
| | |
|---------|---|
| TITLE | SSA Application for a Type A Water Licence |
| SECTION | 7: Site-Specific Water Use |
| SUBJECT | 1: Summary |

INTRODUCTION

This section supports an application for approval to obtain water for site-specific use within the SSA. It contains site-specific maps, describes the proposed undertaking, provides an estimate of the quantities of water required and summarizes the schedule of activities.

| | |
|---------|---|
| TITLE | SSA Application for a Type A Water Licence |
| SECTION | 7: Site-Specific Water Use |
| SUBJECT | 2: Little Chicago Infrastructure Site |

LOCATION OF UNDERTAKING (PART 3)

The Little Chicago infrastructure site coordinates are listed in [Table 7-1](#). The water source likely to be used is the nearby Mackenzie River at KP-204.5. [Figure 7-1](#) is a site-specific map of the Little Chicago site.

Table 7-1: Location of the Little Chicago Infrastructure Site

| Location of Undertaking | Kilometre Post (KP) | Latitude (DD) | Longitude (DD) | Easting (m) | Northing (m) | UTM Zone |
|------------------------------------|---------------------|---------------|----------------|-------------|--------------|----------|
| Little Chicago infrastructure site | 204.5 | 67.0747 | -130.2029 | 447675 | 7452313 | 9 |

DESCRIPTION OF UNDERTAKING (PART 4)

Little Chicago Infrastructure Site

Development activities of the project will require a temporary construction camp to be located at the Little Chicago infrastructure site.

Construction of a 300-person camp at the Little Chicago site will begin in the summer of 2006 and be completed in late 2007.

Initial crews will reside at the 60-person barge-based mobile camp during the summer of 2006 and at the 300-person Little Chicago camp as soon as it is commissioned in the winter of 2006-2007.

In the summer of 2007, the 300-person Little Chicago construction camp will be expanded to a capacity of about 1,350 personnel. The camp will require a support staff of about 120 people. These people are included in the 1,350-person total.

Construction personnel will occupy the camp over three winter construction seasons (2007-2008 for right-of-way clearing, 2008-2009 for pipeline construction and 2009-2010 for commissioning and reclamation). Numbers will peak in mid-winter and taper off toward spring. A reduced camp support staff will remain on the site between construction seasons. Water and sewage treatment facilities will be present in the camp.

A conceptual drawing of the camp layout is shown in [Section 3](#).

The camp will be used to feed and house construction personnel. The largest element of the operations will be catering and housekeeping for the camp residents. Other activities will include the maintenance operations of the camp and restocking of fuel and supplies by truck.

Water for the camp is expected to be sourced from the Mackenzie River. The water will be transported by pipeline from the source to the camp site for use as camp water. Additional water supply might be required for fire suppression.

QUANTITY OF WATER INVOLVED (PART 7)

A water pipeline will bring the necessary volume of water (about 227 L daily per person) to the camp. The quantity of water required for camp use will be dependent upon the number of persons occupying the camp.

An estimate of water requirements has been conducted and is based on the following assumptions:

- the camp will be at capacity during the winter months (122 days)
- the camp will be at about 8.0% capacity during the summer months (122 days)
- water usage during the shoulder months between summer and winter will be limited
- camp use is based on an average water consumption of 227 L per person per day, which includes all uses
- water requirements in Year 1 consist of the early works phase, Year 2 consists of the first half of operations and Year 3 consists of the second half of operations and the camp demobilization phase
- camp capacity is 300 persons expanding to 1,350 persons

The estimate of water required based on the above assumptions is shown in [Table 7-2](#).

Table 7-2: Little Chicago Infrastructure Site Water Requirements

| Description | Water Requirements | |
|---|---------------------------------------|---|
| | Total Annual Volume (m ³) | Average Daily Volume ^a (m ³) |
| Site-specific water requirements year 1 | 900 | 3 |
| Site-specific water requirements year 2 | 39,050 | 107 |
| Site-specific water requirements year 3 | 39,950 | 109 |
| Total water requirements over 3 years | 79,900 | |
| NOTE: ^a Average daily volume is total annual volume averaged over 365 days. | | |

SCHEDULE (PART 13)

Camp operations will be continuous, at varying rates of activity, from the summer of 2006 through the summer of 2010 ([see Section 3](#)).

