



Yellowknives Dene First Nation Land and Environment

Jay Project Hearing - Closing Submission

From Yellowknives Dene First Nation
Fax: (867)766-3496

To: Chuck Hubert
Mackenzie Valley Environmental Impact Review Board
Box 938
Yellowknife, Northwest Territories
X1A 2N7
Fax: (867) 766-7052

August 3rd, 2015

YKDFN Land & Environment



Yellowknives Dene First Nation

P.O. Box 2514, Yellowknife, NT X1A 2P8

Contents

Yellowknives Dene First Nation	1
1.0 Introduction	3
2.0 Organization.....	3
3.0 Plain Language Summary	4
4.0 Specific Impacts	6
4.1 Caribou: Cumulative Impact Predictions	6
4.1.1 Issue Statement	6
4.1.2 Proponent's Conclusion	6
4.1.3 YKDFN's Conclusion	6
4.1.2 Proponent's Conclusion	9
4.1.3 YKDFN's Conclusion	9
4.1.4 Evidence and Rational.....	9
4.1.5 Recommendation.....	12
4.2 Compensatory Mitigation	13
4.2.1 Issue Statement	13
4.2.2 Proponent's Conclusions	13
4.2.3 YKDFN's Conclusion	13
4.2.4 Evidence and Rational.....	13
4.2.5 Recommendations	14
4.3 Zone of Influence	16
4.3.1 Issue Statement	16
4.3.2 Proponent's Conclusion	16
4.3.3 YKDFN's Conclusion	16
4.3.4 Evidence and Rational.....	16

4.3.5 Recommendations	16
4.4 Air Quality & Dust Management.....	17
4.4.1 Issue Statement	17
4.4.2 Proponent's Conclusions	17
4.4.3 YKDFN's Conclusion	17
4.4.4 Evidence and Rational.....	17
4.4.5 Recommendations	18
4.5 Surface and Mine-Water Management	18
4.5.1 Issue Statement	18
4.5.2 Proponent's Conclusion	18
4.5.3 YKDFN's conclusion	19
4.5.4 Evidence and Rational.....	19
4.5.5 Recommendation.....	20
4.6 Community Wellness	21
4.6.1 Issue Statement	21
4.6.2 Proponent's Conclusion	21
4.6.3 YKDFN's Conclusion	21
4.6.4 Evidence and Rational.....	22
4.6.5 Recommendations	23
5.0 Conclusion.....	24

1.0 Introduction

The Yellowknives Dene First Nation (YKDFN) submits its final comments to the Review Board as evidence to assist in decision-making for the proposed Ekati Jay Project (EA1314-001) environmental assessment, as outlined in the Developers Assessment Report (DAR) and supporting documents. The proponent is Dominion Diamond Ekati Corporation (DDEC).

2.0 Organization

The YKDFN membership resides primarily in the two communities of Dettah and Ndilo, in addition to the adjacent community of Yellowknife. The proposed Jay project lies within traditional Chief Drygeese Territory. YKDFN is concerned with the impacts of the project on the land, the animals, and the water that they rely on. YKDFN is concerned with the potential impact that this proposed project possess; not in the short term, but also far into the future. It is not the DDEC ownership or the employees who will feel the effects, but the people who rely on the land – for 70 years the YKDFN have felt the effect of resource extraction. YKDFN has practiced land management since time immemorial, with a single rule – if you take care of the land, it will take care of you.

YKDFN has always demonstrated a willingness to work with industry. However, it is essential that resource exploitation be undertaken with the utmost respect and consideration for the land and the people who have traditionally used and occupied it.

3.0 Plain Language Summary

Yellowknives Dene First Nation (YKDFN) has ongoing concerns with the proposed Dominion Diamond Ekati Corporation (DDEC), Jay Project. The intensified development of the Lac de Gras and Lac du Sauvage area continues to put further environmental stress on traditional Chief Drygeese Territory. It is important to YKDFN that appropriate measures be put in place to ensure that the short and long-term viability of the Lac de Gras and Lac du Sauvage area as a culturally, ecologically and economically significant region are put in place. The main items covered in this report are as follows.

- **Caribou Measures:** Traditional knowledge strongly supports the conclusion that mining development by the proponent, and others, has already had a significant impact on caribou populations. Therefore, it is untenable that intensified development of the Lac de Gras area would not have a negative impact caribou numbers and behaviour. This is especially important in the context of the recent caribou population collapse. The caribou population collapse has had a significant negative impact on YKDFN. In spite of this, it is YKDFN who face increased restrictions on their traditional activities. It is not reasonable that the onus fall to the traditional harvesters of caribou and not those who have a large-scale, impact on the land.
- **Cumulative Effects & Recovery:** The continued development of mining projects presents an ongoing and cumulative stress to caribou. This is evidenced by both traditional knowledge and in scientific literature. The assertion that continued, intensified mining projects would not raise major concerns as to the health and longevity of the Beverly Heard is untenable, at best. The recent precipitous decline caribou numbers, coupled with evidence for decreased herd resilience raises serious concerns for YKDFN. What's more, the continued development in the region raises concerns with regard to herd recovery.
- **Water Management Measures:** YKDFN has significant reservations about the plan to rely on pit lake meromixis to contain contaminated water. This plan relies on the density

difference between the fresh water added to the pit and the saline water at the bottom of the pit preventing mixing. YKDFN does not feel that this approach is a well vetted. Further, YKDFN would like a plan in place should this approach to contaminated-water containment fail. Furthermore, YKDFN is concerned about the reliance on permafrost to prevent the movement of contaminated water out of, and fresh water into the pit lake. This factor undermines both the stability of the meromixis the lateral containment of contaminated water.

