

Jay Project Conceptual Wildlife Effects Monitoring Plan



Introduction

Conceptual Jay Project Wildlife Effect Monitoring Plan

- Incorporate effects identified through the Jay Project environmental assessment.
- Intended to engage interested parties and solicit feedback.
- Subsequent versions will be issued for the Jay permitting process.
- Pending approval, the Jay Project would become part of the existing Ekati Mine operation and be covered by the existing Ekati Mine management plans for compliance with the Environmental Agreement and other regulations.

Concordance of Requirements

Legislation/Regulation/Agreement	Requirement	Corresponding Section in WEMP	Responsible Regulatory Agency
Environmental Agreement	<ul style="list-style-type: none"> measure compliance with regulatory requirements. determine the environmental effects of the Mine. test impact predictions. measure effectiveness of impact mitigation. 	Entire Document	Dominion Diamond, Government of Canada, GNWT
Migratory Birds Convention Act, Migratory Bird Regulations	Disturbance to migratory birds and nests prohibited.	Section 4.6	CWS
NWT Wildlife Act	Wildlife management and monitoring plan must include: <ul style="list-style-type: none"> description of potential disturbance or harm to wildlife and impacts to habitat; description of mitigation of potential impacts; the process for monitoring impacts and assessing mitigation effectiveness; and, other prescribed requirements. 	Entire Document	GNWT
Species at Risk Act and Species at Risk (NWT) Act	Adherence to requirements and Regulations or Recovery Plans over the duration of the Mine.	Section 3.5	CWS GNWT
Wildlife and Wildlife Habitat Protection Plan and Wildlife Effects Monitoring Program Guidelines	Draft guidelines for the preparation of wildlife monitoring documents, dated May 2013.	Entire Document	GNWT



Introduction

- Conceptual WEMP addresses the requirements of both Wildlife and Wildlife Habitat Protection Plan and Wildlife Effects Monitoring Program, as described in the *Draft Wildlife and Wildlife Habitat Protection Plan and Draft Wildlife Effects Monitoring Program Guidelines* from the GNWT.
- The Wildlife Effects Monitoring Program addresses monitoring of indirect effects that will take place outside of the Mine (including the Jay Project) footprint.
- The Wildlife and Wildlife Habitat Protection Plan addresses mitigation and direct effects within the Mine (including the Jay Project) development area (i.e., Mine footprint).



Wolf

- Wolves in this area depend on the Bathurst caribou herd as their main source of prey, particularly during the winter.
- Potential risks for the local population may arise from habitat removal and human disturbance.
- The objective of this component of the WEMP is to:
 - determine the presence, distribution, and productivity of active wolf dens throughout the study area.





Wolf

- Wolves require specific habitat features that allow them to dig denning structures.
- Denning habitat is potentially a limited resource for wolves, as eskers comprise a small fraction (2% to 3%) of the Arctic tundra ecosystem.
- The quantity of available den sites may be functionally reduced as a result of disturbances, as wolves tend to avoid human activity.
- The quality of a den site may potentially affect the reproductive success of wolves.





Wolverine

- The western population of wolverine, including those in the NWT, are listed as a species of Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
- The NWT Species at Risk status of wolverine is not at risk.
- The objective of this component of the WEMP is to:
 - identify changes of wolverine abundance and distribution in the study area over time.





Wolverine

- A DNA-based population assessment was conducted in 2005 and 2006 in conjunction with Diavik and ENR. This study was repeated in 2010, 2011, and 2015.
- The hair snagging methods follow those outlined in the GNWT document *Monitoring Protocol for Wolverine DNA Hair Snagging*.
- Dominion Diamond will continue to work with regional partners to assess future monitoring possibilities.





Grizzly Bear

- All populations of grizzly bears in Canada are classified as Special Concern by COSEWIC, and have no status in the NWT.
- The objective of this component of the WEMP is to:
 - provide estimates of grizzly bear abundance and distribution in the study area over time.





Grizzly Bear

- DNA hair-snagging has been used in the past at Ekati with the initial 2-year program completed in 2013 (anticipated to be repeated in four years [2017]).
- Ekati initiated a 2-year pilot program to develop the monitoring protocol for this program (completed in 2011).
- The DNA from hair samples can be used to confirm sex, species, genetic population structure, and individual genealogies.
- Bears are readily attracted by scent lures; methods to obtain hair samples from free-ranging bears permits systematic sampling, and avoids live capture of bears.



