Review Comment Table

Jay Project - Second round information requests (EA1314-01) (MVEIRB)

File(s):

Proponent: Dominion Diamond Ekati Corporation

Reviewer Comments Due By: June 5, 2015

Proponent Responses Due By: July 3, 2015

Documents:
Jay Project - Information request responses April 7, 2015 1 MB
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Item For Review Distributed On May 11 at 10:02 Distribution List

Item Description

Jay Project - second round information requests

The Review Board is using the Online Review System and excel spreadsheet for information requests from parties and responses from Dominion. The "topic column" contains the reference to a document on the registry which is the basis for your information request. This can be from Dominion's DAR, responses to information requests, transcripts or undertakings from the technical sessions or other material on the public registry.

The purpose of an information request is to give parties and the Review Board the information needed to help reach conclusions about potentially significant impacts from the Jay Project to the environment and people.

General Reviewer Information

The purpose of the second round of information requests is for parties to seek clarification on issues that have not been resolved during the first round of information requests or during the technical session and undertakings. The second round of information requests is an opportunity for a party to pursue questions that, in its view, were not adequately answered during these previous EA process steps or to ask additional questions that are within the scope of assessment.

When submitting information requests and responses, parties and the developer are asked to please include the references listed in the information request or response. These supporting documents are required as attachments on the Online Review System. Once the second round of information requests phase is complete, all documents will be placed on the Review Board's public registry.

Parties and the developer are encouraged to meet with each other to discuss, and where possible, resolve issues. The Review Board requests a record of

these meetings for the public record. A meeting report template from the Review Board's website is in the attached documents.

Contact Information Chuck Hubert 867-766-7052 Sachi De Souza

Comment Summary

Deninu K'ue First Nation: Rosy Bjornson				
ID	**Topic**	**Reviewer Comment/Recommendation**	**Proponent Response**	**Board Staff Response**
1	General File	**Comment** Cover letter and information requests **Recommendation**		
2	DKFN IR#1 Section 12 Barren-Ground Caribou	**Comment** In its assessment,the Dominion Diamond Ekati Corporation (Dominion Diamond) has assumed,what it calls the maximum potential effect of the project,meaning that caribou were conservatively assumed to be deflected by the Jay Project (and the full Ekati project). Despite, this approach, Dominion Diamond does acknowledge that all caribou will not be deflected around the project since mitigation plans are being developed for the project roads. **Recommendation** ~~If caribou are in close proximity to the mine infrastructure it is expected that they would experience higher levels of stress and increased energy expenditures, exposure to poorer forage quality (as a result of dust deposition) compared to if they were deflected around the mine at the zone of influence distance. The overly conservative approach taken by Dominion Diamond may be unrealistic and not representative of the true condition and unknown effects may occur that are not accounted for in the DAR. Given the current population status and declines of the Bathurst Caribou Herd,additional stewardship activities from industry are warranted. Therefore we request the following: a. Based on data from past monitoring programs at the EkatiMine, what proportion of the Bathurst caribou herd can be expected to interact with the mine infrastructure? b. What proportion of the current population,based on the most recent population estimates, of the Bathurst caribou herd does this represent?	**July 3:** In the Developer's Assessment Report (DAR), 17 potential effects pathways were identified by which Project components or activities might affect barren-ground caribou. These pathways represent a number of effects including potential mortality due to vehicle and aircraft collisions or drinking contaminated water, changes in habitat quality and quantity from dust deposition, air emissions and altered water levels, and sensory disturbance from mining activities. The pathways screening step analysis identified 14 of the potential pathways as no linkage or secondary (negligible), leaving three primary pathways for fuller detailed analyses. In the analyses of the residual effects of those three pathways, the assumption was made that all animals would be deflected around the Ekati and Diavik mines, incurring energetic costs associated with the additional distance travelled. Additional energetic costs were modelled through interactions of caribou with the zones of influence	

			(ZOIs) for all active developments on the entire summer-autumn range, including mineral exploration sites. The ZOIs applied in the analyses were determined using empirical data from aerial surveys and radio-collared Bathurst caribou travelling through the Lac de Gras area near the Ekati and Diavik mines (Boulanger et al. 2012). *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
3	DKFN IR#2 Section 12.4.2.3 Behavior,Energy Balance,and Calf Production - Energetic Costs from Development and Insect Harassment (page 12-114).	**Comment** In this assessment Dominion Diamond assumes that caribou are exposed to one major disturbance event per day when residing within a zone of influence (ZOI). **Recommendation** Please provide a description of what "one major disturbance event" would be?	**July 3:** In Section 12 (Barren-ground Caribou) of the Developer's Assessment Report (DAR), a major disturbance event was defined as an anthropogenic sensory disturbance that results in a reaction by caribou and included a flight response (running or trotting for 15 minutes), additional travel of 2.11 kilometres, and an extended excitement cost (10% of basal metabolic rate for 12 hours), and no compensatory foraging for a 24 hour period. Examples of sensory disturbances types provided in the DAR included noise or visual disturbances (viewscape) from a human walking or working outside, a moving vehicle, blasting, and/or a plane flying overhead (page 12-102).	
4	DKFN IR#3 Section 12.4.2.3 Behavior,Energy Balance,and Calf Production - Energetic Costs from Development and	**Comment** ~~: In the last paragraph of this section the proponent states: For those summers when insect harassment is low,female encounters with disturbance would be required to exceed 525 disturbance events so that there is an expenditure of 20% of 100 kg (i.e.,20 kg),and no calf production the following year. If considering the effects from severe insect harassment and disturbance encounters,then approximately 385 disturbance events per individual	**July 3:** The energetic analysis was designed to describe what the cumulative energetic costs from sensory disturbance would mean to a typical caribou cow moving across the landscape and encountering zones of influence of different	

	Insect Harassment (page 12-116).	would be required to reduce parturition to zero, resulting in no calf production. Based on the expected number of disturbance encounters for current landscape conditions with the Project and future developments (approximately 28),female caribou would have to increase their encounter rate per day by approximately 14 to19 times to result in no calf production the following spring. **Recommendation** Please clarify for the results of this analysis the reference to female encounters. Is this referring to all females within the Bathurst Caribou Herd or caribou on an individual level?	developments (disturbance event). The referenced paragraph of Section 12.4.2.3 of the Developer's Assessment Report (DAR) quantifies how many disturbance events would be required to achieve no calf production the following spring for a typical caribou based on the equation on page 12-108 of the DAR. The quantity was determined without and with the effect of severe insect harassment. The maximum mean annual encounter rate of collared caribou was used to predict the effects to the probability that a typical cow would successfully give birth to a calf the following spring (i.e., fecundity). The change in fecundity was then applied to the stage matrix in the population model, which represents herd-wide effects.	
5	DKFN IR#4 Section 12.6.2 Results (page 12-131	**Comment** ~~In the last paragraph on this page the proponent states: Natural environmental factors that operate over large scales of space and time will likely have greater influences on seasonal distributions of caribou than the incremental and cumulative impacts from the Project and other developments. For example,studies of caribou have shown that the historical cumulative effect of overgrazing on calving, summer or winter ranges can result in periodic range shifts and large population fluctuations (Messier et al. 1988; Ferguson and Messier 2000;Tyler 2010). Climate change and weather can also influence the seasonal distribution of caribou by modifying insect levels, food abundance (primary productivity),timing of spring plant growth, snow depth and hardness,predator numbers (and alternative prey),and burns (Sharma et al. 2009; Vors and Boyce 2009;Festa-Bianchet et al. 2011;Kerby and Post 2013). **Recommendation** ~~We request that the proponent confirm: a. Have periodic range shifts and large population fluctuations of the Bathurst Caribou Herd been attributed to overgrazing on calving,summer or winter ranges within the past five years? b. How climate change and weather has influenced the seasonal distribution of the Bathurst Caribou Herd over the past five years?	**July 3:** a) There has been no research on the Bathurst caribou herd directly related to overgrazing on calving, summer, or winter ranges within the past five years. However, recent research on range conditions indicates that leaf biomass (from remote sensing data) has been annually variable on the Bathurst calving range (Chen et al. 2014) and has increased on Bathurst summer range since the late 1980s (Russell 2014). Temporal patterns of forage conditions on Bathurst winter areas are unknown. However, Barrier and Johnson (2012) estimated the carrying capacity of the late-winter range lichen stores could support approximately 280,000 to 480,000 caribou from their 2008 and 2009 data, which is at least 8 times higher	

			than the most recent Bathurst photo census estimate of 35,000 animals completed in 2012. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
6	DKFN IR#S Reference: Section 15.4.1.2.1Effects on Traditional Wildlife Harvesting- Residual	**Comment** ~~In the last paragraph on this page the proponent states: As a result of the above factors,negative cumulative effects are predicted for effects on traditional wildlife harvesting that will impede the ability to harvest wildlife in some preferred areas. However,alternative preferred areas and resources are expected to continue to be available and unaffected. The incremental effects of the Project alone are expected to result in only minor effects on the continued opportunity to participate in traditional wildlife harvesting. **Recommendation** ~~We request that the proponent confirm: a. Where the proponent believes the alternative preferred areas and resources that are expected to continue to be available and unaffected are for members of the Deninu Kue First Nation?	**July 3:** Information relating to Deninu K'ue First Nation (DKFN) areas of use are provided in the Traditional Land Use and Traditional Knowledge Baseline Report (Annex XVII) of the Developer's Assessment Report (DAR). The traditional territory of the DKFN extends from the south of Great Slave Lake, north and east of Great Slave Lake, and well into the Barrenlands. The asserted territory of the Akaitcho First Nation, including the DKFN, shown in documents for the BC Hydro Site C Project (Traditions 2013) illustrates an area extending from the northern portions of Alberta, north to the Coppermine River and ranging to the border with Nunavut in the east, and including the communities of N'Dilo and Yellowknife in the west. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
7	DKFN IR#6 Reference: Section 17.8 Barren-Ground Caribou (Cumulative Effects Assessment)	**Comment** ~~On page 17-22 in the second paragraph,the proponent makes the following statements in regard to the cumulative effects assessment on caribou: Effects from sensory disturbance on habitat quality and calf production are anticipated to be reversible in the long term (perhaps 5 to 10 years following the end of closure of a project),and should be within the resilience limits and adaptive capacity of the Bathurst herd. (emphasis added) **Recommendation** ~~The proponent has not instilled a high level of confidence in the cumulative effects assessment when subjective	**July 3:** The assessment approach used in the Developer's Assessment Report (DAR) was to apply conservative assumptions to predict maximum effects from changes in habitat quality and sensory disturbance (DAR Sections 12.4.2.2 and 12.4.2.3). This was done to manage uncertainty, such as for	