- **Air Quality Measures:** The emission of particulate matter (especially PM2.5), persistent organic compounds such as dioxins and furans, and dust is an ongoing concern. There continues to be no enforceable emission or air quality standards in in the Northwest Territories (NWT). YKDFN strongly supports the GNWT's development of such policies.
- **Socio-Economic Measures:** YKDFN has a number of concerns around the negative impact that the diamond mining has had on community wellness. This includes the erosion of traditional cultural practices, physical health, economic independence and an increase in addictions.

4.0 Specific Impacts

4.1 Caribou: Cumulative Impact Predictions

4.1.1 Issue Statement

The cumulative impact of mining operation in the Lac de Grace, Lac du Sauvage region has already had a significant negative effect on caribou populations.

4.1.2 Proponent's Conclusion

DDEC states that the development of the Jay project will have “*no significant adverse effects on self-sustaining and ecologically effective barren-ground caribou populations.*” (PR#DAR Section 12.6.2, pg 12-135; response to PR#305 DAR-IEMA-IR-36).

4.1.3 YKDFN's Conclusion

YKDFN contends that the evidence does not support the conclusion reached by the proponent. Both scientific and traditional knowledge based evidence support the conclusion that the cumulative impacts of development are significant. Furthermore, YKDFN contends that the continued expansion of mining activities is likely to have a disproportionate negative impact on the remaining caribou population. This represents a significant public concern for the future health and existence of the Bathurst caribou herd.

4.1.4 Evidence and Rational

Traditional knowledge strongly supports the conclusion that mining development by the proponent, and others, has already had a significant impact on caribou populations. The proposed site for the Jay pit lies immediately adjacent a historic caribou migratory route. Elders have previously indicated that disruption of this route would result in disruption of caribou migratory route selection. Therefore, it is untenable that intensified development of the Lac de Gras, Lac du Sauvage area would not have a negative impact on caribou numbers and behaviour. This is especially important in the context of the recent caribou population collapse. The caribou population collapse has had a significant negative impact on YKDFN. In spite of this, it is YKDFN who face increased restrictions on their traditional activities. It is not reasonable

that the onus fall to the traditional harvesters of caribou and not those who have a large-scale, impact on the land

The Bathurst caribou have seen a 95% drop in numbers in the period spanning the mid-to-late 1980s to the 2014, from approximately 450,000 to 15,000-20,000 animals. (PR#132 DAR Section 12.2.2.3, pg 12-22; as referenced in PR#305 DAR-IEMA-IR-30, Boulanger J, Croft B, Cluff D. 2014b. Trends in size of the Bathurst caribou herd can also be inferred from the 2014b. Trends in size of the Bathurst caribou herd from the 2014 calving ground reconnaissance survey. Integrated Ecological Research. July 31, 2014; 3 *IEMA Jay Project Technical Report EA1314-001* <http://www.cbc.ca/news/canada/north/n-w-t-stops-issuing-remaining-bathurst-caribou-tags-1.2880037>).

Establishing direct causal relationships of outcomes in complex populations is always challenging. However, known factors that have contributed to the Bathurst herd decline include naturally population periodicity (Zalatan *et al.* 2006), human harvest (Boulanger *et al.* 2011) and development within the Bathurst herd range (Dyer *et al.* 2002, & Johnson *et al.* 2005 in DAR sect. 12 PR#132; Nellemann *et al.* 2010, Panzacchi *et al.* 2013). Again, while it is challenging to disentangle the relative contribution of human activity to caribou decline, it is the position of YKDFN that an extreme level of incredulity is required to discount the negative effects of human activity on caribou numbers. By the same token, it is hard to imagine a scenario where further development did not impose additional measurable negative impacts on the Bathurst herd.

YKDFN is further concerned by the implications of the current small population size of the Bathurst herd. The smaller population creates a scenario whereby existing and cumulative stressors (such as predation and an expanding ZOI) may have a disproportionate impact of caribou numbers. The barren ground caribou's herding strategy relies on high caribou numbers. This is especially the case for calving cows who rely on large numbers in order to derive significant benefit from herd protection. Taken together, it must be considered that the existing Bathurst caribou may be more sensitive to population stressors at a time when those stressors are increasing.

