves into deeper water during the summer.             | Spring and Mid Summer |
| Arctic cisco      | <i>Coregonus autumnalis</i> | Mackenzie River and estuary, tributaries to the Mackenzie (spawning habitat - inland lakes).                          | Fall                  |

| Species 1             | Latin Name                     | Habitat   | Spawning Period                |
|-----------------------|--------------------------------|---|--------------------------------|
| Least cisco           | <i>Coregonus sardinella</i>    | Mackenzie River and estuary, tributaries to the Mackenzie (spawning habitat), inland lakes. Inner Shallow Bay / Niakunak Bay and Kugmallit Bay are important overwintering and nursery areas.   | Early October                  |
| Finescale dace        | <i>Chrosomus neogaeus</i>      | Bog ponds, streams, and lakes. Mackenzie River drainage.  | April to June                  |
| Longnose dace         | <i>Rhinichthys cataractae</i>  | Prefers small streams, generally in riffles of gravel and boulders. Often found in turbulent waters. Also the wave lashed shores of very large lakes and often found in trout streams.          | April and May                  |
| Inconnu               | <i>Stenodus leucichthys</i>    | Mackenzie River and estuary (rearing habitat). Turbid lakes on Richard Island throughout summer, Mallik and Mason Bays.   | Late September – early October |
| Arctic grayling       | <i>Thymallus arcticus</i>      | Kugalak River, coastal rivers of North Slope. Occasionally Richards Island.   | Spring                         |
| Lake trout            | <i>Salvelinus namaycush</i>    | Outer delta lakes (including minor channels) with high oxygen levels, a good connection to adjacent water bodies, small to moderate volumes available and poor to moderate water quality.       | Fall                           |
| Northern pike         | <i>Esox lucius</i>             | Tributaries, creeks and shallow lakes in Mackenzie delta.   | Early spring                   |
| Deepwater sculpin     | <i>Myoxocephalus thompsoni</i> | Habitat preferences are not known. Spawning areas are not known.  | May and June                   |
| Slimy sculpin         | <i>Cottus cognatus</i>         | Coldwater streams. Stream bottom.   | Late April and May             |
| Spoonhead sculpin     | <i>Cottus ricei</i>            | Turbid rivers or deep areas of lakes.   | Fall                           |
| Pond smelt            | <i>Hypomesus olidus</i>        | Arctic and Pacific drainages from Rae River (Coronation Gulf) and Great Bear Lake in Northwest Territories, Canada to Copper River in Alaska. Seines of Shallow Bay near mouth of west channel. | Late spring – early summer.    |
| Rainbow smelt         | <i>Osmerus mordax</i>          | Found only along mainland coast from Bathurst Inlet westward.   | Spring                         |
| Ninespine stickleback | <i>Pungitius pungitius</i>     | Shallow vegetated areas of lakes, ponds, and pools of sluggish streams. Sometimes in open water over sand. Seining locations Shallow Bay, Kendall Island, Swan Channel and East Channel.        | Spring and early summer        |
| Longnose sucker       | <i>Catostomus catostomus</i>   | Arctic mainland in lakes and occasionally in the brackish water of estuaries.   | Spring                         |
| White sucker          | <i>Catostomus commersoni</i>   | Lakes, small rivers and streams.  | Late April to June             |

| Species 1        | Latin Name                        | Habitat   | Spawning Period    |
|------------------|-----------------------------------|---|--------------------|
| Trout-perch      | <i>Percopsis omiscomaycus</i>     | Stream habitats with high water quality, deep pools and bottoms consisting of sand and gravel. Lake populations avoid mud-filled bays.  | May through August |
| Walleye          | <i>Stizostedion vitreum</i>       | Intermediate to large cool lakes, rivers, and streams. Prefers large shallow lakes with high turbidity.   | April to late June |
| Broad whitefish  | <i>Coregonus nasus</i>            | Several overwintering areas in East Channel and Whitefish Bay. Tuktoyaktuk Harbour, Mason Bay, Mallik Bay, Shallow Bay, streams of Tuktoyaktuk Peninsula, spawning throughout the Mackenzie system. | October, November  |
| Round whitefish  | <i>Prosopium cylindraceum</i>     | Inhabits shallow areas of lakes and clear streams, rarely entering brackish water. Most often found in clear fast flowing water. Outer Mackenzie delta.   |                    |
| <b>SALTWATER</b> |                                   |   |                    |
| Capelin          | <i>Mallotus villosus</i>          | Cold deep waters.   | June / July        |
| Arctic char      | <i>Salvelinus alpinus</i>         | Fish Hole, Rat River, Big Fish River, Fish Creek, Babbage River, Peel River, Shingle Point, occasionally travel the Mackenzie near Inuvik.  | Fall               |
| Arctic cod       | <i>Boreogadus saida</i>           | Within Mackenzie estuary.   | Winter             |
| Greenland cod    | <i>Gadus ogac</i>                 | Cold temperatures usually inshore regions. Arctic coast of Canada.  |                    |
| Saffron cod      | <i>Elegiums navaga</i>            | Saline bays and offshore.   |                    |
| Tom cod          | <i>Microgadus proximus</i>        |   |                    |
| Starry flounder  | <i>Platichthys stellatus</i>      | West coast of Tuktoyaktuk Peninsula and Mallik Bay.   | February - April   |
| Blue herring     | <i>Clupea spp.</i>                | Mackenzie River and estuary, tributaries to the Mackenzie, inland lakes.  | Late June          |
| Sand lance       | <i>Amodytes sp.</i>               | Shallow intertidal with sandy bottoms.  | December - March   |
| Chum salmon      | <i>Oncorhynchus keta</i>          | Pacific and Arctic oceans, spawning in rivers from the Mackenzie westward.  | Fall               |
| Pink salmon      | <i>Oncorhynchus gorbusha</i>      | Pacific and Arctic oceans, spawning in rivers from the Mackenzie westward.  | Fall               |
| Fourhorn sculpin | <i>Myoxocephalus quadricornis</i> | Lakes and streams of the Arctic archipelago.  | May and June       |

## 10.0 ENVIRONMENTAL PROTECTION MEASURES

Shell has and will continue to operate Camp Farewell with the intent of minimizing its impact on the environment and local users. Measures followed to achieve this include the following:

### **Notification of Concerned Parties**

**Objective:** To ensure that all personnel are briefed on camp operation, and that all permits are in place and required regulatory personnel/community groups are notified of the camp's operation.

- Notification shall be made to appropriate local communities, companies or regulatory agencies, as per permits and lease agreements.

### **Clearing and Access**

**Objective:** Disturbance to vegetation, watercourse and the ground mat shall be kept to a minimum.

- The access for camp operations will be the public Mackenzie River ice road between Inuvik and Tuktoyaktuk and the privately constructed and maintained ice road from Tununuk Point to Camp Farewell.
- Equipment movement shall be limited to the existing camp lease.

### **Fuel, Hazardous Materials and Garbage**

**Objective:** To ensure the proper storage, handling and disposal of fuel, hazardous materials and garbage, as well as spill prevention and reporting.

- Fuel shall be stored in a single walled tanks located within the synthetically lined and bermed area or other secondary containment with a holding capacity of 110% of the largest volume of fuel to be stored at the site. Any tanks without secondary containment shall be double walled. Any hazardous product stored in excess of 20 drums shall have secondary containment or stored in tanks as described above.
- Fuel, oil or hazardous material storage shall not be allowed within 100 m of a watercourse or waterbody.
- Spent oils, lubricants and filters and so forth shall be collected at camp and transported to an approved receiver for final disposal or recycling.
- Hydraulic, fuel and lubricating systems shall be kept in good repair to avoid leakage of deleterious substances.
- Equipment and ancillary vehicles shall be inspected on a regular basis to ensure they are clean and free of leaks.
- Operators, foremen and responsible supervisory personnel shall be trained to contain spills or leakage from equipment.
- All service vehicles used for refueling must be equipped with automatic shut-off valves that shall be inspected on a regular basis to ensure they are in good working order.

- A spill mat, drip tray or tarpaulin, which is impervious to all liquids, shall be used under all vehicles or equipment that is being serviced.
- All fuel and service vehicles shall carry a spill kit that contains suitable commercial absorbent materials for ground spills, to ensure an immediate response capability in the event of a fuel spill.
- In the event of a spill, procedures shall be implemented as outlined in the Emergency Response Plan (Section 7 of the attached *Operations and Maintenance Plan*).
- All leaks and spills shall be reported to the Site Supervisor to initiate immediate clean up.
- All spills will be reported to the NWT 24-hour Spill Report Line (867) 920-8130.
- The spill area shall be restored to the satisfaction of the Environmental Inspector, Field Superintendent, and the local Environmental Monitor.
- Construction waste, debris, garbage and other non-hazardous materials shall not be allowed to accumulate at the camp.
- All combustible garbage shall be continuously collected and with the exception of plastics, incinerated at the camp in an enclosed container. All plastics and non-combustible materials shall be hauled to Inuvik for disposal in the sanitary landfill site.
- Hazardous material shall have the appropriate Material Safety Data Sheet (MSDS) identification and the sheets available at the camp.
- All hazardous materials stored at the camp shall be contained, labeled, handled and used according to TDG (Transportation of Dangerous Goods) and WHMIS (Workplace Hazardous Materials Information System) regulations.

### **Water Intake**

**Objective:** To ensure that all water withdrawals conform to permit conditions as set out by DFO and the Northwest Territories Water Board.

- The Camp Farewell site supervisor must review the water license requirements, and ensure requirements are executed.
- Only water sources designated for water withdrawal shall be used.
- Water withdrawals shall be less than 150 cubic metres per day for duration of camp operations.
- All water intakes shall be properly screened with fine mesh of 2.54 mm to prevent the entrainment of fish, in accordance with DFO Freshwater Intake End-of-Pipe Fish Screen Guideline.

### **Wastewater Treatment and Discharge**

**Objective:** To ensure that wastewater treatment and discharge conforms to license conditions as set out by the Northwest Territories Water Board.

- The Camp Farewell site supervisor must be familiar with the operating procedures of the wastewater treatment plant and ensure the guidelines are followed (Section 4 of the attached *Operations and Maintenance Plan*).
- The NWT Water Board Inspector shall be notified 5 days prior to the start of any planned discharge of treated wastewater to the Mackenzie River. Inspector approval is required prior to discharge.
- In the event of a spill, procedures shall be implemented as outlined in the Emergency Response Plan (Section 7 of the attached *Operations and Maintenance Plan*).

### **Wildlife**

**Objective:** Measures shall be implemented to minimize wildlife disturbance at the camp and on the access route.

- A wildlife monitor will be on-site while the camp is in operation to limit the potential for human – wildlife contact.
- The Wildlife Monitor shall identify any bear dens close to the camp before the start up of camp operation.
- Wildlife shall not be harassed or fed. With the exception of wildlife monitors, personnel shall not be permitted to have firearms on the site. The recreational use of all-terrain vehicles and snowmobiles by personnel is prohibited. Any incidents with wildlife or collisions with wildlife shall be reported to the Canadian Wildlife Service. Additionally, any encounters with bears shall be reported to the Wildlife Division of the Environment and Natural Resources department (ENR).
- Aircraft involved in camp operations shall fly at sufficient altitudes to avoid disturbing wildlife.
- Any fishing must meet all Northwest Territories regulatory and licensing requirements.

## 11.0 CUMULATIVE EFFECTS

Camp Farewell is an existing facility, and any new environmental impacts will be minimized by the following:

- The tank farm was rebuilt in 2002 including a new secondary containment liner.
- A tray system is located beneath the fuel loadout, which allows all potential spills to be captured during fuel discharge.
- Shell has an approved spill plan for the site.
- Combustible debris is burned in an incinerator or contained metal sloop.
- Recyclable materials are removed from the site to an approved facility.
- The camp has a fully operational sewage treatment system in place with a proven track record for meeting discharge limits since installation of the extended aeration sewage treatment system.

As indicated in Section 6 Alternatives, the operation of mobile camps and temporary stockpile sites would be the likely alternatives to the continued operation of Camp Farewell. Thus in terms of reducing cumulative effects of activity in the Mackenzie Delta, the continued operation of Camp Farewell would have a positive impact because it is already in existence and requires no further surface disturbance.

## **12.0 EMERGENCY RESPONSE PLANS**

Section 7 of the attached document *Operations and Maintenance Plan* contains the updated Emergency Response Plan for Camp Farewell. This ERP has been previously approved by the NWT Water Board and Canadian Coast Guard.

### **13.0 SITE RECLAMATION AND DECOMMISSIONING**

The Interim Abandonment and Restoration Plan provided in Appendix D addresses restoration of Camp Farewell. Specifically the report addresses the Northwest Territories Water Board reporting requirements for reclamation of water systems (collection, distribution, and discharge facilities), and it provides an overview of the restoration requirements associated with the entire site. This Plan was previously approved by the NWT Water Board.