		words are used. We request that the proponent: a. Provide a cumulative effects assessment on the Bathurst Caribou Herd with a higher level of certainty in the assessment.	the magnitude and temporal and spatial extents of effects, and provide confidence that the assessment would not underestimate effects levels (i.e., precautionary approach). Throughout the DAR there is also discussion about uncertainty associated with zones of influence (ZOI), which is related to temporal changes in the magnitude and spatial extent of ZOI, such as habituation to disturbance by caribou and the type, size and level of activity of different developments (Haskell and Ballard 2008; ERM Rescan 2014a,b; Johnson and Russell 2014). With respect to future conditions, the maximum spatial and temporal scales of development were applied for the Reasonably Foreseeable Development (RFD) Case in the cumulative effects assessment. The determination is that there should be no significant Project-specific or cumulative effects on the ability of the Bathurst caribou herd (and the Ahiak and Beverly herds) to be self-sustaining and ecologically effective. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
8	DKFN IR#7 Reference: Appendix 9A-Conceptual Offsetting Plan	**Comment** In its conceptual offsetting plan the proponent has identified several options that focus on local fisheries of concern and engage communities. **Recommendation** Will the proponent agree to exploring offsetting options with the DKFN around the community of Fort Resolution?	**July 3:** Dominion Diamond is committed to working with all impacted communities to identify potential offsetting measures for the Jay Project that meet community interests and meet the requirements of the Fisheries Protection Policy Statement (DFO 2013) and comply with the Applications for	

			Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations. Fort Resolution is identified as a potentially affected community for the Jay Project. Therefore, Dominion Diamond is prepared to consider potential offsetting options around that community that are identified and supported by the Deninu K'ue First Nation and Fort Resolution Métis Council. **References:** DFO (Fisheries and Oceans Canada). 2013. Fisheries Protection Policy Statement. Ottawa, ON, Canada. ISBN 978-1-100-22885-3.	
9	DKFN IR#B Reference: Conceptual Wildlife Effects Monitoring Plan,Jay Project	**Comment** Eight main objectives are identified in section 1.4 of the Wildlife Effects Monitoring Plan that fulfill requirements of the Environmental Agreement. A further four objectives are identified in section 3.2 as overall objectives of monitoring and then individual objectives for various components of the WEMP are identified in section 5. **Recommendation** ~~The objectives of the WEMP should focus on measureable parameters that will determine 1) if the predicted effects identified in the environmental assessment are realized; 2) if the proposed mitigation measures are effective and 3) if further actions are required to reduce effects. In addition, the monitoring of various components related to wildlife are only meaningful when results are related to the direct and/or indirect effects on wildlife species. For example,monitoring of direct habitat loss from the mine development should be placed in the context of the direct and/or indirect effects on wildlife species. We request: a: Clear objectives for the WEMP be identified that can be monitored and tracked during the life of the project. This approach should be similar to that taken for the objectives identified in the Conceptual Aquatic Effects Monitoring Program Design Plan.	**July 3:** The objectives suggested by the Deninu K'ue First Nation (DKFN) are included in the requirements of the Ekati Mine Environmental Agreement (1997) and listed in Section 1.2 of the Conceptual Wildlife Effects Monitoring Plan (Plan) for the Jay Project. These requirements are also consistent with requirements of the Northwest Territories (NWT) *Wildlife Act*. Specific objectives regarding monitoring of wildlife habitat, mitigation related to waste management and direct mine-related mortality, and valued components and other wildlife are provided in Section 5 of the Plan. As per Section 1.3, the Plan intended to incorporate effects identified through the Jay Project environmental assessment and the associated changes to the Wildlife Effects Monitoring Program (WEMP) proposed as a result. The Plan was also intended to engage interested parties and solicit feedback for these changes through the Jay Environmental Assessment	

			process. Subsequent versions of the Ekati Mine WEMP will be developed that address this feedback. Pending approval, the Jay Project would become part of the existing Ekati Mine operation and be added to and covered by the existing Ekati Mine management plans to comply with the Environmental Agreement (1997), NWT *Wildlife Act*, and other requirements. The Ekati Mine management plans and monitoring reports are routinely circulated to communities, regulators, and the Independent Environmental Monitoring Agency for review and recommendations for improvement. While the Wildlife Effects Monitoring Plan for the Jay Project is conceptual, Dominion Diamond welcomes the recommendation by DKFN and will consider this recommendation along with other feedback when further revision of the Ekati Mine WEMP is undertaken.	

GNWT - Lands: Melissa Pink

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
20	General File	**Comment** cover letter **Recommendation**		
21	General File	**Comment** Rescan 2013 reference (ORS ID #8) **Recommendation**		
22	General File	**Comment** GNWT IR2 responses cover letter **Recommendation** GENERALFILE		
23	General File	**Comment** GNWT IR2 responses **Recommendation** GENERALFILE		
24	General File	**Comment** GNWT IR2 responses- Ekati 50 KW Solar model		

		document **Recommendation** GENERALFILE		
25	General File	**Comment** Ekati image 1 **Recommendation**		
26	General File	**Comment** Ekati image 2 **Recommendation**		
1	Sections 7.7 - Ambient Air Quality Adaptive Management Plan Framework	**Comment** As per the document titled "Regulatory Engagement Follow-Up Responses from May 7, 2015 Air Quality Regulatory Meeting", dated May 2015, the Proponent has committed to including adaptive management trigger levels and associated actions in the draft Air Quality Monitoring and Management Plan, which will be provided to the Mackenzie Valley Review Board public registry by June 1, 2015. **Recommendation** The GNWT supports this commitment and associated timeline, as it allows the proposed action trigger levels and response plans to be reviewed during the Environmental Assessment process.		
2	Sections 7.3.2.2.1, 7.4.2.1.1, 7.4.2.2.2 & 7.4.2.2.4 Project Mine Fleet and Equipment Procurement	**Comment** The Proponent indicates in sections 7.4.2.1.1, 7.4.2.2.2 & 7.4.2.2.4 of the DAR that diesel fired generators and the mine fleet are the most significant sources of PM2.5 and NOx and are therefore the largest contributors to the predicted air quality ambient standard exceedances. Section 7.3.2.2.1 describes operational methods by which emissions from these sources can be reduced; however, the Proponent does not consider the design performance of the equipment. Specifically, the Proponent does not mention any plans for purchasing high efficiency, low emission mine equipment and vehicles to ensure source emissions are minimized. Procurement policy applying the principle of Best Available Technology (BAT), in addition to optimized operational methods, are vital actions to ensure emissions and associated environmental impacts from the mine are minimized. This principle is important for both new and life-cycle replacement equipment. **Recommendation** The GNWT requests that the Proponent apply a procurement policy such that all emission-generating equipment be selected using the principle of Best Available Technology in order to minimize emissions from the mine and reduce impacts to the environment.	**July 3:** Dominion Diamond is committed to minimizing emissions from mine equipment according to the established principles of Best Available Technology Economically Available (BATEA). All equipment operating at the Ekati Mine has a set preventative maintenance plan that ensures equipment is operating at optimal conditions and performance. *[This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
3	Assessment Boundaries	**Comment** During the technical sessions, there were several discussions	**July 3:** **1. Fish and Fish Habitat** The selection of the boundary for assessing residual	

related to the appropriateness of assessment boundaries for the various Valued Components. Specifically, several parties noted that the selection of the outlet of Lac de Gras as a location to determine effects, which is the case within the Developer's Assessment for water quality and fish and fish habitat, may not be appropriate.

For example, regarding fish populations, GNWT noted that there is no evidence provided to date illustrating that Lac de Gras and Lac du Sauvage share a fish population, and as such fish populations within Lac du Sauvage should be assessed on their own merit. This is specific with existing guidance in this area, such as with the Fisheries Protection Provisions (FPP) presented by Randall et al (2013) where a precautionary approach to management should apply to projects where uncertainty of impacts to populations exists since it is related to the spatial scale of the impact. This paper recommends that predictors of habitat quality be assessed on a small scale using production for projects with uncertainty. As a result, GNWT representatives asked a line of questioning regarding fish and fish habitat on Day 4 of the Technical Sessions when it was requested that the impact assessment be revised to reflect that there will be no effects to fish populations within Lac du Sauvage (Jay Pipe Technical Session, Day 4, Page 109). DDEC responded that they stand by their original assessment (Jay Pipe Technical Session, Day 4, Page 110); however the GNWT maintains that DDEC should re-consider the effects assessment with the boundaries limited to Lac du Sauvage to demonstrate that there will be no significant effects to fish populations within that lake. This would include effects assessments related to fish and fish habitat, as well as water quality.

Also, due to the potential for cumulative impacts from projects on Lac de Gras, the issue of residual effects on ecosystem productivity needs mentioning. Bradford et al (2014) discussed how impacts to habit quality and quantity that are not yet on

effects (i.e., the Effects Study Area [ESA]) for fish Valued Components (VCs) is described in the Developer's Assessment Report (DAR) (Section 9.1.4.2). Additional details and justification for the ESA were also provided in the Round 1 Information Request (IR) response DAR-GNWT-IR-49. The ESA is defined by the biological properties of the fish VCs (Arctic Grayling, Lake Trout, and Lake Whitefish) and also considers the physical properties of the environment in which the VCs occupy to fulfil their life history requirements. For fish VCs, the most relevant factor in defining the assessment boundary is the spatial scale of the population or fisheries unit under examination (Randall et al. 2013), with the goal of providing an ecologically relevant classification of impacts.
[*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*]

the ecosystem transformation level would be difficult to assess as the largest effect may overwhelm the smaller effects. Overlapping development signals at the Lac de Gras outlet would limit or impede the assessment of smaller but relevant ecosystem changes to water quality and fish resulting from Jay Project within Lac du Sauvage.

