ARCTIC CANADIAN DIAMOND COMPANY

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Memorandum

Date	September 21, 2022
To	Dr. Brett Elkin (Assistant Deputy Minister, Environment and Natural Resources), Ms. Kathy Unger (Manager of Habitat and Environmental Assessment), Environment and Natural Resources Dept., Government of Northwest Territories
CC	Sheila Chernys (Head of Health, Safety, Security, Environment and Communities), Tommy Thorsteinsson (Wildlife Advisor)
From	Harry O'Keefe (Superintendent of Environment)
Our Ref	Response to: **Submission of an Updated Wildlife Management and Monitoring Plan for the Ekati Diamond Mine for Minister Approval under Section 95(1) of the *Wildlife Act* in Conjunction with the Water Licence Renewal Process**

Background

Arctic Canadian Diamond Company Ltd. (Arctic Canadian) plans to submit an updated Tier 3 Wildlife Management and Monitoring Plan (WMMP) to the Government of Northwest Territories, Department of Environment and Natural Resources (ENR) as part of the 2022 Water Licence renewal application in October 2022. On August 9, 2022, ENR provided a list of expected updates to the WMMP; this memo provides responses to those comments prior to completion of the WMMP updates. Arctic Canadian first acknowledges the name change of the document that will occur from Wildlife Effects Monitoring Plan (WEMP) to Wildlife Management and Monitoring Plan (WMMP).

Tier 3 WMMP Updates Comment Responses

Regarding process for submission, public review and Minister approval

Arctic Canadian will submit the updated WMMP to the Wek'èezhìi Land and Water Board (WLWB) as part of the Water Licence renewal package and notify ENR. Arctic Canadian notes that ENR is planning a 30-day public review period on the WLWB's Online Review System (ORS) following which Arctic Canadian is to provide responses via the ORS. Further, ENR has requested a day be added to the WLWB's technical sessions to focus specifically on the WMMP as an additional opportunity for stakeholders to ask questions and provide comments for Arctic Canadian to respond to.

While utilizing the ORS for review comments seems optimal for gathering and responding to comments, tying the technical sessions pertinent to the Water Licence renewal may be less intuitive because the schedule for Water License renewal is strictly dictated by legislation and this timeline might not be optimal for comprehensive review and engagement for WMMP. Additionally, Arctic Canadian is of the belief that the process can be completed in a much shorter timeframe. Arctic Canadian therefore would respectfully like to suggest extending the public review period to at least six or eight weeks, during which time Arctic Canadian will host its own workshop prior to the comment submission deadline, which will allow reviewers and Arctic Canadian the opportunity to discuss questions, comments, and recommendations. Any

outstanding issues can then be addressed through the submission of comments to the ORS before the submittal of an updated version of the WMMP to ENR for approval.

Arctic Canadian has started pre-application engagement for its Water License Application, as part of this process we have had the opportunity to discuss our proposed process for the WMMP renewal. Arctic Canadian has not heard any concerns specific to the proposed process; however, we have yet to engage with all stakeholders. As part of our commitment and for transparency we have CC'ed the various stakeholders on the email distribution list of this letter in case they have concerns related to the suggested timeline for WMMP renewal.

1. Arctic will devise a method to monitor hourly traffic volumes on project roads and report daily summaries in their annual WMMP reports.

Arctic Canadian has already started developing a method to monitor hourly traffic volumes, as indicated in the 2020 annual Wildlife Effects Monitoring Program Report (WEMP Report) comment response for ENR3 (December 15, 2021):

"Per discussion meeting with ENR on November 12, 2021, Arctic will explore ENRs recommendation for deploying TRAFx traffic counters at the Misery and Sable haul road entries to log vehicular traffic activity. The traffic volumes will be totalled on an hourly basis for correlation with data on caribou observations of road crossings/deflections (e.g., from the camera program, radio-collar data). Results will be included in future annual WEMP reports."

The method details will be included in the updated WMMP and a full traffic dataset is anticipated for 2023.

2. Going forward, Arctic will use the traffic volume data to correlate with timing of observations of caribou data to the nearest timing window in other methods (i.e. time signatures on photos, time of systematic observations, collared data timing windows).

