



# **Orano Canada Inc.**

## **Wildlife Mitigation and Monitoring Plan**

Exploration Department  
Kiggavik Project


Version 8


November 2019

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## Approval for Use

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# History of Revisions

Version	Revision	Date	Details of Revision
1	0	March 2007	Original submission
2	0	January 2008	Updated to reflect changes in field activities/capabilities and areas of continual improvement
2	1	May 2008	Updated to reflect program changes initiated by new consulting biologist and to integrate comments received by Nunavut and NWT biologists
3	0	January 2009	Updated to reflect opportunities for improvement
4	0	January 2010	Updated to reflect opportunities for improvement
5	0	April 2011	Updated to reflect lessons learned throughout the 2010 field season. These changes include an appendix which outlines the appropriate responses to a variety of scenarios to ensure appropriate mitigative actions are carried out in a timely and effective manner.
5	1	May 2012	Updated to reflect change in personnel titles
5	2	May 2013	Updated to reflect changes in personnel
5	3	May 2014	Updated to include deterrence measures for safety intervention and wildlife monitor responsibilities
5	4	January 2015	Minor edits for improved clarity and updated to new template
6	0	January 2017	Updated to reflect transition to Care and Maintenance phase
7	0	January 2019	Updated to reflect corporate name change and title changes
8	0	November 2019	Updated to reflect personnel change

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## Acronyms and Abbreviations

Term	Definition
AANDC	Aboriginal Affairs and Northern Development Canada (currently Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), but previous comments/licenses from AANDC are referenced)
Orano	Orano Canada Inc.
BQCMB	Beverly and Qamanirjuaq Caribou Management Board
EC	Environment Canada
EIS	Environmental Impact Statement
GN	Government of Nunavut
GNWT	Government of Northwest Territories
GN-DoE	Government of Nunavut, Department of Environment
HTO	Hunters and Trappers Organization
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
KIA	Kivalliq Inuit Association
SHEQ	Safety Health Environment and Quality

# 1 Introduction

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The Kiggavik Project is currently in a care and maintenance phase. The Wildlife Mitigation and Monitoring Plan (Plan) will be kept in this state, but is considered not applicable, except for the noted applicable sections, during the care and maintenance phase. Animal sightings will be reported in the annual report. This Plan will be updated prior to a change in project phase to reflect the most recent information.

Applicable sections during care and maintenance include:

- 3.2 Raptor and Migratory Bird Protection Measures
- 3.3 Caribou Protection Measures
- 3.4 Flight Specific Mitigation

Wildlife monitoring will be performed by Orano personnel during site visits.

The Wildlife Mitigation and Monitoring Plan described herein has been developed by Orano Canada Inc. (Orano) for the Kiggavik Project (Project) located approximately 80 km west of Baker Lake, Nunavut. The Plan is implemented during the field season to monitor and reduce potential impacts on wildlife with particular emphasis on caribou. The Plan serves as a work instructional and internal best management practice and encompasses activities in Nunavut, including continued exploration and environmental studies for the environmental assessment process.

Orano personnel, contractors, subcontractors, helicopter contractors, and Wildlife Monitors have the responsibility to be familiar with and to follow this Plan. Implementation and enforcement is the responsibility of the Coordinator, SHEQ Exploration or designate with support from the Wildlife Monitors. Kiggavik Project worksites and activities include the following:

- Camp Activities (including the fuel cache)
- Drilling Operations
- Airborne Geophysics
- Ground Geophysics and Exploration Activities
- Environmental Baseline Work and
- Environmental Monitoring

During the active exploration phase, the Plan is reviewed and updated regularly, and was developed in consultation with a biologist knowledgeable in barren ground caribou. The Plan is reviewed to reflect lessons learned through Orano's experience and the experience of other projects and to incorporate feedback and recommendations from regulators and community members.

The current Plan has evolved with lessons learned during the previous field seasons, community input, and regulatory commitments. Orano is working closely with the Government of Nunavut Department of

Environment (GN-DoE) to investigate options for collecting meaningful caribou population data using low invasive methodologies.