## **14.0 OTHER ENVIRONMENTAL ASSESSMENT**

The operation of Camp Farewell has undergone a previous Canadian Environmental Assessment Act (CEAA) screening during the initial Type B Water Licence Application in September 2000.

In addition, numerous project-specific screenings have occurred which used Camp Farewell as a base camp. Over the last 5 years, the following site-specific projects that have used Camp Farewell have been screened:

- Shell 2005 Winter Field Geotechnical Investigation Program
- ChevronTexaco 2005 Seismic Program
- WesternGeco seismic programs (2001)

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Indian and Northern  
Affairs Canada

affaires indiennes  
et du Nord Canada

# Schedule "A"

DUPLICATE

Expires  
Dec 31/2008

SF:2726-02

Replacement of  
Lease No.: 107 C/4-2-9  
Lease No.: 107 C/4-2-10  
File No.: 107 C/4-2

THIS LEASE made this 20<sup>th</sup> day of April, 1999

BETWEEN

Her Majesty the Queen in right of Canada, hereinafter called "Her Majesty"

OF THE FIRST PART

AND

SHELL CANADA LIMITED, a body corporate, incorporated under the Laws of Canada, having a registered office in the City of Calgary, in the Province of Alberta,

hereinafter called "the lessee"

OF THE SECOND PART

WITNESSETH that in consideration of the rents, covenants and agreements herein reserved and contained on the part of the lessee to be paid, observed and performed, and subject to the Territorial Lands Act and the Territorial Lands Regulations, Her Majesty demises and leases unto the lessee all that certain parcel or tract of land situate, lying and being composed of all those parcels of land designated as "A", "B" and "C", at Farewell, located at approximately on 69°12'30" North Latitude and 135°06'04" West Longitude, in QUAD 107 C/4, in the Northwest Territories, as shown outlined in red on the sketch plan annexed hereto and forming part of this description,

hereinafter called "the land", SUBJECT TO the following reservations:

Initial 

Canada

DUPLICATE

Lease No.: 107 C/4-2-10

- 2 -

- (a) all mines and minerals whether solid, liquid or gaseous which may be found to exist within, upon, or under the land together with the full powers to work the same and for that purpose to enter upon, use and occupy the land or so much thereof and to such an extent as may be necessary for the effectual working and extracting of the said minerals;
- (b) the rights of the recorded holders of mineral claims and any other claims or permits affecting the land;
- (c) all timber that may be on the land;
- (d) the right to enter upon, work and remove any rock outcrop required for public purposes;
- (e) such right or rights of way and of entry as may be required under regulations in force in connection with the construction, maintenance and use of works for the conveyance of water for use in mining operations; and
- (f) the right to enter upon the land for the purpose of installing and maintaining any public utility.

THE PARTIES COVENANT AND AGREE AS FOLLOWS:

DEFINITIONS:

- 1. In this lease:
  - (a) "Minister" means the Minister of Indian Affairs and Northern Development and any person authorized by him in writing to act on his behalf;
  - (b) "facilities" means all physical structures or appurtenances placed in or upon the land;
  - (c) "construction" means all manner of disturbance of the natural state of the surface of the land, including the sub-surface and sub-strata;
  - (d) "Surveyor General" means the Surveyor General as defined in the Canada Lands Surveys Act;
  - (e) "body of water" means any lake, river, stream, swamp, marsh, channel, gully, coulee or draw that continuously or intermittently contains water;

TERM:

- 2. The term of this lease shall be for a period of Ten (10) years commencing on the 1<sup>st</sup> day of January, A.D. 1999 and terminating on the 31<sup>st</sup> day of December A.D. 2008.

RENT AND TAXES:

- 3. Subject to Clause 4, the lessee shall pay to the lessor yearly and every year in advance the rental of Three hundred and sixty (\$360.00) dollars. *renter -> Jenny Chalmers*

Initial JC

## DUPLICATE

Lease No.: 107 C/4-2-10

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4. The Minister may, not less than three (3) months before the expiration of the first five (5) year period of the said term, notify the lessee in writing of an amended rental payment for the following five (5) year period, the said amended rental to be based upon the fair appraised value of the land at the time of such notification, but without taking into account the value of any improvements placed thereon by and at the expense of the lessee.
5. The lessee shall during the term of this lease, pay all taxes, rates and assessments charged upon the land or upon the lessee in respect thereof.

### USE:

6. The lessee shall use the land for STAGING AREA, FUEL STORAGE, EQUIPMENT AND MATERIAL STORAGE AND BASE CAMP purposes only.

### SUBLETTING OR ASSIGNMENTS:

7. The lessee shall not sublet the land or assign or transfer this lease or any portion thereof without the consent of the Minister in writing, which consent shall not be unreasonably withheld. Such consent shall not be required in the event of the lessee mortgaging or pledging the rights and privileges granted herein to secure the payment of any bonds or other indebtedness of the lessee, or to any assignment made to or by any securing holder as a result of default by the lessee under any mortgage or pledge; however, copies of any such instruments must be forwarded to the Minister.

### BREACH:

8. Where any portion of the rental herein reserved is unpaid for more than thirty (30) days after it becomes due, whether formally demanded or not, the Minister may by notice in writing terminate this lease and on the day following the mailing of such notice, this lease is cancelled.
9. Where the lessee breaches or fails to perform or observe any of the covenants, terms, conditions or agreements herein contained, other than the covenant to pay rent, the Minister may so advise the lessee by written notice and if the lessee fails to remedy the breach or non-performance within a reasonable time thereafter or within the time granted in the said notice, the Minister may, by notice in writing, terminate this lease and on the day following the mailing of such notice, this lease is cancelled.
10. Unless a waiver is given in writing by the Minister, Her Majesty will not be deemed to have waived any breach or non-performance by the lessee of any of the covenants, terms, conditions or agreements herein contained and a waiver affects only the specific breach to which it refers.

### TERMINATION:

11. Upon the termination or expiration of this lease, the lessee shall deliver up possession of the land in a condition satisfactory to the Minister.

Initial



DUPLICATE

Lease No.: 107 C/4-2-10

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12. Termination or expiration of this lease will not prejudice Her Majesty's right to unpaid rental or any other right with respect to a breach or non-performance of any covenant, term, condition or agreement herein contained nor will the lessee be relieved of any obligation contained herein.

RESTORATION:

13. Where the lessee fails to restore the land as required and within the time allowed by the Regulations or by the Minister, the Minister may order the restoration of all or any part of such land and any expenses thus incurred by the Minister shall be recoverable from the lessee as a debt due to Her Majesty.

WASTE DISPOSAL:

14. The lessee shall dispose of all garbage and debris by incinerating all combustible materials and burying all noncombustible materials in a manner and at a site approved by the Minister, or by removal to an approved dumping site.
15. The lessee shall dispose of human waste in a manner satisfactory to the Minister.
16. The lessee shall not discharge or deposit any refuse substances or other waste materials in any body of water, or the banks thereof, which will, in the opinion of the Minister, impair the quality of the waters or the natural environment and any areas designated for waste disposal shall not be located within thirty-one (31) metres of the ordinary high water mark of any body of water, unless otherwise authorized by the Minister.

ENVIRONMENTAL:

17. The lessee shall at all times keep the land in a condition satisfactory to the Minister.
18. The lessee shall not do anything which will cause erosion of the banks of any body of water on or adjacent to the land, and shall provide necessary controls to prevent such erosion.
19. The lessee shall not unduly interfere with the natural drainage pattern of the land, except with the permission of the Minister.

FUEL AND HAZARDOUS CHEMICALS:

20. The lessee shall take all reasonable precautions to prevent the possibility of migration of spilled petroleum fuel over the ground surface or through seepage in the ground by:

- (i) constructing a dyke around any stationary petroleum fuel container where the container has a capacity exceeding four thousand (4,000) litres; and
- (ii) ensuring that the dyke(s) and the area enclosed by the dyke(s) is impervious to petroleum products at all times; and
- (iii) ensuring that the volumetric capacity of the dyked area shall, at all times, be equal to the capacity of the largest petroleum fuel container plus ten (10) percent of the total displacement of all other petroleum fuel containers placed therein; or

such other alternate specifications submitted by the lessee that may be approved, in writing, by the Minister.

Initial 

DUPLICATE

Lease No.: 107 C/4-2-10

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21. The lessee shall ensure that fuel storage containers are not located within thirty-one (31) metres of the ordinary high water mark of any body of water unless otherwise authorized by the Minister.
22. The lessee shall mark with flags, posts or similar devices all petroleum fuel storage facilities, including fill and distribution lines, such that they are clearly visible at all times.
23. The lessee shall immediately report all spills of petroleum and hazardous chemicals in accordance with the Government of the Northwest Territories Spill Report and any amendments thereto, or in a manner satisfactory to the Minister.
24. The lessee shall take all reasonable precautions to prevent the migration of petroleum products into bodies of water.
25. The lessee shall, within six (6) months of the execution of this lease deliver to the Minister, for his approval, an Oil Spill Contingency Plan and shall maintain the provisions of the said Plan, and any modifications approved by the Minister, throughout the term of this lease. *Sch. must have own plan in place.*
26. *prob not could be stored on ground* The lessee shall handle, store, dispose and keep records of all hazardous and toxic chemicals in a manner satisfactory to the Minister.
27. The fuel storage facilities of the lessee, including all tanks, bladders, hoses, pumps, fuel transfer lines and associated mechanical connections and valves shall be installed and maintained to the satisfaction of the Minister and the lessee agrees to make such reasonable modifications and improvements as are deemed necessary by the Minister.

IMPROVEMENTS:

28. The lessee is responsible for ensuring that all improvements to the land are made within the boundaries of the land.
29. The lessee shall maintain the existing improvements now situated on the land on the effective date of this lease, or any similar improvements which may be constructed, in a manner and condition satisfactory to the Minister.
30. The lessee shall not construct any facilities within thirty-one (31) metres of the ordinary high water mark of any body of water without the written approval of the Minister.

BOUNDARIES/SURVEY:

31. Her Majesty is not responsible for the establishment on the ground of the boundaries of the land.
32. The boundaries of the land are subject to such adjustment and alteration as may be shown to be necessary by survey.

Initial 

DUPLICATE

Lease No.: 107 C/4-2-10

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32. The Minister may, during the term herein granted, by notice in writing, order the lessee to survey the boundaries of the land and the lessee shall, at its own expense, within one (1) year from the date of said notice, make or cause to be made a survey of the land, such survey to be made in accordance with the instructions of the Surveyor General, and upon completion of the survey and the production of survey plans suitable for recording in the Canada Lands Surveys Records and filing in the Land Titles Office for the Northwest Territories Land Registration District, Her Majesty will execute an Indenture in amendment of this lease for the purpose of incorporating herein descriptions of the land based on the said plans.

ACCESS:

33. Her Majesty assumes no responsibility, express or implied, to provide access to the land.
34. It shall be lawful for Her Majesty or any person duly authorized at all reasonable times to enter upon the land for the purpose of examining the condition thereof.
35. The Minister may grant to such persons as he may consider fit, rights-of-way or access across, through, under or over all or any portion of the land for any purpose whatsoever, but such rights-of-way or access will not unreasonably interfere with the rights granted to the lessee hereunder, or with any improvements made by the lessee on the land.

INDEMNIFICATION:

36. The lessee will not be entitled to compensation from Her Majesty by reason of the land or any portion thereof being submerged, damaged by erosion, or otherwise affected by flooding.
37. Her Majesty will not be liable for damages caused by vandalism or interference by others with the lessee's facilities and equipment.
38. The lessee shall at all times hereafter indemnify and keep Her Majesty indemnified against all claims, demands, actions or other legal proceedings by whomsoever made or brought against Her Majesty by reason of anything done or omitted to be done by the lessee, his officers, servants, agents or employees arising out of or connected with the granting of this lease.

REVIEW:

39. At the request of the lessee, any decision of the Minister will be reviewable by the Trial Division of the Federal Court of Canada; costs of such review are the responsibility of the lessee unless otherwise ordered by the Court.

NOTICES:

40. All written notices respecting the land or the covenants, terms, conditions or agreements contained in this lease shall, unless otherwise stipulated herein, be deemed to have been received by the lessee ten (10) days after the mailing thereof or, if hand delivered, on the day of delivery.

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DUPLICATE

Lease No.: 107 C/4-2-10

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41. Any notice affecting this lease which Her Majesty may desire to serve upon the lessee, or any notice which the lessee may desire to serve upon Her Majesty shall, unless otherwise stipulated herein, be sufficiently served if posted by registered mail to the last known address of the opposite party as follows:

To Her Majesty: Director of Operations  
Northwest Territories Region  
Northern Affairs Program  
Department of Indian Affairs and Northern  
Development  
P.O. Box 1500  
Yellowknife, N.W.T.  
X1A 2R3

To the Lessee: Shell Canada Limited  
P.O. Box 100  
Calgary, AB  
T2P 2H5

Either party may change its address for service during the term of this lease by notifying the other party in writing.

42. No notice of breach or default given herein by Her Majesty shall be valid or of any effect unless it is also given to any mortgagee of the lessee, in respect of the leased lands, of which Her Majesty shall have received written notice.