Arctic Canadian is committed to monitoring caribou activity near roadways; the updated WMMP will include methods for comparing caribou photo observations to hourly traffic data. Arctic Canadian will also explore methods to compare caribou collar data with traffic volumes, however additional time is required to establish an effective method to incorporate these data. At this time, Arctic Canadian is focused on conducting the comprehensive telemetry analysis. Following the results of this analysis, Arctic Canadian will explore the potential causes of any effects identified in the analysis. This may involve the inclusions of traffic and camera data depending on the scale and significance of any detected effects.

It was anticipated that the results of the comprehensive telemetry analysis would inform the updates to the revised WMMP. Arctic Canadian remains committed to using the results of the telemetry analysis to inform any changes that may be required to mitigations. However, due to difficulties reaching agreement among stakeholders regarding the objectives and methods for the telemetry analysis, there will be a delay in incorporating relevant results. Arctic Canadian still believes that this work must be complete to understand if any changes to mitigations are required. To date no work has been completed that even begins to assess the efficacy of Arctic Canadian's mitigations at a scale larger than caribou directly on or adjacent to the mine site. The most recent work completed using the telemetry dataset does nothing more than identify a potential concern that warrants further thorough investigation. The work does not consider a control group to understand if the behaviours identified adjacent to the mine are different to those displayed by caribou in areas without industrial activity. Nor does it consider habitat, season or intensity of the potential effect and its biological/ecological relevance to caribou. Arctic Canadian strongly asserts the

appropriate evaluation of this potential effect is essential prior to the start of assessing the effectiveness of mitigations and decisions regarding their adaptation. Arctic Canadian is committed to a scientifically sound approach to analysis of telemetry data and the use of the results to inform adaptive management of mitigations.

3. Arctic will provide this information to interested parties annually to facilitate discussion of refinements to mitigation and monitoring in the WMMP, and to the Caribou Road Mitigation Plan (CRMP).

Arctic Canadian is committed to monitoring caribou activity near roadways and will include the traffic volume data/caribou observation data comparison summaries in the annual WMMP Report.

4. Regarding Arctic's remote camera monitoring program:

- Arctic should work to incorporate traffic data, at a daily or ideally hourly scale, and road closure timing into the analysis and cross-reference them to the timing signature on the photos.
- Arctic should engage with the Independent Environmental Monitoring Agency (IEMA), the GNWT, and other interested parties in the development of an appropriate study design to get at mitigation effectiveness.
- Arctic should examine the data in relation to other informative variables such as season and time of day.

As discussed above, Arctic Canadian is committed to monitoring caribou activity near roadways; the updated WMMP will include methods for comparing caribou photo observations to hourly traffic data. Arctic Canadian will also explore methods to compare caribou collar data with traffic volumes, however additional time is required to establish an effective method to incorporate these data. At this time, Arctic Canadian is focused on conducting the comprehensive telemetry analysis. Following the results of this analysis Arctic Canadian will explore the potential causes of any effects identified in the analysis. This may involve the inclusions of traffic and camera data depending on the scale and significance of any detected effects.

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As provided in the responses to comments on the *Ekati Diamond Mine: 2020 Wildlife Camera Monitoring Summary Report* (ERM 2020), due to the very low numbers of caribou recorded as being deflected along roads from the camera dataset (3% deflection rate), there is not the statistical power to incorporate additional variables such as season and time of day. However, Arctic Canadian is happy to discuss further what questions ENR is hoping to address by considering these variables.

5. Regarding the CRMP:

- Arctic should provide additional information on how snow berm height is monitored on project roads to ensure that it is not presenting a visual or physical barrier to caribou.
- Arctic should design a monitoring program to specifically test whether caribou are preferentially using caribou crossing structures along project roads related to other road sections without crossing structures.
- In future annual reports, Arctic should report the basis for the decision to close a road and to reopen the road, including detailed information about road closures (which roads, how long, what triggered it).
- Arctic will engage with interested parties to evaluate the appropriateness of the CRMP triggers prior to the next WMMP revision.

Regarding snow berm height, Arctic Canadian has committed to maintain snow berm heights of less than 1.6 m, where practicable, to avoid a potential obstacle effect to caribou movement. This commitment was based on monitoring along Misery Road during spring migration, which found that deflections occurred when berms were at least 1.6 m high (CRMP Section 4.1.1). However, the graders used to manage the snow at Ekati clear the snow closer to a height of 1 m due to the physical height of the wing blade. Consequently, the snow berms at Ekati are conservatively lower as a mitigation to caribou movement (response to ENR4 regarding 2020 WEMP Report). Arctic Canadian will include methods for snow berm height monitoring in the updated WMMP and will report monitoring results in the annual WMMP Report, as indicated in the response to the 2021 annual WEMP Report comment ENR6 (August 10, 2022).