The decline, and potential extirpation, of the Bathurst caribou has far reaching social and economic impacts on YKDFN membership that contribute to a decline in community wellness and cultural identity. Accordingly, YKDFN membership is deeply concerned about the long-term wellbeing of the Barren Grounds caribou generally and the Bathurst herd in particular.

Participation in the caribou harvest is culturally and economically important to YKDFN.

Harvesting represents a unique opportunity for the passing of cultural practices and practical skills. These include, but is not limited to, respect for the land, wilderness survival skills, physical and spiritual health of the community, and meaningful engagement between youth and elders.

The caribou harvest also provides significant economic benefit to YKDFN members. Meat arising from the harvesting offsets the cost of meat that would otherwise need to be obtained from grocery stores. Further, caribou meat has high nutritive value and contributes positively to the physical health of the community. Economic benefit is also derived from game-hunting that supports outfitting companies and ancillary economic activity arising from this. Finally, there is further economic benefit associated with value-added economic activities such as traditional craft and garment production.

Finally, the Jay Project will increase the ZOI which will negatively affect the herd. The location of the Jay pit and the proposed Jay road will have both direct and secondary affects; e.g., traffic and associated increases dust production. As stated above, the ZOI of development extends several kilometers and its true extent is still not fully defined. In addition to this, the proposed Jay road will cut directly through the existing Bathurst herd migratory route, disrupting the esker defining the caribou's preferred path.

Taken together, YKDFN insists that the Jay Project represents a significant public concern with respect to the continued health and existence of the Bathurst Caribou. We must reiterate the importance of applying precautionary principle as required in the Environmental Agreement (PR#411 Section 1.2d).

4.1.2.1 Increased TK-Based Research & Mitigation

1. As a measure, YKDFN proposes that DDEC provide financial support for TK-based research into the impacts of Diamond mining on caribou herd health and migratory

patterns. To be considered part of mitigation there must also be a commitment from DDEC to incorporate the results of the TK-based research into mitigation efforts. To ensure this YKDFN proposes that full control of the TK-based research program lie with Communities who are party to the IBA.

2. DDEC provide direct financial compensation to IBA communities to offset the loss incurred through the inability to exercise their aboriginal rights. This inability to engage in traditional practices is the direct result of the removal of the Ekati mine area from traditional use due to mining activities.

4.1.2.2 Community-Based Caribou Monitoring

The cumulative impact of mining operation in the Lac de Grace, Lac du Sauvage region has already had a significant negative effect on caribou populations.

4.1.2 Proponent's Conclusion

DDEC states that the development of the Jay project will have "*no significant adverse effects on self-sustaining and ecologically effective barren-ground caribou populations.*" (PR#DAR Section 12.6.2, pg 12-135; response to PR#305 DAR-IEMA-IR-36).

4.1.3 YKDFN's Conclusion

YKDFN contends that the evidence does not support the conclusion reached by the proponent. Both scientific and traditional knowledge based evidence support the conclusion that the cumulative impacts of development are significant. Furthermore, YKDFN contends that the continued expansion of mining activities is likely to have a disproportionate negative impact on the remaining caribou population. This represents a significant public concern for the future health and existence of the Bathurst caribou herd.

4.1.4 Evidence and Rational

Traditional knowledge strongly supports the conclusion that mining development by the proponent, and others, has already had a significant impact on caribou populations. The proposed site for the Jay pit lies immediately adjacent a historic caribou migratory route. Elders have previously indicated that disruption of this route would result in disruption of caribou

migratory route selection. Therefore, it is untenable that intensified development of the Lac de Gras, Lac du Sauvage area would not have a negative impact on caribou numbers and behaviour. This is especially important in the context of the recent caribou population collapse. The caribou population collapse has had a significant negative impact on YKDFN. In spite of this, it is YKDFN who face increased restrictions on their traditional activities. It is not reasonable that the onus fall to the traditional harvesters of caribou and not those who have a large-scale, impact on the land.

The Bathurst caribou have seen a 95% drop in numbers in the period spanning the mid-to-late 1980s to the 2014, from approximately 450,000 to 15,000-20,000 animals. (PR#132 DAR Section 12.2.2.3, pg 12-22; as referenced in PR#305 DAR-IEMA-IR-30, Boulanger J, Croft B, Cluff D. 2014b. Trends in size of the Bathurst caribou herd can also be inferred from the 2014b. Trends in size of the Bathurst caribou herd from the 2014 calving ground reconnaissance survey. Integrated Ecological Research. July 31, 2014; 3 *IEMA Jay Project Technical Report EA1314-001* <http://www.cbc.ca/news/canada/north/n-w-t-stops-issuing-remaining-bathurst-caribou-tags-1.2880037>).

Establishing direct causal relationships of outcomes in complex populations is always challenging. However, known factors that have contributed to the Bathurst herd decline include naturally population periodicity (Zalatan *et al.* 2006), human harvest (Boulanger *et al.* 2011) and development within the Bathurst herd range (Dyer *et al.* 2002, & Johnson *et al.* 2005 in DAR sect. 12 PR#132; Nellemann *et al.* 2010, Panzacchi *et al.* 2013). Again, while it is challenging to disentangle the relative contribution of human activity to caribou decline, it is the position of YKDFN that an extreme level of incredulity is required to discount the negative effects of human activity on caribou numbers. By the same token, it is hard to imagine a scenario where further development did not impose additional measurable negative impacts on the Bathurst herd.

