WILDLIFE MITIGATION PLAN
DORIS NORTH PROJECT

Prepared for:

Miramar Hope Bay Ltd.
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Prepared by:

Andy McMullen's
BEAR WISE
14 Tees Court
Yellowknife, NT X1A 3L5

WILDLIFE MITIGATION PLAN DORIS NORTH PROJECT

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1. INTRODUCTION

This wildlife management plan is organized in subject specific modules that pertain to specific elements of the overall effort required to ensure safety to both personnel on site as well as animals that may frequent the Project area.

The plan is organized from the general to the specific and should be reviewed by **ALL** personnel who work at the Doris North Project area. Wildlife encounters may occur at any time and it is everyone's responsibility to ensure the safety of people and animals on site.

This wildlife management plan was prepared by:
Andy McMullen at BearWise of Yellowknife, NWT

2. MITIGATION PROCEDURE: WILDLIFE SAFETY TRAINING PLAN

PURPOSE

To ensure that all personnel at the MHBL Doris North Project are provided guidance on how to respond in a manner that is safe to both humans and wildlife should they encounter wildlife on or around the site.

SCOPE

This wildlife safety training guide outlines the recommended levels of training that specific groups of people at the MHBL Doris North Project site should receive. Training starts from the general to the specific and provides an opportunity for any one on site to become more aware of the wildlife and wildlife safety issues in the Doris North Project area.

OVERVIEW

The Doris North Project area provides both year-round and seasonal habitat for wildlife species. It is important that human activity at the Doris North Project site does not result in wildlife encounters that put people or wildlife at risk. All personnel on site have a role to play in ensuring human safety, conservation of wildlife, and documenting wildlife activities in the Project area.

PROCEDURE

Awareness

Site Orientation to include:

- General site rules regarding wildlife.
- No Feeding Wildlife policy
- Wildlife have the Right of Way
- No Littering policy
- Relevant sections of the Waste Management Plan
- Reporting Wildlife
- Encountering Wildlife
- Bear Encounters

General wildlife awareness training is self directed learning where people are able to obtain and view the educational materials dealing with wildlife found in the Doris North area.

- Species to include are grizzly bear, caribou, muskox, wolverine, fox and wolf.
- Printed publications will be stocked and made available in recreation areas.
- Videos can be signed out from the Environment office for private or group viewing in the TV lounges.
- Videos could also be shown on the camp TV channel at seasonally appropriate times i.e. caribou videos during the spring and fall migrations.

Wildlife Awareness training can be supplement with presentations by guest speakers who are knowledgeable about wildlife in the area.

Bear Awareness Training will be mandatory for anyone working outside or participating in leisure activities outside i.e. joggers, walkers, hikers, photographers etc.

- Training can be self directed by viewing the video Staying Safe in Bear Country or by attending a bear awareness presentation when available.
- Both the video viewing and presentation options will include the completion of a multiple choice test.

WILDLIFE SAFETY

Bear Safety Training provided by DSD officer or qualified contractor to include:

- Bear ecology
- Behaviour
- Human/ Bear encounters
- How to react in a bear encounter
- Prevention
- Detection
- Deterrents
- Field Worker Safety

Carnivore Safety Training provided by DSD officer or qualified contractor to include:

- Ecology and behaviour of Wolf, Fox and Wolverine
- Wildlife/ Human encounters
- How to react in a wildlife encounter
- Prevention
- Rabies
- Detection
- Waste Management Plan

Deterrent Training provided by DSD officer or qualified contractor to include:

- Ecology and behaviour of Caribou, Wolf, Fox and Wolverine
- Wildlife/ Human encounters
- How to react in a wildlife encounter
- Prevention
- Detection
- Waste Management Plan
- Wildlife Deterrent Plan
- Detailed Deterrent training

TRAINING	WHO
SITE ORIENTATION	EVERY EMPLOYEE, CONTRACTOR AND VISITOR
GENERAL WILDLIFE AWARENESS	EVERY EMPLOYEE, CONTRACTOR AND VISITOR
BEAR AWARENESS	EVERY EMPLOYEE, CONTRACTOR AND VISITOR
BEAR SAFETY TRAINING	ENVIRONMENT STAFF WILDLIFE RESPONSE TEAM EXPLORATION CREWS SURFACE SURVEYORS
CARNIVORE SAFETY TRAINING	ENVIRONMENT STAFF WILDLIFE RESPONSE TEAM EXPLORATION CREWS SURFACE SURVEYORS
DETERRENT TRAINING	WILDLIFE RESPONSE TEAM
WASTE MANAGEMENT PLAN	ENVIRONMENT STAFF WILDLIFE RESPONSE TEAM EMPLOYEES RESPONSIBLE FOR FOOD, FOOD WASTE, AND NON-FOOD WASTE HANDLING.

RESPONSIBILITY

The Environment Manager is responsible for:

- Ensuring that all employees, contractors and visitors at the Doris North site receive wildlife safety training appropriate to their roles and responsibilities.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

REFERENCES AND RELATED POLICIES

Doris North Project General Site Rules

Operational Procedure: Wildlife Sighting and Activity Log (See Section 2.)

Operational Procedure: Bear Encounters (See Section 9.)

Operational Procedure: Dealing with Bear Sightings, Encounters, or a Bear in Camp (See Section 10.)

Operational Procedure: Reporting Bear Sighting (See Section 11.)

Operational Procedure: Encountering Wildlife Carcasses (See Section 13.)

3. MITIGATION PROCEDURE: WILDLIFE SIGHTING & ACTIVITY LOG PROCEDURES

PURPOSE

To ensure that all personnel at the Doris North Project are aware of the need to complete the Wildlife Sighting and Activity Log.

SCOPE

Applies to all employees, contractors and visitors at the Doris North Project including the exploration crews on the Hope Bay belt.

OVERVIEW

Recording wildlife sightings and activity provides MHBL with a historical record of wildlife use of the area and can be used be the wildlife response team to predict timing of potential wildlife encounters.

PROCEDURE

- Whenever wildlife is spotted within the area of the Doris North Project the sighting is to be recorded in the Wildlife Sighting and Activity Log on return to camp.
- The information to be recorded includes:

  Date

  Recorders name.

  Location of wildlife observed

  The type and number of wildlife.

  A general description of the animals behaviour i.e. moving north, feeding, bedding etc.

TRAINING

- Induction Program for all employees, contractors, and visitors will focus on the need to report wildlife sightings in the Hope Bay belt.

RESPONSIBILITY

Every individual is responsible for:

- Reporting and/or recording wildlife sightings.

Environmental Staff are responsible for:

- Ensuring that the wildlife Sighting and Activity log is posted in a location accessible by all employees.
- Maintaining the Wildlife Sighting and Activity Log book and ensuring its accuracy.
- Compiling monthly summaries of the data from the log sheets.

The Doris North Project Environmental Manager is responsible for:

- Ensuring that all employees, contractors and visitors understand this policy and procedure.

REFERENCES AND RELATED DOCUMENTS

DEFINITIONS

Food Waste: Includes and food remains, wastes, or any packaging that contained food.

REFERENCES AND RELATED POLICIES / PROCEDURES

Induction Program

Operational Procedure: Wildlife Encounters (See Section 8.)

Operational Procedure: Reporting Bear Sightings and Encounters (See Section 11.)

Wildlife Safety Training Plan (See Section 2.)

4. MITIGATION / CONTINGENCY PROCEDURE: TRAFFIC MANAGEMENT PROCEDURES

PURPOSE

The purpose of the traffic management procedures is to reduce the risk of wildlife/vehicle collisions and the potential disturbance of wildlife from vehicle and aircraft traffic in the Doris North Project area.

SCOPE

Traffic management procedures apply to anyone operating vehicles or aircraft in the Doris North Project area during all phases of the MHBL Doris North Project. The procedure addresses:

- recommended traffic speeds;
- vehicle and aircraft operators directions regarding the presence of wildlife on or near roads and the airstrip; vehicle and aircraft operators notification of sensitive wildlife habitat to avoid.

NOTE: Vehicle traffic on roads is predicted to be the largest source of dust. Mitigation measures specific to dust from roads, airstrip and mine operations are contained EMS Section 4: Air Quality.

OVERVIEW

Project Sites of Concern:

The MHBL Doris North Project will include approximately 11.45 kilometres of service and haul roads including a widened 914 m section of service road which will serve as an all-weather airstrip.

- Main road (causeway to the mill area): 4.8 km long, 6m wide
- Tail Lake service road: 5.9 km, 4 m wide
- Explosives magazine access: 300 m, 4 m wide, links to the main road.
- Boat and float plane dock access road: 300 m long, 6 m wide
- Landfill Access Road: 150 m long, 6 m wide, links to the main access road to the camp.
- Underground trucks will haul the ore from the underground mine to a stockpile located on the surface near the ore processing plant.
- Airstrip: average 5 to 7 flights per week during the construction, reduced to between 2 and 4 flights per week during operation phase.

Vehicle traffic on these roads, and aircraft landing and taking-off from the airstrip present the potential for accidental wildlife mortality due to vehicle/wildlife collisions. Vehicle and aircraft traffic may also cause a disturbance to wildlife in the vicinity of the project site.

PROCEDURE

General:

- Wildlife are to have the right-of-way when crossing or attempting to cross roads or the airstrip.

- All vehicles are to be restricted to designated roads and prepared work areas within the designed footprint of the mine.
- Recreational use of off-road vehicles is to be prohibited.

Air Traffic:

- Aircraft are to maintain a minimum flying altitude of 300 m above ground level (AGL) or greater except during landings and take-offs.
- Aircraft are not to approach closer than 500 m from a raptor nest, waterfowl nesting area or caribou water crossings when any of these sites are active.
- Caribou will be herded off the runway prior to aircraft landings and takeoffs. Herding techniques are described in "Herding Guidelines".

Surface Vehicle Traffic Speeds:

- Main road (causeway to the mill area) – 60 km/hr.
- Tail Lake service road – 40 km/hr.
- Explosives magazine access road – 30 km/hr.
- Boat and float plane dock access road – 30 km/hr.
- Landfill access road – 30 km/hr.
- Underground trucks portal to a stockpile – 20 km/hr.
- Airstrip – 30 km/hr.
- Camp and Mill pad – 20 km/hr

Wildlife Advisory System:

The goal of the wildlife advisory system is to alert all Doris North Project employees and contractors that wildlife are on, or close to roads or the airstrip so that appropriate precautions are to be taken.

Wildlife sightings:

- Any wildlife sighted in the Doris North Project area is to be recorded in the "Wildlife Sighting and Activity Log".
- Any bear sighted **< 1 km** from the project footprint will be considered an encounter and the "Reporting Bear Sighting and Encounters" procedure will be followed.
- Wildlife **< 1km and > 500 m** from roads or the project footprint and moving towards project roads or infrastructure:
    - Reported to the Environmental Manager or designate via radio.
    - Environment Department will notify vehicle operators working in the area.
    - Sighting recorded in the "Wildlife Sighting and Activity Log". (Wildlife type, numbers etc.)
- Wildlife **< 500 m** from roads or the project footprint:
    - Reported to the Environment department, via radio.
    - When notified Environment personnel will be dispatched to the location to monitor the situation.

- Based on monitoring of the wildlife, the Environment department will advise Site Services Manager of appropriate action(s) to be taken.
- Each sighting is to be recorded in the "Wildlife Sighting and Activity Log".
- If appropriate, Site Services Manager to implement a Caribou / Muskox Watch.

Caribou / Muskox Watch:
Experience at other Nunavut and Northwest Territories mine sites shows that caribou or muskox are the species most likely to come into conflict with vehicles and aircraft at the Doris North Project. Based on this, extra precautions will be taken when dealing with these species.

For instance a "Caribou / Muskox Watch" system, based on the Caribou Advisory system currently in use at Diavik Diamond Mine in the Northwest Territories, will serve as a communication tool to alert vehicle and equipment operators of the presence of caribou or muskox on or near the project infrastructure. This advisory system will include the use of radio broadcasts and roadside signage to alert drivers of presence of caribou or muskox and what mitigation measures are to be put into effect.

Traffic or activity controls that may be put into place to minimize the risk of vehicle / wildlife conflict include, but are not limited to:

- reduced traffic speed.
- traffic rerouting or stoppage.
- construction and operations activities controlled or stopped.
- cancel or reschedule flights.
- herding or deterrent action.

Traffic or activity controls will remain in effect until monitoring by Environment personnel determines that the risk of vehicle / wildlife collisions has either been reduced or increased. Controls will be adjusted appropriately.

Advisories and specified actions are shown in the chart below. Codes and warning signs are to be posted at key areas on site.

DORIS NORTH PROJECT CARIBOU / MUSKOX WATCH			
CODE		TRIGGER	ACTION
GREEN	**NO CONCERN**	**NO CARIBOU OR MUSKOX WITHIN 500 M OF THE DORIS NORTH PROJECT INFRASTRUCTURE.**	**POSTED TRAFFIC SPEEDS REMAIN IN EFFECT IN ALL AREAS.**
YELLOW	**BE AWARE**	**CARIBOU OR MUSKOX** **< 500 M BUT >100 M** **OF THE DORIS NORTH PROJECT INFRASTRUCTURE.**	**TRAFFIC SPEED REDUCED TO** **30 KM/HR WITHIN 1 KM OF REPORTED WILDLIFE.** **POSTED TRAFFIC SPEEDS REMAIN IN EFFECT IN ALL OTHER AREAS.**
ORANGE	**CAUTION**	**CARIBOU OR MUSKOX** **<100 M OF THE DORIS NORTH PROJECT INFRASTRUCTURE.**	**TRAFFIC SPEED REDUCED TO** **20 KM/HR WITHIN 1 KM OF REPORTED WILDLIFE.** **TRAFFIC RESTRICTIONS MAY BE IN PLACE, GO TO CHANNEL ? FOR INSTRUCTIONS.**
RED	**ALERT**	**CARIBOU OR MUSKOX ON ROADS OR PROJECT INFRASTRUCTURE.**	**TRAFFIC RESTRICTIONS IN PLACE, GO TO CHANNEL ? FOR INSTRUCTIONS.**

In addition to presence, the numbers of animals and their behaviour will have a bearing on the level of alert implemented and the mitigation measures to be put into effect.

YELLOW	**LARGE HERDS OF CARIBOU WITHIN THE HOPE BAY BELT.**	**AIRCRAFT PILOTS NOTIFIED AND IF POSSIBLE THE AREAS ARE TO BE AVOIDED.**
ORANGE	**HERDS OF CARIBOU > 500 M FROM PROJECT INFRASTRUCTURE BUT DIRECTION OF TRAVEL IS TOWARDS PROJECT INFRASTRUCTURE.**	**TRAFFIC SPEEDS TO BE REDUCED.**
RED	**ANY NUMBER OF CARIBOU OR MUSKOX CROSSING OR ATTEMPTING TO CROSS A ROAD OR THE AIRSTRIP.** **TRAFFIC OR ACTIVITY IN THE AREA IS STRESSING THE ANIMALS PREVENTING THEM FROM CROSSING.**	**TRAFFIC OR ACTIVITY WILL BE STOPPED.** **HERDING ACTION MAY BE IMPLEMENTED IF ANIMALS STALL ON ROAD OR AIRSTRIP.**

Wildlife / Vehicle Collisions:

In the event that wildlife is injured or killed as a result of a collision with a vehicle at the MHBL Doris North Project site, the Department of Sustainable Development, Cambridge Bay will be contacted immediately.

- Injured wildlife will be put down as quickly and humanely as possible.
- Information and samples will be collected as outlined in the “Encountering Wildlife Carcasses” procedures.
- DSD will be asked to provide direction on disposal of carcass.

TRAINING

- Induction program.
- Vehicle and equipment operators will be provided a detailed briefing by their supervisors.

RESPONSIBILITY

Vehicle and aircraft operators are responsible for:

- Reporting wildlife sightings.
- Keeping informed of traffic advisories, both radio and signage.
- Immediately complying with advisories.
- Following the directions of Environment personnel at the scene.

Environment Department Personnel will:

- Monitor wildlife.
- Advise the Mine Manager of wildlife activity.
- Recommend mitigation action(s).
- Record animal presence, behaviour, mitigation measures taken and the results.
- Provide DSD with reports as required by DSD.
- Inform helicopter pilots to maintain a minimum flying altitude of 300 m AGL and not approach within 500 m of active caribou water crossings, raptor nests and waterfowl nesting areas.
- Inform pilots of the location of these sites and other sensitive wildlife habitat.

The Mine Manager will:

- Ensure that the traffic management procedures are implemented and enforced.
- Broadcast traffic advisories and direct site services to change advisory signage.
- Directs Wildlife Response Team (WRT) to implement mitigation measures.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

REFERENCES AND RELATED POLICIES / PROCEDURES

EMS Section 4: Air Quality

Operational Procedure: Wildlife Encounters (See Section 8.)