Arctic Canadian has already conducted analyses to explore caribou road crossing challenges, including a caribou crossing photo and road features analysis completed in 2016 at Ekati. The analysis specifically evaluated how road features may influence caribou movement and crossing behaviour, and included data from 2011-2015 from camera deployments along Misery Road. The results informed construction of future crossing ramps at Ekati roads, including along Lynx and Sable roads (*Memorandum – Ekati Diamond Mine: Caribou Crossing Photo and Road Features Analysis 2011 to 2015*). Analyses and data to date do not support the conclusion that the road is posing a barrier to caribou crossing as the deflection rate is only 3% (ERM 2020), and Arctic Canadian does not plan to conduct additional analyses on road crossing ramps at this time.

Criteria for short- and long-term road closures are provided in the CRMP Section 4.1.1, Table 4-1. Future annual WMMP Reports will include a table with additional details of road closures for additional transparency.

Evaluation of triggers for the CRMP will be conducted after the comprehensive telemetry analysis has been completed. Arctic Canadian believes, and as recommended by IEMA, this analysis will inform updates to the current CRMP (IEMA Intervention Point Lake Water Licence Amendment Public Hearing. 2021). If results of the comprehensive telemetry analysis warrant it, the CRMP will be revised with stakeholder input.

6. ENR previously recommended that Ekati and Diavik should collaborate to provide a single analysis of the behaviour monitoring data collected in recent years to address the objective of determining if caribou behaviour changes with distance from the mines. Given the ongoing difficulties in obtaining adequate behaviour monitoring data from both mines to conduct such analyses, Arctic should consider whether it is worthwhile continuing this program, or propose how it would like to modify its approach to monitoring how caribou behaviour changes with distance from the mine so that it can provide meaningful information about drivers of zone of influence (ZOI) and effectiveness of mitigation measures. To evaluate the continued inclusion of monitoring of caribou responses to stressors in the WMMP going forward, Arctic provided in its 2021 WMMP a comprehensive account of what has been learned about observable caribou responses to stressors to date, how this addresses impact predictions, and provides an assessment of how this has informed improved mitigation at the mine site.

Arctic Canadian provided response to this comment in the 2020 annual WEMP Report comment response for ENR10 (December 15, 2021):

“As discussed in the meeting with ENR on November 12, 2021, neither ENR nor Arctic consider behavioural surveys to be optimal for evaluating caribou behaviour changes at greater distances to the mine site (per answer to ENR8B) and the historical collaborations with Diavik have resulted in a limited amount of data with the same analytical limitations. Arctic therefore welcomes the suggestion to modify caribou behaviour monitoring to focus on behaviour evaluation in terms of movements of individual collared caribou approaching and passing through the mine site. As discussed in the meeting with ENR on November 12, 2021, the collar data analyses Arctic has committed to (see ENR8B) is a more appropriate way to evaluate caribou behaviour changes due to potential barrier and stressor effects of the mine. The results of these studies will inform the WEMP and associated mitigations as part of the 2023 WEMP renewal.

Any signs of distress, including potential stressors such as vehicles, are recorded during caribou behavioural surveys and the behavioural responses are included in Section 5.4.4. As discussed in Section 5.4.5, typical stress responses include brief alert behaviour (e.g., head raising) that last from 1-60 seconds as a decreasing function of distance to the potential stressor, which is consistent with findings from other studies (see Section 5.4.4). Consequently, Arctic is confident in the resolutely protective policy of giving caribou the right of way near all Ekati infrastructure, including short-term or long-term road closures, per the mitigations outlined in the CRMP. Going forward, caribou response to stressors will be better informed by the caribou collar data analyses that Arctic has committed to, per ENR10A/B.”

7. In future annual WMMP reports, Arctic should provide information on how it is using the collar data from barren-ground caribou to detect approaching caribou, and how Arctic responds when approaching caribou are detected.

Arctic Canadian provided responses to this comment in the 2020 and the 2021 annual WEMP Report comment responses (ENR8 and ENR9, respectively (December 15, 2021; 10 August 2021). Here is the 2021 response:

As per Arctic Canadian’s response to ENR8 comment on the 2020 WEMP Report, the utilization of the collar data is described in Section 5.2 while the detailed action triggers for, as well as, the mitigations themselves are described extensively in the CRMP and a specific table reference was inserted in the 2021 WEMP Report for ease of reference.