Figure 7.1 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Application for a Type A Water Licence**
SECTION 7: Site-Specific Water Use
SUBJECT 3: Little Chicago Facility Site

LOCATION OF UNDERTAKING (PART 3)

The Little Chicago facility site coordinates and location of its likely water source are listed in [Table 7-3](#). [Figure 7-2](#) is a site-specific map of the Little Chicago facility site.

Table 7-3: Location of the Little Chicago Facility Site

| Location of Undertaking | | Kilometre Post (KP) | Latitude (DD) | Longitude (DD) | Easting (m) | Northing (m) | UTM Zone |
|------------------------------|------|---------------------|---------------|----------------|-------------|--------------|----------|
| Little Chicago facility site | | 223.0 | 67.0659 | -129.9816 | 457318 | 7439059 | 9 |
| Water source | 115b | 223.0 | 67.0640 | -129.9866 | 457095 | 7438855 | 9 |
| | 115 | 224.2 | 67.0530 | -129.9742 | 457617 | 7437617 | 9 |

DESCRIPTION OF UNDERTAKING (PART 4)

Infrastructure Site for the Little Chicago Facility Site

A temporary construction camp will be required at the Little Chicago facility site. At full occupancy (about 120 personnel), this camp will require a camp support staff of about 12 people. These people are included in the 120-person total. The camp will be occupied year-round during construction.

Construction of the Little Chicago facility site infrastructure pad and the 120-person camp will occur during early 2007 and will open during the winter of 2007-2008. The camp will be occupied continuously during facility construction, through commissioning of the pipeline (2009) and reclamation of the site in the summer of 2010.

A conceptual drawing of the camp layout is shown in [Subject 4](#) in [Section 3](#).

The camp will be used to feed and house construction personnel. The largest element of the operations will be catering and housekeeping for the camp residents. Other activities will include the maintenance operations of the camp and restocking of fuel and supplies by truck.

Water for the camp is expected to be sourced from source 115b and 115. The water will be transported by pipeline from the source to the camp site for use as camp water. Additional water supply might be required for fire suppression.

QUANTITY OF WATER INVOLVED (PART 7)

A water pipeline will bring the necessary volume of water (about 227 L daily per person) to the camp. The quantity of water required for camp use will be dependent upon the number of persons occupying the camp.

An estimate of water requirements has been conducted and is based on the following assumptions:

- the camp will be occupied year round during construction
- camp use is based on an average water consumption of 227 L per person per day, which includes all uses
- water requirements in Year 1 consist of the early works phase, Year 2 consists of the first half of operations and Year 3 consists of the second half of operations and the camp demobilization phase
- camp capacity is 120 persons

The estimated water requirements, based on the above assumptions and including the quantities required for the Little Chicago facility site, are shown in [Table 7-4](#).

Table 7-4: Little Chicago Facility Site Camp Water Requirements

| Description | Water Requirements | |
|---|---------------------------------------|---|
| | Total Annual Volume (m ³) | Average Daily Volume ^a (m ³) |
| Site-specific water requirements year 1 | 50 | 1 |
| Site-specific water requirements year 2 | 5,500 | 15 |
| Site-specific water requirements year 3 | 5,550 | 15 |
| Total water requirements over 3 years | 11,100 | |
| NOTE: ^a Average daily volume is total annual volume averaged over 365 days. | | |

Once construction of the facility is complete, the operations phase of the facility will begin. The duration of this phase will coincide with the commercial life of the upstream production fields and is projected to be about 30 years. Water consumption during normal operations is expected to be about 40 m³ per year. This water will be likely sourced from the Mackenzie River and be brought in by tanker truck.