Operational Procedure: Reporting Bear Sighting or Encounter (See Section 11.)

5. MITIGATION / CONTINGENCY PROCEDURE: WILDLIFE DETERRENT PLAN

GOAL:

Respond to wildlife situations in ways that keep both humans and wildlife safe using humane wildlife control methods.

OBJECTIVES:

1. To provide direction to the Wildlife Response Team (WRT) members on techniques and procedures to be used to deter wildlife where wildlife may pose a threat to itself, people or property.
2. To provide background information on the various deterrent devices that may be applicable for deterring wildlife that is likely to be encountered at the MHBL Doris North Project.
3. To promote cooperative efforts that help industry, public agencies, and governments share and integrate information related to wildlife deterrent efforts.

GUIDING PRINCIPLES:

1. As a first priority WRT members will take mitigation actions.
2. All deterrent actions taken will start with the least intrusive methods, then increase in intensity up to the point that wildlife may be relocated or destroyed.
3. Contingency measures will be taken to remove wildlife from:
    - Service roads during a medical or environmental emergency.
    - Airstrip prior to landings and take-offs.
    - Inside exclusion fencing.
    - Potentially hazardous sites and activities.
4. The Wildlife Deterrent Plan actions are set out from methods that are least intrusive to those that are most intrusive. Animal behaviour and level of threat to humans or wildlife will guide Wildlife Response Team personnel in selecting the initial deterrent action.

These are guidelines; not rules to be followed blindly.

1. When Contingency measures are necessary, actions will be taken to analyze and report the problem and find a solution.

2. Deterrent actions taken should minimize interruption to construction, mining and other operational activities while still ensuring human and wildlife safety.

DETERRENT ACTION:

Mitigation activities are taken to lessen the likelihood that wildlife will:

- Become habituated to the site and its infrastructure.
- Obtain a food reward.
- Find shelter around buildings or in equipment storage or lay-down areas.
- Gain access to areas or substances that could be harmful to it i.e. fuel and chemical storage.
- Be injured i.e. collision with vehicle.
- Damage mine property.

Contingency measures are taken to remove wildlife from roads, airstrip, inside exclusion fencing and potentially hazardous sites and activities. Sites and activities potentially hazardous to wildlife include:

- Anywhere on the gravel pad on which the camp complex and mill facilities are located
- Remote sites i.e. Causeway and Explosive Magazine
- Mine portal and access road
- Fuel or chemical storage areas
- Container storage and lay-down areas
- Land Fill
- Land Farm and emergency dump ponds.
- Quarries and the "Safe Zone" of any surface blasting.

The only goal of deterrent actions is to ensure the safety of both humans and wildlife. Each deterrent action will stop as soon as the animal moves away from the potentially hazardous site or activity. The intensity of the contingency measure should increase only if the animal is not doing what it is intended to do.

Before taking any deterrent action, the Wildlife Response Team must first:

- Ensure that a safe avenue of escape is obvious and available to the animal.
- Establish and maintain radio contact with the appropriate managers to ensure that:
    - Traffic and other activities do not put the wildlife at additional risk.
    - Safe escape routes for the animal are protected or created.
    - People working in the area are warned of the planned deterrent
    - action and told what to do, i.e., enter buildings or remain indoors.

Wildlife should be relocated or killed only as a last resort. Relocation of wildlife is to be done by the Government of Nunavut's Department of Sustainable Development (DSD). If the wildlife is not an immediate threat to human safety, the decision to kill the animal must be made only in consultation with DSD.

Additional deterrent guidance specific to situations and certain species follows in:

- Wildlife Response Team Response to a Bear on Site
- Deterring Wolverine, Wolf and Foxes
- Herding Caribou

TRAINING:

Knowledgeable, trained personnel will select deterrent actions based on each wildlife situation. Wildlife control personnel must:

- Consistently increase skills,
- Evaluate the use of various deterrent techniques in specific situations, and
- Persist with actions to deter wildlife.

All Wildlife Response Team members and designated individuals will be required to hold a valid Canadian Possession-Acquisition Firearms Licence.

All Wildlife Response Team members will be required to take Advanced Bear Safety and Wildlife Deterrent Training specific to caribou, muskox, wolverine, wolf and foxes. This training will include sessions on:

- Wildlife ecology and behaviour,
- Prevention of wildlife-human encounters,

- Contingencies for wildlife human encounters,
- Proper use of deterrents,
- Recording and reporting procedures.

INVESTIGATION:

Following every deterrent action the Wildlife Response Team will try to determine why the animal was there or how it got inside a hazard area. Steps will be taken immediately to ensure practical corrective measures are implemented.

RECORDING & REPORTING:

Every deterrent action is to be recorded on a Wildlife Deterrent Report and submitted to the Environmental Manager for forwarding to DSD.

RESPONSIBILITY

The Environment Manager is responsible for:

- Appointing a Wildlife Response Team and ensuring that the WRT members receive appropriate training.
- Reporting the bear encounter or kill to DSD.
- Forwarding all Wildlife Deterrent Reports to DSD via Fax.
- Contacting DSD for direction on carcass disposal.
- Ensuring that the carcass is handled properly, and the skin and head are delivered to DSD in a timely manner.

The Wildlife Response Team is responsible for:

- Deterring Wildlife that is either endangering itself, humans or property.
- Recording the sighting on the Wildlife Sighting and Activity Log.
- Recording encounters and kills on Wildlife Deterrent Report.
- Skinning and preserving bear hide complete with claws and skull.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

Area of Human Activity: Includes any area within the project footprint where human activities take place.

REFERENCES AND RELATED POLICIES

Operational Procedure – Bear Encounters (See Section 9.)

Operational Procedure – Reporting Bear Sightings & Encounters (See Section 11.)

Operational Procedure – Bear WRT Response

Operational Procedure – Encountering Wildlife Carcasses (See Section 13.)

Bear Deterrents (See Section 14.)

Bear Deterrent Summary Tables (See Section 14.)

Deterrent Report (See Section14.)

Wildlife Safety Training Plan (See Section 2.)

6. MITIGATION / CONTINGENCY PROCEDURE: CARNIVORE DETERRENT PROCEDURES

INTRODUCTION

Wolverine, wolf and fox are relatively small and well camouflaged. This makes them difficult to spot. Signs such as tracks, scat, or diggings will often be the first indication that these animals are in the immediate area. A quick response to these early warning signs is critical in order to prevent negative wildlife/human encounters, property damage, or injury to the animal.

Whenever animal sign is spotted near areas of human activity or potential hazardous sites or activities, every attempt should be made to track or back track the animal to see what it is doing in the area. If the animal has gained access to shelter, a potential hazard, or food source, steps must be taken immediately to ensure that the animal is not able to gain access to these again. If the animal has found food, it will be back. The Wildlife Response Team must be prepared to deter every animal as soon as it is spotted.

Additional Deterrent Guidance:

For general guidance, see Deterrent Actions earlier in this Wildlife Deterrent Plan.

This section guides actions to be taken by the WRT to deter wolverine, wolf or fox at specific locations or potential hazards.

Caution:
Given the potential risk of injury to humans, the Wildlife Response Team must have a shotgun with them and be ready to use it any time a deterrent action is taken for wolverine, wolf or fox.

When approaching any fox keep a look out for signs of rabies.

If an animal is showing clear signs of being rabid and it is safe to do so kill it by shooting it in the body, not the head (the brain is required for lab testing). Following the procedures contained in the Wildlife and Diseases and Parasites Manual obtain the required sample, cleanup the kill site and dispose of the carcass as instructed by DSD.

ROADS & AIRSTRIP

In general:

- Wildlife have the “right of way”.
- Wildlife will not be blocked from crossing roads. If wildlife is crossing or attempting to cross the winter road or site roads, traffic will stop and wait for them to finish crossing.

WRT members will take a deterrent action on or adjacent to roads and airstrips when a wolf, wolverine or fox is:

1. resting on the road surface or airstrip. If wolverine, wolf or fox are allowed to remain undisturbed, the risk of vehicle/wildlife collisions is increased. In these vicinities often a food reward may habituate them to the site.
2. on the road or airstrip at the time of a medical emergency or toxic spill response that requires these facilities.
3. loitering within 100 meters of the main haul roads or within 100 meters of the airstrip 20 minutes prior to aircraft landing or takeoff.

In each case the WRT member will perform the following actions beginning at the lowest possible level appropriate to the situation. The aim is to get wildlife to move away from hazardous situations without causing unnecessary stress or possible injury to the animal.

Level 1.

- With the vehicle headlights on approach the animal slowly (< 5 km/hr.). When the animal starts to move, stop and allow it to move off on its own.
- If the animal stops moving, once again make a slow approach.
- Use the vehicles horn to try scare the animal off.
- When the animal leaves the road/airstrip continue to monitor it until it has moved off approximately 100 meters from the road.

Level 2.

- If the wolverine, wolf or fox did not respond to the vehicle, slowly approach the animal on foot all the while maintaining a safe distance. Do only what is necessary to get the animal to move.
- Approach no closer than 50 meters. If the animal starts to move off, stop the approach.
- If the animal stops moving, continue the approach.
- If wolverine, wolf or fox do not respond to these approaches by people on foot, it is necessary to increase the disturbance to the animal. Continue to approach making noise by clapping hands or shouting.
- If clapping and shouting do not cause the animal to move off, use an air horn.
- When the wolverine, wolf or fox leaves the road/airstrip, continue to monitor them until they have moved off and are approximately 100 meters from the road or airstrip.

Level 3.

- If the WRT approaches to approximately 50 meters from the animal and it still has not moved off, the team will stop its approach.
- Use noise making explosive type deterrents to try to scare the animal off. During winter or night deterrent actions, use a noise maker that also emits light. This helps to illuminate the animal and provides another level of deterrence.
- If the animal is not responding to noise making deterrents at a distance, move to less than 50 meters and use the appropriate deterrent for the distance between the shooter and the animal. (See Deterrent Range Chart)
- When the animal begins to move away, stop your deterrent action.
- If the animal stops moving, resume the deterrent action.
- If the animal moves off, continue to monitor it until it has moved approximately 100 meters from the road or airstrip.

Level 4:

- If the animal does not respond to the close approach of people and deterrents, the animal may have become habituated to people and/or obtained food from them. As well the animal could be sick.
- If the animal does not respond to noise making deterrents, use non-lethal projectiles. Select the type of non-lethal projectile based on the species and the distance from the animal (See Deterrent Range Chart). Wherever possible use a non-lethal projectile round with marker dye so that the animal can be monitored and the effectiveness of the deterrent action evaluated.
- When the animal starts to move away, stop your deterrent action.
- If the animal stops moving, resume the deterrent action using non-lethal projectiles or noise makers.

- If the animal moves off, continue to monitor it until it is approximately 100 meters from the road or airstrip.
- If the animal refuses to move or becomes aggressive, it may be necessary to shoot the animal for safety reasons.

INSIDE EXCLUSION FENCING

Exclusion fencing is used to keep wildlife out of areas where a hazard might exist. However there is a potential that wildlife may get inside a fence and become trapped. This is likely to occur if people do not close gates.

Extreme care must be taken if wildlife is trapped within exclusion fencing. In order to free the animal, a person may have to come in very close to open a gate or provide an escape route for the animal. Close approach may panic the animal and cause it to become aggressive. The agitated animal may injure itself on the fencing or enter the hazard that the fence surrounds. In each case the WRT member will perform the following actions beginning at the lowest possible level appropriate to the situation. The aim is to get wildlife to move away from hazardous situations without causing unnecessary stress or possible injury to the animal.

Level 1.

- Use binoculars to assess the situation from a safe distance. This will minimize any further stress to the animal.
- Have one member of the WRT team approach the fence and open all gates. Start with the one that provides the wildlife with the shortest and safest escape route. Once all gates are open, retreat to join the rest of the team.
- Monitor the animal. Give it enough time to find an opening and escape.
- If the wildlife does not find the opening or its movements inside the fence put it at risk, proceed to “Level 2”.

Level 2.

- Proceed slowly towards the fence from the direction that will cause the animal to move towards the opening in the fence, but not drive it into the potential hazard. Remain on the outside of the fence and only approach close enough to get the animal to move in the right direction.
- Once the animal is outside the fence, ensure that all gates are closed.

Level 3.

- If the animal is unable to spot the opening or is reluctant to go through the opening, make the opening larger if possible. Cut the chain link fasteners and peel back one or two sections of the fencing. *(If during construction the fencing fabric is marked with fluorescent orange paint at joins or overlaps, this process will be quicker.)*
- Once a larger opening is made, move away from the fence so that the animal has the chance to find the opening itself.
- If the animal still does not exit the fence, once again try to direct the animal from outside of the fence by making noise in the appropriate location.

Level 4.

- If the animal still has not moved out by way of the opening, and the exclosure is large enough to manoeuvre the animal safely from within the exclosure, enter the fence at the opening furthest from the point that the animal’s intended exit point.
- Proceed slowly on foot and attempt to direct the animal towards the nearest safe escape route.
- Recruit other people as necessary to assist with the herding action.

POTENTIAL HAZARDOUS SITES or ACTIVITIES

Potential hazardous sites or activities include:

- Anywhere on the gravel pad on which the camp complex and mill facilities are located.
- Remote sites i.e. Causeway and Explosives Magazine.
- Mine portal and access road.
- Fuel or chemical storage areas.
- Container storage and lay-down areas.
- Land Fill.
- Land Farm.
- Emergency Tailings Dump Catch Basins, when in use.
- Quarries and the "Safe Zone" of any surface blasting

In each case the WRT member will perform the following actions beginning at the lowest possible level appropriate to the situation. The aim is to get wildlife to move away from hazardous situations without causing unnecessary stress to the animal or possible injury. Do only what is necessary to get the animal to move.

NOTE:
The Wildlife Response Team member needs to be as mobile as the animal they are trying to deter. As well the WRT member must maintain visual contact with the animal until it leaves the area. Therefore use of a vehicle is limited in deterring wildlife from potential hazardous sites. In those situations where the use of a vehicle is practical, refer to Level 1 response for Roads & Airstrip.

Caution:

- Before approaching wildlife make sure the animal is aware of your presence. From as far away as possible let the animal know where you are by making noise i.e. talking, clapping hands etc.
- When following wildlife be sure to make wide swings around corners and other visual obstructions to prevent sudden encounters with the animal.

Level 1.

- Slowly approach the animal on foot to no closer than 50 meters if possible. Get closer if necessary to establish or maintain visual contact with the animal.
- If the animal starts to move off, stop the approach but do not let the animal get out of sight.
- If the animal stops moving, continue your approach.
- If the wolverine, wolf or fox do not respond to earlier approaches by people on foot, increase the disturbance to the animal. Continue to approach but make noise by clapping hands or shouting.
- If clapping and shouting do not cause the animal to move off, use an air horn. The air horn is well suited for working in confined or congested areas where the WRT must closely approach the animal.
- When the wolverine, wolf or fox leaves the hazard area, continue to monitor the animal until it is approximately 100 meters from the hazardous site or activity.
- If the animal has not begun to move off if approached to about 50 meters, stop the approach.

Level 2.

- At about 50 meters, use noise making explosive type deterrents to try to scare the animal off. During winter or night deterrent actions, use a noise maker that also emits light. This helps to illuminate the animal and provides another level of deterrence.

Caution:

Explosive type deterrents present a fire risk and should never be used in areas where a fire hazard exists i.e. the fuel storage areas.

- If the animal does not respond to noise making deterrents at a distance, move to less than 50 meters and use the appropriate deterrent for the distance between the shooter and the animal. (See Deterrent Range Chart)
- When the animal begins to move away, stop your deterrent action.
- If the animal stops moving, resume the deterrent action.
- If the animal moves off, continue to monitor it until it is approximately 100 meters from the hazardous site or activity.

Level 3.

- If the animal does not respond to the close approach of people and noise making deterrents, the animal may have become habituated to people and/or obtained food from them. The animal could also be sick.
- If the animal does not respond to noise making deterrents, use non-lethal projectiles. Select the type of non-lethal projectile based on the species and the distance from the animal (See Deterrent Range Chart). Wherever possible use a non-lethal projectile round with marker dye so that the animal can be monitored and the effectiveness of the deterrent action evaluated.
- When the animal starts to move away, stop the deterrent action.
- If the animal stops moving, resume the deterrent action using non-lethal projectiles or noise makers.
- If the animal moves off, continue to monitor it until it is approximately 100 meters away from the hazardous site or activity.
- If the animal refuses to move or becomes aggressive, it may be necessary to shoot the animal for safety reasons.