Specifically, Arctic Canadian's response was:

"As described in Section 5.2, the weekly GNWT satellite maps showing locations of -collared caribou are used by Arctic to inform the required local monitoring and mitigation levels at the mine site, per the CRMP. In future annual WEMP reports, Arctic will clarify further by referencing Table 4-1 in CRMP specifically, which shows action level triggers for the caribou alert levels and associated monitoring and mitigations."

8. Regarding evaluation of the ZOI of the mine on barren-ground caribou, ENR is of the view that, given increased number of collars on barren-ground caribou herds, data from geofenced collars will suffice for evaluating ZOI.

   ENR sees value in continuing to assess spatio-temporal trends in ZOI with respect to variation in mine activity levels and the addition of the Point Lake project, as well as when Ekati and Diavik transition into the closure and post-closure phases. ENR expects the WMMP to include details about methods that Arctic will use to evaluate ZOI, including how such analyses will consider metrics of mine activity such as road traffic levels. Arctic is encouraged to consider the most recent draft of the guidance document from the ZOI Technical Task Group, as well as peer-reviewed methods contained in Boulanger et al 2021[1]. ENR expects Arctic to report on the results of ZOI analyses in each comprehensive WMMP report. Annual estimates of ZOI will be reported for all intervening years in which an adequate sample size is achieved. Furthermore, ENR would like to see the WMMP include a description of more in-depth analyses that will be used to assess potential mechanisms that contribute to ZOI. ENR recently reviewed and commented on Arctic's proposed methods for undertaking such analyses using collar data and looks forward to seeing how the results of these analyses will inform these sections of the revised WMMPs.

Arctic Canadian conducted a detailed ZOI analysis, provided in *Ekati Diamond Mine and Diavik Diamond Mine. Evaluating the Role of Habitat in Caribou Distribution Relative to a Potential Zone of Influence around Mines* (ERM 2021) statistical report. The methods were consistent with Boulanger et al. 2021, with the addition of habitat as an explanatory variable. Arctic Canadian received ENR's commissioned review of the ERM 2021 report and is expecting to provide a response later this year. Arctic Canadian is focused on garnering stakeholder consensus to define the objectives and methods for the telemetry analysis which will provide a more comprehensive investigation of caribou movement changes with proximity to the mine. As part of the current telemetry analysis, distance to the mine will be the by-product of any detected change in caribou movement. This would render the above requirement redundant.

As discussed with ENR on November 12, 2021, at this stage Arctic Canadian finds it appropriate to allow these analyses to follow an independent timeline given the importance and complexity of the analyses. Doing this ensures that results are distributed when available as opposed to awaiting an annual WMMP submission. Additionally, this work could demonstrate that data availability is insufficient for annual replication to be appropriate or sufficiently informative.

9. Finally, ENR expects that any additional mitigation and monitoring measures that were proposed in the June 2022 Post-Dewatering WEMP Addendum for the Point Lake Project that were not part of the existing WEMP approved by ENR in June 2021 will be incorporated in the updated site-wide WMMP to be submitted in October 2022.

The mitigation and monitoring included in the WEMP Addendum for the Point Lake Project will be included in the updated WMMP.

Conclusion

Arctic Canadian will submit the updated Tier 3 WMMP with the Water Licence renewal application in October 2022. The results of the comprehensive telemetry analysis will inform whether revisions will be needed to the CRMP and mitigation and monitoring from the Point Lake WEMP addendum will be included in the updated Tier 3 WMMP. Updates to the annual WMMP Report will be incorporated where possible for the 2022 report, with full updates based on the new WMMP carried out and reported on for the 2023 report.

If you should require clarification on any of the matters above please feel free to contact me at Harry.O'Keefe@arcticcanadian.ca or 867 445 3185.

Thank you kindly,

Harry O'Keefe
Superintendent – Environment

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References

ERM. 2020. *Ekati Diamond Mine: 2020 Wildlife Camera Monitoring Summary Report*. Prepared for Dominion Diamond ULC by ERM Consultants Canada Ltd.: Yellowknife, Northwest Territories.

ERM. 2021. *Ekati Diamond Mine and Diavik Diamond Mine. Evaluating the Role of Habitat in Caribou Distribution Relative to a Potential Zone of Influence around Mines*. Prepared for Arctic Canadian Diamond Company Ltd. by ERM Consultants Canada Ltd Yellowknife, Northwest Territories.