Similarly, ENR supports a line of questioning initiated by the Review Board during Day 3 of the technical sessions:

"If using a smaller, more Jay-specific study area would change the determination of significance effects, given that the effects study area would be much smaller?" Kate Mansfield, Jay Pipe Technical Sessions Day 3, Page 151

While that line of questioning was specific to hydrology, GNWT concurs that a Jay-specific study area may impact the determination of significance effects, and as such should be considered for all Valued Components.

The GNWT remains concerned that a larger than necessary effects assessment boundary may mask significant impacts specific to Lac du Sauvage. As such, the GNWT maintains the opinion that the use of Lac de Gras as the assessment boundary is not the appropriate scale for assessing habitat and water quality changes from Jay Project. It is important to note that a determination of significance does not equate to a rejection of the project but rather highlights the necessity to implement mitigation measures to address any effects as may be anticipated.

Reference: Randall, R.G., Bradford, M.J., Clarke, K.D., and Rice, J.C. 2013. A science-based interpretation of ongoing productivity of commercial, recreational or Aboriginal fisheries. DFO Can. Sci. Advise. Sec. Res. Doc. 2012/112 iv + 26 p.
Recommendation GNWT requests that DDEC re-evaluate the effects assessment presented in the DAR so that is the boundaries are limited to Lac du Sauvage to demonstrate that

		there will be no significant effects as a result of the Jay Project. Specifically, GNWT requests that the following Valued Components are addressed: • Fish and Fish Habitat – Effects assessment boundaries be reduced from outlet of Lac de Gras to outlet of Lac du Sauvage; and, • Water Quality – Effects assessment boundaries be reduced from outlet of Lac de Gras to outlet of Lac du Sauvage.		
4	Effects Level Within Mixing Zones	**Comment** During Day 4 of the technical sessions, GNWT staff conducted a line of questioning related to determining the extent, duration and magnitude of effect that would be occurring within the mixing zone. It was ascertained through that line of inquiry that the duration of impact is effectively the period of discharge, approximately a 5 year period (Mr. John Faithful, Jay Pipe Technical Sessions Day 3, Page 53). Also, the spatial extent of the mixing zone is estimated to be 200m (Mr. John Faithful, Jay Pipe Technical Sessions Day 3, Page 41). However, the methodology utilized to determine the extent of the mixing zone was not clear. While there is no set policy for setting mixing zone sizes in the NWT, the GNWT generally looks to CCME documents for guidance. The CCME guidance document on the site specific application of water quality guidelines (CCME, 2003) provides 14 factors that should be considered when establishing mixing zones. Three of these points are that the mixing zone should be as small as possible, that conditions within the mixing zone should not cause acute or short-term chronic toxicity to aquatic organisms, and wastewater discharged to the receiving water system must not be acutely toxic to aquatic organisms. In that regard, based on the evidence provided by DDEC to date, the GNWT believes that effluent discharged to Lac du Sauvage may be acutely toxic to daphnids during open pit mining (DAR Appendix 8H –"Attachment B Daphnia magna toxicity testing of "End of	**July 3:** *1. The areal extent of the effluent plume defined by the point at which SSWQOs for Lac du Sauvage will be met.* In the Developer's Assessment Report (DAR), Dominion Diamond suggested a mixing zone for the Jay Project (Project) of 200 metres (m) from the proposed diffuser for Misery Pit minewater discharge to Lac du Sauvage (Section 8.5.4 and Appendix 8F). This distance is based on near-field mixing studies using the CORMIX model, as described in Appendix 8F, Attachment 8F1, and is similar to other regulated mixing zones in the Northwest Territories (e.g., Snap Lake Mine [De Beers 2002], Gahcho Kué Mine [MVLWB 2014]). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	

Open Pit Mining" predicted ion balance" displays a 45 ± 35 survival % for Daphnia magna at 100% effluent). Also, there was no discussion in the DAR regarding the potential for chronic toxicity effects within the mixing zone.

At this time, it is still unclear as to the predicted effects to aquatic species within the mixing zone during the time of discharge and if this effect will extend into the closure period. It is GNWT's position that in order to make a determination on significance, the levels of effects that will be occurring within that area must be clearly understood. There has been no discussion to date on which species will experience effects, and the level of those effects, within this area.

As well, the scale of the area being affected within the context of Lac du Sauvage as a whole should be presented (note the DAR assessment boundary is the outlet of Lac de Gras). The percentage of the population of affected species (i.e. percentage of the lake impacted) should be quantified in the context of Lac du Sauvage using a clear assessment of overall magnitude of impact determined by the particular combination of concentration relative to chronic effect values, spatial extent, and duration of exposure.

Reference: Environment Canada. 2003. Revised Technical Guidance on How to Conduct Effluent Plume Delineation Studies.

Recommendation ENR requests that DDEC provide the following information:

1. The areal extent of the effluent plume defined by the point at which SSWQOs for Lac du Sauvage will be met.
2. The anticipated water quality within the mixing zone (end-of-pipe to end of mixing zone) during discharge and the rate of reduction post closure (i.e. the amount of time before concentrations are reduced to closure objectives);
3. The aquatic species that are anticipated to experience chronic toxicity within the mixing zone area including the effects level

		and assessment endpoints (i.e. EC20 for growth, IC10 for reproduction, etc.) and the parameters responsible for the noted toxicity; 4. Evidence that the predicted end-of-pipe effluent will not be acutely toxic to aquatic species at 100% effluent; 5. A discussion of the scale of the area being impacted by the mixing zone in the context of the volume of Lac du Sauvage expressed as a percentage (i.e. mixing zone volume/ volume of Lac du Sauvage). 6. A discussion on how the previous points translate to a determination of significance as it relates to aquatic species within Lac du Sauvage. An assessment of alternative strategies to address toxicity issues identified at the end- of-pipe or within the mixing zone in the context of the Jay Project that includes discharge strategies, discharge timing alternatives to avoid discharge of the poorest quality effluent, treatment options, etc.		
5	Contingencies	**Comment** The GNWT has noted that the uncertainty surrounding the groundwater modeling has not been quantified. It is important to ensure that this aspect of the assessment is well understood, since the implications of not correctly estimating groundwater inflows can have a significant impact on planned water management. Under some scenarios, the GNWT is concerned that the resulting water quality of Misery Pit water will result in effluent water quality which will result in an inability to meet the proposed SSWQOs in Lac du Sauvage. These SSWQOs are set to a level to be protective of aquatic species within Lac du Sauvage and as a result it is the GNWT's position that this situation could result in a significant impact to Lac du Sauvage. As such, it is paramount that DDEC investigate contingency options to ensure that, should the aforementioned situation arise, there are sufficient resources present to prevent the discharge of this water into the receiving environment. During the technical sessions, DDEC noted that approximately 9.2	**July 3:** Note of clarification: during operation of the Jay Project, a minimum of 3 million cubic metres (m3) of contingency storage will exist within Misery Pit (not Lynx Pit as stated in the Preamble). This storage volume comes from the 10 metres (m) of freeboard. This equates to 1.1 years of storage capacity during the first year of operation and 0.4 years during the last year (Developer's Assessment Report [DAR] Appendix 3A, Mine Water Management Plan, page 25), based on Jay Pit inflow volumes as presented in the DAR. This scenario is considered the Environmental Assessment conservative assessment case (or updated assessment case in water quality modelling predictions [Golder 2015a]). As the Jay Pit is developed (depth increases) inflow volumes are predicted to increase, hence the change in storage capacity over time.	

million cubic metres of storage volume exists (or will exist) within King Pond, Misery Pit and Lynx Pit (Jay Technical Sessions, Day 3, Page 214). This equates to approximately 18 months of storage capacity based on DDEC's statement that the 3 million cubic metre capacity of Lynx Pit equates to 6 months additional storage. Regarding the Lynx Pit, however, it is the GNWT's understanding that this will be used as a settling pond when dewatering the impounded portion of Lac du Sauvage (DDEC 2014). The Lynx Pit will then be allowed to fill over a period of 2.5 years via natural inflows Golder (2014, § 4.4). If the Lynx Pit is completely filled within 2.5 years of dike dewatering it is not clear how the Lynx Pit can be used to provide additional contingency mine water storage.

Additionally, the storage of higher TDS water within other areas of the mine may result in additional environmental factors that may have additional risks/significant impacts to the environment and consequences to closure options and feasibility of the mine. For example, DDEC stated that an additional 80,000,000 cubic metres of storage is available in existing mining structures on the main Ekati site (Jay Technical Sessions, Day 3, Page 215). The costs associated with pumping large quantities of water from the Misery site to the main Ekati site are unclear and the GNWT is unsure if this represents a truly feasible option.