Deterrent Range Chart

Launcher Type	Deterrent	Approx. Range
Pencil Launcher	Banger	15–20 m / 50–65 ft
15 mm Pistol Type	Banger	23–27 m / 75–90 ft
	Screamer	76–91 m / 250–300 ft
9 mm Pistol Type	Banger	23–27 m / 75–90 ft
	Screamer	76–91 m / 250–300 ft
12 Gauge Shotgun	Shell Cracker	50–60 m / 164–200 ft
	Screamer / Whistle Cracker	60 m / 200 ft
	Rubber Bullet (Strike II)	40 m / 130 ft
	Bean Bag (Close Range)	3-15 m / 10-50 ft
	Bean Bag (Standard)	9-30 m / 30-100 ft

TRAINING

- Wildlife Response Team members and designated individuals will be required to hold a valid Canadian Possession-Acquisition Firearms Licence.
- Advanced Bear Safety Training is required. This training will include sessions on bear biology, bear behaviour, and bear human encounters, what to do in an encounter, prevention, detection and deterrents. Training will also include sessions on the proper use of deterrents, bear response planning and reporting procedures.

RESPONSIBILITY

The Wildlife Response Team is responsible for:

- Recording the sighting on the Wildlife Sighting and Activity Log.
- Recording encounters and kills in Wildlife Encounter Report.
- Skinning and preserving hide complete with claws and skull.

The Environment Manager is responsible for:

- Reporting the encounter or kill to DSD.
- Forwarding all Wildlife Encounter Reports to DSD via Fax.
- Contacting DSD for direction on carcass disposal.
- Ensuring that the carcass is handled properly, and the skin and head are delivered to DSD in a timely manner.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

Area of Human Activity: Includes any area within the project footprint where people are active.

REFERENCES AND RELATED POLICIES

Operational Procedure – Bear Encounters (See Section 9.)

Operational Procedure – Reporting Bear Sightings & Encounters (See Section 51.)

Operational Procedure – Encountering Wildlife Carcasses (See Section 13.)

Bear Deterrents (See Section 7.)

Bear Deterrent Summary Tables (See Section 14.)

Deterrent Report (See Section 14.)

Wildlife Safety Training Plan (See Section 2.)

7. MITIGATION / CONTINGENCY PROCEDURE: BEAR DETERRENTS

BEAR DETERRENTS

Prevention is key to bear safety.
Proper food storage, garbage disposal and camp maintenance reduce bear problems economically. Sometimes, however, bears are attracted to clean well-maintained camps.

Every person who works or travels in bear country should have a way to deter (chase away) an approaching bear. Appropriate use of proven deterrents can increase human safety and reduce the need to kill problem bears.

Deterrents have two purposes:
1) in the short-term, to protect people and property.
2) in the long-term, to teach bears to avoid humans and areas of human activity.

A deterrent can get you out of a tight situation safely – without the need to shoot a bear. However a bear that has previously obtained human food or garbage, even at another location, may be difficult to deter.

Make sure you
- Deter every bear that approaches your camp, and deter the bear every time it returns.
- Eliminate odours that attract animals. This is critical to the successful use of deterrents.

Commonly bears are deterred by pepper spray, loud noises, non-lethal projectiles, electric fences, or being chased by vehicles. As well, bears that do not obtain food will move off on their own.

Capsaicin “Pepper" Spray
Pepper spray contains capsaicin, a natural component of cayenne pepper. Capsaicin is a strong irritant to the eyes and nose. It also closes off the bronchial tubes, the airways of the lungs.

Capsaicin spray has effectively repelled black and grizzly bears in some circumstances. It is not well tested on polar bears. Capsaicin sprays have become very popular in recent years. It is a readily available non-firearm deterrent and can be carried in areas where firearms are prohibited.

Pepper sprays have been designed as a last resort deterrent i.e. to escape from an attack. During use, the spray is directed at the face of the bear from a distance of 3-6 m (10-20 ft) or less.

Always consider
- Wind can carry pepper spray back to the user.
- Pepper spray cans may not work in cold weather.
- Bronchial conditions will be aggravated. Make sure help is nearby.

Noisemakers
Noisemakers used to deter bears include warning shots, horns, sirens or explosive devices that are fired from specialized launchers or 12-gauge shot guns. They may become less effective with repeated use.

Warning Shots
Warning shots are the least effective method to deter bears.

Although firearms make a loud noise at their muzzle when fired, a distant bear may not hear much of a noise. However warning shots can be used to scare away an approaching bear. If need be you can use lethal force if some cartridges remain.

Always

- Make sure the bear knows that you are there before you fire a warning shot.
- Shoot in the air off to the side of the bear. Do not aim directly at the bear.
- Keep track of shots. Each warning shot fired means one less shell or cartridge in the gun that you may need to shoot the bear.

Before you fire a shot make sure that there are no people in a position where they might be hit. This is easy to overlook in a tense situation.

Horns

Hand-held air horns produce loud noises that may prevent a surprise encounter while you travel or deter an approaching bear. Hand-held horns are small, portable and easy to use.

An alternative to a compressed air canister horn is an air horn pressurised using a bicycle pump. The canister can be emptied for transportation, then quickly recharged at your destination. An empty canister is not subject to dangerous goods shipping restrictions. Fog or signal horns, sounded by blowing through a mouthpiece attached to a plastic megaphone, are also available.

Always:

- Alert a bear to your presence well before it has seen you.
- Register compressed air canister horns (boat horns) under dangerous goods shipping restrictions. Shipping costs can be expensive.

Sirens

- Commonly sirens are permanently mounted on equipment or buildings. Small portable sirens are available as well.

Always:

- Use a siren in conjunction with a trip wire or motion detector for greater effectiveness.
- Be able to easily distinguish the siren's sound from other emergency alarms.

The human voice is also an effective noisemaker. A loud noise is not always required. Simply talking in a low tone is often enough to let the bear know what you are.

Explosive Type Deterrents

Explosive deterrents are fired from specialized launchers or from 12-gauge shotguns. These deterrents send loud bangs, screams, or whistles toward an approaching bear. They have a range of 15–65 m (49–213 ft) and are more effective at long distances than other noisemakers. Table 1 shows the range of various types of explosive deterrents with specific launchers.

Two common groups of explosive deterrents are:

Shell crackers, scare cartridges, and bangers all contain a fuse. These fused projectiles travel 15–60 m (50-200 ft) before exploding. There is an initial noise at the launcher muzzle followed by a louder noise from the projectile when it explodes.

Screamers and Whistlecrackers make a continuous high-pitched noise. These projectiles may emit a bright light or explode with a loud bang at the end of their flight. The light emitting

version provides a visual display that is prominent at night. In addition to scaring a bear these provide a light source with which to see the bear.

Always:

- Make the bear aware of your location before shooting. If the bear does not know where you are, it may run towards you by chance.
- Judge your distance to the bear carefully. Then shoot at the appropriate range. If an explosive deterrent lands behind a bear, the blast may drive the bear toward you.
- Avoid using explosive deterrents in dry vegetation, and around volatile chemicals and gases. These can be a fire hazard.

SPECIALIZED DETERRENT LAUNCHERS

Pencil launchers are pencil-size devices used to fire "bear banger" cartridges. The cartridges or "bangers" are threaded into the end of the "pencil". These devices easily fit in a shirt or jacket pocket.

Pencil launcher considerations:

- Fire flares and other emergency signal cartridges as well as bangers.
- Fire single shots and are slow to reload. The spent casing must be removed and a new cartridge screwed on before it can be fired again.
- Require more expensive replacement cartridges than those for pistol launchers; however the launcher is less expensive.

Pistol Launchers fire a variety of 15mm scare and signal cartridges. These single or multi-shot launchers are pre-loaded with .22 calibre (6mm) hot blanks. The deterrent cartridges are placed into the end of the muzzle when needed. Used with "bangers" and "screamers" they are effective, practical, inexpensive and easy-to-use bear deterrents.

Pistol launcher considerations:

- Fire multiple rounds of deterrents rapidly.
- Launch a wide variety of scare and signal cartridges.
- Can be pre-loaded with blanks and safely carried in a quick-draw holster for fast and easy use.

12-Gauge Shotguns can fire shell crackers and whistle crackers over a great distance.

Always:

- Fully load the magazine with lead slugs so that you are prepared if a bear attacks.
- Place deterrent rounds directly into the chamber of the shotgun, one at a time.

Use a shotgun that has an open or cylinder choke (no narrowing of the barrel at the muzzle) and has either a hinge or pump action.

Warning:
Do not use a semi-automatic shotgun to fire bear deterrents. The low powder loads in explosive and non-lethal deterrent rounds do not produce enough pressure to properly work the action. Rounds can get jammed in the action rendering the firearm useless.

Do not fire a 12-gauge shell cracker at a bear closer than 65 m. The shell will explode behind the bear potentially chasing the bear toward you.

Table 1. Approximate range of various deterrents from specific launchers.

Launcher Type	Deterrent	Approx. Range
Pencil Launcher	Banger	15–20 m / 50–65 ft
15 mm Pistol Type	Banger	23–27 m / 75–90 ft
	Screamer	76–91 m / 250–300 ft
9 mm Pistol Type	Banger	23–27 m / 75–90 ft
	Screamer	76–91 m / 250–300 ft
12 Gauge Shotgun	Shell Cracker	50–60 m / 164–200 ft
	Screamer / Whistle Cracker	60 m / 200 ft
	Rubber Bullet (Strike II)	40 m / 130 ft
	Bean Bag (close range)	3-15 m / 10-50 ft
	Bean Bag (standard)	9-30 m / 30-100 ft

Transportation of Dangerous Goods
Pepper spray, compressed air canister type"air horns" and all explosives are considered dangerous goods in Canada. These deterrents must be shipped under the Transportation of Dangerous Goods Act.

NON-LETHAL PROJECTILES

Noise alone will not always scare a bear away. Non-lethal projectiles are designed to inflict pain to a bear, but not penetrate the hide or injure the bear.

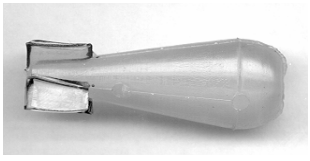
Non-lethal projectiles for bears can be broken into two broad categories based on the firing device

- 12-guage shotgun, and
- specialized launchers.

12-GUAGE SHOTGUN PROJECTILES

Plastic Bullets are also called ferret slugs, bear deterrent rounds, or soft slugs. The plastic slug is a torpedo shaped projectile made of polyurethane plastic. Plastic slugs have been used in Nunavut and the Northwest Territories since the 1980's to successfully deter black, grizzly and polar bears. Fins on the back of the torpedo shape are meant to keep the slug's trajectory within a 1-foot diameter circle at 40 m (130 ft).

There have been complaints about the accuracy of some rounds. Because the nose of the torpedo shape is round, it is difficult to crimp the end of the shell casing the same way each time. The crimping process may push the projectile down into the casing further than intended. This causes the fins to bend; then accuracy is lost.



The **Strike II rubber slug** is more commonly used over the plastic bullet. They are more accurate and hit with more force. The projectile is made of soft rubber and shaped like an hourglass. When the Strike II slug hits the bear, the soft rubber flattens out, or mushrooms, quickly. This prevents hide penetration. The back of the rubber slug is hollow and lighter than the front, similar to a regular lead slug. This helps to increase accuracy.

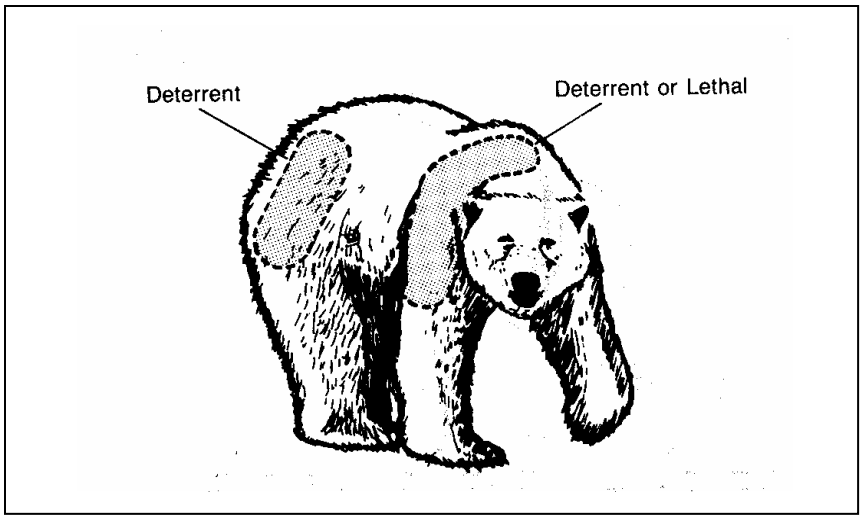
The **"Bean Bag"** projectile is another non-lethal option for bears at close range. Bean bag rounds have been effective in deterring bears.

Fairly recently developed, this bear deterrent is a fabric bag filled with lead shot that will not penetrate the bear. On impact the bag collapses, and the shot acts as a fluid mass. Its energy is distributed over a surface area of approximately 26 sq. cm (4 sq. inches). The solid blow delivered by the bean bag has been described as being comparable to a line drive from a baseball or a punch from a professional boxer.

Bean bag rounds for the 12 gauge shotgun come in a variety of loads. Each load is effective for a different range. Some manufactures also make a Dye Marking model. The fabric bags are coated with a yellow dye for marking the bear. This marking is handy where the three-strike rule is used for repeat offenders.

When firing non-lethal projectiles from a 12-guage shotgun, always:

- Load deterrent cartridges directly into the chamber of an open-choked shotgun.
- Let the bear know your location before firing.
- Take care not to startle a bear at close range.
- Make sure the bear has a clear path to escape.
- Have an experienced person with a loaded firearm as backup.
- Fire at a large muscle mass of a bear such as the shoulder or rump.



Recommended placement of deterrent and lethal hit on bears.

Be Aware!
In order to use deterrents safely and skilfully you must train and practice on a regular basis.
Read and follow the manufacturer warnings and instructions carefully.
Access to deterrents should not replace prevention and caution.

Vehicles

A truck, snow machine, all terrain vehicle or helicopter can be used to chase away bears. Sometimes starting and revving the engine is enough.

Trucks, and other vehicles that are restricted to road use, are the least effective means for chasing bears. Bears can quickly learn that a truck can not follow them off the road. However trucks do allow you to get nearer the bear to use other deterrent options more safely than if you had to approach by foot.

Snowmobiles and ATVs have the advantage of being able to leave the roadways and so are more effective than trucks to chase bears. However the driver is at far greater risk in the open.

When using a vehicle to deter a bear:

- Stay at least 30 m (100 ft) behind the bear when chasing with a truck, snowmobile or ATV.
- Go slow. There is no need to make the bear run. The faster you go, the greater the chance of injury to the bear and you!
- Only approach close enough to get the bear to move in the right direction.
- Work in pairs when using snowmobiles and ATVs.

Do not:

- Chase a bear with a vehicle for any reason other than personal protection. Unnecessary disturbance or harassment is unlawful.
- Chase a bear for more than ten minutes or 3 km (2.2 miles), especially if it is not in good condition. The bear may become overheated and injure itself.

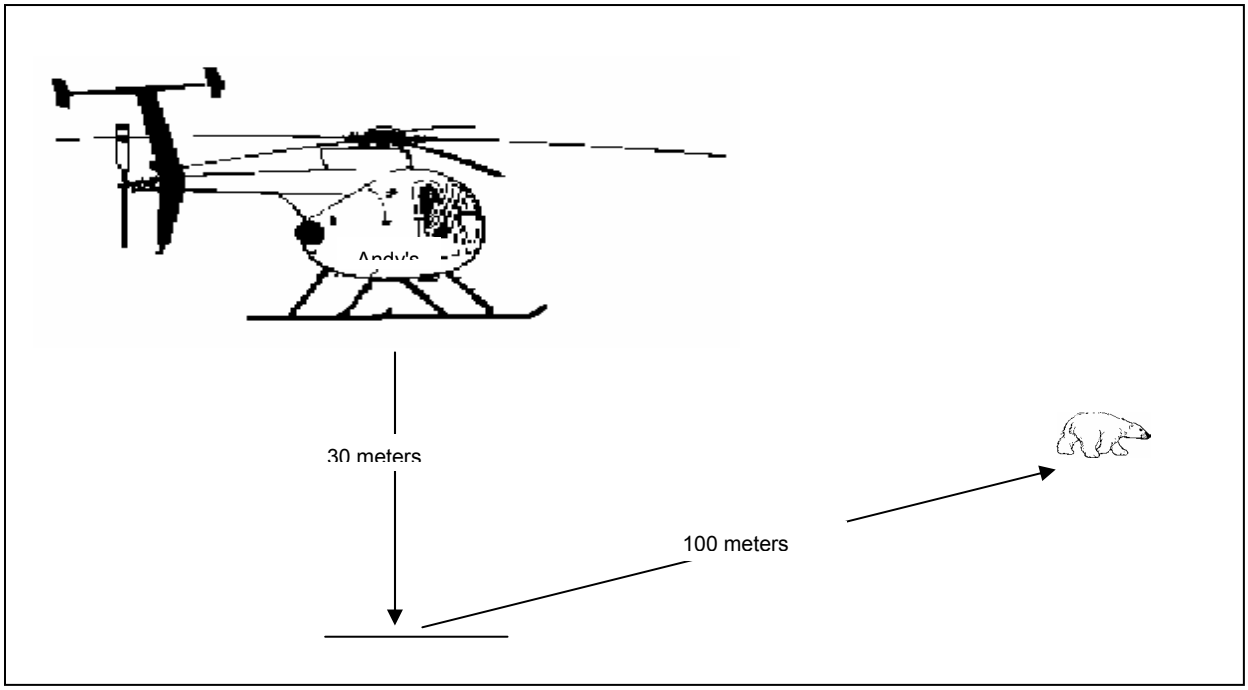
Helicopters

Helicopters can be used to deter a bear. However it is illegal to harass wildlife with aircraft. Only for reasons of human safety is it legal to "push" a bear using a helicopter.