SCHEDULE (PART 13)

Camp operations will be continuous, at varying rates of activity, during the facility construction period, which is currently planned to occur from early 2007 through the summer of 2010 ([see Section 3](#)).

Figure 7.2 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

| | |
|---------|---|
| TITLE | SSA Application for a Type A Water Licence |
| SECTION | 7: Site-Specific Water Use |
| SUBJECT | 4: Fort Good Hope Infrastructure Site |

LOCATION OF UNDERTAKING (PART 3)

The Fort Good Hope infrastructure site coordinates are listed in [Table 7-5](#). The water source is likely to be used in the nearby Mackenzie River at KP-341.9. [Figure 7-3](#) is a site-specific map of the Fort Good Hope site.

Table 7-5: Location of the Fort Good Hope Infrastructure Site

| Location of Undertaking | Kilometre Post (KP) | Latitude (DD) | Longitude (DD) | Easting (m) | Northing (m) | UTM Zone |
|------------------------------------|---------------------|---------------|----------------|-------------|--------------|----------|
| Fort Good Hope infrastructure site | 340.0 | 66.2240 | -128.5779 | 518990 | 7344941 | 9 |
| Water source | 341.9 | - | - | - | - | - |

DESCRIPTION OF UNDERTAKING (PART 4)

Fort Good Hope Infrastructure Site

Development activities of the project will require a temporary construction camp to be located at the Fort Good Hope infrastructure site.

Construction of a 90-person camp at the Fort Good Hope site will begin in the summer of 2006 and be completed in the fall of 2006.

Initial crews will reside at the 35-person barge-based mobile camp during the summer of 2006 and at the 90-person Fort Good Hope camp as soon as it is commissioned in the fall of 2006.

In the summer of 2007, the 90-person Fort Good Hope construction camp will be expanded to a capacity of about 1,350 personnel. The camp will require a support staff of about 120 people. These people are included in the 1,350-person total.

Construction personnel will occupy the camp over three winter construction seasons (2007-2008 for right-of-way clearing, 2008-2009 for pipeline construction and 2009-2010 for commissioning and reclamation). Numbers will peak in mid-winter and taper off toward spring. A reduced camp support staff will remain on the site between construction seasons. Water and sewage treatment facilities will be present in the camp.

A conceptual drawing of the camp layout is shown in [Subject 4](#) in [Section 3](#).

The camp will be used to feed and house construction personnel. The largest element of the operations will be catering and housekeeping for the camp residents. Other activities will include the maintenance operations of the camp and restocking of fuel and supplies by truck.

Water for the camp is expected to be sourced from the Mackenzie River. The water will be transported by truck from the source to the camp site for use as camp water. Additional water supply might be required for fire suppression.

QUANTITY OF WATER INVOLVED (PART 7)

A water pipeline will bring the necessary volume of water (about 227 L daily per person) to the camp. The quantity of water required for camp use will be dependent upon the number of persons occupying the camp.

An estimate of water requirements has been conducted and is based on the following assumptions:

- the camp will be at capacity during the winter months (122 days)
- the camp will be at about 8.0% capacity during the summer months (122 days)
- water usage during the shoulder months between summer and winter will be less
- camp use is based on an average water consumption of 227 L per person per day, which includes all uses
- water requirements in Year 1 consist of the early works phase, Year 2 consists of the first half of operations and Year 3 consists of the second half of operations and the camp demobilization phase
- camp capacity is 1,350 persons

The estimate of water required based on the above assumptions is shown in [Table 7-6](#).

Table 7-6: Fort Good Hope Infrastructure Site Water Requirements

| Description | Water Requirements | |
|---|--|--|
| | Total Annual Volume (m ³) | Average Daily Volume ^a (m ³) |
| Site-specific water requirements year 1 | 900 | 3 |
| Site-specific water requirements year 2 | 39,050 | 107 |
| Site-specific water requirements year 3 | 39,950 | 109 |
| Total water requirements over 3 years | 79,900 | |
| NOTE: ^a Average daily volume is total annual volume averaged over 365 days. | | |

SCHEDULE (PART 13)

Camp operations will be continuous, at varying rates of activity, from the summer of 2006 to the summer of 2010 (see [Section 3](#)).