Finally, the list of contingency actions outlined in the Developer's Assessment Report also included water treatment as a potential option should pit water be of a lesser quality than anticipated. The feasibility of this option has not been discussed to date. Given the limited effectiveness of water storage in the long-term and the potential conflict with acceptable closure options for the site, the GNWT concludes that the option related to water treatment should be investigated more thoroughly to ascertain if sufficient contingency options exist on site in the event that groundwater

In comparison, for the reasonable estimate case, presented in Golder (2015a), the contingency storage capacity in Misery Pit allows for 0.5 years of inflows to be stored during the last year of operation. Based on the assumptions used in the lower bound modelling case (Golder 2015b), Misery Pit allows for 1 year of inflows to be stored, during the last year of operation. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*

		predictions are underestimated. References: DDEC (Dominion Diamond Ekati Corporation). 2014. Dominion Diamond Ekati Developer's Assessment Report Jay Project. Golder. 2014. Dominion Diamond Ekati Corporation, Lac Du Sauvage Northwest Territories Canada. Jay Project Mine Water Management Plan. Submitted to Dominion Diamond Ekati Corporation. October 2014. **Recommendation** The GNWT requests that DDEC provide the following information: 1. Clarification on the water management contingency planning with respect to the Lynx Pit. 2. Details on the feasibility of the option related to pumping mine water to the main Ekati site and provide conclusions on the acceptability of this option based on those results. 3. Details on the feasibility of the option related to treating mine water on site to avoid long term storage of high TDS water on site. This analysis should include the proportion of mine water that would require treatment, volumes of the brine stream, storage options for the brine stream, any transportation costs, etc. The aforementioned options should be compared and a decision on contingency for mine water on site be selected based on the outcome of these results.		
6	Closure at Misery Pit	**Comment** ENR understands that long term water quality in Misery pit could have TDS concentrations of 700 mg/L, even if meromixis does become established. ENR is not certain how this concentration would change in the event that the actual groundwater quantity and quality encountered during the project differs from what is predicted by the modeling. Further, DDEC identifies in the response to Undertaking 12 that concentrations of copper, chloride, total phosphorous, manganese, aluminum, iron and nickel will also exceed generic	**July 3:** The post-closure surface water quality in the Misery Pit is a function of the following two processes: • ? mixing of water stored in the monimolimnion with the overlying mixolimnion; and, • ? runoff from the wall rock exposed above the final Misery pit lake elevation. In Undertaking #12 (DAR-MVEIRB-	

guidelines for the protection of aquatic life, trophic status, wildlife or drinking water aesthetics in the Misery Pit during the post closure period.

Section 5.1 of the Jay Project Conceptual Closure and Reclamation Plan identifies that the closure plan for the Jay Project facilities have been designed to fit into the closure framework established for the Ekati site. The overall closure goal is "to return the Ekati Mine site to viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment." The closure objectives have been established, but the closure criteria have not been finalized. ENR's understanding of the objectives for the pit lakes in the Interim Closure and Reclamation Plan are that the company's final design will be conducive to the establishment of a self-sustaining aquatic ecosystem, but that the company would not be responsible for ensuring that such an ecosystem became successfully established. This would include consideration of physical characteristics, such as constructing littoral zones around the edge, and pit water quality.

ENR is concerned that the predicted post–closure water quality in the Misery Pit will not meet the closure objectives in that the water quality will not be conducive to establishment of a self-sustaining aquatic ecosystem that is compatible with the surrounding environment.

DDEC identifies in response to Undertaking 12 that one potential mitigation strategy that could improve water quality in the Misery Pit would be to pump additional water from the Misery Pit into Jay Pit and provide a deeper freshwater cap for the Misery Pit. The potential effectiveness of this option was not quantified.

References:

BHP Billiton Canada Inc., 2011. EKATI Diamond Mine, Interim

UT-12) from the Jay Project Technical Sessions in Yellowknife (April 21 to 24, 2015), Dominion Diamond identified the following eight constituents that were projected to increase to concentrations greater than the generic guidelines for the protection of aquatic life, trophic status, wildlife, or aesthetic drinking water: total dissolved solids (TDS), chloride, total phosphorus (TP), aluminium, copper, iron, manganese, and nickel. Detailed water quality modelling of the Misery Pit indicated that TDS and chloride concentrations in the pit after closure (i.e., following back-flooding) are related to water stored in the mixolimnion mixing with water stored in the monimolimnion, whereas, increases of metals concentrations during post-closure is a result of loading originating from the wall rock. Total phosphorus concentrations increase as result of both of these sources. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*

		Closure and Reclamation Plan. Dominion Diamonds Ekati Corporation, 2015. EA1314-01 Jay Project, Dominion Diamond Corporation Developer's Assessment Report – Responses to Undertakings, DAR-MVEIRB_UT-12. Golder (Golder Associates Ltd.). 2014. Jay Project Conceptual Closure and Reclamation Plan Report. Prepared for Dominion Diamond Ekati Corporation. Yellowknife, NWT, Canada. **Recommendation** ENR requests that DDEC provide an evaluation of the feasibility and effectiveness of all available mitigation options that could be implemented to improve post-closure water quality in the Misery Pit. The premise for these evaluations should be that final closure would align with the existing and approved closure goals and objectives for the Misery Pit.		
7	Viability of Minewater Management Plan	**Comment** The viability of the minewater management plan is contingent upon permanent stratification in several pits. An initial meeting with DDEC was helpful in understanding this aspect of the mine water management plan and forestalled some questions. Further questions were addressed in the response to IRs (DDEC, 2015, DAR-GNWT-IR-62), in a face to face meeting during the technical meeting and a subsequent teleconference. The major theme of the questioning has to do with the likelihood that the pit lakes will stratify and remain permanently stratified. Stratification in Jay Pit Lake is based on modelling using CE-QUAL-W2 version 3.7 (Cole and Wells, 2011). Inputs to the model are based on additional 2D and 3D modelling of connate water flow. Of primary concern is the effect of changes in TDS concentrations, flows and elevation on pit lake stability.	**July 3:** Dominion Diamond Ekati Corporation (Dominion Diamond), Golder Associates Ltd. (Golder), the Government of the Northwest Territories (GNWT) and their consultant (Barry Zajdlik) met via teleconference on June 30, 2015 to discuss the model input data requested in this information request. During the call, GNWT stated their primary concern was the uncertainty around meromixis not forming in the Jay Pit should total dissolved solids [TDS] concentrations be less than predicted in the DAR and reasonable estimate model (Golder 2015a) scenarios. GNWT indicated they intended to develop a CE-QUAL-W2 pit lake hydrodynamic model and modify the model input TDS concentrations in the mixolimnion	

		References: Cole TM, Wells S. 2011. CE-QUAL-W2: A Two-Dimensional, Laterally Averaged, Hydrodynamic and Water Quality Model, Version 3.7; User Manual. Prepared for US Army Corps of Engineers Waterways Experiment Station. Washington, DC, USA. **Recommendation** The Government of the Northwest Territories intends to use most probable, as well as, a potential yet probable lower bound scenario to assess meromixis using CE-QUAL-W2 version 3.7 (Cole and Wells, 2011). In order to do so in a timely manner and to ensure transparency and comparability with results provided by DDEC, the Government of the Northwest Territories requests all input files to the CE-QUAL-W2 version 3.7. These files include but may not be limited to the following: • The general control file including any adjusted kinetic parameters; • Calibration data and associated final boundary conditions including inflows and outflows, head boundary conditions if used, surface boundary conditions, etc; • The volume-area-elevation table after adjustment to match the project table; • The boundary files following calibration; • Bathymetry file; • Vertical and/or longitudinal profile input files; and • Hydraulic parameters.	and monimolimnion within the pits to evaluate if meromixis would remain stable under these conditions. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
8	Stability of Meromixis Post- Closure	**Comment** During the technical sessions, there were several discussions related to the stability and longevity of meromictic conditions in both Jay Pit and Misery Pit Lakes. It is the GNWT's understanding that the modeling performed by Dominion Diamond for meromictic conditions in both pit lakes have only investigated the development of meromixis based on the parameters of high TDS, different wind sheltering coefficients	**July 3:** Salt exclusion during ice formation was not included in the pit lake hydrodynamic models developed for the DAR or the Reasonable Estimate Case (Golder 2015). Salt exclusion during ice formation was added to the Updated Assessment Case and Reasonable Estimate Case hydrodynamic models of the Misery Pit and Jay Pit lakes as	

and increased meteorological data (from 7 to 14 years) (Golder 2015).

In Dominion Diamond's Homework Item No. 22, DDEC reported salt rejection (exclusion) was not included in the model due the added complexities of the model. It should be noted that ice exclusion has been used by BHP Billiton in their Koala watershed modeling report (Rescan 2012) and BHP Billiton noted the importance of including it for water quality modeling for pit lakes for Ekati (Rescan 2013).

It has been shown in pit lakes similar to Jay and Misery, the three primary drivers for establishing and retaining stability of meromixis are salinity, depth of lakes, and ice cover (Pieters and Lawrence 2014). Two cases have been presented by Dominion Diamond, the DAR Case and Updated Assessment Case, but both present high TDS concentrations in the monimolimnion relative to the low TDS concentrations in the mixolimnion. No lower bound case of low TDS concentrations below the Updated Assessment Case TDS concentrations for the monimolimnion has been modeled to date.

While it is possible a pit lake with a strong chemocline with little change to salinity concentrations over time will result in a strongly meromictic pit lake (which are the cases presented in the Compendium of Supplemental Water Quality Modeling by Dominion Diamond) this may not be the case with a weaker chemocline or halocline. It is stated in the DAR Mine Water Management Plan that the decreases to the monimolimnion concentrations of the Misery Pit due to groundwater seepage post-closure were not considered in the modeling for the purpose of conservatism. However, lower concentrations of the monimolimnion have a direct impact on the stability of meromixis and should be further investigated.

Ice exclusion is a significant driver in the stability of meromixis in pit lakes. Stability is compromised when there is a more

part of this information request. Similar to the hydrodynamic and water quality models of Lac du Sauvage and Lac de Gras, the ice thickness on Misery Pit and Jay Pit lakes was assumed to be 1.5 metres (m), and 100 percent (%) of the salt was assumed to be excluded from the ice during ice formation. The rationale for the selection of these parameters is provided in Section 8F2.2.2.2 of Appendix 8F of the DAR. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*

saline inflow to the epilimnion, which would increase the potential for under-ice mixing the following winter (Pieters and Lawrence 2014). The risk of under-ice mixing of the pit lake is enhanced during a winter with thick ice and high salt exclusion. This is partially significant for Misery Pit Lake, as the predicted future surface TDS concentrations are in the range of 429 mg/L to 728 mg/L at 200 years post-closure. As described by Pieters and Lawrence (2014), the higher the mass of salt excluded from the ice, the lower the salt deficit ratio and the greater the potential of mixing of the monimolimnion with the mixolimnion. An example of this scenario is the Colomac mine north of Yellowknife, where groundwater acted to reduce the salinity of the deep water. This diluting of the monimolimnion coupled with under-ice mixing from salt exclusion suggests the degree of meromixis can change over time. This pit lake was identified as a weak meromictic lake as a result. Pieters and Lawrence have provided direction on assessing ice exclusion using box models (Lawrence 2008) and salt deficit ratios (Pieters and Lawrence 2014)

References:

Golder (Golder Associates Ltd.). 2015. Jay Project Compendium of Supplemental Water Quality Modelling. Prepared for Dominion Diamond Ekati Corporation. Yellowknife, NWT, Canada.