If a helicopter is used to deter a bear, the pilot should:

- stress the bear as little as possible. A stressed bear running for a distance can overheat and injure itself.
- keep the helicopter well back from the bear. The minimum distance between the helicopter and the bear is 100 meters back and 30 meters up. (see figure: Minimum helicopter chase distances)
- keep the bear in visual contact. This should be done by taking the helicopter to a higher altitude rather than getting closer than the minimum distances.
- only get close enough to the bear to move it, not fly over it. A bear moving at a fast walk can cover a lot of ground quickly and efficiently; there is no need to run the bear.
- **DO NOT** push a bear for more than ten minutes or 3 km (2.2 miles).

Minimum helicopter chase distances



Electric Fences

A well-maintained electric fence can keep bears out of your site. Electric fencing is an effective deterrent for black and grizzly bears. Initial test results by the Nunavut Wildlife Service show that electric fences also deter polar bears during the snow free seasons, even in very dry soil conditions.

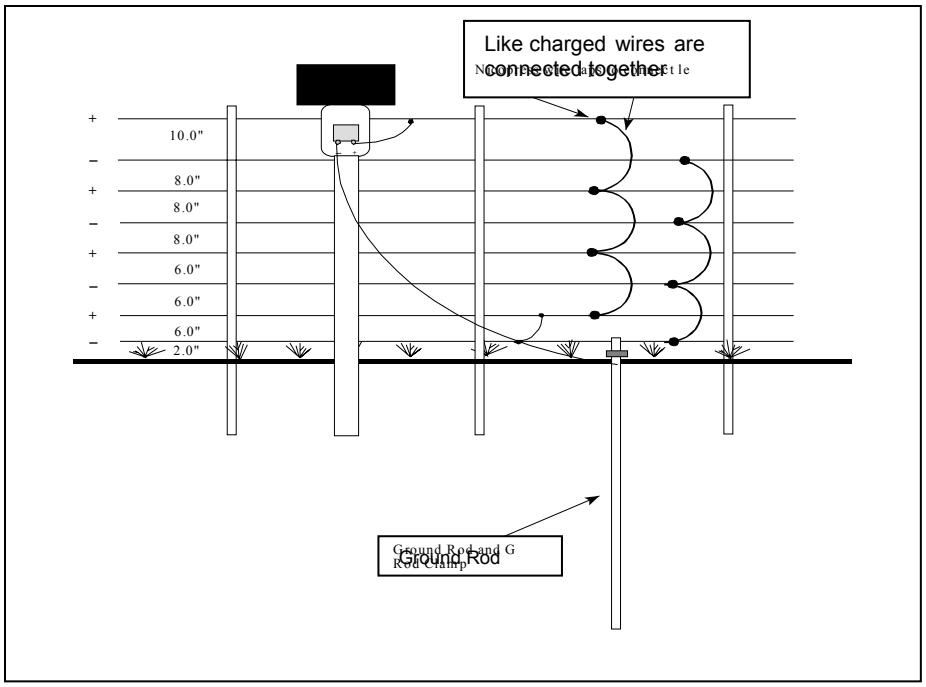
The fence consists of multiple strands of positively or negatively charged wire (see figure: 8 wire Hi-Tensile Electric Bear Fence). Every second strand is charged positive. A bear that tries to push through the fence gets a shock when it contacts a positive and negative strand.

The light gauge temporary fencing or more permanent high tensile fencing can be used in many applications. In Nunavut and the Northwest Territories electric fencing has deterred bears at land fills, exploration camps, mine sites, outpost camps, research camps (see figure: Daring Lake Research Station) and caribou outfitting camps.

The fence chargers used in bear fencing meet all C.S.A. & UL standards and present no danger or hazards to humans. A shock from an electric fence is unpleasant but does not do lasting harm to the animal. Humans are safe should they accidentally contact 2 wires. A shock from the fence can hurt but not injure.

The voltage is high (5,000 - 10,000 volts); but the current (amperage) is low (.01 amps). The electrical charge is pulsating. The charge lasts (pulse width) .0004 of a second at a time. Then for .75 of a second, there is no electric current.

This combination of pulsating charge and low amperage ensures safety.



8 wire Hi-Tensile Electric Bear Fence.

Daring Lake Research Station surrounded by an electric fence to deter grizzly bears.

Bear Resistant Containers

Usually if a bear does not find food, it will not persist. The containers can be used to increase safety and security in "problem bear" areas, or in places where other methods of caching food are impractical.

An **open top steel barrel** has a removable top that is secured to the barrel body with a metal ring. The ring is tightened with either a nut and bolt closure, or a lever mechanism. These drums are available in sizes ranging from 1.3 litres (3 gallons) to 322 litres (71 gallons).

Open top steel barrels are excellent for storing emergency supplies and rations. They are also useful for the off-season storage of non-perishable food items in camps, which must be left unattended for short periods of time.

Open top steel barrels can be used to store garbage temporarily where incineration is not an option. The outside of the barrel must be kept clean and free of garbage odours. Be sure to store the drums in a shaded area. A closed drum sitting in direct sunlight may become a garbage pressure cooker. As soon as possible the barrels should be transported to a proper disposal site and cleaned well after emptying.

Sea-lift containers may be suitable for large semi-permanent camps and permanent industrial sites. These containers can store food, petroleum products or industrial chemicals that could be harmful to wildlife.

Oil seismic camps in Alaska have used large "Conex" or sea-lift containers to keep food, garbage and chemicals away from bears.

Corrugated Steel Grain Storage Bins have been used in barren-ground caribou outfitting camps and forest fire fighting base camps in the Northwest Territories in the off-season to store camp equipment. Outfitting camp use of a grain bin to store hunters' kills works well to deter grizzly bears. Use in polar bear country is encouraged.

Grain bins are lighter and easier to transport than sea-lift containers. A 14' diameter grain bin and wooden floor complete with 8" x 8"beams can fit in a twin otter. Bins can be disassembled and moved as necessary.

Firearms

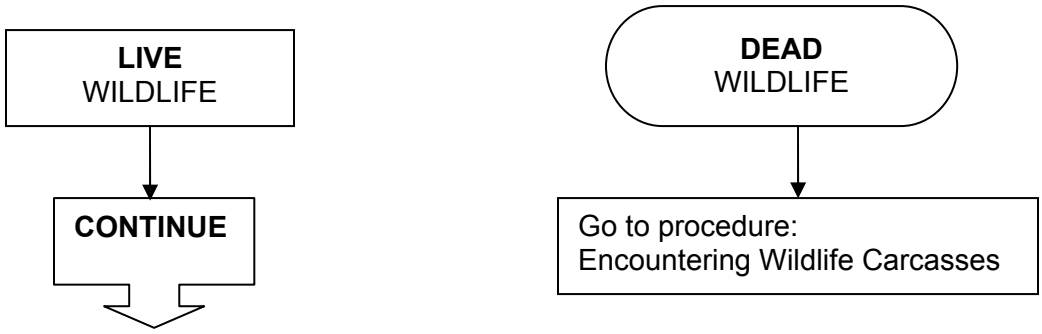
Even with the best prevention measures in place, remote camps should have at least one firearm on site. This firearm needs to have the capacity to kill any bear that presents a serious and immediate threat to human safety. A high powered rifle (30 calibre or larger, with 200 grain soft point ammunition) or a short-barrelled 12-gauge shotgun when used with slugs can provide reliable bear protection. Shotguns can also be used to launch noisemakers and non-lethal projectile deterrents.

Always:

- Keep a firearm in a readily accessible location, and make sure all appropriate persons know where it is and how to use it.
- Keep the firearm magazine loaded at all times. Put a shell in the chamber only when ready to fire.
- Train one person to be responsible for firearms and their maintenance
- Practice and review knowledge of firearm safety regularly.

Be Aware!
A firearm is not a substitute for other preventative measures or proper camp management

8. CONTINGENCY PROCEDURE: WILDLIFE ENCOUNTERS



PURPOSE

To ensure that all personnel at the MHBL Doris North Project are provided guidance on how to respond in a manner that is safe to both humans and wildlife should they encounter wildlife on or around the site. Remember wildlife has the right-of-way.

SCOPE

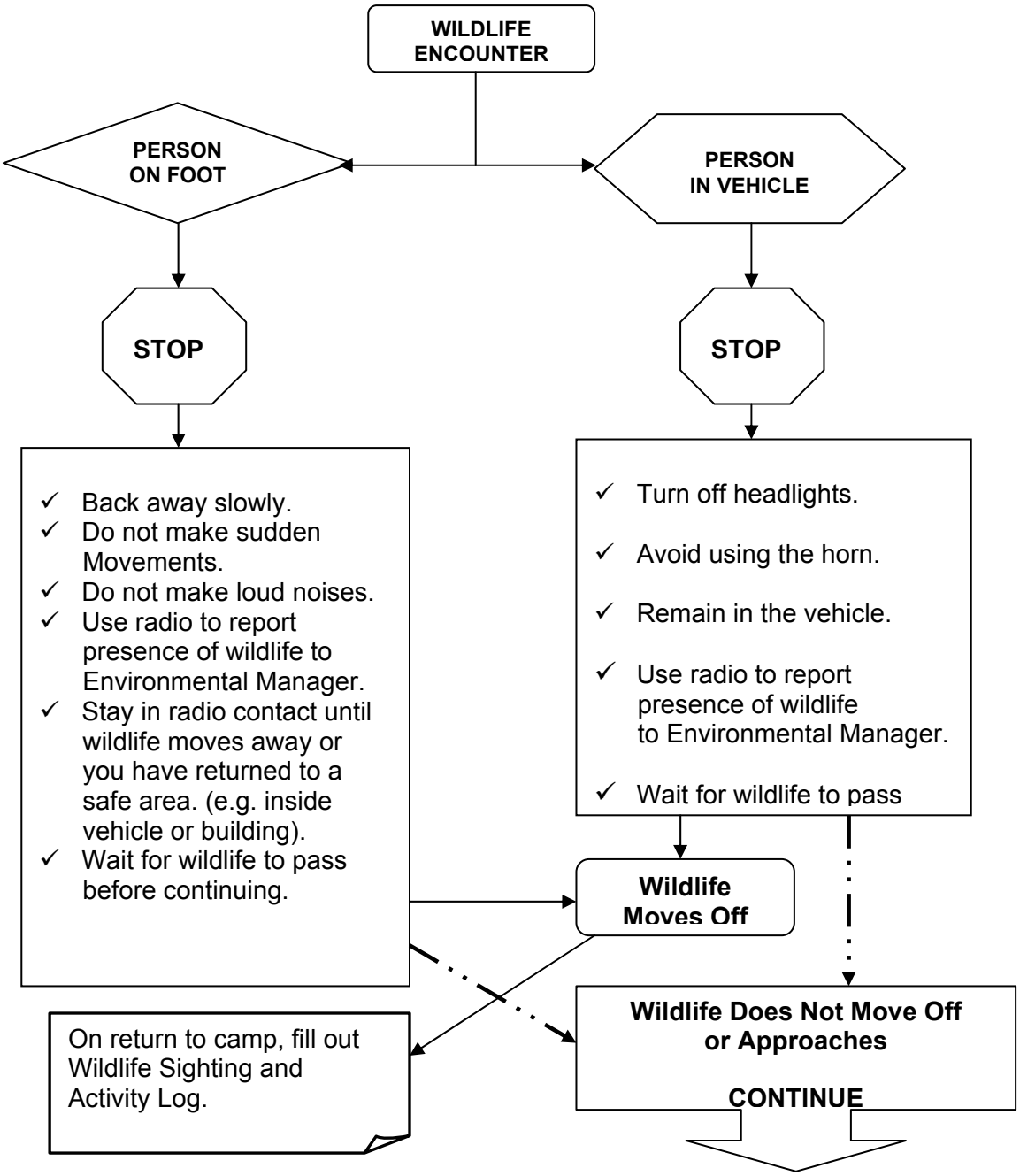
This Operation Procedure applies to all personnel at the Doris North Project, including project personnel at Windy Lake Camp, who encounter wildlife on or around the site.

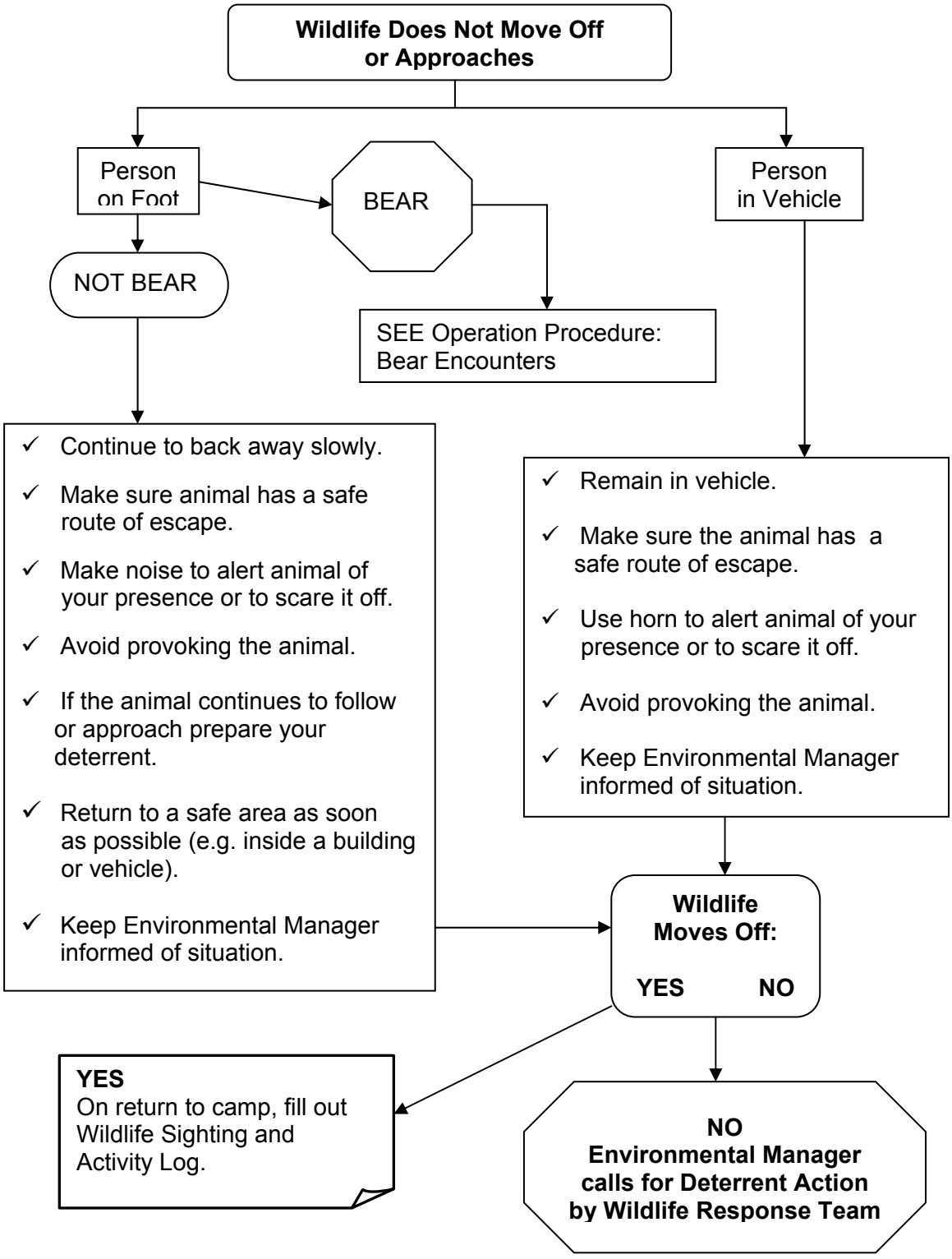
OVERVIEW

The Doris North Project area provides both year-round and seasonal habitat for wildlife species. It is important that human activity at the Doris North Project site does not result in wildlife encounters that put people or wildlife at risk. All personnel on site have a role to play in ensuring human safety, conservation of wildlife, and the documentation of wildlife activities in the area.