YKDFN is further concerned by the implications of the current small population size of the Bathurst herd. The smaller population creates a scenario whereby existing and cumulative stressors (such as predation and an expanding ZOI) may have a disproportionate impact of

caribou numbers. The barren ground caribou's herding strategy relies on high caribou numbers. This is especially the case for calving cows who rely on large numbers in order to derive significant benefit from herd protection. Taken together, it must be considered that the existing Bathurst caribou may be more sensitive to population stressors at a time when those stressors are increasing.

The decline, and potential extirpation, of the Bathurst caribou has far reaching social and economic impacts on YKDFN membership that contribute to a decline in community wellness and cultural identity. Accordingly, YKDFN membership is deeply concerned about the long-term wellbeing of the Barren Grounds caribou generally and the Bathurst herd in particular.

Participation in the caribou harvest is culturally and economically important to YKDFN. Harvesting represents a unique opportunity for the passing of cultural practices and practical skills. These include, but is not limited to, respect for the land, wilderness survival skills, physical and spiritual health of the community, and meaningful engagement between youth and elders.

The caribou harvest also provides significant economic benefit to YKDFN members. Meat arising from the harvesting offsets the cost of meat that would otherwise need to be obtained from grocery stores. Further, caribou meat has high nutritive value and contributes positively to the physical health of the community. Economic benefit is also derived from game-hunting that supports outfitting companies and ancillary economic activity arising from this. Finally, there is further economic benefit associated with value-added economic activities such as traditional craft and garment production.

Finally, the Jay Project will increase the ZOI which will negatively affect the herd. The location of the Jay pit and the proposed Jay road will have both direct and secondary affects; e.g., traffic and associated increases dust production. As stated above, the ZOI of development extends several kilometers and its true extent is still not fully defined. In addition to this, the proposed Jay road will cut directly through the existing Bathurst herd migratory route, disrupting the esker defining the caribou's preferred path.

Taken together, YKDFN insists that the Jay Project represents a significant public concern with respect to the continued health and existence of the Bathurst Caribou. We must reiterate the importance of applying precautionary principle as required in the Environmental Agreement (PR#411 Section 1.2d).

4.1.5 Recommendation

YKDFN recommends that the Review Board make a determination that the Jay project would have a significant adverse cumulative impact on caribou. Therefore, YKDFN supports the following measures.

1. DDEC shall be subject to measures aimed at minimizing adverse effects on caribou, not limited to:
 - a. Selection of the Jay haul road route that minimizes disturbance to high quality caribou habitat (PR#305 DAR-IEMA-IR-28 and PR#256 Anne Gunn's proposed routing)
 - b. Additional mitigation to reduce effects of haul truck and other traffic on caribou; such as, more aggressive dust management; more precautionary traffic management to reduce sensory disturbance.
 - c. Devise and implement a lower impact esker crossing via alternate crossing site, one way traffic, buried power lines and other approaches.
2. Conduct collaborative research with other mine operators to deepen understanding of the true zone of influence (ZOI) created by mining and exploratory activities. The results of this research will be reported annually to all interested parties as part of DDEC's annual report under its Wildlife Effects Monitoring Program. The research program should be developed within a year of the acceptance date of the Measures by Responsible Ministers. Implementation of research results to reduce ZOI should take place within five years, and DDEC will also commit to applying these results to the existing Ekati Mine.

4.2 Compensatory Mitigation

4.2.1 Issue Statement

YKDFN contends that DDEC has not sufficiently considered the need for offsetting the negative impact of the Jay project on caribou.

4.2.2 Proponent's Conclusions

The Proponent has concluded that “no significant adverse effects from the Project on caribou and wildlife ... therefore, no offset mitigation has been proposed” (response to DAR-IEMA-IR2-04). Furthermore, DDEC has stated *“There is no reason to expect that caribou will not continue to use the Narrows between Lac du Sauvage and Lac de Gras. This area has been frequented by hunter and likely predators for thousands of years, has been crossed by the Tibbitt to Contwoyto Winter Road since 1982 ... and continues to be used by caribou.”* (response to DAR-YKDFN-IR-01)

4.2.3 YKDFN's Conclusion

YKDFN rejects the proponents conclusion that the Jay Project will have no effect on caribou numbers and that there is no reason to believe that caribou will not continue to use the Narrows. Existing projects by the proponent and others have already had a negative impact on caribou; to conclude that further development of the region would be insubstantial does not follow. Therefore, YKDFN contends that the proponent should aggressively implement all accepted offsetting, compensatory mitigation strategies.