Raptors

- Gyrfalcon and peregrine falcon breeding activity is monitored as part of the WEMP because falcon species are legally protected under the NWT *Wildlife Act*, and because they are valuable indicators of environmental change.
- The objective of this component of the WEMP is to:
 - determine site occupancy and productivity of historic peregrine falcon nests in the study area to contribute to the Canadian Peregrine Falcon Survey.





Raptors

- Falcon nest sites are monitored by helicopter twice during the breeding season, once during the spring and once during the summer. This will provide information on nest use and productivity.
- Surveys will occur every 5 years, to coincide with the Canadian Peregrine Falcon Survey (underway in 2015).





Caribou

- Caribou behaviour can be influenced by industrial development. Adult female caribou with calves are more sensitive to disturbances than other caribou groups. Roads and traffic may affect caribou behaviour, as roads can act as visual barriers or breaks in habitat.
- Mine-related stressors that can influence caribou behaviour include aircraft activity, vehicle traffic, blasting, dust, lights, and smells.





Caribou

- The objective of this component of the WEMP is to:
 - determine if caribou behaviour changes with distance from the Mine.
- Focal surveys provide information on activity budgets, the temporal sequence of behaviours relative to stressors or other stimuli, and the length of time it takes the animal to return to a non-stressed state following a stressor event.
- Scan samples of a group of animals are more useful for quantifying the frequencies of dominant behaviours in a group over a period of time.