GENERAL:

43. The lessee shall abide by the said Act and Regulations.
44. This lease enures to the benefit of and is binding upon Her Majesty, Her Heirs and Successors and the lessee, its successors and assigns.
45. No implied covenant or implied liability on the part of Her Majesty is created by the use of the words "demises and leases" herein.
46. If an archaeological site is discovered within the land, the lessee shall immediately advise the Minister in writing of such a discovery and shall take all reasonable precautions necessary to prevent any further disturbance or destruction of such site.

Initial



DUPLICATE

Lease No.: 107 C/4-2-10

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IN WITNESS WHEREOF The Director of Operations, Northwest Territories Region, Northern Affairs Program, Department of Indian Affairs and Northern Development, has hereunto set his hand and seal on behalf of Her Majesty the Queen in right of Canada and Shell Canada Limited, has hereunto affixed its corporate seal attested to by its proper officers duly authorized in that behalf.

SIGNED, SEALED AND DELIVERED on behalf  
of Her Majesty by The Director of  
Operations, Northwest Territories Region,  
Department of Indian Affairs and  
Northern Development, in the presence of

 (SEAL)  
Director's Signature

  
Director's Witness

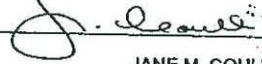
SEALED, ATTESTED TO AND DELIVERED

by the

and the

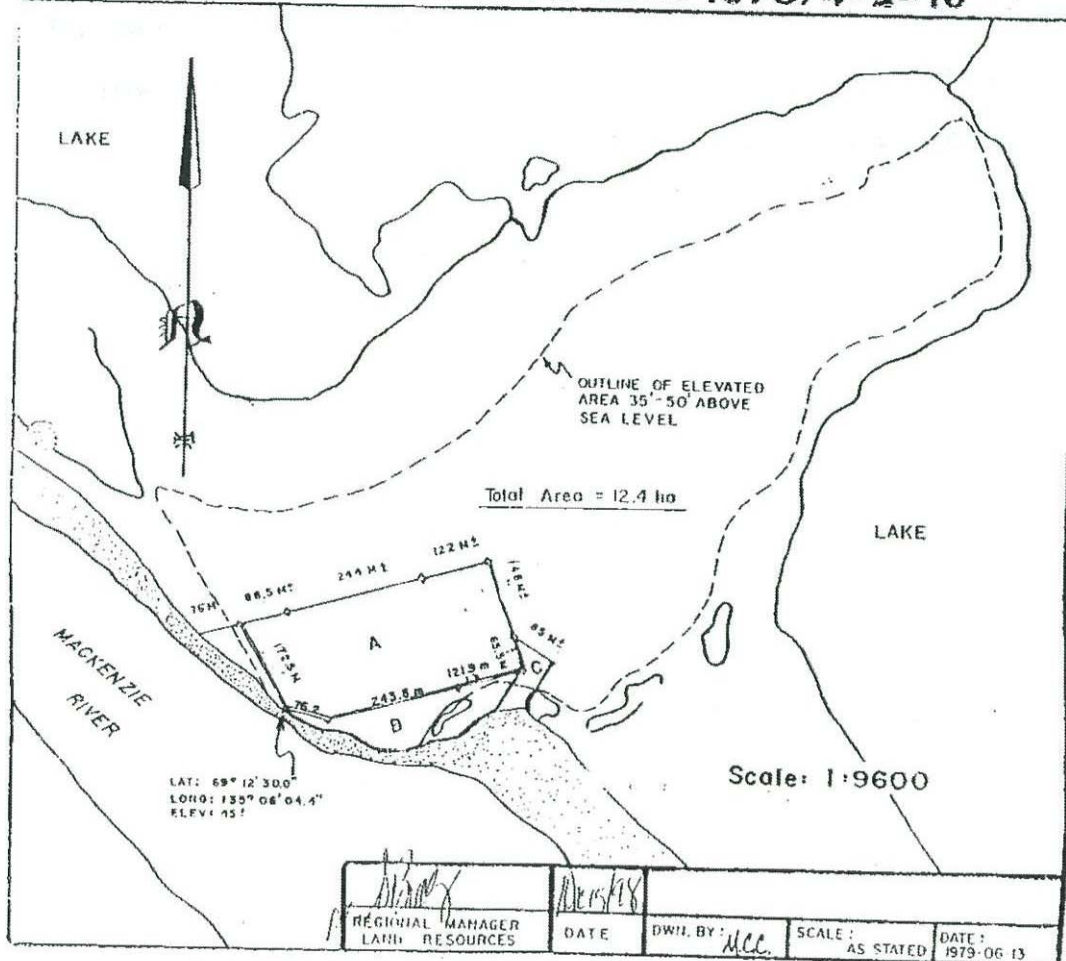
of Shell Canada Limited

SHELL CANADA LIMITED

 (SEAL) *PMW*  
JANE M. COULL  
Assistant Secretary (SEAL)



ANNEXED HERETO AND FORMING PART OF LEASE 107C/4-2-10





Indian and Northern  
Affairs Canada      Affaires indiennes  
et du Nord Canada

Sf: 2726-63

DUPLICATE

CELLS COPY

Replacement of  
Lease No.: 107 C/4-1-6  
Lease No.: 107 C/4-1-7  
File No.: 107 C/4-1

THIS LEASE made this 20<sup>th</sup> day of APRIL, 1979

BETWEEN

Her Majesty the Queen in right of Canada, hereinafter called "Her Majesty"

OF THE FIRST PART

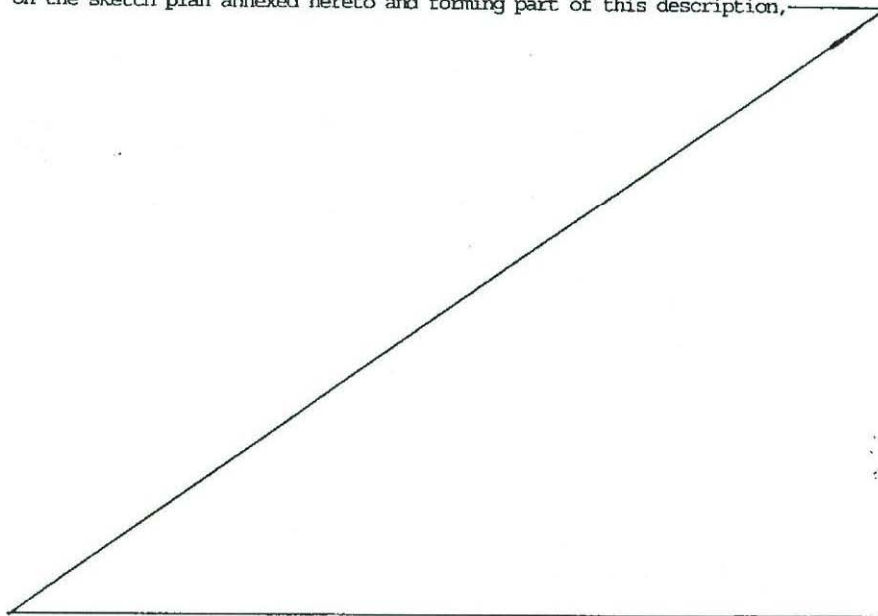
AND

SHELL CANADA LIMITED, a body corporate, incorporated under the Laws of Canada, having a registered office in the City of Calgary, in the Province of Alberta,

hereinafter called "the lessee"

OF THE SECOND PART

WITNESSETH that in consideration of the rents, covenants and agreements herein reserved and contained on the part of the lessee to be paid, observed and performed, and subject to the Territorial Lands Act and the Territorial Lands Regulations, Her Majesty demises and leases unto the lessee all that certain parcel or tract of land situate, lying and being composed of all that parcel of land at Farewell, located at approximately on 69°12'30" North Latitude and 135°06'04" West Longitude, in QUAD 107 C/4, in the Northwest Territories, as shown outlined in red on the sketch plan annexed hereto and forming part of this description,



hereinafter called "the land", SUBJECT TO the following reservations:

Initial JS

Canada

DUPLICATE

Lease No.: 107 C/4-1-7

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- (a) all mines and minerals whether solid, liquid or gaseous which may be found to exist within, upon, or under the land together with the full powers to work the same and for that purpose to enter upon, use and occupy the land or so much thereof and to such an extent as may be necessary for the effectual working and extracting of the said minerals;
- (b) the rights of the recorded holders of mineral claims and any other claims or permits affecting the land;
- (c) all timber that may be on the land;
- (d) the right to enter upon, work and remove any rock outcrop required for public purposes;
- (e) such right or rights of way and of entry as may be required under regulations in force in connection with the construction, maintenance and use of works for the conveyance of water for use in mining operations; and
- (f) the right to enter upon the land for the purpose of installing and maintaining any public utility.

THE PARTIES COVENANT AND AGREE AS FOLLOWS:

DEFINITIONS:

1. In this lease:
  - (a) "Minister" means the Minister of Indian Affairs and Northern Development and any person authorized by him in writing to act on his behalf;
  - (b) "facilities" means all physical structures or appurtenances placed in or upon the land;
  - (c) "construction" means all manner of disturbance of the natural state of the surface of the land, including the sub-surface and sub-strata;
  - (d) "Surveyor General" means the Surveyor General as defined in the Canada Lands Surveys Act;
  - (e) "body of water" means any lake, river, stream, swamp, marsh, channel, gully, coulee or draw that continuously or intermittently contains water;
  - (f) "airstrip" means any area, either water or land, which is adapted for the take off and landing of aircraft and which provides facilities for the shelter and repair of aircraft, or for the regular receiving and discharging of passengers or cargo;

TERM:

2. The term of this lease shall be for a period of Ten (10) years commencing on the 1<sup>st</sup> day of January, A.D. 1999 and terminating on the 31<sup>st</sup> day of December A.D. 2008.

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# DUPLICATE

Lease No.: 107 C/4-1-7

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## RENT AND TAXES:

3. Subject to Clause 4, the lessee shall pay to the lessor yearly and every year in advance the rental of One Hundred and Fifty (\$150.00) dollars.
4. The Minister may, not less than three (3) months before the expiration of the first five (5) year period of the said term, notify the lessee in writing of an amended rental payment for the following five (5) year period, the said amended rental to be based upon the fair appraised value of the land at the time of such notification, but without taking into account the value of any improvements placed thereon by and at the expense of the lessee.
5. The lessee shall during the term of this lease, pay all taxes, rates and assessments charged upon the land or upon the lessee in respect thereof.

## USE:

6. The lessee shall use the land for the location of an AIRSTRIP only.

## SUBLETTING OR ASSIGNMENTS:

7. The lessee shall not sublet the land or assign or transfer this lease or any portion thereof without the consent of the Minister in writing, which consent shall not be unreasonably withheld.

## BREACH:

8. Where any portion of the rental herein reserved is unpaid for more than thirty (30) days after it becomes due, whether formally demanded or not, the Minister may by notice in writing terminate this lease and on the day following the mailing of such notice, this lease is cancelled.
9. Where the lessee breaches or fails to perform or observe any of the covenants, terms, conditions or agreements herein contained, other than the covenant to pay rent, the Minister may so advise the lessee by written notice and if the lessee fails to remedy the breach or non-performance within a reasonable time thereafter or within the time granted in the said notice, the Minister may, by notice in writing, terminate this lease and on the day following the mailing of such notice, this lease is cancelled.
10. Unless a waiver is given in writing by the Minister, Her Majesty will not be deemed to have waived any breach or non-performance by the lessee of any of the covenants, terms, conditions or agreements herein contained and a waiver affects only the specific breach to which it refers.

## TERMINATION:

11. Upon the termination or expiration of this lease, the lessee shall deliver up possession of the land in a condition satisfactory to the Minister.

Initial



DUPLICATE

Lease No.: 107 C/4-1-7

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12. Termination or expiration of this lease will not prejudice Her Majesty's right to unpaid rental or any other right with respect to a breach or non-performance of any covenant, term, condition or agreement herein contained nor will the lessee be relieved of any obligation contained herein.

RESTORATION:

13. Where the lessee fails to restore the land as required and within the time allowed by the Regulations or by the Minister, the Minister may order the restoration of all or any part of such land and any expenses thus incurred by the Minister shall be recoverable from the lessee as a debt due to Her Majesty.

WASTE DISPOSAL:

14. The lessee shall remove all garbage and debris from the land to an authorized dumping place.

ENVIRONMENTAL:

15. The lessee shall at all times keep the land in a condition satisfactory to the Minister.

FUEL AND HAZARDOUS CHEMICALS:

16. The lessee shall ensure that fuel storage containers are not located within thirty-one (31) metres of the ordinary high water mark of any body of water unless otherwise authorized by the Minister.
17. The lessee shall mark with flags, posts or similar devices all petroleum fuel storage facilities, including fill and distribution lines, such that they are clearly visible at all times.
18. The lessee shall immediately report all spills of petroleum and hazardous chemicals in accordance with the Government of the Northwest Territories Spill Report and any amendments thereto, or in a manner satisfactory to the Minister.
19. The lessee shall prevent the possibility of migration of spilled fuel over the ground surface or through seepage in the ground.
20. The lessee shall take all reasonable precautions to prevent the migration of petroleum products into bodies of water.
21. The fuel storage facilities of the lessee, including all tanks, bladders, hoses, pumps, fuel transfer lines and associated mechanical connections and valves shall be installed and maintained to the satisfaction of the Minister and the lessee agrees to make such reasonable modifications and improvements as are deemed necessary by the Minister.