## 2 Monitoring Plan

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### 2.1 Wildlife Monitoring

Orano will employ an Independent Wildlife Monitor(s) to:

- Verify that this Plan is carried out
- Independently report Kiggavik related wildlife and any concerns to external agencies
- Provide safety assistance regarding wildlife issues

The Wildlife Monitor must become familiar with their scope of work by discussing this Plan with the Coordinator, SHEQ Exploration or designate. The Wildlife Monitor will be responsible for observations surrounding the Kiggavik camp and must report wildlife sightings to the Coordinator, SHEQ Exploration or designate. They may report to the local Conservation Officer and Hunters and Trappers Organization (HTO) at any time. Provided weather conditions are adequate, the camp observations should be conducted from the five height-of-land (HOL) locations surrounding camp. If collared caribou are identified as approaching the site activities, or caribou herds have been visually observed in the area, an aerial reconnaissance survey greater than 610 m (2,000 feet) may be conducted with the Wildlife Monitor to determine proximity to site activities. The Wildlife Monitor will be responsible for advising on the number and proximity of caribou to determine when to cease activity. Regular communication with the Coordinator, SHEQ Exploration and Project Geologist is beneficial for adequate reporting and mitigation measures.

If requested, the Wildlife Monitor will be allowed to carry the firearm provided by Orano during regular monitoring of the HOL locations and during wildlife deterrence for safety intervention. The firearm may be obtained following discussion with the Facility and Logistics Coordinator, Kiggavik and will be returned to the locked gun cabinet once work is complete. [HSER-906 Firearms and Weapons](#) guides the storage and use of firearms.

### 2.2 Baseline Data to Support Environmental Assessment

Wildlife survey data collected to support development of the Environmental Impact Statement (EIS) may be used to support site monitoring and help inform appropriate mitigation actions as required. The environmental consultants communicate regularly with the Coordinator, SHEQ Exploration or designate to ensure important wildlife observations are recorded and communicated to appropriate personnel at site.

## **2.3 Aerial Observations**

Wildlife observations during daily transportation of field staff and contractors will be recorded to provide information about the presence of caribou and any other wildlife in the area. Refer to section 3.4 Flight Specific Mitigation for the required altitudes of the above mentioned flights.

## **2.4 Wildlife Logs**

Orano has provided Wildlife Sightings Forms for all site personnel and visitors to complete following the observation of any wildlife. Instructions regarding this form are provided during orientation. The Wildlife Monitor will communicate information obtained in the field to the Coordinator, SHEQ Exploration or designate. All wildlife information will be transcribed to an electronic file which is included in the monthly wildlife reports.

## **2.5 Caribou Radio-Collaring Data**

The study area will be monitored for approaching caribou with the use of satellite collar information provided by caribou biologists with the Government of Northwest Territories. In the future, the Government of Nunavut may provide collar data as well.

## 3 Mitigation and Protection Measures

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Mitigation and protection measures are heavily based on compliance with permit/licence terms and conditions. Additional Orano commitments were adopted from recommendations from the Government of Nunavut Department of Environment (GN-DoE), Environment Canada (EC), Beverly and Qamanirjuaq Caribou Management Board (BQCMB) and Orano-led commitments. Orano will implement the following mitigation and protection measures for caribou, and other wildlife that are seasonal or annual residents of the Project area.

### 3.1 General Protection Measures

Wildlife will have the “right-of-way” and will not be blocked or deterred from moving through the Project area. The camp layout and drilling area will be limited in size to reduce the Project footprint and the use of “good housekeeping” practices to reduce attractants limits the number of wildlife around work areas. Refer to the Noise Abatement Plan for measures taken to control noise.

Non-hazardous combustible garbage will be burned in an incinerator (see Waste Management Plan). Non-combustible waste and hazardous materials are stored in enclosed buildings and/or sea containers for future shipment to an approved facility. Wildlife safety will be discussed during orientation, and all predator interactions will be reported to the Baker Lake Conservation Officer. Orano educates and enforces “no feeding or harassment of wildlife” and the appropriate response to animal encounters, specifically carnivores and muskoxen will be communicated. An Orano representative will contact the Baker Lake Conservation Officer for appropriate protocols and actions if a need for deterrents or other wildlife management techniques are identified.

Hunting and trapping by Orano employees and contractors is prohibited on the Kiggavik lease. Orano employees and contractors must obtain a Sport Fishing Licence, and provide a copy to the Coordinator, SHEQ Exploration or designate before commencing on a fishing trip leaving from site.

The use of firearms is strictly controlled. The Project Geologist or designate must approve any firearm coming on site. The only allowable use of firearms is for dangerous animal deterrence measures (e.g., firearms, bear bangers, bear spray, cracker shells and rubber bullets), and for safety kills to protect human life should a situation arise when other measures have failed. The Wildlife Monitor is permitted to carry a firearm. Refer to *GSP Section 9.03 Firearms and Offensive Weapons* regarding storage and use of firearms.

If there is a disturbance to caribou or if an incident occurs between a grizzly bear, wolverine, wolf, or fox and the field staff a Supervisor’s Investigation Report will be completed. An incident is defined as a disturbance to caribou, damage to camp facilities caused by wildlife, continued persistence of a carnivore(s) within the camp or work site, and/or interactions between humans and wildlife that lead to harm to either. In the case of a wildlife incident, notify the Baker Lake Conservation Officer.