Lawrence, G. 2008. Physical Processes and Meromixis in Pit Lakes. Presentation to the Wek'eezhii Land and Water Board. Link: http://www.mvlwb.ca/Boards/WLWB/Registry/2003/MV2003L2-0013/MV2003L2-0008%20-%20Presentation%20Pit%20Lakes%20-%20Part%201%20Studies%20-%20Part%202%20Meromixis%20-%20Mar24%2008.pdf

Pieters, P. and Lawrence, G.A. 2014. Physical processes and

		meromixis in pit lakes subject to ice cover. Canadian Journal of Civil Engineering, 41: 569-578. dx.doi.org/10.1139/cjce-2012-0132 Rescan. 2012. EKATI Diamond Mine: Water Quality Modelling of the Koala Watershed. Prepared for BHP Billiton Canada Inc. by Rescan Environmental Services Ltd.: Yellowknife, Northwest Territories. **Recommendation** GNWT requests that DDEC provide further information and discussion regarding the influence of ice exclusion on the stability of meromictic conditions in both Jay Pit and Misery Pit Lakes. This should include calculation of salt deficit ratios and meromictic ratios for Jay and Misery Pit lakes for all presented cases post closure (e.g. DAR Case and Updated Assessment Case). GNWT encourages DDEC to replicate the methods presented in Section 6 of Ekati Diamond Mine Modeling Predictions of Water Quality for Pit Lakes (Rescan 2013) for comparison with this review. **Note, Rescan (2013) referenced document is provided as a separate attachment in the IR submission.**		
9	Hydrogeologic monitoring during operations and post-closure	**Comment** Section 8 of the DAR and Information Request #DAR-GWNT-IR-11 included discussion on the topic of hydrogeologic monitoring for the Jay Project. Within Section 8.8 of the DAR, DDEC outlines the broad objectives associated with the proposed groundwater monitoring program. The scope includes water quantity and quality monitoring at the following: • Groundwater inflows to the open pit • Seepage mapping at the open pit (preferential pathways) • Westbay multi-level monitoring well near Jay Pit DDEC has noted that the monitoring programs are proposed to address the uncertainties associated with the effect predictions	**July 3:** Groundwater is not currently used for drinking water or any project-related use in the Jay Project (Project) area. However, groundwater is a valued component due to the contribution of groundwater to the water quality of lakes and streams (Developer's Assessment Report [DAR] Section 8.1.3). Therefore, the hydrogeological monitoring plan at the Jay, Koala, Panda, and Misery pits is intended to connect the monitoring plan to the concern to regulators, communities, and Dominion Diamond – that being the impact on surface water quality of possible changes in the quantity or quality of groundwater discharge to	

and performance of environmental design features and mitigation measures, which will allow analysis to confirm effects predictions, identify unanticipated effects and provide for the implementation of adaptive management.

Section 8.8 of the DAR also states that modification to the proposed monitoring schedule would be based on a comparison of the monitored information to the predicted values. If the observed values or changes are less than predicted, then the intervals between monitoring events would likely be increased (i.e., less frequently sampled). If the observed values or changes are greater than predicted, then the monitoring will continue as deemed necessary.

The proposed monitoring to evaluate impact predictions for the Panda, Koala and Misery Pits, which are the proposed disposal sites for processed kimberlite and saline groundwater inflows from the Jay Pit, are uncertain. It is unclear if there is a proposed scope of groundwater monitoring that:

- Includes the Panda and Koala Pits, which are proposed to receive processed kimberlite generated from the Jay Project.
- Includes a duration at all monitoring areas that encompasses the entire period of EA predictions from construction through post closure.

Recommendation GNWT requests that DDEC address the following hydrogeologic monitoring items:

1. Provide additional details regarding any hydrogeological monitoring program proposed related to the Panda, Koala and Misery Pits.
2. Provide additional details regarding the duration of proposed hydrogeological monitoring for the Jay, Panda, Koala and Misery Pits. The response shall address if the duration of monitoring will extend throughout the impact prediction duration and include phases such as operations, establishment of meromixis within the open pits, and post closure conditions.
3. DDEC to commit to including in the appropriate monitoring

surface water. Consequently, Dominion Diamond will rely on monitoring of pit lake and surface water quality to assess the effects of changes to groundwater flow or quality on the environment.
This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.

		and/or adaptive management plan, the final details of the groundwater monitoring programs, such as measurement frequencies, reporting requirements, and establishment of pre-defined action levels or thresholds which are linked to key mitigation techniques (such as calibration of numerical models and re-evaluation of initial predictions).		
10	Calibration of the 3-D hydrogeologic model	**Comment** Section 8.8 of the DAR entitled Follow-up and Monitoring, provides a broad discussion of proposed monitoring programs, and states that monitoring will be used to verify the effects predictions. DDEC also proposes that if monitoring results indicate effects that are different from predicted effects, or the requirement for additional mitigation measures, then adaptive management will be implemented. Additionally, special studies intended to supplement monitoring data would be considered. A 3-D hydrogeological model was applied to predict inflow water quality and mine inflows during operations. Various assumptions were applied to model this system as a result of the availability of information pre-mining. During mine operation, hydrogeologic data are proposed to be collected and compared to predicted effects. Thus, there will be an opportunity to improve the predictions of the 3D hydrogeological model after mining commences, should the hydrogeologic monitoring data support the need to re-calibrate the 3-D model. As was noted during the Technical Sessions, re-calibration of the mine inflow model for the Diavik site was warranted after mining commenced, in part due to higher measured pit inflows than initially predicted. Thus hydrogeological model refinement, after the environmental assessment predictions have been completed, has been applied to other mine sites in a similar hydrogeologic setting.	**July 3:** 1. and 2. Dominion Diamond anticipates that the hydrogeological models for the Jay and Misery pits will be calibrated to site-specific data and re-run based on the monitoring data collected through operations at the Jay Pit. This update would be planned prior to the initiation of minewater discharge from the Misery Pit to Lac du Sauvage (5 to 6 years into mine operations). This timeframe provides adequate time for establishing a good database of site-specific information and provides for updated predictions in Misery Pit prior to discharge, and in the Jay Pit after closure. Updates to one or both of the hydrogeological models would also be considered over the life of the Jay Project (i.e., initial, late operational, or closure phases), if site-specific data were unacceptably different than predicted. Action levels will be developed during the licensing and permitting phase of the Jay Project, which if reached, would as one likely response, trigger the re-calibration of one or both of the three-dimensional hydrogeological models, either in advance of the Misery Pit discharge period, during the discharge period, or during the Jay back-flooding period, depending on monitoring data. Consistent with other northern diamond mine	

		It is unclear if, or when, an evaluation of the 3-D hydrogeological model's performance will occur, and what action levels or thresholds will be established to refine the initial 3-D model in order improve prediction confidence and better mitigate against significant unexpected impacts. **Recommendation** The GNWT requests: 1. DDEC provide additional information with regards to the approach to evaluate if the 3 D hydrogeological model will require re-calibration. The response shall include discussion related to the action levels or thresholds to trigger the re-calibration of the 3- D model. For example and where permissible, the action levels or thresholds could be related to a measured variance from the DAR predictions or a pre-determined phase/year of pit development. 2. DDEC commit to including in the appropriate adaptive management plan, the final action levels or thresholds that would trigger the re-calibration of the 3-D hydrogeological model.	operations, it is anticipated that action levels associated with groundwater management could be based on variance of measured groundwater inflow rates and chemistry (i.e., quantity and quality, such that inflow rates and/or chemistry are notably different [e.g., greater] than predicted for a given duration of time) to the Developer's Assessment Report or updated predictions. These action levels will be clearly specified in the appropriate adaptive management plan.	
11	Sediment and Water Quality	**Comment** In the first round of Information Requests, the Government of Northwest Territories requested "that DDEC provide either the analyses using the latest sampling results or the raw data in order to determine whether changes in sediment quality are occurring in Lac du Sauvage". DDEC complied by providing some analyses (DDEC, 2015, DAR-GNWT-IR-60) but stated in reference to 2014 data that "those data are not yet published". Since that time, the DDEC Jay Project 2014 Water and Sediment Quality Supplemental Baseline Report, April 2015 was released. **Recommendation** GNWT requests that the data presented in Appendix D Water Quality Data and Appendix E Sediment Quality Data of this report are provided in electronic format to confirm conclusions reached by DDEC. Additionally, all available metal, ions, nutrient, hydrocarbon, PCDD and PCDF sediment data for Lac du Sauvage are requested in electronic format.	**July 3:** Water and sediment quality data collected during the 2014 baseline study are provided in electronic format (Excel) in file DAR-GNWT-IR2-11(Supporting Excel File).xlsx (Tables 11-1 to 11-21). All available sediment quality data collected from Lac du Sauvage, which were used for the DAR and subsequent reporting, are provided in electronic format (Excel) in file DAR-GNWT-IR2-11(Supporting Excel File).xlsx (Table 11-22). Where applicable, summary water quality and sediment quality data are provided in the Excel file. **List of Tables in the Supporting Excel File:** Table 11-1 Laboratory Water Quality Data from Lac du Sauvage during the Under Ice Period, 2014 Table 11-2 Laboratory Water Quality Data from	

				the Lac du Sauvage Outlet during the Under Ice Period, 2014 Table 11-3 Laboratory Water Quality Data from the Lac du Sauvage Sub-Basin Lakes during the Under Ice Period, 2014 Table 11-4 Laboratory Water Quality Data from Paul Lake during the Under-Ice Period, 2014 Table 11-5 Laboratory Discrete Water Quality Data from Lac du Sauvage during the Open Water Period, 2014 Table 11-6 Laboratory Discrete Water Quality from the Lac du Sauvage Outlet during the Open Water Period, 2014 Table 11-7 Laboratory Water Quality Data from Lac du Sauvage Sub-Basin Lakes during the Open-Water Period, 2014 Table 11-8 Laboratory Discrete Water Quality Data from Lac de Gras Slipper Bay during the Open-Water Period, 2014 Table 11-9 Laboratory Discrete Water Quality Data from Lac de Gras Far Field 2 during the Open-Water Period, 2014 Table 11-10 Laboratory Water Quality Data from the Lac de Gras Outlet during the Open Water Period, 2014 Table 11-11 Laboratory Discrete Water Quality Data from Lac de Gras Sub-Basin Lakes during the Open-Water Period, 2014 Table 11-12 Depth-Integrated Nutrient Data from Lac du Sauvage during the Open Water Period, 2014 Table 11-13 Depth-Integrated Nutrient Data from Duchess Lake during the Open Water Period, 2014 Table 11-14 Depth-Integrated Nutrient Data Lac de Gras Slipper Bay during the Open Water Period, 2014 Table 11-15 Depth-Integrated Nutrient Data from Lac de Gras Far Field 2 during the Open Water		