Figure 7.3 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

| | |
|---------|---|
| TITLE | SSA Application for a Type A Water Licence |
| SECTION | 7: Site-Specific Water Use |
| SUBJECT | 5: Norman Wells Infrastructure Site |

LOCATION OF UNDERTAKING (PART 3)

The Norman Wells infrastructure site coordinates and location of its likely water source are listed in [Table 7-7](#). The water source likely to be used is the nearby town of Norman Wells. [Figure 7-4](#) is a site-specific map of the Norman Wells site.

Table 7-7: Location of the Norman Wells Infrastructure Site

| Location of Undertaking | Kilometre Post (KP) | Latitude (DD) | Longitude (DD) | Easting (m) | Northing (m) | UTM Zone |
|----------------------------------|---------------------|---------------|----------------|-------------|--------------|----------|
| Norman Wells infrastructure site | 475.5 | 65.2874 | -126.7390 | 605458 | 7242378 | 9 |

DESCRIPTION OF UNDERTAKING (PART 4)

Norman Wells Infrastructure Site

Development activities of the project will require a temporary construction camp to be located at the Norman Wells infrastructure site.

Construction of a 350-person camp at the Norman Wells site will begin in the summer of 2006 and be completed in the summer of 2007.

Initial crews will reside at the 120-person camp during the summer of 2006 and at the 350-person Norman Wells camp as soon as it is commissioned in the summer of 2007.

In the summer of 2007, the 350-person Norman Wells construction camp will be expanded to a capacity of about 1,350 personnel. The camp will require a support staff of about 120 people. These people are included in the 1,350-person total.

Construction personnel will occupy the camp over three winter construction seasons (2007-2008 for right-of-way clearing, 2008-2009 for pipeline construction and 2009-2010 for commissioning and reclamation). Numbers will peak in mid-winter and taper off toward spring. A reduced camp support staff will remain on the site between construction seasons. Water and sewage treatment facilities will be present in the camp.

A conceptual drawing of the camp layout is shown in [Subject 4](#) in [Section 3](#).

The camp will be used to feed and house construction personnel. The largest element of the operations will be catering and housekeeping for the camp residents. Other activities will include the maintenance operations of the camp and restocking of fuel and supplies by truck.

Water for the camp is expected to be sourced from the town of Norman Wells. The water will be transported by truck from the source to the camp site for use as camp water. Additional water supply might be required for fire suppression.

QUANTITY OF WATER INVOLVED (PART 7)

A water pipeline will bring the necessary volume of water (about 227 L daily per person) to the camp. The quantity of water required for camp use will be dependent upon the number of persons occupying the camp.

An estimate of water requirements has been conducted and is based on the following assumptions:

- the camp will be at capacity during the winter months (122 days)
- the camp will be at about 8.0% capacity during the summer months (122 days)
- water usage during the shoulder months between summer and winter will be less
- camp use is based on an average water consumption of 227 L per person per day, which includes all uses
- water requirements in Year 1 consist of the early works phase, Year 2 consists of the first half of operations and Year 3 consists of the second half of operations and the camp demobilization phase
- camp capacity is 1,350 persons

The estimate of water required based on the above assumptions is shown in [Table 7-8](#).

Table 7-8: Norman Wells Infrastructure Site Water Requirements

| Description | Water Requirements | |
|---|--|--|
| | Total Annual Volume (m ³) | Average Daily Volume ^a (m ³) |
| Site-specific water requirements year 1 | 900 | 3 |
| Site-specific water requirements year 2 | 45,700 | 125 |
| Site-specific water requirements year 3 | 46,600 | 128 |
| Total water requirements over 3 years | 93,200 | |
| NOTE: ^a Average daily volume is total annual volume averaged over 365 days. | | |

SCHEDULE (PART 13)

Camp operations will be continuous, at varying rates of activity, from the summer of 2006 to the summer of 2010 (see [Section 3](#)).