Materials, chemicals, and equipment will be removed from the drill sites and camp area at completion of the project as described in the Abandonment and Restoration Plan. The intent is to reclaim the area as close as possible to the natural state. Chemicals are stored in double-walled containers or in secondary containment. Diesel fuel, gasoline, and aviation fuel is contained within arctic berms or double-walled storage tanks (see Spill Contingency Plan). In the event of a spill, the Spill Contingency Plan will be implemented immediately. Used chemicals are stored for transportation off site for proper handling.

### **3.1.1 Safety Intervention**

#### **3.1.1.1 Field Personnel**

In the event that there is potential for a human to wildlife conflict, safety intervention may be necessary. As recommended by the Conservation Officer, field personnel should use bear bangers as a deterrent first before requesting helicopter assistance or rubber bullets. The Wildlife Monitor is available for added deterrent support with firearms loaded with bear bangers and rubber bullets. Any such occurrence must be reported to the Coordinator, SHEQ Exploration immediately who will then report to the local Conservation Officer.

#### **3.1.2 Camp Personnel**

Similar to the standard practice for field personnel, in the event there is potential for a human to wildlife conflict, the first priority for deterrence is the use of bear bangers. Where the helicopter is already in the air, the animal will likely be deterred without requiring the bear bangers. The camp also has two firearms available to the Wildlife Monitor. The 12 gauge shotgun has bear bangers, rubber bullets, and lethal shot; the rifle has lethal shot. Both are available when safety is at risk. Any such occurrence must be reported to the Coordinator, SHEQ Exploration immediately who will then report to the local Conservation Officer.

## **3.2 Raptor and Migratory Bird Protection Measures**

To mitigate potential impacts to raptors and other migratory birds, Orano will avoid disturbing known raptor nests from April 15 to September 1 by maintaining a 1.5 km buffer when in transit by aircraft and will avoid approaching known nests closely while on foot. Limited disturbance (e.g. raptor nest monitoring) within the aircraft buffer may occur infrequently prior to September to obtain necessary baseline data for the environmental assessment.

If a nest site is established on a man-made structure and eggs are present, the nest will be avoided as much as possible and monitored for nest success.

Prior to drilling in an area, a gamma survey is conducted. During this survey the area is surveyed for active bird nests during the breeding period of May 30 to July 31. All nests will be recorded and efforts to create appropriate buffers (dependent on species tolerance and protection level) around migratory birds and species at risk will be made. Nests will be monitored for hatch or termination.

### 3.3 Caribou Protection Measures

Caribou will have the “right-of-way”, and will not be blocked or deterred from moving through the Project area. Activities that may interfere with migration will cease during migration. The calving grounds for the Beverly and Qamanirjuaq herds are approximately 70 km and 200 km from the exploration areas, respectively. Orano does not conduct any activity within the designated Caribou Protection Areas or within the larger known Caribou Calving Grounds. The distance between the Kiggavik camp and the nearest known caribou water crossings is 25 km. Figure 3.1 shows the caribou crossings and calving areas in relation to the Kiggavik Project Site. Orano follows the DIAND Caribou Protection Measures (AANDC, 2010) as well as additional caribou protection and mitigation commitments. Refer to 3.4 Flight Specific Mitigation for altitudes over concentrations of fifty caribou or more within close proximity to one another.

No camp construction, caching of fuel, or blasting will occur within 10 km of a designated and/or recognized caribou crossing during periods of migration between May 15 and September 1. No diamond drilling activity will occur within 5 kilometres of any designated and/or recognized caribou crossing during periods of migration between May 15 and September 1. Operation of ground, air or water-based mobile equipment within 10 km of a caribou crossing is anticipated to happen infrequently and will only occur in the absence of caribou concentrations. Snowmobile and ATV use will be suspended if cows and calves are within two km of activities. Ground-based monitoring and/or aerial reconnaissance flights will be used to monitor caribou presence as required and appropriate prior to and during operations of mobile equipment (AANDC, 2010).

If a collared caribou is identified as approaching site activities, the Coordinator, SHEQ Exploration or designate may determine what the collar represents by communicating with the Government of Nunavut (GN) or Government of Northwest Territories (GNWT), with environmental consultants, and exploration companies within the area. If required, verification may occur through an aerial reconnaissance survey with the Wildlife Monitor.