Jay Project Conceptual Wildlife Effects Monitoring Plan - CRMP

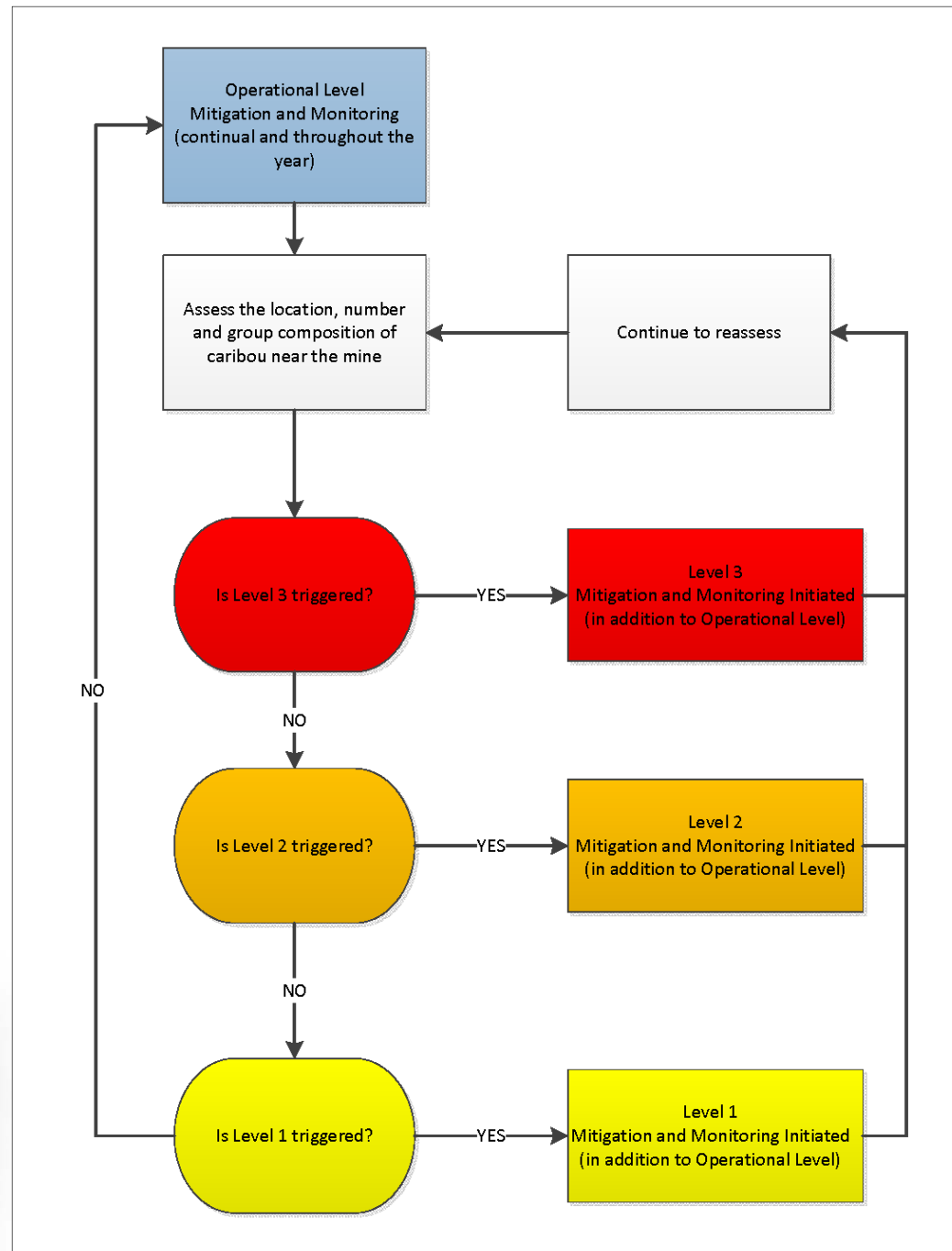


Introduction

- Draft version of this Plan was submitted to the Mackenzie Valley Environmental Impact Review Board on May 8, 2015.
- Following a review period, Dominion Diamond hosted a workshop to discuss the CRMP on May 22, 2015.
- The suggestions made at this workshop have been considered and incorporated into this version of the Plan.
- The Jay CRMP will be included as an Appendix to the Jay Project Conceptual Wildlife Effects Monitoring Plan.
- Based on the framework of adaptive management, the CRMP will evolve through time.

CRMP Revisions from May Workshop

Workshop Recommendation	Revision to CRMP	CRMP Section
Revise Plan Name	Now titled as Caribou Road Mitigation Plan	Entire Document
Incorporate into WEMP	Will become an appendix to the Conceptual Jay Project WEMP	Appendix B, Jay Project Conceptual WEMP
Clarify traffic details	Added detail on traffic amounts and “passages”	Section 1.1
Sensory disturbance objective	Added this objective	Section 1.2
Revise mitigation decision tree colour scheme	New colours and wording used in mitigation decision tree	Section 3
Rationalize distance thresholds	Included basis of distance thresholds	Section 3
Combine Levels 2 and 3	Levels 2 and 3 combined	Section 3
Trigger of 1% of herd for road closure	Trigger is 1%, but road may be closed at lower levels	Section 3.4
Identify reported components	Mitigation and monitoring reported annually in WEMP	Section 4



Operational Level - Blue

Level (Alert)	Action Level (Triggers) to Initiate	Wildlife Road Mitigation	Caribou Monitoring
Operational (Blue)	<ul style="list-style-type: none"> Continual and throughout the year 	<ul style="list-style-type: none"> Design road to incorporate caribou crossings Employee education Speed limits are posted Wildlife have right-of-way on all roads Observations of wildlife on roads will be communicated to the Environment Department and other drivers in the area Wildlife carcasses on or near roads will be removed Road snow berm height will be managed during winter 	<ul style="list-style-type: none"> Collared caribou monitoring Incidental wildlife sightings Weekly road surveys

Level 1 - Yellow

Level (Alert)	Action Level (Triggers) to Initiate	Wildlife Road Mitigation	Caribou Monitoring
1 (Yellow)	<ul style="list-style-type: none">One or more collared caribou or caribou observations within 30 km of the Ekati Mine (i.e., RSA)	<ul style="list-style-type: none">Site-wide notifications of caribou approach to Ekati MineSignage indicating caribou could be encountered (yellow alert)	<ul style="list-style-type: none">Collared caribou monitoringIncidental wildlife sightingsDaily road surveys

Level 2 - Orange

Level (Alert)	Action Level (Triggers) to Initiate	Wildlife Road Mitigation	Caribou Monitoring
2 (Orange)	<ul style="list-style-type: none"> One or more collared caribou within 14 km of the Ekati Mine Caribou sightings are reported near the Misery or Jay roads 	<ul style="list-style-type: none"> Site-wide notifications of caribou approach to Ekati Mine Increased signage in areas where caribou might encounter the road Signage indicating caribou are likely to be encountered (orange alert) Speed limits will be decreased and posted 	<ul style="list-style-type: none"> Collared caribou monitoring Incidental wildlife sightings Daily road surveys Environment Technicians dispatched to monitor traffic and provide caribou safety