Figure 7.4 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

| | |
|---------|---|
| TITLE | SSA Application for a Type A Water Licence |
| SECTION | 7: Site-Specific Water Use |
| SUBJECT | 6: Norman Wells Compressor Station |

LOCATION OF UNDERTAKING (PART 3)

The Norman Wells compressor station site coordinates are listed in [Table 7-9](#). The water source likely to be used is the nearby town of Norman Wells. [Figure 7-5](#) is a site-specific map of the Norman Wells site.

Table 7-9: Location of the Norman Wells Compressor Station

| Location of Undertaking | Kilometre Post (KP) | Latitude (DD) | Longitude (DD) | Easting (m) | Northing (m) | UTM Zone |
|---------------------------------|---------------------|---------------|----------------|-------------|--------------|----------|
| Norman Wells compressor station | 482.6 | 65.2928 | -126.9014 | 597863 | 7242718 | 9 |

DESCRIPTION OF UNDERTAKING (PART 4)

Infrastructure Site for the Norman Wells Compressor Station

A temporary construction camp will be required at the Norman Wells compressor station. At full occupancy (about 120 personnel), this camp will require a camp support staff of about 12 people. These people are included in the 120-person total. The camp will be occupied year-round during construction.

Construction of the Norman Wells compressor station infrastructure pad and the 120-person camp will occur during the winter of 2006 - 2007 and will open in the summer of 2007. The camp will be occupied continuously during facility construction, through commissioning of the pipeline (2009) and reclamation of the site in the summer of 2010.

A conceptual drawing of the camp layout is shown in [Subject 4](#) in [Section 3](#).

The camp will be used to feed and house construction personnel. The largest element of the operations will be catering and housekeeping for the camp residents. Other activities will include the maintenance operations of the camp and restocking of fuel and supplies by truck.

Water for the camp is expected to be sourced from the town of Norman Wells. The water will be transported by truck from the source to the camp site for use as camp water. Additional water supply might be required for fire suppression.

QUANTITY OF WATER INVOLVED (PART 7)

A water pipeline will bring the necessary volume of water (about 227 L daily per person) to the camp. The quantity of water required for camp use will be dependent upon the number of persons occupying the camp.

An estimate of water requirements has been conducted and is based on the following assumptions:

- the camp will be occupied year round during construction
- camp use is based on an average water consumption of 227 L per person per day, which includes all uses
- water requirements in Year 1 consist of the early works phase, Year 2 consists of the first half of operations and Year 3 consists of the second half of operations and the camp demobilization phase
- camp capacity is 120 persons

The estimated water requirements, based on the above assumptions and including the quantities required for the Norman Wells compressor station, are shown in [Table 7-10](#).

Table 7-10: Norman Wells Compressor Station Camp Water Requirements

| Description | Water Requirements | |
|---|---------------------------------------|---|
| | Total Annual Volume (m ³) | Average Daily Volume ^a (m ³) |
| Site-specific water requirements year 1 | 50 | 1 |
| Site-specific water requirements year 2 | 3,500 | 10 |
| Site-specific water requirements year 3 | 3,550 | 10 |
| Total water requirements over 3 years | 7,100 | |
| NOTE: ^a Average daily volume is total annual volume averaged over 365 days. | | |

Once construction of the facility is complete, the operations phase of the facility will begin. The duration of this phase will coincide with the commercial life of the upstream production fields and is projected to be about 30 years. Water consumption during normal operations is expected to be about 20 m³ per year. This water will be likely sourced from the town of Norman Wells and be brought in by tanker truck.

SCHEDULE (PART 13)

Camp operations will be continuous, at varying rates of activity, during the facility construction period, which is currently planned to occur from late 2006 through the summer of 2010 (see [Section 3](#)).

Figure 7.5 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.