In the event that caribou cows calve outside the designated Caribou Protection Areas, Orano will suspend operations within 10km<sup>1</sup> of any area occupied by cows and calves between May 15 and July 15 (AANDC, 2010). Water circulation in the drills will continue to ensure the rods do not freeze in the hole. Monitoring activities and visuals from the drill area will be used to identify when caribou are within 10 km of drilling activities. Through high altitude aerial reconnaissance or ground based monitoring, the Wildlife Monitor will determine when caribou cows and calves are outside the 10 km buffer and report the information to the Coordinator, SHEQ Exploration or designate. Activities can resume when the caribou are outside the 10 km buffer following confirmation by the Coordinator, SHEQ Exploration or designate. If a concentration of caribou remains within 10 km of drilling operations for more than two days, the Coordinator, SHEQ

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<sup>1</sup> The 10 km calving period buffer originated from comments by the BQCMB and GNDOE (BQCMB, 2007, GN, 2007, GN 2008)

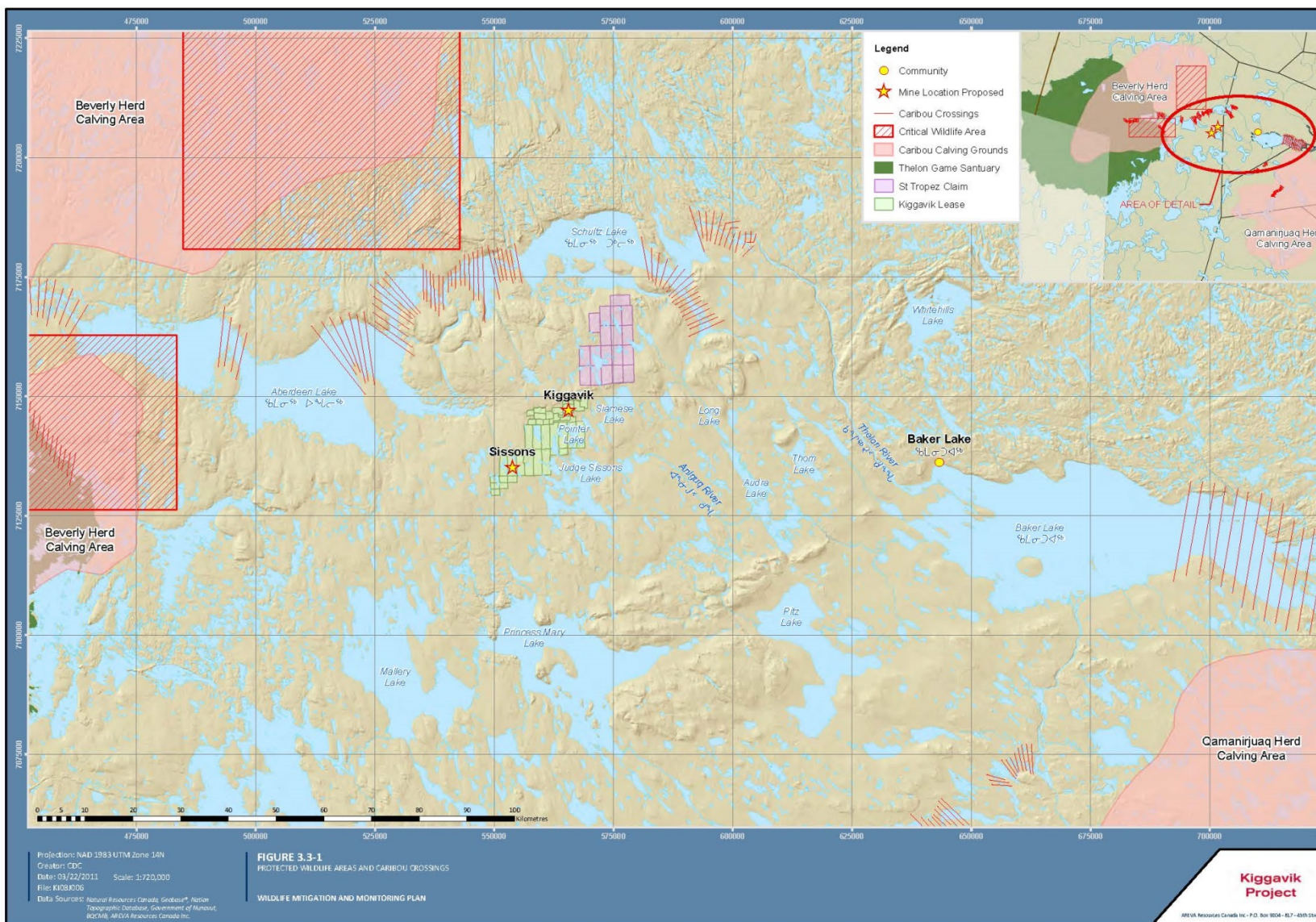
Exploration or designate will contact the Conservation Officer in Baker Lake to determine the next appropriate course of action.