PROCEDURE

See following pages.


WILDLIFE ENCOUNTER
PERSON ON FOOT
PERSON IN VEHICLE
STOP
STOP
✓ Back away slowly.
✓ Do not make sudden Movements.
✓ Do not make loud noises.
✓ Use radio to report presence of wildlife to Environmental Manager.
✓ Stay in radio contact until wildlife moves away or you have returned to a safe area. (e.g. inside vehicle or building).
✓ Wait for wildlife to pass before continuing.
✓ Turn off headlights.
✓ Avoid using the horn.
✓ Remain in the vehicle.
✓ Use radio to report presence of wildlife to Environmental Manager.
✓ Wait for wildlife to pass
Wildlife Moves Off
Wildlife Does Not Move Off or Approaches
CONTINUE
On return to camp, fill out Wildlife Sighting and Activity Log.


Wildlife Does Not Move Off or Approaches
Person on Foot
BEAR
Person in Vehicle
NOT BEAR
SEE Operation Procedure: Bear Encounters
✓ Continue to back away slowly.
✓ Make sure animal has a safe route of escape.
✓ Make noise to alert animal of your presence or to scare it off.
✓ Avoid provoking the animal.
✓ If the animal continues to follow or approach prepare your deterrent.
✓ Return to a safe area as soon as possible (e.g. inside a building or vehicle).
✓ Keep Environmental Manager informed of situation.
✓ Remain in vehicle.
✓ Make sure the animal has a safe route of escape.
✓ Use horn to alert animal of your presence or to scare it off.
✓ Avoid provoking the animal.
✓ Keep Environmental Manager informed of situation.
Wildlife Moves Off:
YES NO
YES
On return to camp, fill out Wildlife Sighting and Activity Log.
NO
Environmental Manager calls for Deterrent Action by Wildlife Response Team

RESPONSIBILITY

Every individual is responsible for:

- Recording the sighting on the Wildlife Sighting and Activity Log.
- Reporting the sighting/encounter to the Environmental Manager.

The Environmental Manager is responsible for:

- Completing Wildlife encounter / Deterrent Report
- Reporting the sighting/ encounter to DSD.
- Calling for Wildlife Response Team action.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

REFERENCES AND RELATED POLICIES

Doris North Project General Site Rules

Operational Procedure: Wildlife Sighting and Activity Log (See Section 3.)

Operational Procedure: Bear Encounters (See Section 9.)

Operational Procedure: Dealing with Bear Sightings, Encounters or a Bear in Camp (See Section 10.)

Operational Procedure: Reporting Bear Sighting (See Section 11.)

Operational Procedure: Encountering Wildlife Carcasses (See Section 13.)

9. CONTINGENCY PROCEDURE: BEAR ENCOUNTERS

PURPOSE

To ensure that personnel understand the steps to take if they inadvertently encounter a bear.

This does not replace appropriate levels of bear safety training.

SCOPE

This applies to bear encounters for all personnel working at the MHBL Doris North Project site including exploration crews on the Hope Bay belt.

OVERVIEW

The MHBL Doris North Project is located within know range of the Barren-Ground Grizzly Bear. Grizzly bears are active in the area from late April to late October. Grizzly bears sightings in the Hope Bay Belt are a yearly occurrence. Although it is possible that Polar bears occasionally move through the area these incidents are exceedingly rare. Most bears avoid encounters with humans if they detect them in time. However if cornered, threatened or surprised, a bear can be aggressive.

PROCEDURE

Prevention:

- Be alert at all times.
- Respect all bears – they can be dangerous.
- Never approach a bear for any reason.
- Never feed bears or other wildlife.
- Make sure someone knows where you are going and when you plan to return.
- Always carry a portable radio or other communication device to contact the main site.

Encounter:

There is always a possibility you may surprise a bear at close range, or encounter a bear unafraid of people. Though there is no guaranteed formula for reacting to a bear encounter, each one being unique, the following tips may help.

- Stop, stand still and stay calm.
- Assess the situation.
- Slowly back away keeping your eye on the bear. Do not run.
- If the bear is aware of you help the bear identify you as human by talking in a low voice and slowly waving your arms. Moving upwind will help the bear get your scent.
- Go to a safe location i.e. inside a building or vehicle.
- Use your radio to alert Environmental Manager of your situation.

TRAINING

- Site safety training is required.
- Bear safety awareness.

RESPONSIBILITY

Every individual is responsible for:

- Reporting the Encounter to the Environmental Manager.
- Recording the Encounter in The Wildlife Sighting and Activity Log

The Environmental Manager is responsible for:

- Completing the Wildlife Encounter Report
- Reporting the Encounter to DSD, Cambridge Bay
- Dispatching vehicle or helicopter to remove persons to a safe location.
- Dispatching Wildlife Response Team if required.

Wildlife Response Team is responsible for:

- Providing deterrent action if encounter within the mine footprint.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

REFERENCES AND RELATED POLICIES / PROCEDURES

Operational Procedure: Reporting Bear Sighting and Encounter (See Section 11.)

Operational procedure: Wildlife Sighting and activity Log (See Section 3.)

10. CONTINGENCY PROCEDURE: BEAR ENCOUNTERS OR BEAR IN CAMP – WILDLIFE RESPONSE TEAM RESPONSE

PURPOSE

To ensure that all on-site personnel assigned responsibility for responding to bear sightings, encounters, and bears in camp understand the appropriate procedures for dealing with these situations.

SCOPE

This procedure applies to all Doris North Project Wildlife Response Team (WRT) members and designated individuals, who are responsible for dealing with bear encounters or a bear in the camp. The number of people on-site and the levels of activity will fluctuate during the construction, operation and decommissioning phases of the project and there will not always be a Wildlife Response Team available; alternatives must be assigned that role by the Environmental Manager.

OVERVIEW

There are a number of reasons why bears and people might encounter each other. The bear may be attracted to the facilities, food or garbage odors, or it may be curious. What ever the reason for the encounter, it is important to deal with the situation quickly and efficiently to ensure the safety of people and bears.

For the purposes of this procedure any time a bear approaches within 100 m of an area of human activity, a WRT response will be initiated. “Area of Human Activity” - means any area within the project footprint where people are active. The size of this area will increase and decrease based on the level and location of activity on site. For example when there are only a few people in camp and no one is working outside of the camp area, there will be no need to deter a bear on or near the runway. However there will also be areas of the project where bears will not be allowed regardless of the level of activity on site. These areas include:

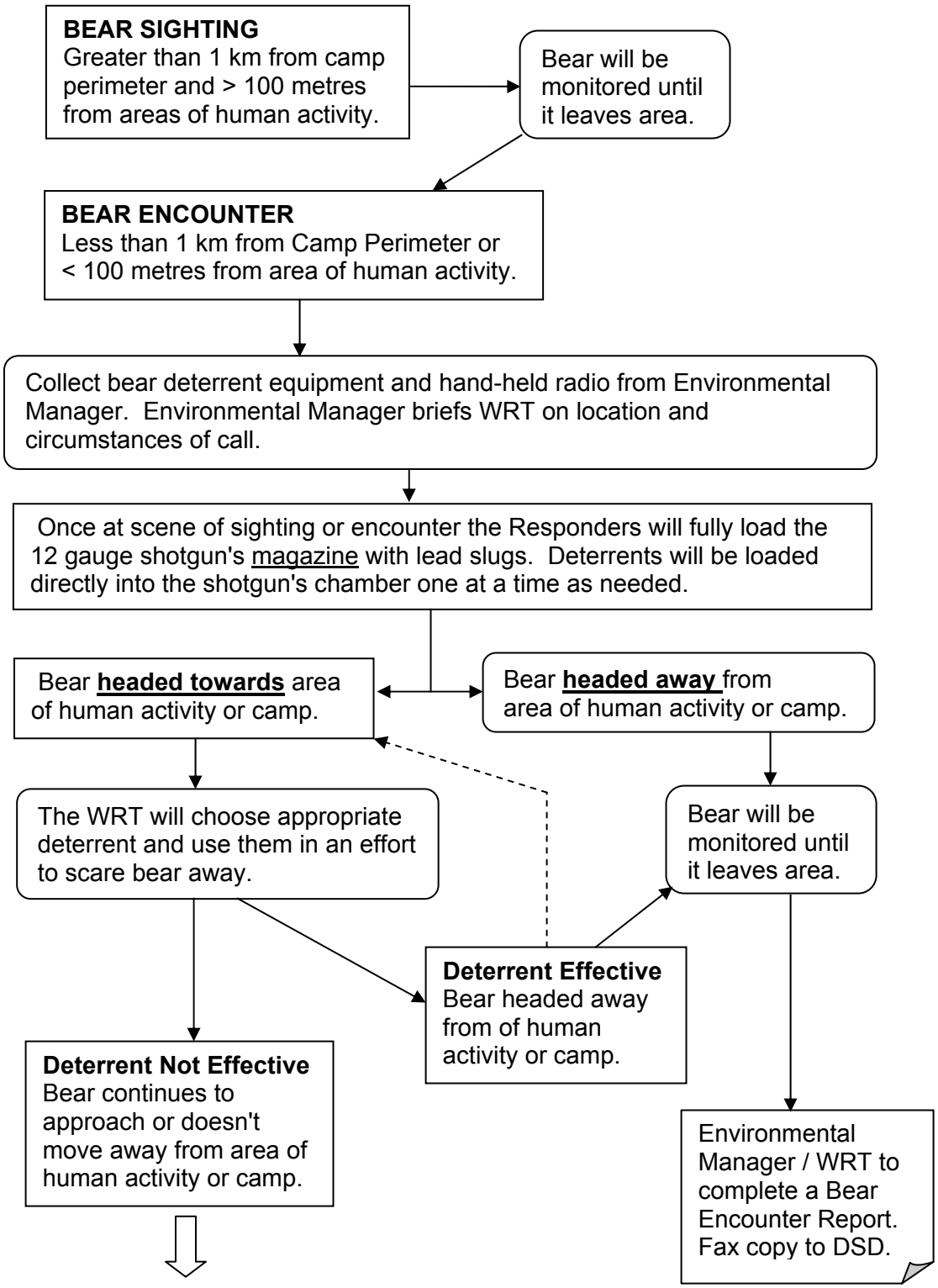
- the accommodation complex including the dorms, kitchen, office, dry, first aid, water plant, sewage plant, and incinerator.
- the mining infrastructure, including mine portal, mill reagent storage, workshop, tank farm, mill, crusher, emergency tailings dump catch basins (when tailings are present), land fill, laydown areas, and other areas that could present a risk to the bear.

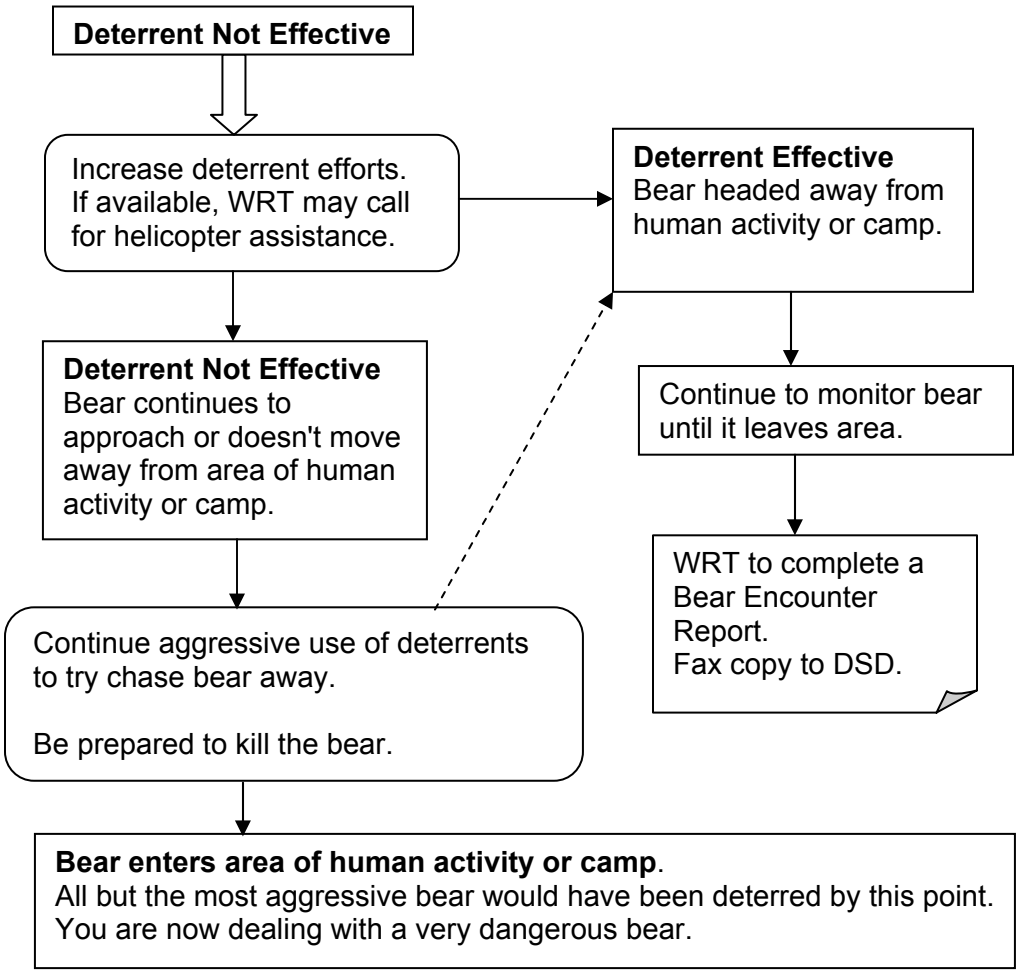
The intent is to:

- prevent risk of injury to humans.
- prevent bears from becoming habituated to the site and its infrastructure.
- prevent bears from seeking refuge around buildings or in equipment storage or laydown areas.
- prevent bears from gaining access to areas or substances that could be harmful to the bear, i.e. fuel and chemical storage.

PROCEDURE FOR BEAR ENCOUNTER

WARNING: When responding to a bear encounter or a bear in camp there should be a minimum of two responders.