4.2.4 Evidence and Rational

The Bathurst herd has seen a greater than 95% drop in numbers since the 1980s. This rapid decline has been in lock-step with the expansion of mining projects in the region. Furthermore, the proponent has acknowledged the growing ZOI created by development (PR#461 response to DAR-MVEIRB-IR2-06: Map 6-1, PR#466 The Caribou ZOI Technical Task Group 2015: Appendix C: Fig. 3). The alarming drop in caribou numbers, and the unknown extent of the expanding ZOI support the deployment of compensatory mitigation.

Precedent for the implementation of compensatory mitigation as a caribou management strategy already exists in Canada. In 2012, Peace River Coal Inc. was required to secure areas of high quality caribou habitat to be excluded from development, as a condition of their Caribou

Mitigation and Monitoring Plan for the Roman Coal mine

(http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_308_34868.html). To this end, they were also required to contribute \$2.5 million to an endowment for caribou management. YKDFN believes that a similar approach is feasible for the Jay Project and the collapse of the Bathurst caribou population necessitates strong and meaningful measures be taken.

4.2.5 Recommendations

YKDFN posits that the proponent can take specific and measurable actions to off-set the adverse impact of the Jay Project on caribou. For example, DDEC could increase efforts towards the timely reclamation of sites no longer in use; such as, Old Camp, Fox waste rock piles and pit, and Cell B of the Long Lake Containment Facility). Finally, DDEC should exercise caution with respect to timing and phasing of any further exploration or development in the regions until such time as the Bathurst caribou population recovers to more robust levels. YKDFN supports the following measure.

1. DDEC should be required to prepare a Compensatory Mitigation plan for caribou, so as to facilitate caribou herd recovery. Specifically, the plan's objectives should target quantifiable objectives, such as: reductions in energy loss, increased calving rates, increase calf survival rates. The plan should be developed with input from interested parties. The plan should be prepared by DDEC and circulated to affected Aboriginal governments, the GNWT, and the Wek'eezhii Renewable Resources Board within one year of acceptance of the Report of Environmental Assessment.
2. YKDFN proposes that DDEC provide financial support for TK-based research into the impacts of Diamond mining on caribou herd health and migratory patterns. To be considered part of mitigation there must also be a commitment from DDEC to incorporate the results of the TK-based research into mitigation efforts. To ensure this YKDFN proposes that full control of the TK-based research program lie with Communities who are party to the IBA. As part of this TK research program, YKDFN proposes the following:

- a. DDEC provide a minimum of \$200,000/year direct financial support for the period spanning the start of mine construction to the completion of mine closure. DDEC also provide an additional \$100,000 of direct support thereafter until all adverse effects on the Bathurst caribou herd from mine development have been mitigated, as determined by an expert panel of reviews.
 - b. The establishment of an expert panel to guide the research. This panel will comprise both traditional knowledge holders identified by IBA communities and appropriately qualified scientists. This panel will operate independently, developing a terms of reference and report directly to IBA communities.
 - c. The panel will provide quarterly reports on such factors as caribou movement, cow/calf ratios, mortality rates, body condition, insect harassment and other indicators as determined by the panel. To meet this objective, the panel will actively seek and welcome collaboration with trans-boundary partners.
 - d. The panel will produce an annual report to IBA communities and DDEC on herd status and health based on metrics deemed relevant. Reporting will take consideration of target audience, with emphasis on accessibility of information to community members. That is, the information should be presented in such a way as to enhance understanding to as many community members as possible.
 - e. DDEC must demonstrate how recommendations research results produced from the panel are incorporated into its wildlife mitigation efforts.
3. DDEC provide direct financial compensation to IBA communities to offset the loss incurred through the inability to exercise their aboriginal rights. This inability to engage in traditional practices is the direct result of the removal of the Ekati mine area from traditional use due to mining activities.
4. That DDEC will develop a clear mechanism for the temporary (i.e., seasonal or when caribou are in proximity of mining operations) halting mine work and/or introducing mitigation and offsetting actions, should the caribou population continue to decline.

4.3 Zone of Influence

4.3.1 Issue Statement

The issue is whether the Jay Project will expand the ZOI and if that expansion will be detrimental to Caribou.

4.3.2 Proponent's Conclusion

DDEC concluded that in recent years the ZOI has not shown an increase and that this information coupled with the stabilization in herd size demonstrate that the ZOI is unlikely to change with the expansion of mining to include the Jay Project

4.3.3 YKDFN's Conclusion

YKDFN does not accept the Proponent conclusion that placing an open pit mine adjacent an important caribou migratory route, then bisecting that route with a haul road is unlikely to expand the ZOI. In fact, asking if the Jay Project will expand the ZOI hardly seems valid as it has already been established that caribou avoid mining development. The more appropriate question is: to what extent the Project will negatively affect the Bathurst herd?

4.3.4 Evidence and Rational

It has already been demonstrated that Bathurst caribou avoid haul roads and that these roads act as a barrier to caribou movement. Likewise, the existence of the ZOI itself demonstrates that the Bathurst caribou prefer to keep their distance from existing mining operations. Currently, however, the true extent of the existing ZOI is unclear. This confounding factor makes it difficult to predict, with certainty, to what degree the Jay Project would extend the ZOI.