IMPROVEMENTS:

22. The lessee is responsible for ensuring that all improvements to the land are made within the boundaries of the land.
23. The lessee shall not erect any building or structure nearer than a distance of three (3) metres from any boundary of the land.

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DUPLICATE

Lease No.: 107 C/4-1-7

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24. The lessee shall not construct any facilities within thirty-one (31) metres of the ordinary high water mark of any body of water without the written approval of the Minister.

BOUNDARIES/SURVEY:

25. Her Majesty is not responsible for the establishment on the ground of the boundaries of the land.
26. The boundaries of the land are subject to such adjustment and alteration as may be shown to be necessary by survey.
27. The Minister may, during the term herein granted, by notice in writing, order the lessee to survey the boundaries of the land and the lessee shall, at its own expense, within one (1) year from the date of said notice, make or cause to be made a survey of the land, such survey to be made in accordance with the instructions of the Surveyor General, and upon completion of the survey and the production of survey plans suitable for recording in the Canada Lands Surveys Records and filing in the Land Titles Office for the Northwest Territories Land Registration District, Her Majesty will execute an Indenture in amendment of this lease for the purpose of incorporating herein descriptions of the land based on the said plans.

ACCESS:

28. Her Majesty assumes no responsibility, express or implied, to provide access to the land.
29. It shall be lawful for Her Majesty or any person duly authorized at all reasonable times to enter upon the land for the purpose of examining the condition thereof.
30. The Minister may grant to such persons as he may consider fit, rights-of-way or access across, through, under or over all or any portion of the land for any purpose whatsoever, but such rights-of-way or access will not unreasonably interfere with the rights granted to the lessee hereunder, or with any improvements made by the lessee on the land.

INDEMNIFICATION:

31. The lessee will not be entitled to compensation from Her Majesty by reason of the land or any portion thereof being submerged, damaged by erosion, or otherwise affected by flooding.
32. Her Majesty will not be liable for damages caused by vandalism or interference by others with the lessee's facilities and equipment.
33. The lessee shall at all times hereafter indemnify and keep Her Majesty indemnified against all claims, demands, actions or other legal proceedings by whomever made or brought against Her Majesty by reason of anything done or omitted to be done by the lessee, his officers, servants, agents or employees arising out of or connected with the granting of this lease.

REVIEW:

34. At the request of the lessee, any decision of the Minister will be reviewable by the Trial Division of the Federal Court of Canada; costs of such review are the responsibility of the lessee unless otherwise ordered by the Court.

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# DUPLICATE

Lease No.: 107 C/4-1-7

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## NOTICES:

35. All written notices respecting the land or the covenants, terms, conditions or agreements contained in this lease shall, unless otherwise stipulated herein, be deemed to have been received by the lessee ten (10) days after the mailing thereof or, if hand delivered, on the day of delivery.
36. Any notice affecting this lease which Her Majesty may desire to serve upon the lessee, or any notice which the lessee may desire to serve upon Her Majesty shall, unless otherwise stipulated herein, be sufficiently served if posted by registered mail to the last known address of the opposite party as follows:

To Her Majesty: Director of Operations  
Northwest Territories Region  
Northern Affairs Program  
Department of Indian Affairs and Northern  
Development  
P.O. Box 1500  
Yellowknife, N.W.T.  
X1A 2R3

To the Lessee: Shell Canada Limited  
P.O. Box 100  
Calgary, AB  
T2P 2H5

Either party may change its address for service during the term of this lease by notifying the other party in writing.

37. No notice of breach or default given herein by Her Majesty shall be valid or of any effect unless it is also given to any mortgagee of the lessee, in respect of the leased lands, of which Her Majesty shall have received written notice.

## GENERAL:

38. The lessee shall abide by the said Act and Regulations.
39. This lease enures to the benefit of and is binding upon Her Majesty, Her Heirs and Successors and the lessee, its successors and assigns.
40. No implied covenant or implied liability on the part of Her Majesty is created by the use of the words "demises and leases" herein.
41. The lessee shall at all times permit emergency landings on the airstrip without the payment of fees.
42. Aircraft owned or under contract to the Government of Canada or the Government of the Northwest Territories shall be exempt from the payment of any charges of landing fees for the use of the airstrip.
43. The lessee shall not levy charges or landing fees for the use of the airstrip by other users without prior written consent of the Minister.

Initial 

DUPLICATE

Lease No.: 107 C/4-1-7

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IN WITNESS WHEREOF The Director of Operations, Northwest Territories Region, Northern Affairs Program, Department of Indian Affairs and Northern Development, has hereunto set his hand and seal on behalf of Her Majesty the Queen in right of Canada and Shell Canada Limited, has hereunto affixed its corporate seal attested to by its proper officers duly authorized in that behalf.

SIGNED, SEALED AND DELIVERED on behalf )  
of Her Majesty by The Director of )  
Operations, Northwest Territories Region, )  
Department of Indian Affairs and )  
Northern Development, in the presence of )

C. Robert  
Director's Witness

J. M. O. (SEAL)  
Director's Signature

SEALED, ATTESTED TO AND DELIVERED

by the

and the

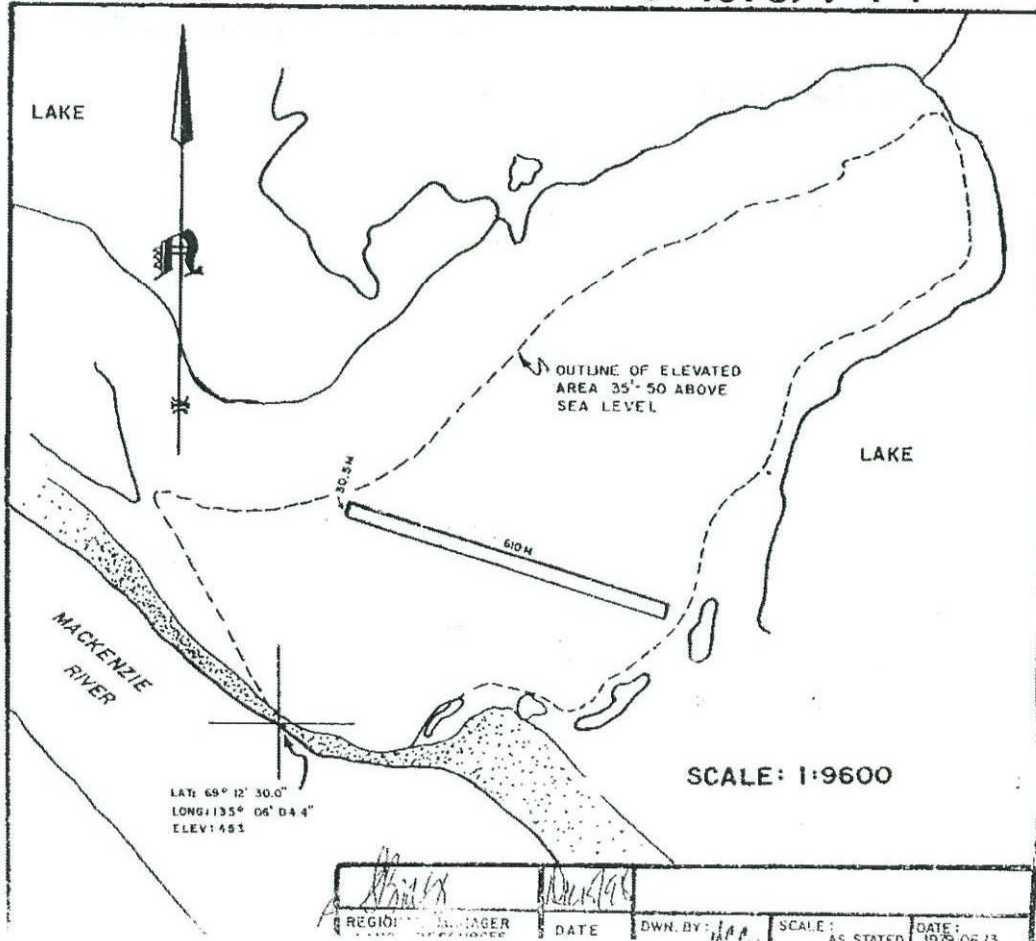
of Shell Canada Limited

SHELL CANADA LIMITED

J. M. Coull (SEAL) JMC  
JANE M. COULL (SEAL)  
Assistant Secretary



ANNEXED HERETO AND FORMING PART OF LEASE 107C/4-1-7



# **WATER MANAGEMENT PLAN FOR CAMP FAREWELL**

Prepared for:

Shell Canada Limited  
400 - 4 Avenue S.W.  
P.O. Box 100, Station M  
Calgary, Alberta  
T2P 2H5

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# **WATER MANAGEMENT PLAN**

## **CAMP FAREWELL**

### **1.0 PURPOSE**

The purpose of this document is to discuss Shell's water conservation initiatives and to provide a detailed description of water use, treatment and disposal at Camp Farewell. Appendix I provides a copy of the current Water Licence No N7L1-1762 and all amendments.

### **2.0 WATER CONSERVATION**

Shell has currently implemented some basic water conservation initiatives including the installation of low-flow showerheads and the controlled distribution of laundry soap. The latter initiative also has implications as to the effectiveness of the sewage treatment system.

Shell commits to conducting a Water Use Audit the next time the camp is in operation. The audit will identify areas where water consumption can be reduced, where leaks and drips require repair, and opportunities to replace old, less efficient fixtures with new water-saving devices. The results of the audit including an action plan for when measures will be implemented will be made available to the NWT Water Board if required.

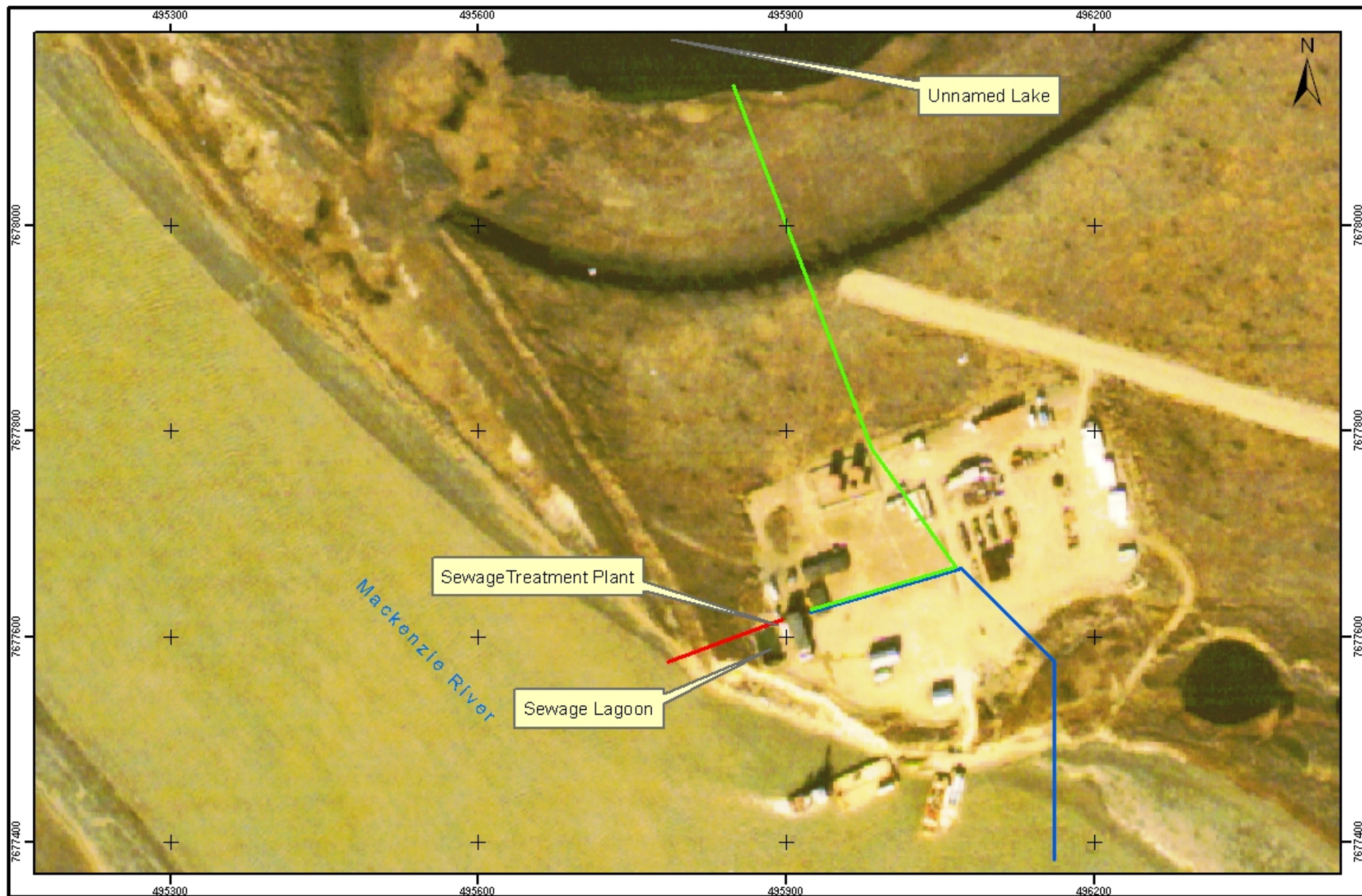
### **3.0 WATER USE**

#### **3.1 Water Source**

Two fresh water sources are used at Camp Farewell. These are:

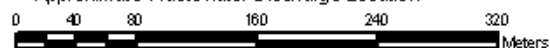
- the Middle Channel of the Mackenzie River, used during winter camp operation
- the Unnamed Lake to the north of the camp facilities, used during summer camp operation.