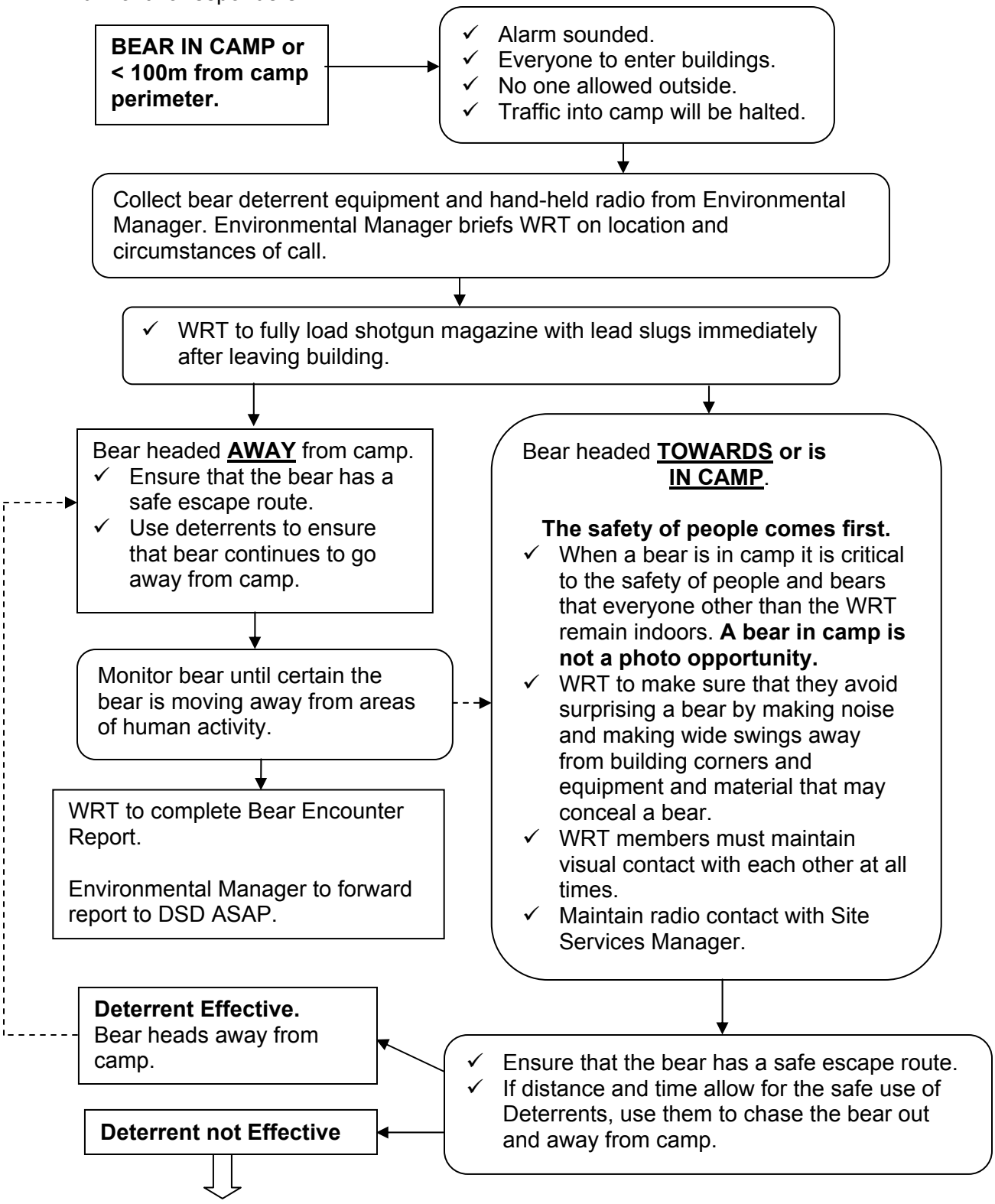


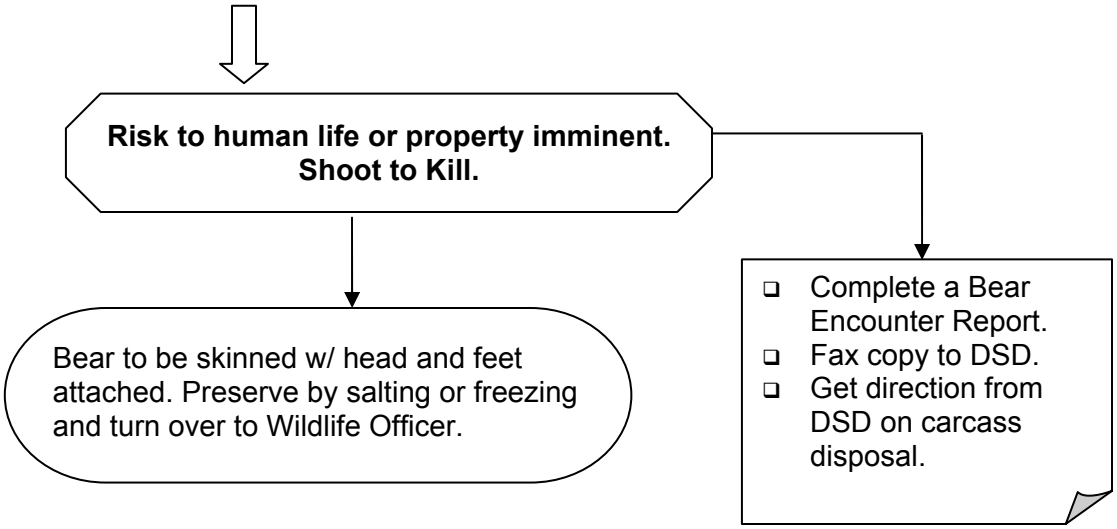
Any time a bear approaches or enters areas of human activity, do a site investigation to try determine why the bear was attracted to the site. Record findings in bear encounter report.

If attractant found, deal with it immediately.
Failure to deal with the attractant will only lead to more problems.

PROCEDURE FOR BEAR IN OR NEAR CAMP

WARNING: When responding to a bear encounter or a bear in camp, there should be a minimum of two responders.





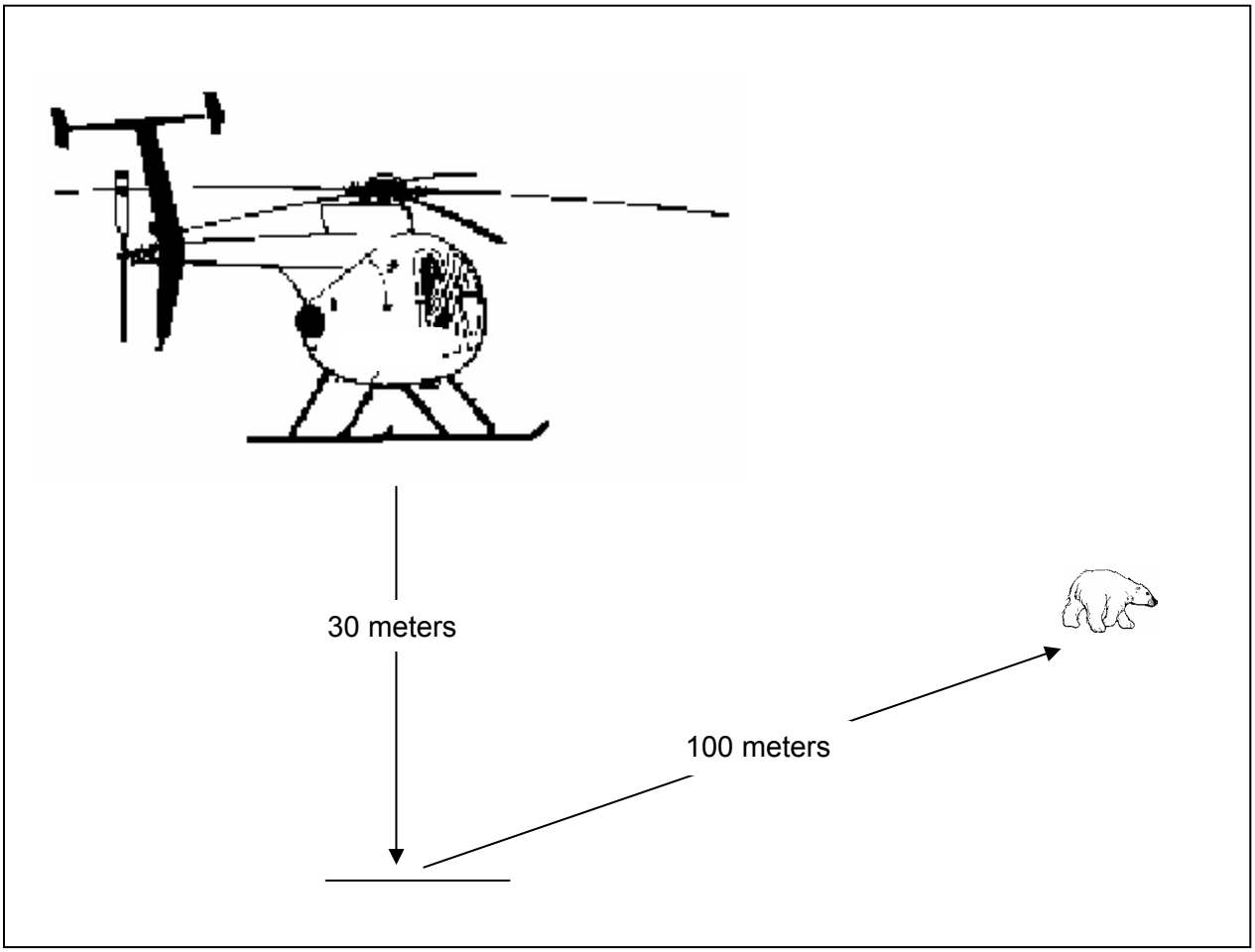
Any time a bear approaches or enters areas of human activity do a site investigation to determine why the bear was attracted to the site. Record findings in bear encounter report.

If attractant found, deal with it immediately.
Failure to deal with the attractant will lead to more problems.

Using a Helicopter to Deter a Bear – if / when available

It is illegal to harass wildlife with aircraft. However occasionally, and only for reasons of human safety, it may be necessary to "push" a bear using a helicopter. When using a helicopter to deter a bear from the Doris North Project site, the following procedures must be followed:

- At least one member of the WRT must be on board the helicopter. They will be responsible for the safety of the bear and will provide instructions to the pilot. The pilot is responsible for his aircraft and the safety of the people on board; he has final say.
- The pilot must maintain radio contact with WRT members on the ground.
- To stress the bear as little as possible, the pilot must keep the helicopter well back from the bear. The minimum distance between the helicopter and the bear is 100 meters back and 30 meters up.
- The pilot should only get close enough to get the bear to move, not fly over it. A bear moving at a fast walk can cover a lot of ground quickly and efficiently. There is no need to have the bear running; a running bear may become overheated and injure itself.
- The pilot must keep the bear in visual contact. However the pilot is to take the helicopter to a higher altitude rather than get closer than the minimum distances.
- The pilot must keep the helicopter between the bear and the site to prevent pushing the bear into camp.



Helicopter minimum chase distance

DO NOT push a bear for more than ten minutes or 3 km (2.2 miles).

- Once the WRT member is satisfied that the bear is moving away, he will direct the pilot to stop pursuing the bear even if they are within the 10 min / 3km zone. He will direct the pilot to take the helicopter up to an altitude where they can continue to monitor the bear to ensure that it is not returning.
- Once satisfied that the bear presents no further risk, the helicopter will return to camp.

Destroying a Problem Bear

Deciding exactly when to shoot a bear is a difficult decision to make and is wholly dependent on the prior experience and training of the WRT. For this reason there is no set distance at which to pull the trigger.

The bear must be shot when personnel are in immediate danger of attack, or if the bear can not be deterred without endangering human life.

Before You Shoot

Always consider what is beyond the bear as the slug may pass through the bear or you may miss your target.

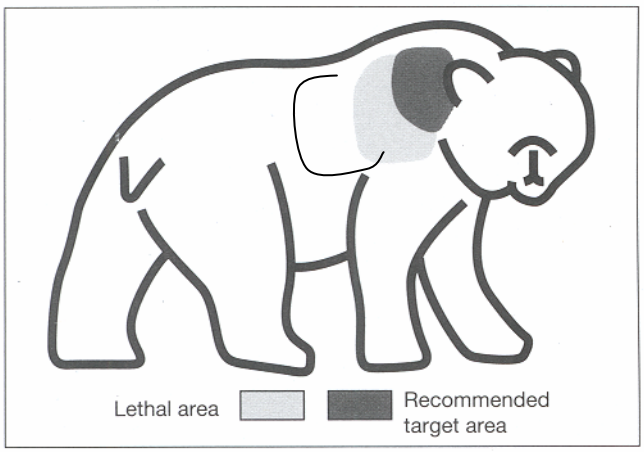


Figure 5. Area of instant kill or disabling shot.

It is very difficult to kill a charging bear. The first shot is intended to stop or knock down the bear not kill it.

If the bear is standing sideways – shoot at the large shoulder and into the chest area.
When the bear is facing head on, shoot into the neck and top of the shoulders. Once the bear is stopped or down, use the remaining lead slugs to kill the bear. A minimum of two shots must be made into the vital areas.

Do not approach the bear until you have reloaded the shotgun and you are sure it is dead.

The hide must be removed, with the claws and the head attached, and kept from spoiling by salting or freezing. The hide and skull must be turned over to a DSD Wildlife Officer ASAP.

The carcass will be disposed of under the direction of DSD.

If a bear is shot, return to camp and report to the Environmental Manager. The WRT and Environmental Manager will complete Bear Encounter Report. The Environmental Manager will report the incident to DSD immediately.

DSD Contacts:

Shane Sather, Wildlife Officer III, or
George Hakongak, Wildlife Officer II
Department of Sustainable Development, Cambridge Bay 867-983-7314
Kitikmeot Regional Office – 867- 982-7240

All cases of the WRT driving a bear off or which involve shooting a bear must be reported immediately.

TRAINING

- Wildlife Response Team members and designated individuals will be required to hold a valid Canadian Possession-Acquisition Firearms Licence.
- Advanced Bear Safety Training is required. This training will include sessions on bear biology, bear behaviour, and bear human encounters, what to do in an encounter, prevention, detection and deterrents. Training will also include sessions on the proper use of deterrents, bear response planning and reporting procedures.

RESPONSIBILITY

The Wildlife Response Team is responsible for:

- Recording the sighting on the Wildlife Sighting and Activity Log.
- Recording encounters and kills on Wildlife Encounter Report.
- Skinning and preserving bear hide complete with claws and skull.

The Environment Manager is responsible for:

- Reporting the bear encounter or kill to DSD.
- Forwarding all Wildlife Encounter Reports to DSD via Fax.
- Contacting DSD for direction on carcass disposal.
- Ensuring that the carcass is handled properly, and the skin and head are delivered to DSD in a timely manner.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

Area of Human Activity: Includes any area within the project footprint where human activities are taking place.

REFERENCES AND RELATED POLICIES

Operational Procedure – Bear Encounters (See Section 9.)

Operational Procedure – Reporting Bear Sightings & Encounters (See Section 11.)

Operational Procedure – Encountering Wildlife Carcasses (See Section 13.)

Bear Deterrents (See Section 7.)

Bear Deterrent Summary Tables (See Section 14.)

Deterrent Report (See Section 14.)

Wildlife Safety Training Plan (See Section 2.)

11. CONTINGENCY PROCEDURE: REPORTING BEAR SIGHTINGS AND ENCOUNTERS

PURPOSE

To ensure that all personnel at the MHBL Doris North Project are aware of the procedure for reporting the sighting of bears and bear/human encounters.

SCOPE

This applies to all personnel who see a bear in the Doris North Project area, including all exploration crews on the hope Bay belt.

OVERVIEW

Grizzly Bears are active in the Doris Lake area from early May to late October. There is potential risk to human safety, from all bears attracted to camp or encountered at close range. It is important that all sightings or encounters with bears be reported immediately. Early detection of bears allows camp personnel time to take actions to prevent the presence of a bear from becoming a risk to human safety or property. For the purposes of determining WRT response, the following definitions will be used:

Sighting: A Bear greater than 1 Kilometre from camp perimeter, and greater than 100 meters from area of human activity.

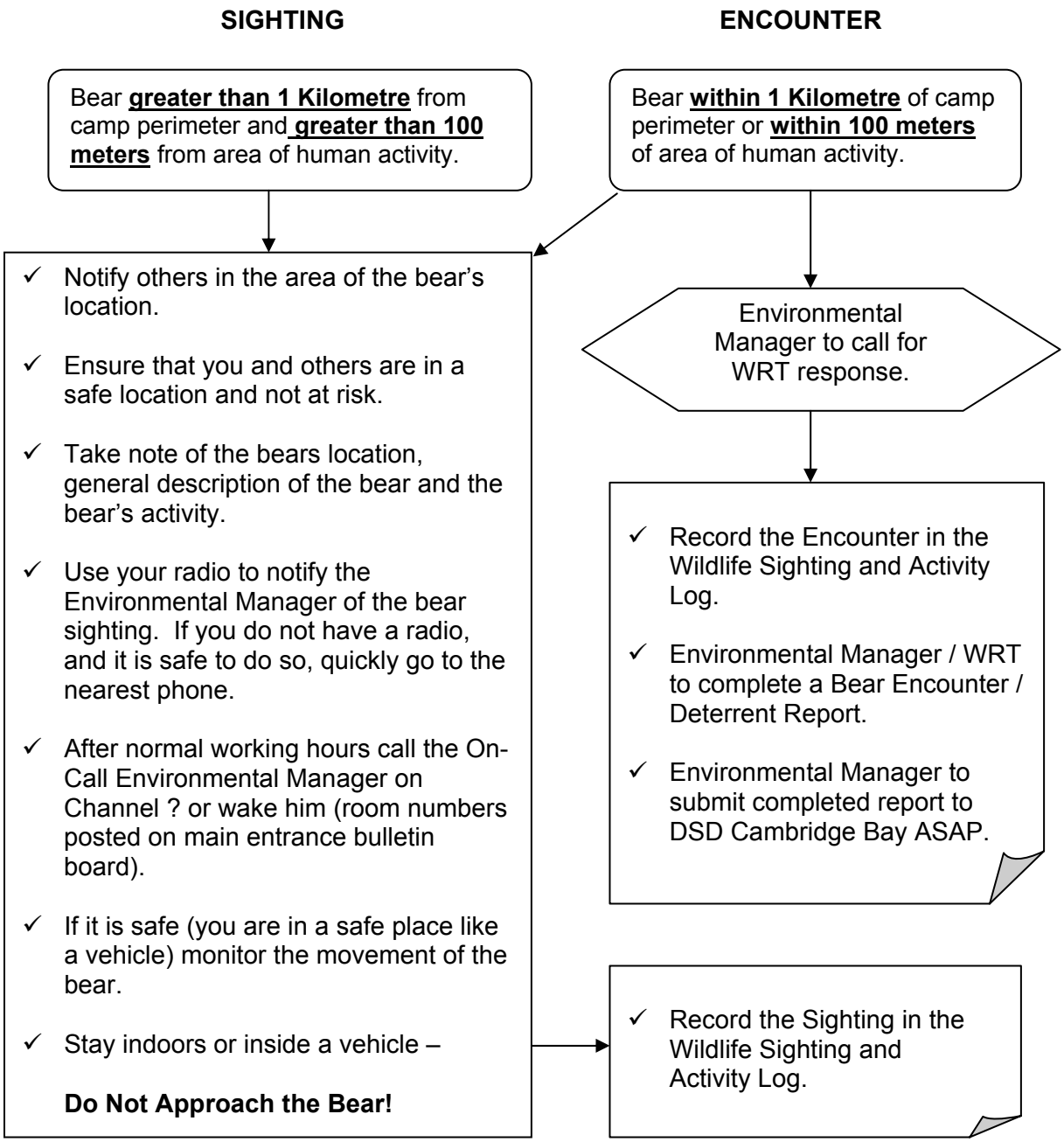
Encounter: A Bear within 1 Kilometre of camp perimeter or within 100 meters of area of human activity.