4.3.5 Recommendations

YKDFN supports the following recommendation.

1. To obtain information needed to prevent significant adverse impact to caribou, DDEC shall analyze estimates to ZOI distances and magnitude from the 2009 and 2012 aerial survey data from the combined Ekati-Diavik study area using the new R code analysis. These estimates should be reported within the 2015 Wildlife Effects Monitoring Program report.

4.4 Air Quality & Dust Management

4.4.1 Issue Statement

The Revised Terms of Reference (PR#74) set out project impacts to air quality as a Subject of Note in s. 7.4.1. The proponent is required to “quantify emissions (incinerator, heavy equipment etc.) and the accumulation of those emissions in the environment (dioxins, furans, metals etc.), and demonstrate the manner in which the developer will show compliance with national standards and minimize these emissions and their impacts to the environment.”.

4.4.2 Proponent’s Conclusions

“All of the effects were classified as local in geographic extent and of medium duration because emissions and effects cease when Project activities are completed. Magnitude classifications ranged from negligible to high within the LSA. Consequently, effects to air quality were classified as not significant” DAR (PR#103 s. 7 Air Quality, pg. 7-111). The proponent maintained this position after its updated air quality assessment (PR#256 pg. 31-32).

4.4.3 YKDFN’s Conclusion

YKDFN has two primary concerns surrounding emissions. The first relates to dust suppression and its contribution to the ZOI. The second relates to the emission of organic pollutants and metals.

4.4.4 Evidence and Rational

YKDFN continues to be concerned about the lack of any enforceable air quality standards in the Northwest Territories. It is the understanding of YKDFN that the GNWT is in the process of drafting such regulations, and we fully support this course as we feel it is the minimum standard for any modern approach to large-scale resource exploration project. This is especially the case with regard to persistent environmental pollutants whose impact will long outlive the life of the mining project. While DDEC has been forthcoming in its engagement with affected parties on this issue, YKDFN feel that it is insufficient to rely on the proponent to lead efforts in regulating their own emissions.

As previously stated in this Technical Report there is a gap in the understanding of the nature and extent of the ZOI as it relates to caribou. It is clear, however, that caribou avoid the mining projects including haul roads. The role of dust, both suspended and precipitated out on

surrounding vegetation, on caribou behaviour and feeding patterns are unclear. However, it is not unreasonable to speculate that dust emitted from mining activities is a determinate in the extent of the ZOI.

During the July 20th, 2015 air quality management workshop the proponent detailed ongoing efforts to reduce dust emission through the selection of more effective dust suppressors for road treatment. Preliminary results from this work were positive and YKDFN hopes that this work and the implementation of results from this work will continue.

4.4.5 Recommendations

YKDFN has two primary recommendations.

1. The GNWT should develop strong, enforceable emission and air quality standards as soon as possible.
2. DDEC should continue to actively pursue more effective dust suppression strategies such as the application of more effective dust suppressants on road surface and appropriate triggers and responsive management strategies.

4.5 Surface and Mine-Water Management

4.5.1 Issue Statement

YKDFN is very concerned that the strategy of using meromixis as a containment strategy for contaminated water, has not been rigorously evaluated.

4.5.2 Proponent's Conclusion

The proponent has proposed using an induced meromictic state as a waste-water management strategy. The developer uses, primarily, modeling to assert that highly solute-laden water will remain isolated at the bottom of the pit while low salinity (fresh) water will overlay and remain stratified. DDEC further asserts that this fresh-water strata will be suitable for discharge into Lac du Sauvage.

The proponent also contends that existing permafrost will be sufficient to prevent lateral movement of salinated water into peripheral lakes such as Lac de Gras, while not addressing the potential meromixis destabilization if permafrost is destabilized.

4.5.3 YKDFN's conclusion

YKDFN is concerned about the robustness of relying on an induced meromictic state to isolate contaminated waste water in the Lynx and Misery pits.

YKDFN is also concerned that stability of the permafrost surrounding the Lynx and Misery pits is uncertain. Particularly in light of the combined effects of global warming on permafrost coupled with the effects of the significant thermal load of the water used to fill the pits.

The freshwater fisheries associated with both Lac de Gras and Lac du Sauvage represent important historic country food sources. As such it is of significant public concern to YKDFN membership that the long-term health and viability of the water-system and fish in this region be preserved.

4.5.4 Evidence and Rational

Contaminated land and water is a reality that the YKDFN have had to live with for nearly 80 years. The Giant and Con mines have left a mark on the bodies, minds and culture of the YKDFN. The toxic legacy of the Giant and Con mine has been lost lives and lost trust. This has become a part of the traditional knowledge of the Yellowknives. More than three generations of Yellowknives have grown up learning that you don't drink the water near a mine. This lesson was learnt in one of the hardest ways possible, and it won't be unlearned soon.