Figure A identifies the water source, treatment and discharge locations.



# Legend

- Approximate Location of Unnamed Lake Water Intake
- Approximate Location of Mackenzie River Water Intake
- Approximate Wastewater Discharge Location



## Camp Farewell Water Source, Treatment and Discharge Locations

|            |        |                   |               |
|------------|--------|-------------------|---------------|
| PROJECTION | Datum  | CONTRACTOR NAME   | DATE          |
| UTM 8      | NAD 83 | IEG ENVIRONMENTAL | JUNE 15, 2005 |
| DRAWN      | CHECK  | SCALE             | FIGURE A      |
| PR-6       | KM     | 1:5,000           | 0             |

Geotitles are color balanced, acquired on 25.09.2002

### 3.2 Water Use

The water withdrawn is used for domestic purposes, excluding drinking water. Drinking water is trucked or barged onto site.

## 4.0 WATER VOLUMES AND WITHDRAWAL METHODS

The maximum water withdrawal is 150 m<sup>3</sup>/day.

Water intakes are screened with 2.54 mm fine mesh to prevent entrainment of fish, in accordance with the Department of Fisheries and Oceans *Freshwater Intake End-of-Pipe Fish Screen Guideline* (1995).

For winter water use, water is withdrawn from the Middle Channel and transported by tank truck to the 27,250 L water storage tank located the camp.

For summer water use, a temporary 5 cm line from Unnamed Lake to the water storage tank is used. Water is withdrawn through the intake screen and pumped to a settling tank where sediment and solids settle out prior to being used.

## 5.0 WASTE WATER TREATMENT AND DISPOSAL

### 5.1.1. Wastewater Treatment

Wastewater (grey water) and sewage (black water) is combined and treated using the existing extended aeration sewage treatment system and contingency lagoon (Figure A).

The extended aeration system is a modified activated sludge process, which is a continuous or semi-continuous aerobic method for biological wastewater treatment. The process is based on the following:

- wastewater is aerated in a tank
- bacteria are encouraged to grow and multiply by providing oxygen, food (biological oxygen demand), and the right environment i.e., correct temperature and time
- treated wastewater flows into a secondary clarifier
- bacteria cells settle and are then removed from clarifier as sludge
- part of the sludge is recycled back to the activated sludge tank to maintain bacteria population
- remainder of sludge is transported to an approved sewage treatment facility

An as-built drawing of the extended aeration system is found in Appendix II. The process illustrated in the drawings is:

- raw sewage enters the equalization tank to smooth out the flows through the unit
- wastewater is then pumped to the first aeration tank where complete mixing occurs before it flows to the second aeration tank.

- wastewater then flows to the aerated sludge digester (SHT), where it can be recycled from this point for constant flow maintenance
- treated wastewater then enters the final clarifier (FC), which has a sloped bottom for effective sludge removal and recycling
- treated water flows to the chlorine tank. The treatment plant was designed for chlorination/dechlorination but this feature is not used currently.
- the effluent is disinfected using a dual, oversized ultraviolet light system in series.

The plant has been designed for 120+ people. However, based on a nominal treatment capacity of 34.068 m<sup>3</sup>/day or a maximum of 16.8 kg BOD<sub>5</sub>/day, and a potable water use estimate of 0.227 m<sup>3</sup>/day per person (Imperial Oil 2004), the treatment plant can accommodate up to 150 people. The total volume of the system is approximately 68,137 litres.

A start-up time of two to four weeks is required to start the treatment system and demonstrate that the Water Licence requirements have been met prior to discharge to the Mackenzie River. During start-up, system upset, and shutdown the lagoon is required for storage.

Further details on the extended aeration process are provided in the Camp Farewell *Operations and Maintenance Plan*. Specifically:

- Section 2 provides a detailed description of the activated sludge process.
- Section 4 provides the Operations and Maintenance Guide for the wastewater treatment system. This Operations and Maintenance Guide provides instructions for treatment plant start-up, operation and shut down, including a trouble-shooting guide.

### 5.1.2. **Wastewater Disposal**

Treated wastewater is discharged into Middle Channel of the Mackenzie River. Prior to discharge, the wastewater is tested to ensure it meets the effluent quality requirements as stipulated in Water Licence N7L1-1762. These effluent quality requirements are provided in Table 5-1. The discharge of effluent will comply with the requirements outlined in the Guidelines for the Discharge of Treated Municipal Waste in the Northwest Territories.

**Table 5-1: Effluent Quality Requirements for Treated Wastewater Prior to Discharge**

| <b>Sample Parameter</b> | <b>Maximum Average Concentration</b> |
|-------------------------|--------------------------------------|
| BOD <sub>5</sub>        | 70.0 mg/L                            |
| Total Suspended Solids  | 70.0 mg/L                            |
| Faecal Coliforms        | 10E4 CFU/dL                          |
| Oil and Grease          | 5.0 mg/L                             |
| pH                      | Between 6 and 9                      |

Discharge results from January to September 2002 are included in Appendix III.

For camp operations that do not justify start-up of the treatment system, sewage is hauled by vacuum truck to the sewage treatment facility in Inuvik.

Excess sludge, sludge that is not recycled back in to the activated sludge tank, is removed from the treatment plant and is also hauled to the sewage treatment facility in Inuvik.

## 5.2 Monitoring

The Surveillance Network Program (SNP) required in Water Licence N7L1-1762 is being implemented. The SNP requires sampling of water at Station Number 1762-1 (Figure A) every two weeks and analysis for the required parameters (Table 5-1). Station 1762-1 located at the treatment plant discharge.

Shell's Quality Assurance/Quality Control (QA/QC) Plan describes sample location, handling and analytical requirements. The QA/QC Plan is found in Section 6 of the attached *Operations and Maintenance Plan*.

The lagoon is used storage during treatment plant start-up, upset, and shutdown. The riverbank close to the lagoon is monitored annually for erosion.

## 6.0 CONTINGENCY PLANS

The sewage lagoon is used for storage if there is a problem with the sewage treatment system. This is identified in the Emergency Response Plan for Camp Farewell (Section 7 of the attached *Operations and Maintenance Plan*). When the sewage treatment system is operational, sewage is sent through the treatment system until it meets discharge criteria.

Alternatively sewage is hauled to the municipal sewage treatment system in Inuvik for treatment and disposal.

The sewage lagoon when in use is monitored on a regular basis to ensure dyke integrity. Repair requirements if encountered, are included in the site maintenance schedule.

**Appendix I**  
**Current Water Licence and Amendment**

NORTHWEST  
TERRITORIES  
WATER BOARD



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WATER REGISTER: N7L1-1762

November 28, 2001

Mr. Randy Hetman  
DAR/Construction Manager  
Shell Canada Ltd.  
P.O. Box 100, Stn. M  
400 - 4 Avenue S.W.  
CALGARY, AB T2P 0J4

Dear Mr. Hetman:

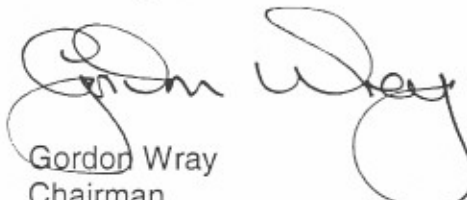
**AMENDMENT OF A "B" TYPE LICENCE**

The Northwest Territories Water Board has reviewed your application for amendment to the discharge limits of your current Water Licence.

The Board hereby approves this request. Please find attached an amendment which reflects changes to the discharge limits. The other duplicate of this amendment has been filed with the Water Resources Division of the Department of Indian Affairs and Northern Development.

If you require further assistance, please contact this office. For technical enquiries, contact Ms Shannon Pagotto at (867) 669-2658 or Mr. David Milburn at (867) 669-2650 of Water Resources Division.

Sincerely,

  
Gordon Wray  
Chairman  
N.W.T. Water Board

Attach.

# NORTHWEST TERRITORIES WATER BOARD

## LICENCE AMENDMENT

---

LICENSEE: Shell Canada Ltd.

LICENCE NUMBER: N7L1-1762

EFFECTIVE DATE: November 28, 2001

---

Pursuant to the *Northwest Territories Waters Act* the Northwest Territories Water Board hereby grants the following Licence Amendment.

1. PART A, Item 2 is hereby enhanced with:

**"Analyst"** means an Analyst designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

**"Freeboard"** means the vertical distance between water line and crest on a dam or dyke's upstream slope;

**"Geotechnical Engineer"** means a professional engineer registered with the Association of Professional Engineers, Geologists, and Geophysicists of the Northwest Territories and whose experience is the design and construction of earthworks in a permafrost environment;

**"Modification"** means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

**"Permeability"** means the capacity to transmit water through a medium;

**"Project Description"** refers to the report titled "Project Description for the Proposed Petro-Canada Mackenzie Delta Kugpik and Kurk Seismic Program", and dated September, 2000 prepared by Inuvialuit Environmental Inc.;

**"Sewage"** means all toilet wastes and greywater;

**"Sewage Treatment Facilities"** comprises the area and engineered structures designed to contain sewage as identified in Appendix B of the Project Description, titled "Camp Farewell and Sewage System Drawings", and also includes a Sump constructed of impervious material and or with an impervious liner;

**"Sump"** means an excavation for the purpose of catching or storing water and/or waste;

**"Water Supply Facilities"** comprises the area and engineered structures designed to withdraw and treat Water for potable use, as described in Section 4.3.3 of the Project Description;

PART B, Item 1 is hereby enhanced with:

- g) details on the restoration of any Sumps; and
- h) any revisions to the approved Contingency Plan.

PART B, Item 1 (d) is hereby rescinded and replaced with:

- d) a summary of any Modifications carried out on the Water Supply and Sewage Treatment Facilities, including all associated structures;

PART D, Item 7 and 8 are hereby added:

- 7. A freeboard limit of 1.0 metre in the Sewage Treatment Facilities shall be maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board.
- 8. All analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" or by such other methods as may be approved by an Analyst.

PART D, Item 4 is hereby rescinded and replaced with:

4. All Sewage effluent discharged by the Licensee from the Sewage Treatment Facilities at "Surveillance Network Program" Station Number 1762-1 shall meet the following effluent quality requirements:

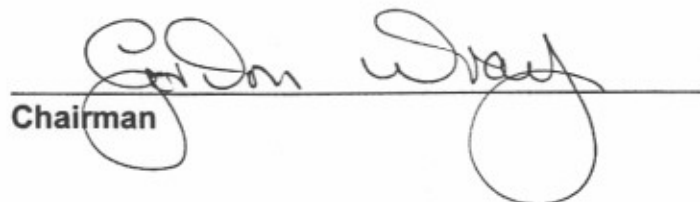
| Sample Parameter       | Maximum Average Concentration |
|------------------------|-------------------------------|
| BOD <sub>5</sub>       | 70.0 mg/L                     |
| Total Suspended Solids | 70.0 mg/L                     |
| Faecal Coliforms       | 10E4 CFU/dL                   |
| Oil and Grease         | 5.0 mg/L                      |

The Waste discharged shall have a pH between 6 and 9.

This Licence Amendment issued and recorded at Yellowknife, Northwest Territories on November 28, 2001.

**NORTHWEST TERRITORIES WATER BOARD**

  
Witness

  
Chairman



November 30, 2000

Mr. Randy H. Hetman  
Construction Manager  
SHELL CANADA  
400-4th Ave. S.W.  
PO Box 100, Station M  
CALGARY, ALBERTA T2P 2H5

Dear Mr. Hetman

**ISSUANCE OF A "B" TYPE LICENCE**

Attached is a duplicate of Licence No. N7L1-1762 granted to SHELL CANADA. by the Northwest Territories Water Board in accordance with the *Northwest Territories Waters Act*. The other original of this Licence has been filed with the Department of Indian Affairs and Northern Development in Yellowknife, Northwest Territories.