Level 3 - Red

Level (Alert)	Action Level (Triggers) to Initiate	Wildlife Road Mitigation	Caribou Monitoring
3 (Red)	<ul style="list-style-type: none"> 1% of total cows in the Bathurst herd are within 200 m of the Jay or Misery roads One or more caribou groups observed within 500 m of the Jay or Misery roads during the northern migration (May) One or more caribou crossing the road 	<ul style="list-style-type: none"> Site-wide notifications of caribou approach to Ekati Mine Signage indicating caribou are highly likely to be encountered (red alert) Short-term or long-term closures 	<ul style="list-style-type: none"> Collared caribou monitoring Incidental wildlife sightings Daily road surveys Environment Technicians dispatched to monitor traffic and provide caribou safety Behavioural surveys (scan and focal sampling)



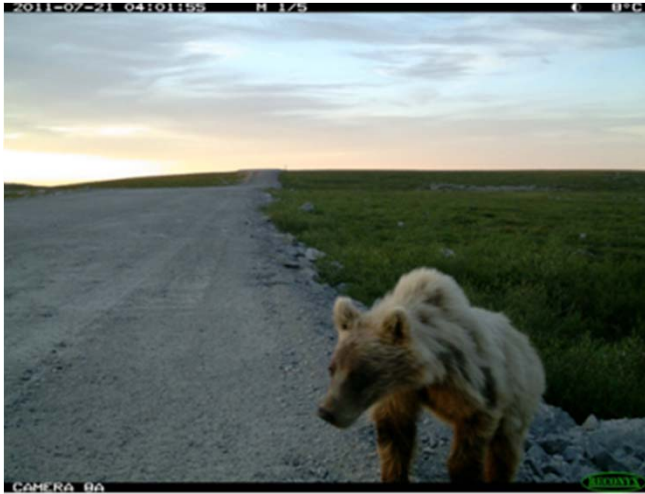
Wildlife Advisory Example

Fox Den Misery KM 5 June 23, 2015

Please be advised of the presence of a fox den at KM 5 of the Misery Haul Road. Vehicle speeds are to be reduced to 20 km/hr from KM 4 to KM 6 of the haul road. Signs indicating the reduced speed limit are posted.

- Continue to report all wildlife sightings to Environment (6 AM to 6 PM) or Security (6 PM to 6 AM)
- All drivers are reminded to slow down and, if necessary, stop when encountering wildlife around site





Jay Project Conceptual Wildlife Effects Monitoring Plan - WWHPP



Introduction

- Dominion Diamond has produced a single conceptual document:
 - the Jay Project Conceptual Wildlife Effects Monitoring Plan.
- This Plan addresses the requirements for both a Wildlife and Wildlife Habitat Protection Plan and a Wildlife Effects Monitoring Program, as described in the *Draft Wildlife and Wildlife Habitat Protection Plan and Draft Wildlife Effects Monitoring Program Guidelines* from the GNWT.
- The WWHPP applies to wildlife mitigation and monitoring of direct effects within the Mine (including the Jay Project) development area (i.e., Mine footprint).



Mitigation

- Mitigation is implemented on a hierarchy of intensity (action) levels and spatial and temporal scales to protect wildlife and wildlife habitat.
- Ekati Mine follows this hierarchical approach by using mitigation that first avoids, then minimizes, and then reclaims adverse effects associated with environmental risks or effects pathways.
- Mitigation at the Ekati Mine is applied and intensified or reduced within an adaptive management framework.





Wildlife Habitat

- The objective for this component of the WEMP is to:
 - determine the amount of direct habitat loss due to Ekati activities (including the Jay Project).
- The area of direct habitat loss is determined by superimposing the current Mine development area on the pre-development (i.e., baseline) habitat map of the study area using Geographic Information System (GIS) software.
- Habitat loss from Mine expansion (which will include the Jay Project) will continue to be monitored and reported in the annual monitoring report.



Incidental Observations

- The objective of this component is to:
 - record wildlife observations at the Mine site.
- Wildlife activity at site is monitored, which can help locate and eliminate attractants and minimize human-wildlife interactions.
- This can also be used to track changes in wildlife activity near the Mine (and Jay Project) over time and to assess potential attraction or avoidance at different Mine locations, and focus mitigation efforts.



Raptors – Pit Wall Monitoring

- The objective of this component of the WEMP is to:
 - determine if pit walls or other infrastructure are utilized as nesting sites for raptors;
 - determine nest success in areas of development and document effectiveness of deterrent efforts that may be employed for nest relocations; and,
 - document and determine the cause of direct mine-related mortalities of raptors, and mitigate those causes moving forward.





Raptors – Pit Wall Monitoring

- Visual surveys for nesting activity will occur at all open pits at Ekati between April and August.
- If nests are observed in an active pit, ENR will be contacted immediately for advice on mitigation.
- Incidental raptor observations in the Ekati study area will be reported by helicopter operators, ground-based field workers, and other Mine personnel.