YKDFN has been a traditional user of the Lac de Gras region long before colonization. Every autumn, the Yellowknives would travel North to this area in order to harvest caribou and other game. This is not just a historical footnote, as members have used this region up until modern times. In addition to the importance of this area for harvesting, it has long been remarked that the water of Lac de Gras and Lac du Sauvage was *good* for drinking. The attribute *good* extends beyond safety. *Good* captures such qualities as being clear and having a pleasant taste.

It's worth reflecting on the impact poor water quality has on users of the land. For traditional harvesters, transporting water is not feasible. Areas used for harvesting must have a reliable and good water supply. If the water is perceived to be of inferior quality, traditional land users will no longer use that site. Traditional harvesting sites and transportation routes stop being used. This has far reaching implications as the ability to engage in traditional cultural practice

are tied to the land. The transmission of language, stories and cultural identity takes place on the land. Because of this, YKDFN remains very concerned about DDEC's plan to rely on meromixis to ensure water quality at the Jay and Misery sites.

There are several examples in Canada of attempting to use meromixis in pit lakes to isolate contaminated water, including the: Equity mine, Colomac mine and Faro mine (PR#498, Pieters & Lawrence, 2014). These three examples are instructive as they demonstrate that establishing meromixis is not straightforward in practice. While the Faro pit lake has shown relative stability of meromixis, this is not true of the other lakes.

Predicting the stability of meromixis is made challenging by the range of determinants of stability. Predictions are made especially challenging by some factors both contributing to and reducing meromixis stability. For example, the formation and melting of lake-surface ice can have both stabilizing and destabilizing effects on meromixis (PR#498, Pieters & Lawrence, 2014).

Another factor that can affect the stability of meromixis, both positively and negatively, is movement of groundwater to the pit lake (PR#498, Pieters & Lawrence, 2014). The potential instability of permafrost around both the Lynx and Misery pits introduces significant uncertainty as to the robustness of a meromixis to perturbation.

4.5.5 Recommendation

YKDFN would like to see further steps be taken to ensure that there is appropriate monitoring of the state of meromixis in pit lakes. YKDFN would also like to see an improved plan for the monitoring of the integrity of permafrost surrounding the pit lakes where meromixis exists. Likewise, YKDFN recommends that a more detailed adaptive management plan that details timelines and specific measures that will be taken if there is failure to establish and/or maintain meromixis in the proposed pit lakes.

YKDFN supports the following measure.

1. To prevent a significant adverse impact to water quality, DDEC shall develop and submit to the Wek'eezhii Land and Water board, for approval, a revised Water Management

Plan for the Jay Project within two year of initiating de-watering operations of the Jay pit. The plan should include:

- a. Identification of specific surface and mine water management contingencies including capacities (in terms of effluent volumes and mine production as expressed in operating days);
 - b. Design, construction and implementation timing for each identified surface and mine water management contingency option;
 - c. Detailed monitoring of water quality and quantity to enable early detection of success or failure; and
 - d. Associated adaptive management trigger thresholds for implementation of contingencies.
2. That the water quality in Lac du Sauvage be returned to a quality deemed *good* by traditional land users and traditional knowledge holders as soon as possible following mine closure.

4.6 Community Wellness

4.6.1 Issue Statement

YKDFN has a number of concerns around the decrease in community wellness that has accompanied increased mining activities. These concerns range from language loss; increased addictions; loss of traditional skills; poor dietary status; under-employment of, and lack of accommodation for, women.

4.6.2 Proponent's Conclusion

The proponent has stated that "... the Project's effects on health and well-being are not assessed as significant." (DAR, Section 14.6).

4.6.3 YKDFN's Conclusion

YKDFN Community Wellness Department has identified a number of markers of community wellness have shown a significant deterioration as a result of increase mine activity. These decreases in wellbeing relate directly to the proponents response to DAR-MVEIRB-IR2-31 "... if

the Project results in a change to the health and wellbeing of most people in communities, or its effects create community or societal concern over the status of health and wellbeing, it would have a significant effect.”. It is YKDFN’s assertion that the decrease in community health wellbeing is a pressing community concern.

4.6.4 Evidence and Rational

The YKDFN Wellness Department reports a number of areas where community wellness has seen a measurable decrease. These issues are laid out in the Socio-Economic Agreement (SEA) with DDEM. The following is a list of some to the areas for which there is specific concern.

- **Loss of traditional language:** There has been a significant drop in the use of traditional language in the YKDFN community. Increased employment with diamond mines has meant a drop in opportunities for individuals to speak traditional languages in their day to day activities. This has partially come about by virtue of spending more time in predominantly English working environments. The displacement of traditional activities such as spending less time on the land, where speaking traditional languages would accompany traditional activities. The lower engagement with community elders (which often accompanies traditional activities) also contributes to the decrease in traditional language proficiency.
- **Increased incidence of sexually transmitted infections (STIs):** The YKDFN community has seen a significant increase in STI transmission rate and incidence since the involvement of the communities in diamond mining.
- **Poor nutritional status:** The displacement of traditional food sources such and fish and caribou by lower quality food, in addition the lack of availability of traditional country food as a result of caribou population decline has had a negative effect on YKDFN community health.
- **Addictions:** Community Wellness Department has reported an increase in addictions since community involvement with diamond mines.