Also attached are general procedures for the administration of licences in the Northwest Territories. I request that you review these and address any questions to the Board's office.

In conclusion, please be advised that this letter with attached procedures, all inspection reports, and correspondence related thereto are part of the public Water Register, and are intended to keep all interested parties informed of the manner in which the Licence requirements are being met. All Water Register material will be considered when the Licence comes up for renewal or amendment.

The full cooperation of SHELL CANADA is anticipated.

Sincerely,

Gordon Wray  
Chairman  
N.W.T. Water Board

Attachments (2)

**GENERAL PROCEDURES FOR THE ADMINISTRATION OF LICENCES  
ISSUED UNDER THE NORTHWEST TERRITORIES WATERS ACT  
IN THE NORTHWEST TERRITORIES**

---

1. At the time of issuance, a copy of the Licence is placed on the Water Register in the Office of the Northwest Territories Water Board in Yellowknife, and is then available to the public.
2. To enforce the terms and conditions of the Licence, the Minister of Indian Affairs and Northern Development has appointed Inspectors in accordance with Section 35(1) of the *Northwest Territories Waters Act*. The Inspectors coordinate their activities with officials of the Water Resources Division of the Department of Indian Affairs and Northern Development. The Inspector responsible for Licence No. N7L1-1762 is located in the North Mackenzie- Inuvik District.
3. To keep the Water Board and members of the public informed of the Licensee's conformity to Licence conditions, the Inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating what action, if any, should be taken. The inspection reports and covering letters are placed on the public Water Register, as are any responses received from the Licensee pertaining to the inspection reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.
4. If the renewal of Licence No. N7L1-1762 is contemplated it is the responsibility of the Licensee to apply to the Water Board for renewal of the Licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any Licence renewal. Please note that if the Licence expires and another has not been issued, then water and waste disposal must cease, or you, the Licensee, would be in contravention of the *Northwest Territories Waters Act*. It is suggested that an application for renewal of Licence No. N7L1-1762 be made at least eight months in advance of the Licence expiry date.
5. If, for some reason, Licence No. N7L1-1762 requires amendment, then a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the Water Board with ample time to go through the amendment process. The process may take up to six (6) months or more depending on the scope of the amendment requested.

The Surveillance Network Program annexed to the Licence can be modified at the discretion of the Board and does not require a public hearing. A request for any proposed change to the Surveillance Network Program should be forwarded to the Board in writing, including a rationale for the change.

6. Specific clauses of your Licence make reference to the Board, Analyst or Inspector. The contact person, address, phone and fax number of each is:

BOARD: Executive Assistant  
Northwest Territories Water Board  
P.O. Box 1500  
YELLOWKNIFE, NT X1A 2R3

Phone No: (867) 669-2772  
Fax No: (867) 669-2719

ANALYST: Analyst  
Water Laboratory  
Northern Affairs Program  
Department of Indian Affairs  
and Northern Development  
Box 1500  
4601 - 52nd Avenue  
YELLOWKNIFE, NT X1A 2R3

Phone No: (867) 669-2780  
Fax No: (867) 669-2718

INSPECTOR: Inspector  
Inuvik District Office  
Northern Affairs Program  
Department of Indian Affairs  
and Northern Development  
P.O. Box 2100  
INUVIK, NT X0E 0T0

Phone No: (867) 777-3361  
Fax No: (867) 777-2090

# NORTHWEST TERRITORIES WATER BOARD

Pursuant to the Northwest Territories Waters Act and Regulations the Northwest Territories Water Board, hereinafter referred to as the Board, hereby grants to

SHELL CANADA  
(Licensee)  
400-4th Avenue S.W.  
PO BOX 100, STATION M  
of Calgary, Alberta T2P 2H5  
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the Northwest Territories Waters Act and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

|   |  |
|---|--|
| Licence Number                          | <u>N7L1-1762</u>   |
| Licence Type                            | <u>"B"</u>   |
| Water Management Area                   | <u>NORTHWEST TERRITORIES 07</u>  |
| Location                                | <u>LATITUDE 69°12'30" N. AND</u><br><u>LONGITUDE 135°06'04" W.</u><br><u>NORTHWEST TERRITORIES</u> |
| Purpose                                 | <u>WATER USE AND WASTE DISPOSAL</u><br><u>FOR MUNICIPAL UNDERTAKINGS</u>                           |
| Quantity of Water Not<br>To Be Exceeded | <u>150 CUBIC METRES DAILY</u>  |
| Effective Date of Licence               | <u>DECEMBER 1, 2000</u>  |
| Expiry Date of Licence                  | <u>NOVEMBER 30, 2005</u>   |

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

NORTHWEST TERRITORIES WATER BOARD

\_\_\_\_\_  
Witness

  
\_\_\_\_\_  
Chairman

**PART A: SCOPE AND DEFINITIONS**

**1. Scope**

- a) This Licence entitles Shell Canada to use water and dispose of waste for municipal undertakings in oil and gas exploration and associated uses at Camp Farewell in the MacKenzie River Delta, located at Latitude 69°12'30" N. and Longitude 135°06'04" W., Northwest Territories;
- b) This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of waste that may be so deposited or under which any such waste may be so deposited this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations; and
- c) Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

**2. Definitions**

In this Licence: **N7L1-1762**

**"Act"** means the *Northwest Territories Waters Act*;

**"Board"** means the Northwest Territories Water Board established under Section 10 of the *Northwest Territories Waters Act*;

**"Inspector"** means an Inspector designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

**"Licensee"** means the holder of this Licence;

**"Maximum Average Concentration"** means the moving average of any four (4) consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

**"Minister"** means the Minister of Indian Affairs and Northern Development;

**"Regulations"** mean Regulations proclaimed pursuant to Section 33 of the *Northwest Territories Waters Act*;

**"Waste"** means waste as defined by Section 2 of the *Northwest Territories Waters Act*;

**"Waters"** mean waters as defined by Section 2 of the *Northwest Territories Waters Act*;

#### **PART B: GENERAL CONDITIONS**

1. The Licensee shall file an Annual Report with the Board not later than March 31 of the year following the calendar year reported which shall contain the following:
  - a) the total quantities in cubic metres of fresh water obtained from all sources;
  - b) the total quantities in cubic metres of each and all waste discharged;
  - c) the results of sampling carried out under the Surveillance Network Program;
  - d) a summary of any modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures;
  - e) a list of any spills and unauthorised discharges; and
  - f) any other details on water use or waste disposal requested by the Board within forty-five (45) days before the annual report is due.

2. The Licensee shall comply with the "Surveillance Network Program" annexed to this Licence, and any amendment to the said "Surveillance Network Program" as may be made from time to time, pursuant to the conditions of this Licence.
3. The "Surveillance Network Program" and compliance dates specified in the Licence may be modified at the discretion of the Board.
4. Meters, devices or other such methods used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.
5. The Licensee shall, within thirty (30) days of the issuance of this Licence, post the necessary signs, to identify the stations of the "Surveillance Network Program". All postings shall be located and maintained to the satisfaction of an Inspector.
6. Prior to the use of water for municipal undertakings or the disposal of waste and pursuant to Section 17(1) of the *Act* and Section 12 of the Regulations, the Licensee shall have posted and shall maintain a security deposit of Two Hundred Fifty Thousand dollars (\$250,000.00) in a form suitable to the Minister.
7. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times.

**PART C: CONDITIONS APPLYING TO WATER USE**

1. The Licensee shall obtain water the Mackenzie River or the unnamed lake as described in the project description or as otherwise approved by an Inspector.
2. The daily quantity of water used for all purposes shall not exceed 150 cubic metres.
3. The water intake hose used on the water pumps shall be equipped with a screen with a mesh size sufficient to ensure no entrainment of fish.

**PART D: CONDITIONS APPLYING TO WASTE DISPOSAL**

1. The Licensee shall within one (1) year of the issuance of this Licence, submit to the Board for approval an Operation and Management Plan for the Sewage and Solid Waste Treatment Facilities. This plan shall include but not necessarily be limited to details on the design, operational capacity, management and maintenance, and disposal of sludges.
2. The Licensee shall direct all piped and pumpout sewage to the Sewage Treatment Facilities or as otherwise approved by the Board.
3. The Licensee shall provide at least five (5) days notice to an Inspector prior to commencement of any discharges to the Mackenzie River.
4. All Sewage effluent discharged by the Licensee from the Sewage Treatment Facilities at "Surveillance Network Program" Station Number 1762-1 shall meet the following effluent quality requirements:

| <u>Sample Parameter</u> | <u>Maximum Average<br/>Concentration</u> |
|-------------------------|--|
| BOD <sub>5</sub>        | 30.0 mg/L                                |
| Total Suspended Solids  | 35.0 mg/L                                |
| Faecal Coliforms        | 250 CFU/dL                               |
| Oil and Grease          | 5.0 mg/L                                 |

The Waste discharged shall have a pH between 6 and 9.

5. The Licensee shall maintain the Sewage Treatment Facilities to the satisfaction of and Inspector.
6. The Licensee shall dispose of all solid wastes in a manner acceptable to the Inspector.

**PART E:     CONDITIONS APPLYING TO MODIFICATIONS**

1.     The Licensee may, without written approval from the Board, carry out modifications to the Water Intake and Waste Treatment Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:
  - a)     the Licensee has notified the Board in writing of such proposed modifications at least forty-five (45) days prior to beginning the modifications;
  - b)     such modifications do not place the Licensee in contravention of either the Licence or the Act;
  - c)     the Board has not, during the forty-five (45) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than forty-five (45) days; and
  - d)     the Board has not rejected the proposed modifications.
2.     Modifications for which all of the conditions referred to in Part E, Item 1 have not been met may be carried out only with written approval from the Board.
3.     The Licensee shall provide to the Board as-built plans and drawings of the modifications referred to in this Licence within ninety (90) days of completion of the modifications.

**PART F:     CONDITIONS APPLYING TO CONTINGENCY PLANNING**

1.     The Licensee shall submit to the Board for approval within thirty (30) days of issuance of this Licence, a Contingency Plan in accordance with the Board's "Guidelines for Contingency Planning, January 1987," or subsequent edition.
2.     If, during the period of this Licence, an unauthorised discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:
  - a)     employ the appropriate contingency plan;

- b) report the incident immediately via the 24 Hour Spill Report Line. The current telephone number is (867) 920-8130; and
- c) submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.

**PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION**

- 1. The Licensee shall submit to the Board for approval within one year of issuance of this Licence, an Interim Abandonment and Restoration Plan in accordance with the Board's "Guidelines for Mines in the Northwest Territories," September 1980, or subsequent edition.
- 2. The Licensee shall implement the Plan specified in Part G, Item 1 as and when approved by the Board.
- 3. The Licensee shall review the Abandonment and Restoration Plan every two years and shall modify the Plan as necessary to reflect changes in operations, technology. All proposed modifications to the Plan(s) shall be submitted to the Board for approval.

**NORTHWEST TERRITORIES WATER BOARD**

\_\_\_\_\_  
**Witness**

  
\_\_\_\_\_  
**Chairman**

## NORTHWEST TERRITORIES WATER BOARD

LICENSEE: SHELL CANADA  
LICENCE NUMBER: N7L1-1762  
EFFECTIVE DATE OF LICENCE: DECEMBER 1, 2000  
EFFECTIVE DATE OF  
SURVEILLANCE NETWORK PROGRAM: DECEMBER 1, 2000

### SURVEILLANCE NETWORK PROGRAM

#### A. Location of Sampling Stations

| <u>Station Number</u> | <u>Description</u>   |
|-----------------------|--|
| 1762-1                | Treated Effluent Discharge Prior to Entering the Mackenzie River |

#### B. Sampling and Analysis Requirements

1. Water at Station Number 1762-1, shall be sampled every two weeks, and analysed for the following parameters:

|                  |                        |
|------------------|------------------------|
| BOD <sub>5</sub> | Total Suspended Solids |
| Oil and Grease   | Faecal Cloiforms       |
| Ammonia          |                        |

2. More frequent sample collection may be required at the request of an Inspector.
3. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater", or by such other methods approved by an Analyst.
4. All analysis shall be performed in a laboratory approved by an Analyst.
5. The Licensee shall, by January 31, 2001, submit to an Analyst for approval a Quality Assurance/Quality Control Plan.
6. The plan referred to in Part B, Item 5 shall be implemented as approved by an Analyst.