PROCEDURE

See procedure decision tree on the following page.

PROCEDURE

If you see a bear the following procedures apply:



TRAINING

- Site safety training is required.
- Bear safety awareness.

RESPONSIBILITY

Every individual is responsible for:

- Recording wildlife sightings in the Wildlife Sighting and Activity Log.
- Reporting the wildlife encounter to the Environmental Manager.

The Environmental Manager is responsible for:

- Alerting WRT
- Providing the resources and assistance required by the WRT to respond appropriately.
- Reporting the bear encounter to DSD.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

Sighting: Bear greater than 1 kilometre of camp perimeter and greater than 100 meters from area of human activity.

Encounter: Bear within 1 Kilometre of camp perimeter or within 100 Meters of area with human activity.

REFERENCES AND RELATED POLICIES / PROCEDURES

Operational Procedure: Bear Encounter or Bear in Camp – WRT Response (See Section 10.)

Operational Procedure: Bear Encounter (See Section 9.)

Operational Procedure: Wildlife Deterrent Report (See Section 14.)

Operational Procedure: Wildlife Sighting & Activity Log Procedures (See Section 3.)

12. MITIGATION/CONTINGENCY PROCEDURE: CARIBOU HERDING PROCEDURES

INTRODUCTION

The Doris North Project regional study areas (RSA) area is presently used by at least two caribou herds: the Victoria Island herd and the Queen Maude Gulf herd. Historically, caribou from the Bathurst herd used the RSA, however, recent data indicate that the Bathurst heard has not used the RSA or adjacent range since 1996 (Calef and Hubert, 2002).

Caribou are likely to be present in the Doris North Project area during most of the year with the exception of late summer and early winter (during which they appear to be limited to lone bulls or small groups of bulls). During the study period from 1996 to 2002, caribou sightings were made in the RSA during calving season. Abundance and distribution vary seasonally and between years but the potential for caribou to encounter the Doris North Project site is present year round. Plans need to be in place to reduce the risk of injury to caribou that come into contact with the project site and its infrastructure.

Additionally plans need to be in place for dealing with large numbers of caribou encountering the Doris North Project site and associated activities. Group sizes of more than five hundred caribou could be difficult to effectively herd away from roads or the airstrip. In these cases, the safest option would be to allow the caribou to move through the area.

Select a level of action appropriate to the situation and least intrusive to the caribou. Deterrent actions taken to herd caribou should be based on the number of caribou, the potential for risk to wildlife or human safety, and the potential for interrupting to construction, mining and operational activities. For general guidance, see Deterrent Actions in the introduction section of the Deterrent Plan. This section guides actions to be taken for caribou at specific locations or hazards.

Before taking any herding action the Wildlife Response team must first:

- Ensure that a safe avenue of escape is obvious and available to the caribou.
- Establish and maintain radio contact with the appropriate site supervisors and Environmental Manager to ensure that:
    - Traffic and other site activities do not put the caribou at any further risk.
    - Safe escape routes for the caribou are protected or created.
    - People working in the area are warned of the planned herding action.

Large Numbers of Caribou (>500)

If it were absolutely necessary to take herding action with a large number of caribou, the Wildlife Response Team would need to recruit other site personnel to assist. The number of available personnel will dictate what action can be taken.

Caribou herding actions for large numbers of animals are intended to:

- Encourage the caribou to continue moving and decrease the time of exposure to potential risk, or
- Attempt to deflect the caribou around a hazard.

Recording and Reporting

Every herding action is to be recorded on a Wildlife Deterrent Report and submitted to the Environmental Manager who will send a copy of the report to DSD.

ROADS

In general:

- Caribou and other wildlife have the "right of way".
- Caribou will not be blocked from crossing roads. If caribou are crossing or attempting to cross the winter road, eskers, or site roads, traffic will stop and wait for them to finish crossing.
- Caribou within 100 meters of the site service roads or winter roads will be monitored. A herding action will only be taken if an immediate risk to wildlife or human safety exists.

WRT members will take a herding action on or adjacent to roads when:

- Caribou crossing the roads stall and appear to be ready to bed down or remain on the road surface.
- Caribou are on the road at the time of a medical emergency or toxic spill response that requires the use of the road.

Procedures for Caribou Herding

All herding actions begin with those that cause the least disturbance to the caribou. Each action starts at the lowest appropriate level and moves to the next level only if absolutely necessary. The aim is to deter the caribou from hazardous situations so that the risk of injury is decreased. Deterrent actions should not cause unnecessary stress to the animal

Level 1.

- With the vehicle headlights on, approach the caribou slowly (<5 km/hr.) When the caribou start to move, stop and allow them to move off on their own.
- If the caribou stop moving, once again make a slow approach.
- Avoid using the horn.
- Avoid causing the caribou to run. While climbing or descending road embankments, an injury could occur.
- When the caribou leave the road, continue to monitor them until they have moved off to approximately 100 meters from the road.

Level 2.

- Slowly approach caribou on foot only to a distance close enough to get the caribou to move. Once they start to move, stop your approach.
- If the caribou stop moving, continue your approach.
- When the caribou leave the road, continue to monitor them until they have moved off to approximately 100 meters from the road.

Level 3.

- If caribou are not responding to close approaches by people on foot, it may be necessary to increase the disturbance to the animal(s). Continue to approach but make noise by clapping hands or shouting.
- If clapping and shouting do not cause the caribou to move off, use an air horn.
- Use noise making explosive type deterrents, only as a last resort.

- Only do what is necessary to get the caribou to move.
- Continue to monitor the caribou until they have moved off to approximately 100 meters from the road.

AIRSTRIP

In general:

Caribou will not be blocked from crossing the airstrip. If caribou begin to cross the airstrip, incoming aircraft will be notified to either enter a holding pattern until the caribou have completed their crossing, or divert to an alternate airstrip if necessary. In these situations herding action may be necessary to ensure that the caribou continue to cross and move away from the airstrip.

Wildlife Response Team members will take action to herd caribou in the vicinity of the airstrip when:

1. Any number of caribou are within 100 meters of the airstrip twenty minutes prior to aircraft arrivals or departures.
2. Any number of caribou are bedding on or using the airstrip for insect relief twenty minutes prior to aircraft arrivals or departures.
3. Caribou crossing the airstrip stall and appear to be ready to bed down or remain on the airstrip.

Procedures for Caribou Herding

Twenty minutes prior to aircraft landing, and immediately prior to aircraft takeoff, airport /security staff will slowly drive the entire length of the airstrip to search the airstrip and its immediate vicinity for caribou. If caribou are spotted on or within 100 meters of the airstrip, the airport staff should start a “Level 1” herding action.

Caution:

During landings and takeoffs caribou should not be closer than 100 meters from the edge of the airstrip. Caribou within this zone could become panicked by the noise of landing or departing aircraft. This panic could cause them to run onto the airstrip or injure themselves as they try to escape.

Level 1.

- With the vehicle headlights on approach the caribou slowly (<5 km/hr.) When the caribou start to move, stop and allow them to move off on their own.
- If the caribou stop moving, once again make a slow approach.
- Avoid using the horn.
- Avoid causing the caribou to run; they may injure themselves.
- When the caribou leave the airstrip, continue to monitor them until they have moved off to approximately 100 meters from the airstrip.
- If caribou do not move off the runaway, or remain within 100 meters of the airstrip, airport/security staff will contact the Wildlife Response Team to request further herding actions.

Level 2.

The airport staff will transport the Wildlife Response Team to where the caribou are located. This limits the number of vehicles on the airstrip but allows the Wildlife Response Team to remain at the site during a landing or takeoff. Further actions may be necessary to prevent the caribou from attempting to get onto, or across, the runway.

The Wildlife Response Team will proceed with a “Level 2” herding action.

- Members of the Wildlife Response Team slowly approach caribou on foot only to a distance close enough to get the caribou to move. Once caribou start to move, stop the approach.
- If the caribou stop moving, continue the approach.
- Continue to monitor caribou until they have moved off to approximately 100 meters from the edge of the airstrip.
- If the caribou stop within the 100 meter zone, continue the approach. Keep the caribou moving until they are greater than 100 meters from the edge of the airstrip.
- If the caribou are reluctant to move off, or appear that they might try to return to the airstrip, the Wildlife Response team will remain on site positioned between the caribou and the airstrip until the aircraft has safely landed or taken off.

Level 3.

- If caribou are not responding to close approaches by people on foot, then it may be necessary to start making noise. Continue to approach but make noise by clapping hands or shouting.
- If clapping and shouting does not cause the caribou to move off, use an air horn. Only do what is necessary to get the caribou to move.
- If the caribou stop moving, continue your approach.
- If the caribou stop within the 100 meter zone, continue your approach. Keep the caribou moving until they are more than 100 meters from the edge of the airstrip.
- The herders should remain positioned between the caribou and the runway to prevent the caribou from returning prior to the safe landing or take-off of aircraft.
- Use noise making explosive type deterrents only as a last resort.

Inside Exclusion Fencing

Although exclusion fencing is designed to keep caribou and other wildlife out of areas where a hazard might exist, there is a potential that wildlife may get inside a fence and become trapped. The most likely cause will be from people not closing gates.

Any number of caribou within an exclusion fence requires a herding action.

Procedures for Caribou Herding

Extreme care must be taken when dealing with caribou trapped within exclusion fencing. In order to free the caribou a person may have to come very close to open a gate or provide an escape route for the caribou. A panicked caribou might injure itself on the fencing or enter the hazard the fence was intended to surround.

In each case the WRT member will perform the following actions beginning at the lowest possible level appropriate to the situation. The aim is to get wildlife out of the hazardous situation without causing unnecessary stress or injury to the animal(s).

Level 1.

- Use binoculars to assess the situation from a safe distance and minimize any further stress to the caribou.
- One member of the WRT will approach the fence and open all gates starting with the one that provides the caribou with the shortest and safest escape route.
- Once all gates are open the WRT member will retreat to join the rest of the team.
- The WRT will monitor the caribou giving it enough time to find an opening and escape.
- If the caribou is unable to find the opening, or its movements inside the fence put it at any risk, the WRT will proceed to “Level 2”.

Level 2.

- The WRT will approach the fence slowly from the direction that will cause the caribou to move towards the opening in the fence, but without driving it into the potential hazard. The WRT will remain on the outside of the fence and only approach close enough to get the caribou to move in the right direction.
- Once the caribou is outside the fence, the WRT will ensure that all gates are closed.

Level 3.

- If the caribou is unable to spot the opening, or is reluctant to go through the opening, make the opening larger if possible. Cut the chain link fasteners and peel back one or two sections of the fencing. *(If during construction, the fencing fabric is marked with fluorescent orange paint at joints or overlaps, this process will be quicker.)*
- Once a larger opening is made, move away from the fence so that the caribou can find the opening itself.
- If the animal still does not exit the fence, once again try to herd the caribou from the outside of the fence by making noise in an appropriate location.

Level 4.

- If the WRT is not able to direct the caribou from the outside of the fence, enter the fence at the opening that is furthest from the opening that the caribou should go out.
- Slowly approach the caribou to herd the animal(s) towards the nearest safe escape route.
- Use burlap and wooden stakes to construct a wing fence that will help direct the caribou to, and through, the fence opening.
- If necessary recruit other people to assist with the herding action.

Potentially Hazardous Site or Activity

Potential hazardous sites or activity include:

- Anywhere on the gravel pad on which the camp complex and mill facilities are located.
- Remote sites i.e. causeway, tailings containment area.
- Mine portal and access road.
- Fuel or chemical storage areas.
- Container storage and laydown areas.
- Land Fill.
- Land Farm.
- Emergency Tailings Dump Catch Basins, when in use.
- Quarries and “Safe Zone” of any surface blasting.

If any number of caribou attempt to gain access to, or are found within, any potential hazard site or activity, herding action must be taken.

Procedures for Caribou Herding

Most potential hazardous sites are located in the areas of highest activity. For this reason it is critical to:

- Establish and maintain radio contact with the appropriate site supervisors and Environmental Manager. This ensures that:
    - Traffic and other site activities do not put the caribou at any further risk.
    - Safe escape routes for the caribou are protected or created.
    - People working in the area are warned of the planned herding action.

In each case the WRT member will perform the following actions beginning at the lowest possible level appropriate to the situation. The aim is to get wildlife out of the hazardous situation without causing unnecessary stress to the animal(s).

Level 1.

- Use binoculars to assess the situation from a safe distance and minimize any further stress to the caribou.
- Use a detailed site map to identify other risks in the area and the safest escape route for the caribou.
- Communicate what actions are required of Environmental Managers and managers to help facilitate the safe movement of the caribou away from the hazard.

Level 2.

- Once a safe escape route has been created and secured, slowly approach caribou on foot. The WRT only approaches close enough to get the caribou to move away from the hazard. Stay close enough to maintain visual contact.

Caution:

Avoid surprising caribou by alerting caribou to your presence by making noise i.e. talking, clapping hands etc. from as far away as possible.

- If the caribou stop moving, continue the approach.
- Continue to monitor the caribou until they have moved at least 100 meters from the edge of the hazardous site or activity i.e. outside of a surface blast “safe zone”.
- If the caribou stop within the 100 meter zone, continue your approach. Keep the caribou moving until they are more than 100 meters from the edge of the hazard.

Level 3.

- If caribou are not responding to close approaches by people on foot then it will be necessary to start making noise. Continue approach making noise by clapping hands or shouting.
- If clapping and shouting does not cause the caribou to move off, use quick short bursts from an air horn. Again only do what is necessary to get the caribou to move.
- If the caribou stop within the 100 meter zone, continue your approach. Make noise and wave your arms. Keep the caribou moving until they are greater than 100 meters from the edge of the hazard.
- Use noise making explosive type deterrents only as a last resort and only when the caribou are beyond the maximum range of the previously selected noise maker.
- If the caribou are reluctant to move off, or appear that they might try to return to the hazard site, remain on site to monitor the caribou and take any further herding action that may be required.

When the caribou are clear of the hazard site the WRT will notify the Environmental Manager and have the "All-Clear" message broadcast.

TRAINING

- Wildlife Response Team members and designated individuals will be required to hold a valid Canadian Possession-Acquisition Firearms Licence.
- Advanced Bear Safety Training is required. This training will include sessions on bear biology, bear behaviour, and bear human encounters, what to do in an encounter,

prevention, detection and deterrents. Training will also include sessions on the proper use of deterrents, bear response planning and reporting procedures.

RESPONSIBILITY

The Wildlife Response Team is responsible for:

- Recording the sighting on the Wildlife Sighting and Activity Log.
- Recording encounters and kills on Wildlife Encounter Report.

The Environment Manager is responsible for:

- Reporting the encounter to DSD.
- Forwarding all Wildlife Encounter Reports to DSD via Fax.
- Contacting DSD for direction on carcass disposal.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

REFERENCES AND RELATED POLICIES

Operational Procedure – Bear Encounters (See Section 9.)

Operational Procedure – Reporting Bear Sightings & Encounters (See Section 11.)

Operational Procedure – Encountering Wildlife Carcasses (See Section 13.)

Bear Deterrents (See Section 7.)

Bear Deterrent Summary Tables (See Section 14.)

Deterrent Report (See Section 14.)