- Inaccessibility of high quality jobs: A lack of training for skilled jobs in mines has meant that YKDFN members have been excluded from more desirable mining jobs. This means that community members are relegated to positions with lower prospects for advancement, professional development and personal satisfaction.
- Gender gap in employment: the gender gap in employment remains significant, with women being chronically under-represented in mining industry jobs. Further, women make up a smaller proportion of higher paying jobs. The proponent asserts that their employment record is representative of the mining industry across Canada. This is cold comfort, and DDEC arguing the fact that it's doing as badly as the rest of the industry is somehow good hardly seems like as a response at all.

4.6.5 Recommendations

YKDFN reiterates that there is significant public concern over the continued decrease in community wellness. In response, YKDFN wants the following.

1. Inclusion in annual meetings with DDEM and the GNWT regarding meeting obligations established in the SEA.
2. Written reports on progress against benchmarks and obligations laid out in the SEA.
3. DDEC will track feedback received from exit interviews completed by exiting female employees to identify barriers to successful retention. If such barriers are identified, Dominion Diamond is committed to investigating what can be done to address the issue. Mechanisms to address barriers will be developed as part of DDEC's commitment to ongoing improvement, and will be specific to the issue in question. DDEC will support and seek input from the Status of Women Council of NWT in the design of the "mechanisms to address barriers" and the design of the exit interviews.
4. Where employment barriers for women are seen as related specifically to social issues, Dominion Diamond is committed to raising these issues with the Government of the Northwest Territories to determine how the two parties can work together to improve or remove the barrier that is being experienced. Dominion Diamond and GNWT will

invite the Status of Women Council of NWT to the discussion, and provide support as necessary so the Council can provide meaningful input towards the removal of the barrier that is being experienced by women.

5. In addition, Dominion Diamond evaluates its programs aimed at improving the training and recruitment of women in the North, and will continue to adapt programs in response to feedback from female employees, and community members, interested in a career in mining. DDEC will also re-engage and consult with Status of Women Council of NWT to identify and address relevant concerns related to women.

5.0 Conclusion

YKDFN would like to acknowledge DDEC's efforts to engage with YKDFN over our concerns about the Jay Project. However, we must reassert our position that the Jay Project has the potential to exert a significant negative cumulative effect on the Barren Ground caribou. In addition to supporting the measures proposed by IEMA in its closing statement, YKDFN proposes a series of measures for the Board's consideration.

YKDFN has always demonstrated a willingness to work with industry. However, it is essential that resource exploitation be undertaken with the utmost respect and consideration for the land and the people who have traditionally used and occupied it.

The NWT Environment Minister, Michael Miltenberger, recently stated that "When a herd goes from 460,000 to 15,000, to me and I think to everyone else, that's an emergency.". While YKDFN is glad the Minister of Environment agrees that the current state of the barren ground caribou constitutes an emergency, it's cold comfort in the face of continued development of key caribou migratory routes. (<http://www.cbc.ca/news/canada/north/bluenose-east-bathurst-caribou-herds-continue-to-decline-1.3247057>)

YKDFN would also like to point out that while the Minister uses strong language when talking about the state of the barren-ground caribou "emergency", he falls short of suggesting any measures beyond the continuation of existing restrictions on harvesting. As the board is aware,

harvesting restrictions are already in effect. YKDFN, and other groups, have respected and abided by previously imposed caribou harvesting restriction and herd numbers continue to drop. Now, YKDFN faces a new round of harvesting restrictions which we will continue to respect, while DDEC continues to expand their mining operations. YKDFN has come to realize that the indigenous people of the North have benefited the least from Mining development, while sacrificing the most. As caribou populations collapse we get more harvesting restrictions while developers get more mines.

DDEC has is fond of stating that the Jay Project does not represent an expansion to their operations. Instead, they have argued that because their capacity will remain relatively unchanged the Jay Project merely represents a continuation of existing operations. This conclusion relies on the argument that the only important measure is DDEC's diamond output rate. However, DDEC seems to ignore the fact that maintaining output means an ever expanding footprint. More open pits, more roads, more powerlines and more infrastructure. The only thing that seems to stay the same, is the rate at which the original Ekati mine consumes the landscape.

The Lac de Gras region has been important culturally and economically for thousands of years; for both the Yellowknives and other First Nations. This fact is supported by the traditional knowledge of multiple First Nations and archeological data. From start to finish, the Ekati mining operation will span more than a generation. This is an entire generation wherein traditional land users will have stopped using this area. If the water or the land remains unusable to traditional harvesters after mine closure, it's hard to guess when it will again become part of the Yellowknives usable territory.

A people and their culture are defined by their history, stories and language. First Nations' language, stories and culture are tied to the land. The removal of the Lac de Gras region from traditional use is more than just removing a few square kilometers of land. It's the removal of a part of the people.