To avoid injuries to caribou and humans during June and July, drilling activities will be suspended if concentrations of caribou (fifty or more) approach within two km<sup>2</sup> of drilling operations (NIRB, 2007a and GN-DoE, 2008). Water circulation within the drill will continue to keep the rods from freezing in the hole. Monitoring activities and visuals from the drill area will be used to identify when caribou are within two km of drilling activities. Through ground based monitoring, the Independent Wildlife Monitor will determine when caribou are outside the two km buffer, and report the information to the Coordinator, SHEQ Exploration or designate. Activities can resume when caribou are outside the two km buffer following confirmation by the Coordinator, SHEQ Exploration or designate. If a concentration of caribou remains within two km of drilling operations for more than two days the Coordinator, SHEQ Exploration will contact the Conservation Officer in Baker Lake and the consulting biologist to determine the next appropriate course of action. Orano will forward any direction from GN-DoE or KIA regarding caribou monitoring to NIRB (NIRB 2007).

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<sup>2</sup> With respect to the recommendation for suspending activities when caribou are within 10 km of exploration activities (GN-DoE 2007, GN-DoE 2008), Orano offers the following information and approach. Studies of woodland caribou have demonstrated avoidance of up to 1 km for well sites and 250 m for roads and seismic lines (Dyer et al. 2001). Data from the Ekati Diamond Mine suggests that the instantaneous negative response (alert, stop feeding) of barren-ground caribou to stressors (e.g., truck traffic) increases within 1 km of the source (BHPB 2004). Behaviour data also demonstrated that the amount of time spent feeding by females with calves was reduced when animals were within 5 km of Ekati mine footprint (BHPB 2004). The size and level of activity of the Kiggavik-Sissons project is much less than an operating diamond mine or road. Regardless, the BQCMB and GN-DoE comments have been considered and operations continue to abide by the more stringent 10 km buffer.





**Figure 3.1 Beverly and Qamanirjuaq Calving Areas and Caribou Crossings in Relation to Kiggavik Project Site**

### 3.4 Flight Specific Mitigation

Orano will make efforts to avoid wildlife during flights and to avoid low-level flying to minimize impact of helicopter and airplane noise and presence. Although required flight altitudes are outlined below, some low-level flights are occasionally required for geological/environmental surveys, slinging operations, and during periods of poor weather. Geological or environmental surveys that will be flown below desired altitude must be pre-approved by the Coordinator, SHEQ Exploration or designate. Unless otherwise approved by the Coordinator, SHEQ Exploration or designate, personnel must adhere to the minimum flight altitudes listed below. If flying at lower altitudes is required, the Coordinator, SHEQ Exploration must be notified and reasons documented. Any special requirements including the necessity for high level reconnaissance surveys will be determined by the Coordinator, SHEQ Exploration or designate.

Aircraft abide by strict altitude restrictions, and helicopter contractors must provide Orano the capability of tracking all flight altitudes to ensure compliance with this Plan. Aircraft pilots are instructed not to fly over the Beverly calving grounds 70 km northwest of the Project area (as shown in Figure 3.1). For long-range transportation flights (>25 km), aircrafts are required to fly at a minimum of 610 m (2000 feet) above ground level. For shorter transportation flights (between 4-25 km), which are typically used for movement of staff and equipment between camp and work sites, the normal practice is to fly all aircraft at a minimum of 300 m (1000 feet) above ground level. Protection measures specific to low-level airborne surveys are given in the following section. Unless caribou are present, there are no altitude restrictions for flights less than 4 km. In the presence of fifty or more caribou, best practice is to avoid the caribou by a minimum distance of 610 m above or around the herd. Taking-off or landing of aircraft does not occur if 50 or more caribou are within 1 km of the landing area, except where safety is at risk (NIRB, 2007). From April 15 to September 1, Orano will not fly within 1.5 km of nesting raptors when in air transit and will avoid disturbance in poor weather. A summary of altitude restrictions is provided in Table 3.1 below.

**Table 3.1 Flying Altitudes and Related Activities**

Activity	Flying Altitude (above ground) <sup>3</sup>
Regular Long Distance Flights >25 km	> 610 m
Short Distance Flights between 4 and 25 km	> 300 m
Aerial Reconnaissance Surveys	> 300 m
Airborne Geophysical Surveys	≥ 120 m (as required by the survey protocol)

<sup>3</sup> Normally the altitude above ground is estimated using the aircraft altimeter set to 29.92" of mercury and correcting for the ground elevation along the track. This causes uncertainties due to estimating the ground elevation and the difference between the barometric pressure at the time of the flight and standard pressure of 29.92".