Wildlife Safety Training Plan (See Section 2.)

13. CONTINGENCY PROCEDURE: ENCOUNTERING WILDLIFE CARCASSES

PURPOSE

To ensure that personnel at the MHBL Doris North Project, including Windy Lake Camp, are aware of proper procedures to be followed when encountering wildlife carcasses.

SCOPE

This applies to all personnel at the MHBL Doris North Project who encounter an animal carcass.

OVERVIEW

There is a potential health risk to Miramar Hope Bay Limited employees when handling wildlife found dead from unknown causes. Carcass from a bear kill could create further problems if not dealt with quickly and effectively. Staff handling dead wildlife will need to be educated about wildlife diseases and proper handling procedures.

The handling and disposing of wildlife carcasses must take into consideration the cultural beliefs of the aboriginal people in the land use area. Final disposal will be done under the direction of DSD.

PROCEDURE

Warning: Because of the possible risk to human health and safety from either disease or wildlife only environmental staff or appropriately trained individuals should investigate wildlife carcasses**.**

When to Report Dead Wildlife:

- Anytime that a bear is found dead.
- Anytime that a bird of prey (eagle, falcon, hawk, owl) is found dead.
- Anytime that two or more animals of the same species are found dead within half a kilometre of each other.
- Anytime that a bear, caribou, wolf, wolverine, fox or bird of prey is found dead within one kilometre of any human activity.
- Any time an animal dies as a result of a collision with a vehicle.

What Information Should Be Collected and Reported Upon Initial Observations:

- Take the following photographs:
  General area, showing where the animal is laying
  The carcasses; one from each side, the head and the tail.

- Record the following:
  - Note anything unusual.
  - Any obvious injuries or marks.
  - Record the following information:
  - Location of animal.
  - Time.
  - Date.
  - Estimate of how long it has been dead.
  - Any other animals of any species seen in the general area.

Disposal of Carcasses
To prevent attraction of animals to the site, carcasses will be disposed off under the direction of DSD. The Environmental Manager will contact DSD personnel to receive permission, and direction, to dispose of the carcass.

Who to Contact:
Shane Sather, Wildlife Officer III, or
George Hakongak, Wildlife Officer II
Department of Sustainable Development, Cambridge Bay (867) 983-7314
Kitikmeot Regional Office – (867) 982-7240

Encountering Grizzly Bear killed Caribou Carcasses:

General: Whenever approaching or working around a recent grizzly killed caribou there must be at least two people one of whom will be armed with a 12 gauge shotgun.

a) Carcass is <u>GREATER THAN 1 km</u> from areas of human activity:

- Grizzly killed caribou will not be removed. The bear will be allowed to feed on the carcass until it is finished. Removing the bear's kill may cause it to approach camp or other areas of human activity in search of its food.
- All employees will be alerted to the presence of the carcass and the area closed to human activity until the Environmental Manager has determined that the area is safe.

b) Carcass is <u>WITHIN 1km</u> of human activity or camp:

- Due to the danger posed by a grizzly on a carcass, any grizzly killed caribou found within 1 km of camp or human activity will be relocated.
- The carcass will relocated by dragging it at least 1 km away from areas of human activity. The purpose of dragging the carcass is to leave a scent trail so that the bear can easily relocate its kill. If the carcass is removed without leaving a scent trail the bear may approach camp or areas of human activity in search of its kill.
- ATV, snowmobiles or helicopter can be used to drag the carcass.
- The carcass should be left in an area where it can be easily seen from a distance, i.e. top of a hill or point jutting into a lake. This will allow for the safe monitoring of the carcass and any bear activity at the site.
- All employees will be alerted to the presence of the carcass and the area closed to human activity until the Environmental Manager has determined that the area is safe.

TRAINING

- Advanced Bear Safety Training
- Wildlife Disease Identification and Sampling Training

RESPONSIBILITY

Every individual is responsible for:

- Recording the sighting on the Wildlife Sighting and Activity Log.
- Reporting the sighting to the Environmental Manager.

Environmental staff with Wildlife Response Team is responsible for:

- Collecting the required information.

- Alerting everyone on site of the presence and location of grizzly killed carcasses.
- Disposing of the carcass.
- Monitoring the kill site or relocated carcass in order to determine if the area is safe.

Environmental Manager is responsible for:

- Closing the area where grizzly bear caribou kills are located.
- Ensuring that the photographs and information required by DSD are collected and forwarded to DSD.
- Receiving permission and direction from DSD personnel and carrying out the disposal of the carcass as directed.

DEFINITIONS

DSD: Government of Nunavut Department of Sustainable Development

Wildlife Disease Identification and Sampling Training: to be designed but will be based directly on the Disease and Parasites of the NWT Reference Manual for Wildlife Officers.

REFERENCES AND RELATED POLICIES / PROCEDURES

Diseases and Parasites of the Northwest Territories Wildlife Officers Reference Manual

Bear Encounters (See section 9.)

14. DETERRENT TABLE INTRODUCTION

Use of Deterrents:

Key Ingredients Persistence and a willingness to experiment are the key ingredients required to be successful in deterring wildlife. Consistent actions are far more important than any of the individual deterrent devices.

Deterrent Selection Each deterrent technique or device has limitations and is not effective in every situation. The most successful long term deterrent efforts use a combination of techniques and devices.

Noise Making Deterrents All noise making deterrent devices become less effective with repeated use. Bears exposed to noise quickly learn that it does not hurt. Bears who have received a food reward will be much harder to deter using a noise making device.

Loading 12 Gauge Deterrents All 12 gauge type deterrents should be loaded directly into the chamber one-at-a-time as needed. Direct placement into the chamber allows you to keep the magazine full of lethal rounds in case the bear charges.

Transportation of Dangerous Goods Regulations Although listed as a limitation this does not preclude the use of these deterrents. The regulations are reality that must be dealt with. Through advanced planning access to these deterrents can be easily accomplished.

Explosive type deterrents are classified as a Pyro-techniques and require dangerous goods paper work to be completed. These types of deterrents can not be transported on passenger planes they must go on freight only charters.

Manufactures Warnings The table contains general information. Always read and follow the manufactures guidelines and warnings when using deterrents.

Field Testing Much of the comparative information on the effectiveness and limitations of deterrents is about 20 years old. This does not make the information unreliable but does point to the need for further research and testing of potential wildlife deterrents.

The following table is based on previous publications and the experience of wildlife officers within the Nunavut Wildlife Service and agencies outside of Nunavut.

Method	Summary	Practicality	Advantages	Limitations
Capsaicin "Pepper" Spray	• Last resort deterrent for escape from attack. • 250 ml or larger recommended.	• Portable. • Suitable for people traveling in bear country.	• Able to carry in areas where firearms and explosive type deterrents are not allowed.	• Limited range • Wind can reduce range • Not reliable in sub-zero temperatures. • Has not been well tested on polar bears. • Subject to Transportation of Dangerous Goods regulations, can be difficult and expensive to get into most Nunavut communities
Noise Makers				
Warning Shots	• Can be used to scare bear away.	• Portable. • Readily available. • Inexpensive	• Allows immediate use of lethal force if cartridges remain.	• Least effective deterrent method • Uses up lethal rounds that may be needed to shoot an predatory or attacking bear.
Horns	• Produce loud noise to prevent surprise encounters or scare away an approaching bear.	• Portable. • Easy to use. • Inexpensive.	• Have control over length of noise. • Bear can identify person as source of noise. • Non-pressurized canisters can be transported without Transportation of Dangerous Goods permitting.	• Not reliable in very cold temperatures. • Compressed air type canisters are subject to Transportation of Dangerous Goods regulations; can be difficult and expensive to get into most Nunavut communities.

Method	Summary	Practicality	Advantages	Limitations
Sirens	• Produces loud noise to scare away bear or to warn camp occupants of the bears presence.	- Most effective when used in combination with a detection system.	• The use of hand held types allow the bear to identify person as source of noise.	• Must sound different than other alarm sounds in use.
Explosive Type Launchers				
Pencil Type Launchers	• Pencil sized devices used to fire "bear banger" cartridges. • Cartridges threaded onto end of "pencil."	• Easy to carry. • Easy to use. • Inexpensive.	• Capable of firing other emergency signaling cartridges. i.e. flares & smoke signals.	• Single shot. • Plastic cartridge threaded into metal threads - can cross thread easily. • Subject to *Transportation of Dangerous Goods* regulations; can be difficult and expensive to get into most Nunavut communities.
Pistol type Launchers	• Fire a variety of explosive deterrents - 15 mm "bangers" and "screamers" most common. • Uses .22 caliber hot blank to ignite deterrents, which are placed into muzzle as needed.	• Portable. • Easy to use. • Relatively Inexpensive.	• Fire multiple deterrent rounds rapidly. • Able to launch a variety of scare and signaling cartridges.	• Cartridges subject to *Transportation of Dangerous Goods* regulations; can be difficult and expensive to get into most Nunavut communities.

Method	Summary	Practicality	Advantages	Limitations
Pump Action 12 Gauge Shot Gun	• Short barreled firearm with open or cylinder choke (no narrowing of the barrel at the muzzle).	• Relatively portable. • Good choice for deterrent work in and around camps and communities. • Suitable for most problem bear situations. • Moderately expensive.	• Able to fire explosive type deterrents, non-lethal projectiles, and lethal rounds. • Allows immediate use of lethal force if needed. • Capable of firing other emergency signaling cartridges. i.e. flares & smoke signals.	• Canadian Firearms Licence required. • The 12 Gauge "shell crackers" and "whistle crackers" are subject to Transportation of Dangerous Goods regulations.
Explosive type Deterrents				
Pencil type "bangers"	• Explosive deterrent is housed in a plastic casing that is threaded on to end of launcher. • When fired, fused explosive travels out to range where it explodes with a loud noise.	• Good for alerting bear to your presence. • People inexperienced with firearms normally comfortable with using pencil launcher and "bangers".	• Predicable behavior of projectile, fairly consistent range. • Sends noise out to the bear increasing the margin of safety.	• Slow to reload. • Relatively expensive approximately $4.00 /round. • Subject to Transportation of Dangerous Goods regulations.
12 Gauge Shotgun "Shell Crackers"	• Long range, explosive deterrent in a 12 gauge shot gun shell. • When fired, fused explosive travels out to range where it explodes with a loud noise.	- Fairly easy to use but requires that the shooter have a basic familiarity with the shotgun in order to use it safely.	• Travels a considerable distance (50-60 m) before exploding so it can be used at greater distances from the bear. • Can be used in conjunction with other 12 gauge deterrents.	• Subject to Transportation of Dangerous Goods regulations. • Possibility of jamming in firearm action - must be loaded directly into chamber as needed. This prevents jamming and allows the magazine to be fully loaded with lethal rounds in case of emergency.

Method	Summary	Practicality	Advantages	Limitations
12 Gauge Shotgun "Whistle Crackers"	• Long range, explosive deterrent in a 12 gauge shot gun shell. • When fired, fused explosive makes a continuous high-pitched noise as it travels out to range where it explodes with a loud noise. • Come in light-emitting version.	- Fairly easy to use but requires that the shooter have a basic familiarity with the shotgun in order to use it safely.	• The high pitched noise from the muzzle out to range makes it easier for the bear to identify the source of noise. • Light emitting version provides a visual display at night to scare the bear, also helps the shooter see the bear.	• Subject to Transportation of Dangerous Goods regulations. • Possibility of jamming in firearm action - must be loaded directly into chamber as needed. This prevents jamming and allows the magazine to be fully loaded with lethal rounds in case of emergency.
Non-lethal Projectiles				
12 Gauge Shotgun Plastic Bullets	• Torpedo shaped plastic projectile. • To be aimed at the large muscle mass areas of the bear such as the rump and shoulders.	• Fairly easy to use but requires that the shooter have a basic familiarity with the shotgun in order to use it safely. • Most jurisdictions replacing with Strike II type (below)	• Not subject to Transportation of Dangerous Goods regulations. • Does not require specialized launcher.	• Hide penetration possible if used at a range of less than 30 m • In below freezing temperatures the plastic can become very hard increasing risk of hide penetration.
12 Gauge Shogun Strike II Rubber Bullet	• Hourglass shaped soft rubber projectile. • To be aimed at the large muscle mass areas of the bear such as the rump and shoulders.	• Suitable for most "problem bear" situations. • Fairly easy to use but requires that the shooter have a basic familiarity with the shotgun in order to use it safely.	• Not subject to Transportation of Dangerous Goods regulations. • Greater accuracy than plastic bullets. • Mushrooms quickly on impact.	• Hide penetration possible if used at a range of less than 30 m.

Method	Summary	Practicality	Advantages	Limitations
12 Gauge Shotgun "Bean Bag" rounds	• A lead shot filled fabric bag. • A close range non-lethal deterrent. • Come in a variety of loads and a dye-marking version.	• Excellent option for close range work less than 30 m. • "Close range" load (3-15m) and a "standard" load (9-30 m). • Expensive approximately $10 per standard round and greater than $12 per dye marking round	• Very little chance of hide penetration. • Excellent for close range work in communities and camps. • Not subject to transportation of dangerous goods regulations. • Dye marking round allows you to determine if bear is a repeat offender.	• Short range deterrent not effective beyond 20 m range. • Limited testing on polar bears.

WILDLIFE DETERRENT REPORT

Deterrent #:

SPECIES: _____ **# of Animals Involved:** _____

SEX: ____ M ____ F ____ Unknown

ESTIMATED AGE: ___ Calf/Cub/Kit/Pup ___ Sub-adult ___Adult ___ Unknown

DATE: _____
&
TIME: _____ Hrs.

LOCATION :(i.e. mill, airstrip) _____

WEATHER : _____

ANIMAL(S) BEHAVIOUR: (i.e. curious, aggressive, crossing road, etc.)

_____

_____

DETERRENT ACTION

Time Start: _____ Hrs Time Finished: _____ Hrs

TYPE: (Mark number used):	**SUCCESSFUL** **(Provide detail on back)**
____ Approach w/ Vehicle	____ Yes ____ No
____ Approach on Foot	____ Yes ____ No
____ Shouting / Yelling	____ Yes ____ No
____ Air Horn	____ Yes ____ No
____ Pen Launched Bangers	____ Yes ____ No
____ 15 mm Bangers	____ Yes ____ No
____ 15 mm Screamers	____ Yes ____ No
____ Warning Shots	____ Yes ____ No
____ 12 Gauge Scare Cartridges	____ Yes ____ No
____ 12 Gauge Rubber Bullets	____ Yes ____ No
____ 12 Gauge Rubber Bullets	____ Yes ____ No
Other (specify) _____	____ Yes ____ No

REASON FOR DETERRENT:

____ On Road or Airstrip

____ Investigating Camp / Equipment

____ Destroying Equipment / Property

____ Endangering Human Safety

____ Endangering Self

Other (specify) _____

_____

COMPLETED BY:

_____

DATE / TIME / METHOD reported to DSD:

_____

NOTE: If wildlife damaged property, injured a human, injured itself, was chased with a vehicle or had to be relocated or killed provide information on page 2 of form.

More on Pg. 2 ____ Yes ____ No

WILDLIFE DETERRENT REPORT

Deterrent #:

DAMAGE BY WILDLIFE

____ Equipment / Supplies: Damage $

____ Human Injured

Other (specify) _____

CHASED WITH VEHICLE:

____ ATV ____ Skidoo ____ Truck

____ Helicopter

Distance: _____

WILDLIFE RELOCATED

DATE: _____ & TIME: _____ HRS

CAPTURE METHOD: ____ Darted from Helicopter ____ Darted from the Ground

___Culvert / Barrel Trap ____ Net Gun from Helicopter ____ Net Gun from Ground

DSD CONTACT:

_____

Contact No

_____

Company Authorization:

_____

Contact No. _____

HELICOPTER USED: _____

No. of Hours _____ Rate _____ Total _____

CREW: Pilot _____

Biologist _____

Wildlife Officer _____

Wildlife Response Team _____

DRUG USED and AMOUNT: _____

DROP OFF LOCATION: (degrees & minutes) Latitude: _____ Longitude _____

Descriptive Name: _____

MARKED:

Ear Tag Right Ear: Colour _____ No. _____

Ear Tag Left Ear: Colour _____ No. _____

Other: _____

RADIO COLLARED:

Type: _____

Frequency _____

Frequency _____

DISTANCE MOVED: _____ **km**

RELOCATION SUCCESSFUL? ____ **YES** ____ **NO**

WILDLIFE KILLED: _____ Emergency Kill _____ Kill Preauthorized by DSD

DSD Contact: _____ No. _____

Date Hide & Skull Turned in to DSD: _____ Carcass Disposal _____

ADDITIONAL NARRATIVE IF NECESSARY TO BE ATTACHED