**C. Reports**

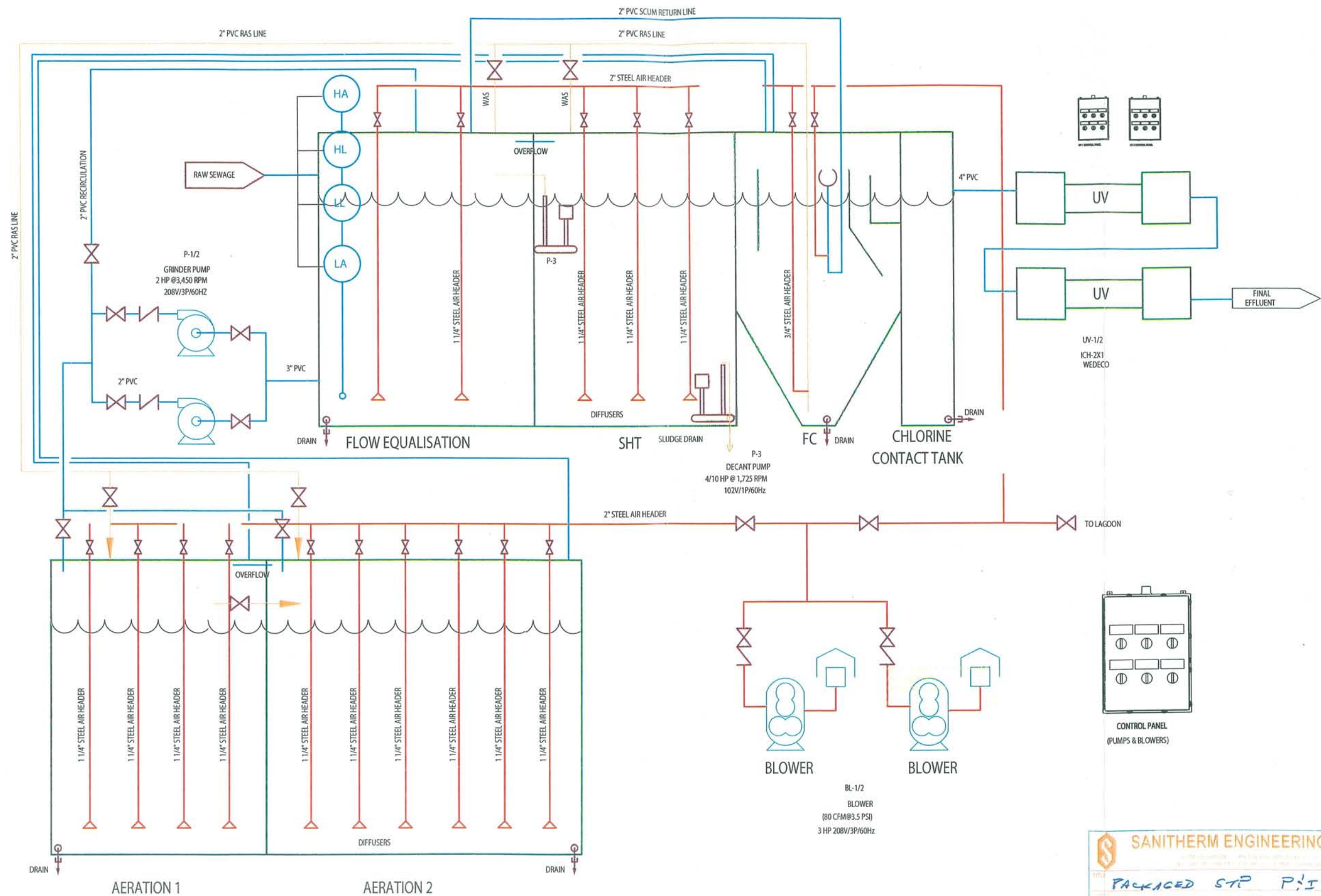
1. The Licensee shall, within thirty (30) days following the month being reported, submit to the Board all data and information required by the "Surveillance Network Program" including the results of the approved Quality Assurance Plan.

**NORTHWEST TERRITORIES WATER BOARD**

\_\_\_\_\_  
Witness

  
\_\_\_\_\_  
Chairman

**Appendix II**  
**As-Built of Sewage Treatment System**



|       |          |
|-------|----------|
| 07/02 | AS BUILT |
|-------|----------|

**SANITHERM ENGINEERING LIMITED**  
 PACKAGED STP P&ID  
 SHELL CANADA LIMITED  
 CAMP FAREWELL 120 MHA STP

**Appendix III**  
**Treatment Plant Wastewater Analysis (2002)**

## Camp Farewell - Treatment Plant Waste Water Sample Results

|                  |              |      |                  |                  |      |                 |                |                   |                |  |
|------------------|--------------|------|------------------|------------------|------|-----------------|----------------|-------------------|----------------|--|
| Licencee:        | Shell Canada |      |                  |                  |      |                 |                |                   |                |  |
| Licence number:  | N7L1-1762    |      |                  |                  |      |                 |                |                   |                |  |
| Station number:  | 1762-1       |      |                  |                  |      |                 |                |                   |                |  |
| Test             | pH           | TSS  | Ammonia-Nitrogen | Total Phosphorus | BOD  | Faecal Coliform | Oil and Grease | Chlorine residual | Chlorine total |  |
| Units            | pH           | mg/l | mg/l             | mg/l             | mg/l | CFU/dL          | mg/l           | mg/l              | mg/l           |  |
| Detection limit  | 0.05         | 3    | 0.005            | 0.004            | 2    | 1               | 0.2            | 0.01              | 0.01           |  |
| Licence maximums | 6.0 to 9.0   | 70   | NLL              | NLL              | 70   | ^10E4           | 5.0            | NLL               | NLL            |  |

| Sampled                | Lab. ID#       | Sample |      |     |        |        |     |             |      |       |
|------------------------|----------------|--------|------|-----|--------|--------|-----|-------------|------|-------|
| <b>Treatment Plant</b> |                |        |      |     |        |        |     |             |      |       |
| 14-Jan-02              | 220143         | 1 F    | 7.58 | 190 | 69,300 | 15,100 | 85  | 48,000,000  | 55.7 | <0.01 |
| 8:50                   | 220144         | 2 F    | 7.48 | 193 | 66,500 | 14,900 | 84  | 31,000,000  | 53.3 | <0.01 |
|                        | Average        |        | 7.53 | 192 | 67,900 | 15,000 | 85  | 39,500,000  | 54.5 | <0.01 |
| 23-Jan-02              | 220182         | 1 F    | 7.71 | 140 | 70,100 | 11,300 | 96  | 70,000,000  | 41.0 | <0.01 |
| 8:40                   | 220183         | 2 F    | 7.74 | 158 | 69,900 | 11,200 | 96  | 140,000,000 | 40.5 | <0.01 |
|                        | Average        |        | 7.73 | 149 | 70,000 | 11,250 | 96  | 105,000,000 | 40.8 | <0.01 |
| 05-Feb-02              | 220242         | 1 F    | 7.38 | 204 | 43,800 | 12,400 | 212 | 172,000,000 | 48.0 | 0.13  |
| 6:45                   | 220243         | 2 F    | 7.35 | 200 | 41,400 | 12,300 | 215 | 167,000,000 | 45.9 | 0.10  |
|                        | Average        |        | 7.37 | 202 | 42,600 | 12,350 | 214 | 169,500,000 | 47.0 | 0.12  |
| 20-Feb-02              | 220485         | 1 F    | 7.78 | 106 | 80,600 | 12,000 | 138 | 3,000,000   | 23.2 | 0.04  |
| 7:55                   | 220486         | 2 F    | 7.83 | 116 | 77,200 | 13,300 | 115 | 5,000,000   | 22.9 | 0.12  |
|                        | Average        |        | 7.81 | 111 | 78,900 | 12,650 | 127 | 4,000,000   | 23.1 | 0.08  |
| 01-Mar-02              | 220747         | 1 F    | 7.77 | 60  | 78,000 | 14,200 | 91  | 1,000,000   | 11.1 | <0.01 |
| 7:55                   | 220748         | 2 F    | 7.79 | 56  | 82,700 | 14,400 | 89  | 800,000     | 10.9 | <0.01 |
|                        | Average        |        | 7.78 | 58  | 80,350 | 14,300 | 90  | 900,000     | 11.0 | <0.01 |
| 19-Jul-2002            | 221993         | 1 F    | 8.17 | 8   | 51,100 | 4,380  | 22  | <10         | 1.4  | <0.01 |
|                        | 221994         | 2 F    | 8.19 | 13  | 48,400 | 3,790  | 14  | 40          | 0.6  | <0.01 |
|                        | Average        |        | 8.18 | 11  | 49,750 | 4,085  | 18  | <25         | 1.0  | <0.01 |
| 30-Jul-2002            | 222162         | 1 F    | 8.03 | 33  | 72,700 | 8,340  | 18  | <10         | 0.6  | 0.06  |
| 8:00                   | 222163         | 2 F    | 8.03 | 38  | 67,800 | 8,390  | 16  | <10         | 0.2  | 0.08  |
|                        | Average        |        | 8.03 | 36  | 70,250 | 8,365  | 17  | <10         | 0.4  | 0.07  |
| 31-Jul-2002            | 222172         | 1 F    | 7.98 | 33  | 73,400 | 9,010  | 46  | 11,400      | 1.3  | 0.10  |
| 8:30                   | 222173         | 2 F    | 8.04 | 33  | 67,600 | 9,070  | 35  | 7,800       | 2.0  | 0.07  |
|                        | Average        |        | 8.01 | 33  | 70,500 | 9,040  | 41  | 9600        | 1.7  | 0.09  |
| 1-Aug-2002             | 222190         | 1 F    | 7.85 | 33  | 74,700 | 9,060  | 45  | 1,000       | 1.0  | 0.47  |
| 7:30                   | 222191         | 2 F    | 7.91 | 28  | 71,000 | 9,090  | 43  | 400         | 1.6  | 0.1   |
|                        | Average        |        | 7.88 | 31  | 72,850 | 9,075  | 44  | 700         | 1.3  | 0.29  |
| 19-Aug-2002            | 222421 Taiga-1 | F      | 8.57 | 83  | 15,800 | 4,490  | 35  | 390,000     | 1.2  | 0.13  |
| 8:50                   | 222422 Taiga-2 | F      | 8.59 | 93  | 15,800 | 3,540  | 28  | 460,000     | 1.2  | 0.06  |
|                        | Average        |        | 8.58 | 88  | 15,800 | 4,015  | 32  | 425,000     | 1.2  | 0.10  |
| 3-Sep-2002             | 222675         | F      | 6.79 | 22  | 1,520  | 7,820  | 3   | <10         | <0.2 | 0.07  |
|                        | 222676         | F      | 6.75 | 20  | 1,990  | 7,890  | 3   | <10         | 1.2  | 0.05  |
|                        | Average        |        | 6.77 | 21  | 1,755  | 7,855  | 3   | <10         | <0.7 | 0.06  |
| 4-Sep-2002             | 222683         | F      | 6.57 | 32  | 2,230  | 8,450  | 8   | <10         | 0.2  | 0.05  |
|                        | 222684         | F      | 6.57 | 16  | 2,060  | 8,380  | 3   | <10         | 0.4  | 0.04  |
|                        | Average        |        | 6.57 | 24  | 2,145  | 8,415  | 6   | <10         | 0.3  | 0.05  |
| 5-Sep-2002             | 222773         | F      | 6.55 | 46  | 6,550  | 8,950  | 17  | 550         | 2.1  | <0.01 |
|                        | 222774         | F      | 5.87 | 50  | 6,010  | 8,990  | 13  | 220         | 1.6  | 0.07  |
|                        | Average        |        | 6.21 | 48  | 6,280  | 8,970  | 15  | 385         | 1.9  | <0.04 |
| 6-Sep-2002             | 222815         | F      | 6.65 | 77  | 6,350  | 9,540  | 19  | 100         | 1.5  | <0.01 |
| 7:45                   | 222816         | F      | 6.65 | 77  | 7,470  | 9,530  | 11  | 190         | 1.0  | 0.04  |
|                        | Average        |        | 6.65 | 77  | 6,910  | 9,535  | 15  | 145         | 1.3  | <0.03 |
| 16-Sep-2002            | 223247         | F      | 6.58 | 83  | 5,970  | 9,760  | 17  | <100        | 2.0  | 0.08  |
|                        | 223248         | F      | 6.55 | 76  | 5,840  | 9,880  | 15  | <100        | 2.0  | 0.11  |
|                        | Average        |        | 6.57 | 80  | 5,905  | 9,820  | 16  | <100        | 2.0  | 0.10  |

TSS = Total Suspended Solids  
 BOD = Biological Oxygen Demand  
 NLL = Not listed in licence  
 P = Preliminary analysis results  
 F = Final analysis results  
 QA/QC = Quality control samples - blanks  
 NA = Results not available