			Period, 2014 Table 11-16 Chlorophyll a Field Duplicates Collected in Lac du Sauvage, Duchess Lake, and Lac de Gras (Slipper Bay and Far Field 2), during the Open-Water Period, 2014 Table 11-17 Sediment Quality Data from Lac du Sauvage, 2014 Table 11-18 Sediment Quality Data from Lac du Sauvage Sub-Basin Lakes, 2014 Table 11-19 Sediment Quality Data from Lac de Gras Far Field 2, 2014 Table 11-20 Sediment Quality Data from the Lac de Gras Sub-Basin Lakes, 2014 Table 11-21 Dioxins and Furans in Sediments within the Baseline Study Area, 2014 Table 11-22 Sediment Quality Data from Lac du Sauvage, 2006-2014	
12	Hydrocarbon Control	**Comment** The Rio Tinto Diavik facility is experiencing fugitive losses of hydraulic fluids to such an extent that hydrocarbons are being detected in its mine water storage pond (i.e. North Inlet) and potentially in the receiving environment. This may be due to the failure of hydraulic seals due to low temperature operations. On February 19, 2014, the Wek'?ezh?i Land and Water Board provided a directive to Rio Tinto to modify the Operational Phase Contingency Plan to provide: 1. Descriptions of the specific source control measures that will be/have been put in place to minimize hydrocarbon contamination from the underground; 2. Detailed description of previous versus improved internal spill reporting procedures; and, 3. Hydrocarbon management performance tracking including a monitoring program. **Recommendation** The Government of the Northwest Territories requests that DDEC provide impact predictions from hydrocarbon losses during operations and their plans to control hydrocarbon contamination and monitor losses to the receiving environment.	**July 3:** 1) There are a number of established and effective hydrocarbon prevention and control measures in place at the Ekati Mine that would be applicable to the Jay Project. These are described in the Spill Response Plan and the Waste Management Plan (which includes the hydrocarbon-contaminated materials management plan), both of which are approved by the Wek'èezhi`i Land and Water Board. The prevention and control measures include: ? • Hydrocarbon source control measured at the Ekati Mine operation, as well as in the underground, include a preventative maintenance schedule for operating equipment and proper training. ? • Around the Ekati Mine, and in	

			the underground areas and shops, spill kits and equipment are available so spills can be immediately addressed and cleaned up before they have the chance to migrate into the sumps. ? • Temperatures in the underground are kept at working conditions so that hoses do not get too cold and brittle and break. ? • Daily equipment inspections are completed to identify any issues or weak areas that can be fixed before a break or spill occurs. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
13	Mercury	**Comment** The Government of the Northwest Territories has reviewed the mercury concentrations in sediment within Lac du Sauvage from the baseline record. The GNWT notes that 72% of mercury concentrations in Lac du Sauvage exceed the selected Interim Sediment Quality Guideline (ISQG) and 2% exceed the selected Probably Effect Level (PEL). The DAR is silent on whether the development of the Jay Pipe would alter the rate/frequency or the magnitude of mercury exceedences in sediment samples within Lac du Sauvage. **Recommendation** The GNWT requests that DDEC: 1. Provide a description of potential sources of mercury from the Jay Pipe development and whether they may influence the existing mercury concentrations in the sediment in Lac du Sauvage.	**July 3:** *1. Provide a description of potential sources of mercury from the Jay Pipe development and whether they may influence the existing mercury concentrations in the sediment in Lac du Sauvage.* Potential sources of mercury from the Jay Project (Project) could include disturbance of sediment during dike construction (considered a secondary pathway in the effects assessment; Section 8.4.2.4.2 in the Developer's Assessment Report [DAR]) and minewater release to Lac du Sauvage (considered a primary pathway in the effects assessment; Section 8.5.4 in the DAR). As described in the DAR (Section 8.4.3.2), sediment and erosion controls such as silt curtains	

		2. Tabulate each sample location in Lac du Sauvage and clearly identify where mercury concentrations exceed the ISQG and PEL.	will be used to reduce the transport of sediment from dike construction activities into Lac du Sauvage, and silt fences will be used to reduce the transport of sediment from general land-based land disturbance activities. These practices will be consistent with those used at the Ekati Mine. Through the use of silt curtains and timing of construction activities, construction of the dike in Lac du Sauvage was considered to have a minor effect on water and sediment quality, and thus this activity is not anticipated to influence mercury concentrations in the sediment in Lac du Sauvage. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
14	Jay Pipe Dike Geotechnical Investigations	**Comment** Sections 3.7, 3.8, 4.2, 4.2.2, and 4.2.4 of the pre-feasibility design report for the Jay Dike (Golder, 2014) noted gaps in geotechnical information performed in 2014, including unreliable (Section 3.8, page 6) ground penetration radar (GPR) survey that did not correlate well to drilling data to delineate the contact between lakebed sediment and competent soil and bedrock contact. Additionally the pre-feasibility design report noted recommendations for future work that included additional geotechnical investigations. From the pre-feasibility report, these recommendations include: • An underwater visual assessment comprising photographs and video of the lakebed surface should be carried out along the Jay Dike alignment. This will provide an indication of the number of cobbles and boulders visible on the lakebed surface.	**July 3:** Yes. Please see response to Homework item #1 from Jay Technical Sessions. This information request is similar to the request made by Mr. Brian Watts, retained by the Mackenzie Valley Environmental Impact Review Board as a reviewer, during the Jay Technical Sessions held on April 20, 2015 (Day 1). Dominion Diamond took the request as Homework Assignment #1, and provided a response on April 21, 2015 (Jay Technical Sessions, Day 2, pages 20-21 of the transcript). *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	

- A cone penetration test (CPT) program should be carried out to better characterize the geotechnical parameters of the lakebed sediment and fine-grained competent soil. It is assumed that the CPT will reach refusal in the competent soil/till, due to the higher density and granular nature of this material. To perform CPTs in the fine-grained competent drill, pre-drilling through the granular competent soil may be required. The CPT data will be used to refine interpreted material thickness and assumed material properties. The CPTs can be carried in combination with the sonic drilling.
- Closely spaced bedrock profile drilling should be carried out to evaluate lakebed soil thickness and bedrock depth. An air track rotary percussive drill rig (i.e., Sandvik DX500, formerly known as the Tamrock Ranger 500) could be used to determine the depth of bedrock.
- Drilling and coring along the dike alignment should be carried out using a sonic drill rig in areas where air track drilling is not possible, which will generally be in intermediate and deeper zones, to obtain stratigraphic information and characterization of the underlying lakebed soils. As part of the drilling, downhole hydrogeological testing is to be carried out at select locations within the bedrock and select samples collected for geotechnical laboratory testing.
- Diamond drilling (HQ3, triple-tube system) should be carried out to characterize shallow bedrock and conduct hydrogeological testing (slug injection, slug withdrawal, and constant rate injection) in the bedrock using pneumatic packers. Testing would be carried out over shorter intervals of the shallow bedrock would be tested to characterize changes in the permeability of the shallow bedrock.
- Additional bedrock drilling could be conducted to assess or characterize the presence of bedrock structures with the potential to have higher hydraulic conductivity (i.e., faults).
- Installation of thermistor strings at select islands and abutments along the dike alignment is recommended. The data obtained from the thermistors will help to better understand the ground thermal profile changes with time.
- Geotechnical laboratory testing of samples collected during sonic drilling should be conducted.
- Sonic drilling and sampling should be performed within the proposed Lynx pit pre-stripping area. This material is intended to characterize and estimate the quantity and quality of

		competent soil material available. Representative samples of competent soil obtained from Lynx drilling will be used to carry out mix design testing for the Cement Soil Bentonite (CSB) backfill. • As an interim measure, mix design testing with competent soil obtained from stripping of the Pigeon Pit will be used for initial mix design testing. • Crushed waste rock material should be evaluated for use as fine filter and coarse filter. Additionally, Golder (2014) also stated within Section 15.0 that, "In support of the recommendations for future work, Golder has proposed to Dominion Diamond a winter 2015 geotechnical and hydrogeological investigation program which includes borehole locations, drilling equipment, on-site field testing, instrumentation, and geotechnical laboratory testing for the Jay Dike and Lynx Pit pre-stripping projects. Refer to the draft Winter 2015 Jay Dike Geotechnical and Hydrogeological Investigation Program report for further details regarding the proposed investigation (Golder 2014i). The results of the 2015 winter geotechnical investigation should be used to refine the interpreted stratigraphy along the dike alignment. Furthermore, the assumptions used in the pre-feasibility design analyses should be compared with the geotechnical investigation results and additional analyses be performed as necessary." **Recommendation** GNWT recommends that DDEC provide clarification on whether they have committed to the geotechnical investigation recommendations described in the pre-feasibility design report for the Jay Dike (Golder, 2014) to aid in the final design of the dike.		
15	Jay Pipe Dike Construction Technique and Turbidity	**Comment** Section 6.4 of the pre-feasibility design report for the Jay Dike (Golder, 2014) noted the dike construction method and	**July 3:** 1. The following provides additional information regarding the amount of rockfill scheduled to be placed during the	