Activity	Flying Altitude (above ground) <sup>3</sup>
Flights in the vicinity of > 50 caribou	> 610 m (horizontal separation if vertical is not possible)

### 3.5 Mitigation Specific to Geophysical Surveys

#### 3.5.1 Survey Rationale

##### Aerial

Airborne geophysical techniques are used extensively in exploration to identify physical variations in the underlying geology which can be then used as a means of defining areas of interest. Different methods are employed such as Electromagnetics (EM), Gravity Gradiometry, Magnetics and Radiometrics which may be conducted in different years if required. Flying altitudes and line spacing's are the main factors that govern the resolution of the survey. To map the targets both a tight line spacing (~150 m) and a low altitude of (~50-200 m) following the topography is required.

Airborne geophysical surveys can gain access to remote areas quickly and reduce exploration time. In addition, where environmental issues may limit the amount of exploration possible with ground activities, airborne surveys offers a solution to these issues. If flying over concentrations of caribou is avoided, then this technique is a non-invasive passive technology and an environmentally friendly alternative that will help focus future ground-based activities while limiting or reducing impacts to the environment.

##### Ground Geophysical Surveys

Ground geophysical surveys are generally the second step in geophysical exploration. Mainly used to refine the areas of interest that result from the airborne surveys, they employ the same kind of techniques such as DC Resistivity, EM, Gravity, Magnetics, and Radiometrics. They are used to better understand the underlying geology with more detail and to help geologists to define their drill targets.

Ground geophysical surveys have a lower production rate compared to airborne surveys because they are generally performed by people on the ground but the accuracy is generally better. Techniques have almost no effects on the environment (walking on the ground) and instruments can be removed from the field if caribou are too close to the survey area.

#### 3.5.2 Survey Specifications

##### Airborne Geophysical Survey Specifications

The chosen method is to mount survey instrumentation in a suitable aircraft. Instrumentation includes among others the data acquisition system (which records full tensor gravity gradiometry, triaxial magnetic gradiometry etc. if any), digital video, and a complete digital terrain model from an inertially referenced laser (Lidar) altimeter system or a radar system. Specific requirements to complete a survey could be as follows:

- Nominal Flying Height: 120 - 200 m
- Flying Mode: Modified Drape
- Line Spacing: 150 m
- Tie Line Spacing: 750 m
- Ground Cover Restriction: Results are much more precise without snow cover
- Survey time: Dependant on weather conditions and the presence of caribou within the survey area)

## **Ground Geophysical Survey Specifications**

The chosen method is to deploy in the field the adequate technique to realize, if any, a mapping of the apparent resistivity or gravity, to locate anomalous radioactivity, to define magnetic structures and to characterize targets at depth.

An example of requirements to complete a mapping survey includes the following:

- Line Spacing: 150 m
- Number of lines: 20
- Length of lines: 2000 m
- Surface covered: 6 km<sup>2</sup>
- Ground Cover Restriction: Results are much more precise without snow cover and frozen ground
- Survey time: Dependent on surface cover, contractor's crew size, quantity of equipment used, weather conditions and the presence of caribou within the survey areas

### **3.5.3 Protection Measures**

There are caribou protection measures in place for airborne and ground geophysical surveys. The intent of these protection measures is to ensure surveys are only conducted when caribou disturbance can be minimized. The preferred window for conducting geophysical surveys is in June after the northern migration, and efforts will be made to avoid the migration and post calving periods from July 15 to July 31. The Coordinator, SHEQ Exploration or designate is notified of the requested survey area and duration to confirm compliance with the Plan. A reconnaissance flight is flown at an altitude of 300 m over the initial line of the proposed area to determine the presence of caribou. If the ceiling is lower than the 300 m but at an altitude that permits safe flying, the reconnaissance flight will be flown at the maximum altitude possible.

## **Airborne Geophysical Surveys**

- If a concentration of caribou (fifty or more individuals in close proximity to one another) are within the survey area the aircraft will relocate to another part of the survey block and repeat the reconnaissance flight or the survey will be postponed until the caribou are at a distance of two km from the survey area.

- If caribou calves are present in the survey area between May 15 and July 15, the survey will be postponed until either the calves are gone or the survey can be conducted outside of this time period.
- If concentrations of caribou are not observed within the survey route, then the survey proceeds at the approved altitude
- A continuous watch is kept for caribou during the survey. If concentrations of caribou are observed in the survey area during the course of the work, the survey is aborted and another part of the block is selected.
- The contractor must notify the Coordinator, SHEQ Exploration or designate of such caribou encounters and provide information pertaining to the location, time, and number of caribou.