## Camp Farewell - Sump/Lagoon Waste Water Sample Results

Licencee: Shell Canada  
 Licence number: N7L1-1762  
 Station number: 1762-1

| Test             |          |        | pH         | TSS  | Ammonia-Nitrogen | Total Phosphorus | BOD    | Faecal Coliform | Oil and Grease | Chlorine residual | Chlorine total |       |      |
|------------------|----------|--------|------------|------|------------------|------------------|--------|-----------------|----------------|-------------------|----------------|-------|------|
| Units            |          |        | pH         | mg/l | mg/l             | mg/l             | mg/l   | CFU/dL          | mg/l           | mg/l              | mg/l           |       |      |
| Detection limit  |          |        | 0.05       | 3    | 0.005            | 0.004            | 2      | 1               | 0.2            | 0.01              | 0.01           |       |      |
| Licence maximums |          |        | 6.0 to 9.0 | 70   | NLL              | NLL              | 70     | ^10E4           | 5.0            | NLL               | NLL            |       |      |
| Date/Time        |          |        |            |      |                  |                  |        |                 |                |                   |                |       |      |
| Sampled          | Lab. ID# | Sample |            |      |                  |                  |        |                 |                |                   |                |       |      |
| Sump             |          |        |            |      |                  |                  |        |                 |                |                   |                |       |      |
| 30-Jul-2002      | 222160   | 1 F    | 8.72       | 90   | 9.540            | 4.000            | 32     | 830             | 0.5            | 0.12              | 0.21           |       |      |
|                  |          | 8:20   | 222161     | 2 F  | 8.69             | 90               | 9.300  | 3.980           | 34             | 740               | 0.7            | 0.12  | 0.30 |
|                  |          |        | Average    |      | 8.71             | 90               | 9.420  | 3.990           | 33             | 785               | 0.6            | 0.12  | 0.26 |
|                  |          |        |            |      |                  |                  |        |                 |                |                   |                |       |      |
| 19-Aug-2002      | 222419   | 1 F    | 8.34       | 44   | 64.500           | 11.600           | 33     | 5,900           | 2.9            | <0.01             | 0.06           |       |      |
|                  |          | 9:20   | 222420     | 2 F  | 8.36             | 39               | 60.000 | 11.800          | 31             | 10,000            | 2.3            | 0.05  | 0.05 |
|                  |          |        | Average    |      | 8.35             | 42               | 62.250 | 11.700          | 32             | 7,950             | 2.6            | <0.03 | 0.06 |
|                  |          |        |            |      |                  |                  |        |                 |                |                   |                |       |      |
| 6-Sep-2002       | 222813   | F      | 8.17       | 68   | 10.300           | 4.690            | 47     | 7,000           | 0.8            | 0.05              | 0.15           |       |      |
|                  |          | 8:00   | 222814     | F    | 8.13             | 68               | 11.700 | 4.610           | 33             | 9,400             | 1.1            | 0.04  | 0.11 |
|                  |          |        | Average    |      | 8.15             | 68               | 11.000 | 4.650           | 40             | 8,200             | 1.0            | 0.05  | 0.13 |
|                  |          |        |            |      |                  |                  |        |                 |                |                   |                |       |      |
| 16-Sep-2002      | 223245   | F      | 7.87       | 50   | 14.500           | 5.120            | 24     | <100            | 0.5            | 0.07              | 0.24           |       |      |
|                  |          |        | 223246     | F    | 7.82             | 57               | 10.300 | 4.960           | 26             | 200               | 0.5            | 0.06  | 0.13 |
|                  |          |        | Average    |      | 7.85             | 54               | 12.400 | 5.040           | 25             | <150              | 0.5            | 0.07  | 0.19 |
|                  |          |        |            |      |                  |                  |        |                 |                |                   |                |       |      |

## Camp Farewell - Sump Waste Water Sample Results For Decant

Licencee: Shell Canada  
 Licence number: N7L1-1762  
 Station number: 1762-1

Current as of 11:00am, 31-Oct-2002

| Test             |         |          | pH         | TSS  | Ammonia-Nitrogen | Total Phosphorus | BOD   | Faecal Coliform | Oil and Grease | Chlorine residual | Chlorine total |       |
|------------------|---------|----------|------------|------|------------------|------------------|-------|-----------------|----------------|-------------------|----------------|-------|
| Units            |         |          | pH         | mg/l | mg/l             | mg/l             | mg/l  | CFU/dL          | mg/l           | mg/l              | mg/l           |       |
| Detection limit  |         |          | 0.05       | 3    | 0.005            | 0.004            | 2     | 1               | 0.2            | 0.01              | 0.01           |       |
| Licence maximums |         |          | 6.0 to 9.0 | 70   | NLL              | NLL              | 70    | ^10E4           | 5.0            | NLL               | NLL            |       |
| Date/Time        | Sampled | Lab. ID# | Sample     |      |                  |                  |       |                 |                |                   |                |       |
| Sump Decant      |         |          |            |      |                  |                  |       |                 |                |                   |                |       |
| 24-Sep-2002      | 223510  | 1        | P          | 7.35 | 41               | 10.700           | 5.020 | 32              | <100           | 0.3               | 0.07           | 0.05  |
| Decant           | 223511  | 2        | P          | 7.42 | 41               | 10.200           | 5.070 | 33              | <100           | 0.4               | <0.01          | <0.01 |
| Start            |         | Average  |            | 7.39 | 41               | 10.450           | 5.045 | 32              | <100           | 0.4               | 0.04           | 0.03  |
|                  |         |          |            |      |                  |                  |       |                 |                |                   |                |       |
| 25-Sep-2002      | 223514  | 1        | P          | 7.44 | 49               | 10.500           | 5.130 | 33              | 400            | 1.1               | 0.09           | 0.09  |
| Decant           | 223515  | 2        | P          | 7.44 | 44               | 11.400           | 5.030 | 33              | 100            | 0.9               | 0.05           | 0.20  |
| Mid              |         | Average  |            | 7.44 | 47               | 10.950           | 5.080 | 33              | 250            | 1.0               | 0.07           | 0.15  |
|                  |         |          |            |      |                  |                  |       |                 |                |                   |                |       |
| 25-Sep-2002      | 223508  |          | P          | 7.25 | 65               | 12.500           | 5.520 | 44              | <100           | 4.2               | 0.05           | 0.17  |
| Decant           | 223509  |          | P          | 7.25 | 70               | 12.400           | 5.090 | 45              | <100           | 1.3               | 0.05           | 0.13  |
| End              |         | Average  |            | 7.25 | 68               | 12.450           | 5.305 | 45              | <100           | 2.8               | 0.05           | 0.15  |

TSS = Total Suspended Solids  
 BOD = Biological Oxygen Demand  
 NLL = Not listed in licence  
 P = Preliminary analysis results  
 F = Final analysis results  
 QA/QC = Quality control samples - blanks  
 NA = Results not available

## **Appendix C: Interim Abandonment and Restoration Plan**

**Shell Canada Limited**



400 - 4th Avenue S.W.  
P.O. Box 100, Station M  
Calgary, Alberta T2P 2H5  
TEL (403) 691-3111

June 29, 2005

Inuvik Hunters & Trappers Committee  
P.O. Box 1720  
Inuvik, NT  
X0E 0T0

**SUBJECT: Camp Farewell Water License Renewal**

Further to John Brown's telephone conversation with you on June 24, Shell Canada Limited (Shell) would like to inform your HTC of our intention to renew Water Licence # N7L1-1762 to continue operation of the permanent camp at Camp Farewell. The camp is located in the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel near Harry Channel in the Kendall Island Bird Sanctuary, Northwest Territories (Latitude 69° 12' 30.0" N, Longitude 135° 06' 04.4" W). Attached you will find a map showing its location as well as an aerial photograph which identifies the existing land uses at the site.

Shell will be formally submitting a Project Description to the Environmental Impact Screening Committee to support the water licence renewal application. The water licence renewal application will be submitted to the NWT Water Board. An application to renew of the permit to operate in the Kendal Bird Island Sanctuary will be submitted to the Canadian Wildlife Service as well. Shell has a valid land lease (#107 C/4-2-10) from the federal government to operate the Camp Farewell.

Shell does not intend to change the use of Camp Farewell. Over the past 35 years, it has been used as a base for approved research, exploration and other development activities. When a project proposes to use Camp Farewell as a base, detailed community consultation would be conducted at that time, including presentations to Inuvik. The consultation carried out from June 21 – 25, 2004 and July 5 – 8, 2004 for the Shell Niglintgak 2005 Winter Field Geotechnical Investigation is an example. Camp Farewell was used as a base of operations for this program.

Camp Farewell has been in existence since 1969 and has been used intermittently since then. The camp is self-contained, providing electrical and heating services and facilities for accommodation, fuel storage, equipment handling, water use, and approved sewage treatment and disposal.

The camp covers about 12.4 hectares, and the water intake and sewage treatment plant are able to accommodate up to 150 people. Specific features include:



- permanent accommodation for 35 people expandable to 150 with trailer style camp units, kitchen and dining area, gym, restrooms and showers, coffee room, sauna, offices, first aid room, recreation area, water intake and a sewage treatment system
- incinerator
- a 2 million litre bermed tank farm, with secondary containment
- a barge landing site
- a 140 m by 200 m storage area
- a 610 m by 30.5 m gravel airstrip

Water supply for domestic purposes is obtained from the Mackenzie River in the winter and the Unnamed Lake to the north in the summer. The attached aerial photograph shows the location of these features.

Please advise if your organization has any issues or support the renewal of the Farewell Water License. If you require any further information, please contact Randy Hetman at (403) 969-0730 or myself at the numbers listed below. We trust this meets your requirements. Should any additional information be required, please contact the undersigned.

Yours truly,

Randall Warren  
DAR/Construction Manager  
Ph. (403) 691-2521  
Fax (403) 269-7948  
Email: [randall.warren@shell.com](mailto:randall.warren@shell.com)

cc- IGC Resource Management Coordinator, Joint Secretariat – Inuvialuit Renewable Resource Committees

**Shell Canada Limited**



400 - 4th Avenue S.W.  
P.O. Box 100, Station M  
Calgary, Alberta T2P 2H5  
TEL (403) 691-3111

June 29, 2005

Aklavik Hunters & Trappers Committee  
P.O. Box 133  
Aklavik, NT  
X0E 0A0

**SUBJECT: Camp Farewell Water License Renewal**

Further to John Brown's conversation with you on June 28, Shell Canada Limited (Shell) would like to inform your HTC of our intention to renew Water Licence # N7L1-1762 to continue operation of the permanent camp at Camp Farewell. The camp is located in the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel near Harry Channel in the Kendall Island Bird Sanctuary, Northwest Territories (Latitude 69° 12' 30.0" N, Longitude 135° 06' 04.4" W). Attached you will find a map showing its location as well as an aerial photograph which identifies the existing land uses at the site.

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Shell does not intend to change the use of Camp Farewell. Over the past 35 years, it has been used as a base for approved research, exploration and other development activities. When a project proposes to use Camp Farewell as a base, detailed community consultation would be conducted at that time, including presentations to Aklavik. The consultation carried out from June 21 – 25, 2004 and July 5 – 8, 2004 for the Shell Niglintgak 2005 Winter Field Geotechnical Investigation is an example. Camp Farewell was used as a base of operations for this program.

Camp Farewell has been in existence since 1969 and has been used intermittently since then. The camp is self-contained, providing electrical and heating services and facilities for accommodation, fuel storage, equipment handling, water use, and approved sewage treatment and disposal.

The camp covers about 12.4 hectares, and the water intake and sewage treatment plant are able to accommodate up to 150 people. Specific features include:



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- a 140 m by 200 m storage area
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Yours truly,

Randall Warren  
DAR/Construction Manager  
Ph. (403) 691-2521  
Fax (403) 269-7948  
Email: [randall.warren@shell.com](mailto:randall.warren@shell.com)

cc- IGC Resource Management Coordinator, Joint Secretariat – Inuvialuit Renewable Resource Committees

**Shell Canada Limited**



400 - 4th Avenue S.W.  
P.O. Box 100, Station M  
Calgary, Alberta T2P 2H5  
TEL (403) 691-3111

June 29, 2005

Tuktoyaktuk Hunters & Trappers Committee  
P.O. Box 286  
Tuktoyaktuk, NT  
X0E 1C0

**SUBJECT: Camp Farewell Water License Renewal**

Further to John Brown's telephone conversation with you on June 24, Shell Canada Limited (Shell) would like to inform your HTC of our intention to renew Water Licence # N7L1-1762 to continue operation of the permanent camp at Camp Farewell. The camp is located in the Inuvialuit Settlement Region (ISR) on the northeast bank of Middle Channel near Harry Channel in the Kendall Island Bird Sanctuary, Northwest Territories (Latitude 69° 12' 30.0" N, Longitude 135° 06' 04.4" W). Attached you will find a map showing its location as well as an aerial photograph which identifies the existing land uses at the site.

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Shell does not intend to change the use of Camp Farewell. Over the past 35 years, it has been used as a base for approved research, exploration and other development activities. When a project proposes to use Camp Farewell as a base, detailed community consultation would be conducted at that time, including presentations to Tuktoyaktuk. The consultation carried out from June 21 – 25, 2004 and July 5 – 8, 2004 for the Shell Niglintgak 2005 Winter Field Geotechnical Investigation is an example. Camp Farewell was used as a base of operations for this program.

Camp Farewell has been in existence since 1969 and has been used intermittently since then. The camp is self-contained, providing electrical and heating services and facilities for accommodation, fuel storage, equipment handling, water use, and approved sewage treatment and disposal.



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cc- IGC Resource Management Coordinator, Joint Secretariat – Inuvialuit Renewable Resource Committees