	Management	sequence, which includes both construction in the summer and winter seasons. It is noted that, "The upstream portion of the rockfill platform will be placed during the winter, while ice exists over the lake, to minimize the generation of turbidity within the lake. A slow rate of placement will be used and modified based on turbidity measurements. The remaining portion of the platform will be placed during the summer, at a rapid rate." Further, Section 8.1 and 8.2 of Golder (2014) noted turbidity management for construction in both the summer and winter seasons, respectively. The turbidity management for summer construction includes the use of redundant parallel turbidity curtains installed prior to ice breakup in the lake each season. However, turbidity curtains will not be used during the winter construction season. For winter construction of the rockfill platform, it is noted that, "ice cover will limit the transportation of disturbed sediments via wind and wave erosion… if placement is carried out at a sufficiently slow rate, it is anticipated that rockfill could be placed during the winter and meet the required turbidity levels." It is unclear what the term "sufficiently slow" means, and how that may impact the planned construction schedule and sequencing noted in Section 10.0. Further, turbidity criteria, monitoring locations and depths, intervals, and adaptive management triggers/responses have yet to be defined at this stage of design. However, those should be better understood in order to mitigate against unacceptable turbidity generated from construction on water quality in Lac du Sauvage, and how turbidity monitoring may affect construction duration and sequencing. Specific to turbidity management during the construction and dewatering of the Meadowbank dike, a Water Quality Monitoring and Management Plan was developed that included, without limitation: applicable turbidity criteria,	winter construction period and the rate of placement: • ? approximately 1.9 million cubic metres (3.2 million tonnes) of rockfill is required to construct the upstream portion of the pre-feasibility Jay Dike; • assuming placement over a 7 month period (November 2016 to May 2017), and • placement 24-hours per day, then there is approximately 5,040 hours for placement of this volume of material; • each truck (CAT 789D MSD II Body) has an approximate capacity of 194 tonnes; and, • therefore, the slowest average upstream rockfill construction rate requires 3.3 truckloads per hour to achieve the above schedule. This is approximately equivalent to 15,000 tonnes of rockfill placed per day. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*		

		monitoring locations and adaptive management triggers/responses to mitigate against elevated turbidity in the surface water. Reference: Golder, 2014 - Golder Associates, 2014. Jay Project Pre-feasibility Dike Design Report. Reference Number 1313280041-E14069-R-Rev0-2020. Submitted to Dominion Diamond Ekati Corporation. December 2014. **Recommendation** GNWT requests that additional details associated with the following be provided: 1. The Jay pipe dike is proposed to be constructed in a similar manner as the Meadowbank dike and will include winter construction. Specific to winter construction of the dike, GNWT requests additional information to describe the term "sufficiently slow" with regards to rockfill placement for the dike and how this criterion will be measured and monitored during construction to mitigate against elevated turbidity in the surface water. 2. Specific to winter construction of the dike, GNWT requests additional information on the typical rate of rockfill placement for the Meadowbank dike and lessons learned regarding the correlation between rate of rockfill placement and turbidity increases in the surface water. This information will assist with understanding the feasibility of this mitigation method. 3. Specific to winter construction of the dike, if the rate of rockfill placement is reduced to mitigate against high turbidity in the surface water, GNWT requests additional details on the potential implications for the timing for dike construction. For example, would the sequencing of dike construction be able to accommodate rockfill placement in different locations to maintain the planned winter construction schedule, or will this result in a longer time overall to construct the dike?		
16	Turbidity	**Comment** The GNWT has several concerns regarding the effectiveness of proposed mitigation measures as they relate to controlling the release of sediment for both the winter and summer periods. This is crucial as ineffectiveness of these mitigation actions may	**July 3:** a) Turbidity curtains are proposed to be installed in Lac du Sauvage, once ice has melted from the lake surface, such that they are in place prior to commencement of the in-water summer dike construction activities. On the upstream side of	

cause significant impacts to the adjacent aquatic environment (e.g. nearby Lake Trout spawning habitat).

For example, the rationalization for not using turbidity curtains during the winter rests on the absence of wind and wave effects and a turbidity monitoring program. Details that have not been presented include:

- The expected levels of turbidity during placement of the rock shell particularly in deeper depositional areas.
- A turbidity threshold and the associated management plan.
- The methodology used to measure turbidity and how that method will be employed during the winter.
- Predicted TSS isopleths during winter.

Also the potential for turbidity associated with trenching of the central portion of the dike has not been discussed.

Finally, St. Lawrence Centre (1993; loc. cit. DDEC 2014) advises against using silt curtains when water is deeper than 6.5 metres. As a result, the GNWT is concerned that silt curtains may be ineffective in this regard. Additional information regarding the effectiveness of this mitigation action is warranted.

Recommendation GNWT requests that additional details regarding: a) the rationalization to not use turbidity curtains during the winter be provided including:

- The expected levels of turbidity during placement of the rock shell particularly in deeper depositional areas.
- A turbidity threshold and the associated management plan.
- The methodology used to measure turbidity and how that method will be employed during the winter.
- Predicted TSS isopleths during winter.

b) GNWT requests additional information on the potential for turbidity associated with trenching of the central portion of the dike. c) GNWT requests DDEC outline reasons that they believe the use of silt curtains in Lac du Sauvage will be effective in deep water areas (i.e. >6.5m).

the dike, double curtains will be installed. The purpose of the primary (inner) curtains is to limit the extent of total suspended solids (TSS) mobilization through summer dike construction activities. The secondary (outer) curtains are to act as a backup if problems occur with the inner curtains. On the downstream side of the dike, a single row of curtains will be installed. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*

17	Jay Pipe Lake Bottom Sediment Management	**Comment** As noted in Golder (2014), the soils located within the extents of the Jay Pit, consist of: • Very soft to soft, non-cohesive lakebed sediments (ranging in thickness from 0 to 5.8 m thick); or • Competent soil generally understood to be either glacial till, glacial outwash, or glacial fluvial deposits (ranging in thickness between 0.6 m to 10.9 m); or • Competent bedrock. Where lakebed soils do not exist, a layer of cobbles and boulders is present above bedrock, and is typically found in shallower water along portions of shoreline or along islands. The soils within the Jay Pit are scheduled to be excavated between October 2019 and the middle to autumn 2020 and stored in the waste rock storage area. A volume of about 15 to 20 million cubic metres of material will be removed, not counting the material from the receding 60° slopes in the overburden which could add another ~100,000 m3 per thaw season. It is noted that this material will be stored in the waste rock storage area. This area is estimated at about 3 km2 or 3,000,000 m2. Therefore, the layer of lake bottom sediment and lacustrian soil will fill the storage area to a height of possibly 5 or 6 metres. The heavy haul trucks likely cannot run on this material and haul roads will likely be required to reach the centre and opposite side of the storage area. Naturally, without a perimeter containment dike, these fine lacustrian silts and clayey materials will be washed away, under heavy rain periods and during the spring run-off, directly into the environment and the western part of Lac du Savage. During the technical sessions, it was noted that containment dikes may be required and could be accommodated in the waste rock storage area.	**July 3:** 1. As stated in the Project Developer's Assessment Report (DAR), the total volume of overburden soils and waste rock from the Jay Pit is approximately 108,699,000 cubic metres (m3). The storage capacity of the Jay waste rock storage area (WRSA) is approximately 120,200,000 m3, which provides approximately 11,000,000 m3 of contingency storage. The footprint area of the Jay WRSA is approximately 251 hectares (ha). *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	

		In addition, this sloppy material will be difficult to hold in haul trucks and loss of material all along the haul roads has potential to occur. Spillage from the haul trucks has the potential to be a source of turbidity to Lac du Savage via surface water run-off. **Recommendation** 1. GNWT requests that DDEC provide further information regarding the sequence, construction approaches and/or methods employed to contain the lake bed sediments within the waste rock pile area. The response shall demonstrate that adequate storage volume is available in the waste rock storage area to contain the sediments and how the sediments will be contained and deposited (i.e., built up) within waste rock storage area. 2. If sediments are removed from the Jay pit area seasonally during operations, GNWT requests that DDEC provide the storage location for these materials. 3. GNWT requests that DDEC describe the potential for lake bed sediment spillage from haul trucks to occur and the proposed management of this spillage to mitigate against turbidity load to surface water.		
18	Hydrology Model Reliability	**Comment** The DAR contains only subjective descriptions of model reliability - i.e. the developer makes subjective statements on the reliability of the model he himself developed. In the first round of IRs, and during the April 2015 Technical Session, the GNWT expressed a number of concerns as to the lack of objective and quantitative evaluations of the accuracy and error limits of the hydrologic modelling. An outcome of the Technical Sessions was Undertaking 07, by which the Developer agreed to undertake a quantitative evaluation of model performance, using measurement parameters and procedures such as outlined in Moriasi et al. 2007. The submitted Undertaking 07 covers the following aspects:	**July 3:** 1. As requested, quantitative evaluation of the Jay Regional Hydrology Model for Lac de Gras water levels (as stage above the estimated zero flow elevation) has been completed using available Lac de Gras water level spanning the period of 2008 to 2013. Validation of the Jay Regional Hydrology Model based on Lac de Gras water levels is expected to provide less insight into the predicted long-term model error or uncertainty than the evaluation at the Coppermine River at Desteffany Lake outlet for the following reasons: *This response has been truncated, please refer to the attachment for a*	

1. The only hydrologic model component assessed is the discharge at the Desteffany Lake station. Although that location has the most data and is thus suitable for evaluation of the model as such, it is located some distance downstream of the project and may not represent how well the model performs nearer to the project. There are more upstream locations where project effects are of greater concern - notably Lac du Sauvage and Lac de Gras and their outlets. Due to a lack of observational data at the former, only the Lac de Gras location would be amenable to quantitative evaluation of model performance.
2. Model performance was computed using four parameters as listed below, with GNWT's comments listed where applicable.

    a. Coefficient of Efficiency (Nash-Sutcliffe Coefficient) - NSE. No comment.

    b. Root-Mean-Square Error standard deviation ratio - RSR. No comment.

    c. Average percent error in annual maximum peaks - APEP. There appears to be a typographical error in the equation used - the second equal sign should be a multiplication sign.

    d. Percent Bias - PBIAS. There appear to be typographical errors in each of the three equation used - the 1/n, 1/m and 1/l terms, as well as the second equal sign should be eliminated.