Caribou – Long Lake Containment Facility Monitoring

- The objectives for this component of the WEMP are to:
 - determine if the LLCF poses a physical risk to caribou or inhibits caribou movement;
 - determine the frequency that caribou use the LLCF; and,
 - determine the group size, group composition, and dominant group behaviours of caribou observed within the LLCF.





Caribou – Long Lake Containment Facility Monitoring

- The survey involves a visual scan of the LLCF three times a week from April 1 to November 30 to observe and record caribou presence with a focus on containment cells A, B, and C.
- At other times of the year, cells will be surveyed approximately once per week to document wildlife activity.
- As the use of the LLCF will change during the life of the Jay Project, monitoring frequency of the LLCF will be adjusted accordingly.



Caribou – Camera Trapping

- The objectives for this component of the WEMP are to:
 - determine the level of caribou (and other wildlife) activity and traffic along Misery and Jay roads;
 - determine caribou (and other wildlife) responses to the road (i.e., crossing or deflecting); and,
 - determine caribou (and other wildlife) activity at other Mine infrastructure and along historic movement corridors.
- Cameras will be used to monitor Misery and Jay roads, as well as other strategic locations where wildlife may be observed.



Jay Project Conceptual Wildlife Effects Monitoring Plan - TK



Traditional Knowledge Inclusion

- The overall intent of Dominion Diamond's Community Engagement Program is to demonstrate and provide hands-on experience for community members (Elders, adults, and youth) so that they may gain a general awareness on how the Ekati Environment Department conducts its day-to-day, site-based, environmental monitoring programs.
- With the assistance of community experts, land users, and/or TK holders during wildlife and habitat surveys, TK has helped to identify ways to prevent or mitigate impacts and understand results.
- ongoing engagement will be continued and incorporated in subsequent versions of the WEMP.



Community Participation

- Misery Road monitoring.
- Misery Pit raptor monitoring.
- Power line construction monitoring.
- Grizzly bear DNA hair-snagging program.
- Wolverine DNA hair-snagging program.
- Caribou behaviour monitoring.



Caribou

- Elders and TK holders are regularly invited to site to participate in monitoring programs and to share their knowledge about caribou behaviour, diet, health and body condition, and migration movements.
- Since 2011, all the community engagement programs have included youth participants, which was recommended in previous meetings.
- These programs have provided opportunities for Elders to pass TK on to youth, and for youth to provide support to their Elders.





Wolf

- As of 2007, Inuit participants in the Caribou and Roads Program recognized that the wolf population around Ekati was beginning to decline.
- They noted that wolf and caribou have been living together for thousands of years and that wolves will decline with caribou, and recommended that the eskers and denning areas for wolves and wolverines be protected. One of the main concerns was potential impacts on the presence and health of game in the area for hunting and trapping in the future.
- Incidental sightings are reported and den surveys are carried out as part of the WEMP to monitor wolf presence, occurrence, and productivity near the Mine. Overall, wolf presence within the Ekati Mine area has been consistent over the last 12 years.



Wolverine

- In the past (2000 and 2001) the presence of wolverine in the study area was documented through winter track surveys.
- According to TK, the best time to obtain estimates of wolverine numbers within an area from snow track surveys was during November and December.
- Wolverine are now monitored through a wolverine DNA hair-snagging program.
- TK has given guidance on preferred baits, and the timing on when this program should be completed.



Grizzly Bear

- At 2010 technical and community workshops, regulators, monitoring agencies, and community members recommended that the mining industry collaborate on a large scale regional grizzly bear program to assess population status and monitor trends over the long term.
- Dominion Diamond, Diavik, and De Beers agreed to work together on a large scale, grizzly bear mark-recapture study surrounding their diamond mine properties in the central barrens of the NWT.
- Elders and land users from outlying communities participated in site visits for the Community Engagement Program during the initial planning phases of the program, and helped Ekati staff identify where hair-snagging devices should be deployed.



TK Informed Mitigation

- Improvements to fencing and other types of passive deflection deterrents (1997 to 2015).
- Inokhoks (Kugluktuk Elders Advisory Group) placed at airstrip, Beartooth Pit, Fox Pit, and other potentially hazardous areas.
- Contributed to the placement and design of caribou crossings on the Misery Road.
- Jay Road route alignment and WRSA placement considered TK (e.g., caribou movements).
- Community engagement activities related to mitigation at Ekati Mine will be on-going.