TITLE **SSA Application for a Type A Water Licence**
SECTION 7: Site-Specific Water Use
SUBJECT 7: Little Smith Creek Infrastructure Site

LOCATION OF UNDERTAKING (PART 3)

The Little Smith Creek infrastructure site coordinates are listed in [Table 7-11](#). The water source is likely to be used in the nearby Mackenzie River at KP-632.0. [Figure 7-6](#) is a site-specific map of the Little Smith Creek site.

Table 7-11: Location of the Little Smith Creek Infrastructure Site

| Location of Undertaking | Kilometre Post (KP) | Latitude (DD) | Longitude (DD) | Easting (m) | Northing (m) | UTM Zone |
|--|---------------------|---------------|----------------|-------------|--------------|----------|
| Little Smith Creek infrastructure site | 632.0 | 64.4282 | -124.7218 | 417083 | 7145852 | 10 |
| Water source | 632.0 | - | - | - | - | - |

DESCRIPTION OF UNDERTAKING (PART 4)

Little Smith Creek Infrastructure Site

Development activities of the project will require a temporary construction camp to be located at the Little Smith Creek infrastructure site.

Construction of a 120-person camp at the Little Smith Creek site will begin in mid-2006 and be completed in the summer of 2007.

Initial crews will reside at the 60-person barge-based mobile camp in mid-2006 and at the 120-person Little Smith Creek camp as soon as it is commissioned later in 2006.

In the summer of 2007, the 120-person Little Smith Creek construction camp will be expanded to a capacity of about 950 personnel. The camp will require a support staff of about 86 people. These people are included in the 950-person total.

Construction personnel will occupy the camp over three winter construction seasons (2007-2008 for right-of-way clearing, 2008-2009 for pipeline construction and 2009-2010 for commissioning and reclamation). Numbers will peak in mid-winter and taper off toward spring. A reduced camp support staff will remain on the site between construction seasons. Water and sewage treatment facilities will be present in the camp.

A conceptual drawing of the camp layout is shown in [Subject 4](#) in [Section 3](#).

The camp will be used to feed and house construction personnel. The largest element of the operations will be catering and housekeeping for the camp residents. Other activities will include the maintenance operations of the camp and restocking of fuel and supplies by truck.

Water for the camp is expected to be sourced from the Mackenzie River. The water will be transported by truck from the source to the camp site for use as camp water. Additional water supply might be required for fire suppression.

QUANTITY OF WATER INVOLVED (PART 7)

A water pipeline will bring the necessary volume of water (about 227 L daily per person) to the camp. The quantity of water required for camp use will be dependent upon the number of persons occupying the camp.

An estimate of water requirements has been conducted and is based on the following assumptions:

- the camp will be at capacity during the winter months (122 days)
- the camp will be at about 8.0% capacity during the summer months (122 days)
- water usage during the shoulder months between summer and winter will be less
- camp use is based on an average water consumption of 227 L per person per day, which includes all uses
- water requirements in Year 1 consist of the early works phase, Year 2 consists of the first half of operations and Year 3 consists of the second half of operations and the camp demobilization phase
- camp capacity is 950 persons

The estimate of water required based on the above assumptions is shown in [Table 7-12](#).

Table 7-12: Little Smith Creek Infrastructure Site Water Requirements

| Description | Water Requirements | |
|---|--|--|
| | Total Annual Volume (m ³) | Average Daily Volume ^a (m ³) |
| Site-specific water requirements year 1 | 600 | 2 |
| Site-specific water requirements year 2 | 27,100 | 74 |
| Site-specific water requirements year 3 | 27,700 | 76 |
| Total water requirements over 3 years | 55,400 | |
| NOTE: ^a Average daily volume is total annual volume averaged over 365 days. | | |

SCHEDULE (PART 13)

Camp operations will be continuous, at varying rates of activity, from the summer of 2006 to the summer of 2010 (see [Section 3](#)).

Figure 7.6 has been moved to reduce file size. To view it, click on the link to the figure in the web page List of Figures for this document.