## **Ground Geophysical Surveys**

Ground geophysical surveys that exclude the use of wire abide by the protection measures outlined for regular operations (see section 3.3 Caribou Protection Measures). Where ground geophysical surveys include the use of wire, the following protection measures will be in place:

- Reconnaissance flights are flown daily during the survey to confirm the absence of caribou herds in proximity to the survey area.
- If caribou herds (fifty or more) or caribou cows with calves are absent (between May 15 and July 15) within 10 km of the study area, or are not expected to be within the study area during the survey, the survey can proceed. If caribou are within 10 km, the geophysical survey will be temporarily postponed until caribou are out of the area.
- For concentrations of caribou the Coordinator, SHEQ Exploration or designate and Wildlife Monitor will determine an adequate distance at which the geophysical wire is to be retrieved. The time required to retrieve wire and the speed in which the caribou are migrating will be considered. This distance will be determined prior to conducting each new survey.
- If fifty or more caribou (in close proximity to one another) approach the survey area, within the minimum distance determined above, the geophysical wire would be retrieved to ensure they are protected.

## 4 Reporting

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All wildlife activities will be recorded and reported monthly during the field season. With the assistance of the independent Wildlife Monitor, reports will be submitted by the Coordinator, SHEQ Exploration or designate on site to the Manager, Nunavut Affairs, the Manager-New Projects, Baker Lake Hunters and Trappers Organization (HTO) the Baker Lake Conservation Officer, the GN Department of Environment (GN-DoE), Regional Biologist, Kivalliq Inuit Association (KIA) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC). The monthly reports will be used to help construct a year-end overview to be included in the Kiggavik Project Annual Report.

## 5 References

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## Appendix A Events and Responses

Event	Contractors	Wildlife Monitor	Coordinator, SHEQ Exploration or Designate
<b>General Mitigation</b>			
A disturbance to caribou	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration</li> <li>Assist with the completion of the Supervisor's Investigation Report where necessary</li> </ul>	<ul style="list-style-type: none"> <li>May be required to assist in emergency situations such as using firearm for safety kills or notifying camp when danger (wildlife) is out of the area</li> <li>Assist with the completion of the Supervisor's Investigation Report where necessary</li> </ul>	<ul style="list-style-type: none"> <li>Complete a Supervisor's Investigation Report</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>
An incident occurs between grizzly bear, wolverine, wolf, fox and field staff	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration</li> <li>Assist with the completion of the Supervisor's Investigation Report where necessary</li> </ul>	<ul style="list-style-type: none"> <li>May be required to assist in emergency situations such as using firearm for safety kills or notifying camp when danger (wildlife) is out of the area</li> <li>Assist with the completion of the Supervisor's Investigation Report where necessary</li> </ul>	<ul style="list-style-type: none"> <li>Complete a Supervisor's Investigation Report</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Notify the Baker Lake Conservation Officer</li> <li>Note in monthly wildlife report</li> </ul>
If a need for deterrents or other wildlife management techniques are identified	<ul style="list-style-type: none"> <li>No action required</li> </ul>	<ul style="list-style-type: none"> <li>No action required</li> </ul>	<ul style="list-style-type: none"> <li>Contact Baker Lake Conservation Officer</li> </ul>
<b>Caribou Mitigation</b>			
Collared Caribou are identified as approaching site activities	<ul style="list-style-type: none"> <li>No action required</li> </ul>	<ul style="list-style-type: none"> <li>Assist Coordinator, SHEQ Exploration with identifying what the collar represents and aerial reconnaissance surveys where necessary</li> </ul>	<ul style="list-style-type: none"> <li>Determine what the collar represents by contacting the GN and/or GNWT or exploration companies in the area</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>
If caribou with <b>newborn calves</b> approach drilling rig between <b>May 15 and July 15</b>	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration and Wildlife Monitor</li> <li>If caribou and calves are observed within 10 km of drilling rig, shut down</li> </ul>	<ul style="list-style-type: none"> <li>Station at a vantage point for observing proximity of herd and presence of calves</li> <li>Notify the Coordinator, SHEQ Exploration of</li> </ul>	<ul style="list-style-type: none"> <li>Advise Contractor to shut down drilling activity if Wildlife Monitor determines calves are present within 10 km</li> <li>Following verification from Wildlife Monitor, advise</li> </ul>

Event	Contractors	Wildlife Monitor	Coordinator, SHEQ Exploration or Designate
	drilling activity (continue water circulation)	observations <ul style="list-style-type: none"> <li>If drilling activity is suspended, continue monitoring and notify Coordinator, SHEQ Exploration of caribou proximity to drill rig</li> </ul>	Contractor to commence drilling when caribou are outside the 10 km range <ul style="list-style-type: none"> <li>If caribou remain within 10 km for &gt;2 days, notify the Baker Lake Conservation Officer for further action</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>
<b>&gt; 50 caribou</b> approach drilling rig during June or July	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration and Wildlife Monitor</li> <li>If &gt;50 caribou are observed within 2 km of drilling rig, shut down drilling activity (continue water circulation)</li> </ul>	<ul style="list-style-type: none"> <li>Station at a vantage point for observing proximity of herd and presence of calves.</li> <li>Notify the Coordinator, SHEQ Exploration of observations</li> <li>If drilling activity is suspended, continue monitoring and notify Coordinator, SHEQ Exploration of caribou proximity to drill rig</li> </ul>	<ul style="list-style-type: none"> <li>Advise Contractor to shut down drilling activity if Wildlife Monitor determines &gt;50 caribou are present within 2 km</li> <li>Following verification from Wildlife Monitor, advise Contractor to commence drilling when caribou are outside the 2 km range</li> <li>If &gt;50 caribou remain within 2 km for &gt;2 days, notify the Baker Lake Conservation Officer for further action</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>
Flight Mitigation			
<b>&gt;50 caribou</b> are within 1 km of landing area	<ul style="list-style-type: none"> <li>Pilot will not land or take off within 1 km of &gt;50 caribou except for flight safety</li> <li>Flights must be 610 m above ground when flying over &gt;50 caribou (horizontal separation of 610 m is acceptable if 610 m altitude is not possible)</li> <li>If possible, choose an alternate landing area &gt; 1 km from the herd</li> <li>Notify the Coordinator, SHEQ Exploration and Wildlife Monitor</li> </ul>	<ul style="list-style-type: none"> <li>If landing area is within sight, monitor proximity of herd</li> <li>Notify the Coordinator, SHEQ Exploration of observations</li> </ul>	<ul style="list-style-type: none"> <li>Notify pilots when &gt;50 caribou are within 1 km of their landing area as advised by the Wildlife Monitor</li> <li>Notify pilots when the caribou have moved outside the 1 km range of the landing area as advised by the Wildlife Monitor</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>

Event	Contractors	Wildlife Monitor	Coordinator, SHEQ Exploration or Designate
<b>Aerial Geophysical Surveys</b>			
During flight, 50 or more caribou are within the aerial survey route	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration</li> <li>The aircraft will relocate to another part of the block and repeat the reconnaissance flight or will be postponed until the animals are a distance of 2 km from the survey area</li> </ul>	<ul style="list-style-type: none"> <li>No Action Required</li> </ul>	<ul style="list-style-type: none"> <li>Notify Project Geologist or designate, Wildlife Monitor and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report.</li> </ul>
If calves are present between May 15 and July 15	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration</li> <li>The survey will be postponed until either the calves are gone or the survey can be conducted outside of this time period.</li> </ul>	<ul style="list-style-type: none"> <li>No Action Required</li> </ul>	<ul style="list-style-type: none"> <li>Notify Project Geologist or designate, Wildlife Monitor and Manager of Nunavut Affairs of mitigating actions</li> </ul>
<b>Ground Geophysical Surveys (include the use of wire)</b>			
Caribou cows and calves are present within 10 km between May 15 and July 15	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration and Wildlife Monitor</li> <li>Retrieve wire following verification from Coordinator, SHEQ Exploration</li> </ul>	<ul style="list-style-type: none"> <li>Station at a vantage point for observing proximity of herd and presence of calves</li> <li>Notify the Coordinator, SHEQ Exploration of observations</li> </ul>	<ul style="list-style-type: none"> <li>The Coordinator, SHEQ Exploration in consultation with the Wildlife Monitor will notify the Contractor to retrieve the wire</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>
> 50 caribou are within close proximity of the ground survey area during June/July	<ul style="list-style-type: none"> <li>Notify the Coordinator, SHEQ Exploration and Wildlife Monitor</li> <li>Retrieve wire following verification from Coordinator, SHEQ Exploration</li> </ul>	<ul style="list-style-type: none"> <li>Station at a vantage point for observing proximity of herd and presence of calves</li> <li>Notify the Coordinator, SHEQ Exploration of observations</li> </ul>	<ul style="list-style-type: none"> <li>The Coordinator, SHEQ Exploration in consultation with the Wildlife Monitor will notify the contractor to retrieve the wire</li> <li>Notify Project Geologist or designate and Manager of Nunavut Affairs of mitigating actions</li> <li>Note in monthly wildlife report</li> </ul>