3. Model performance was rated based on the results of the computed parameter values, as summarized in Table 7-1. (**See attached document for entire IR, including Table 7-1 from the developer's response DAR-MVEIRB-UT-07**).

AMEC conducted check computations for the above parameters and confirms the values listed in Table 7-1 except that a value of 13.1 was found instead of the listed 8.7 for the APEP.

copy of the full response, including the applicable tables, figures and appendices.

It is noted that the model shows a consistent bias in over-predicting discharges and runoff volumes, in the order of 13 - 18 %. That result agrees with Figure 7-1 which shows that a large portion of the percent exceedance probability curve for modelled flows lies above that of the observed flows. Those results then put into doubt the claim in the DAR and IR responses that the model was calibrated to the mean runoff volume or yield.

The use of the average percent error in annual maximum peaks obscures the large variation in the percent error from year to year, which AMEC found to range from 109 % to - 39 %, i.e. modelled peaks were 109 % greater to 39 % lower than the observed values for specific years. Those values do not seem to support the performance rating of "good".

REFERENCES:

Moriasi, D. N., J. G. Arnold, M. W. Van Liew, R. L. Bigner, R. D. Harmel, and T. L. Veith. (2007). Model evaluation guidelines for systematic quantification of accuracy in watershed simulations. Transactions of ASABE, American Society of Agricultural and Biological Engineers, 50(3): 885-900.

Recommendation The GNWT requests DDEC:

1. Conduct additional quantitative evaluation of model performance, using the same parameters, but applied to Lac de Gras water levels using the available five years of data as per IR-33 Figure 33.3. Water levels should be expressed as stage above estimated zero flow rather than geodetic elevation.
2. Confirm the appropriate form of the parameter equations used.
3. Provide an explanation for the consistent over-estimation of annual runoff volume, especially when that parameter is claimed to have been a primary basis for model calibration. Perhaps one or more runoff coefficients have been set at unrealistically high values.
4. With respect to annual peak discharges, DDEC provide:

- The APEP value in Table 7-1 be checked and confirmed.
- The skill of the model in simulating annual peaks be further

		evaluated by preparing a correlation plot of modelled versus observed annual peaks for the years of record. • A discussion be provided as to the factors leading to the divergence between modelled and observed values in the correlation plot. In conclusion, GNWT requests that the range of uncertainty in model simulations, as found from the computations presented in Undertaking 07, and supplemented as necessary to further quantify that uncertainty, should be applied to the predictions of project effects made by the model.		
19	Waste Incineration	**Comment** The Proponent indicated during the technical session that they do not have a schedule for regular incinerator stack testing. ENR believes that stack testing is an essential compliance tool to ensure the equipment is operating as designed and that emission levels remain below the Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standards (CWS) for Dioxins, Furans and Mercury. Due to the toxicity and bio accumulative properties of Dioxins and Furans, CCME has slated these compounds for virtual elimination from the environment. The CCME recommends annual stack testing for Dioxins and Furans (CWS for Dioxins & Furans, 2001) for waste incinerators. ENR recognizes that the Proponent currently has comprehensive incinerator and waste management practices in place, and has demonstrated compliance to the CWS from a 2014 stack test. Continued efforts to maintain proper operation and management of the incinerators are important to minimize the formation and release of these toxic compounds; however, regular stack testing is still necessary as the only quantitative method to verify the effectiveness of those efforts, or conversely, to incite mitigative actions. **Recommendation** The GNWT had requested that the Proponent commit to undertaking stack tests of their incinerators every 3 years, as a component of overall incineration management. This is to ensure that incinerator emissions remain below the CWS and impacts to the environment are minimized. This commitment was discussed further at the May 7, 2015 meeting between the Proponent, the GNWT, and Environment Canada and the minutes noted that the Proponent agreed to 'commit to the 3-year incinerator stack testing cycle'.	**July 3:** Dominion Diamond has committed to undertake stack testing on the operating incinerators on the 3 year schedule. This was discussed in the Jay Project Technical Sessions, and a commitment to stack testing was made following the May 7, 2015 air quality meeting that included the Government of the Northwest Territories (GNWT) staff. Dominion Diamond has committed to updating the Incinerator Management Plan as part of the updated Waste Management Plans, as per the requirement in the Water Licence. Stack testing will follow current standards for this work, data will be circulated to GNWT, and other parties, and follow up actions will be implemented if necessary. Details on these operating procedures will be finalized during the regulatory permitting process. Dominion Diamond provided a draft conceptual Air Quality Emissions Monitoring and Management Plan (AQEMMP) for the Jay Project to the Mackenzie Valley	

		Through this IR, the GNWT requests that the Proponent submit a detailed stack testing program including information on testing, reporting, and compliance procedures. As part of this program, the GNWT requests that all test results are submitted to ENR and Environment Canada within 45 days of completing a stack test. In the event of a failed stack test, GNWT requests that the Proponent develop and submit an Adaptive Management Response Plan within 90 days of the failed stack test. The Adaptive Management Response Plan should contain an assessment of the incinerator operations and management, and measures to improve them. Measures should be implemented immediately. Effectiveness of the adaptive management response measures and compliance to the CWS should be confirmed with a second stack test within 6 months of the original stack test. All stack tests should be conducted in accordance with national standards, and include detailed documentation to demonstrate that representative composition and batch size of waste were used during the testing process.	Environmental Impact Review Board for discussion on June 1, 2015, and followed up with a workshop on June 26, 2015 to engage with regulatory and community groups. The development of the Jay Project AQEMMP is ongoing and the schedule for testing and reporting will still be discussed, and finalized during the Jay regulatory process. Dominion Diamond will host a technical workshop to discuss the proposed triggers and technical components of the AQEMMP in July 2015 and will also provide an engagement schedule for the AQEMMP.	

Gov of Canada: Sarah Robertson

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	GOC - EC Cover Letter	**Comment** Cover letter from Environment Canada. **Recommendation** See attachment.		
2	GOC - EC - #1 Mixing Zone	**Comment** The mixing zone around the diffuser discharge into Lac du Sauvage was discussed at the Yellowknife Technical Sessions but questions did not come to full resolution. The Proponent stated at these sessions that a conceptual 200 m mixing zone design was being used in the interim, until the regulatory stage at which point the mixing zone will be established. It is Environment Canada's (EC) opinion that the extent of the mixing zone and the impacts within that zone should be established during the environmental assessment to ensure all potential impacts are captured and understood prior to a determination of significance. The pollution prevention provisions of the Fisheries Act apply and the Proponent is required to comply with the obligations under this legislation. The mixing zone will effectively attenuate parameters in the effluent that may be discharged at concentrations which could have sublethal toxicity, i.e. which may have chronic effects on organisms in the receiving environment. To evaluate the impacts associated with effluent discharge, it is necessary to identify the extent and magnitude of the zone of chronic toxicity. Data from sublethal toxicity testing of simulated effluent can be used	**July 3:** *1. Provide an estimate of the extent of the mixing zone, and the predicted concentrations of parameters of concern at the edge of the mixing zone. How has the size of the mixing zone been minimized to the extent possible?* In the Developer's Assessment Report (DAR), Dominion Diamond suggested a mixing zone for the Jay Project (Project) of 200 metres (m) from the proposed diffuser for Misery Pit minewater discharge to Lac du Sauvage (Section 8.5.4 and Appendix 8F). The extent of the mixing zone was estimated by conducting near-field mixing studies using the CORMIX model. [*This response has*	

		to achieve this goal. Test data would provide an indication of the biological responses to an integrated mixture of parameters found in the effluent. The use of standard organisms and protocols provides confidence in the results, and different trophic levels can be evaluated (algae, plants, Ceriodaphnia, fish) with appropriately sensitive and representative tests used. **Recommendation** EC requests that the Proponent; 1. Provide an estimate of the extent of the mixing zone, and the predicted concentrations of parameters of concern at the edge of the mixing zone. How has the size of the mixing zone been minimized to the extent possible? 2. Identify and discuss the potential sublethal effects within the mixing zone in Lac du Sauvage and include bioassay data on simulated effluent to support the discussion.	*been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*]	
3	GOC - EC - #2 Misery Pit Discharge Quality to Lac de Gras - DAR-MVEIRB-UT-12	**Comment** In response to undertaking DAR-MVEIRB-UT-12, the Proponent provided information regarding the water quality of the Misery pit discharge to Lac de Gras, modelled up to 200 years following closure. Over the 200 year modelling period, 70,000 m3 per year is expected to discharge to Lac de Gras and there is a projected increase in chemical concentrations over time due to the upward flux of total dissolved solids (TDS) and other constituents into the monimolimnion and mixolimnion. During this time period a number of water quality parameters in the mixolimnion are projected to increase above CCME guidelines, including copper, chloride, total phosphorus, manganese, TDS, aluminum, iron and nickel. Although concentrations of simulated maximum Misery Pit discharge are provided in Table 4-2 of the Compendium of Supplemental Water Quality Modelling, it is unclear if these are maximums of one particular snapshot, or the maximum over the 200 year modelled period. Also, manganese, iron and nickel are excluded from this table. **Recommendation** EC requests that the Proponent; 1. Clarify the specific concentrations that are anticipated during the post closure period, which were not provided in the response. 2. Provide the concentrations of the parameters that are discussed in the response to DAR-MVEIRB-UT-12. Additionally, as the modelling is projecting an upward trend in these particular parameters, at what time post closure do the concentrations level off and no longer increase?	**July 3:** 1. and 2. In DAR-MVEIRB-UT-12, Dominion Diamond identified a number of water quality constituents in the Misery Pit mixolimnion that were projected to potentially increase above generic guidelines for the protection of aquatic life, trophic status, wildlife, or aesthetic drinking water under the Reasonable Estimate Case. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
4	GOC - EC - #3 Phosphorus Loadings to Lac du Sauvage - DAR-MVEIRB-UT-15	**Comment** Loadings are also a useful measure in an aquatic ecosystem, as the total amount of phosphorus entering a system can influence the potential for internal recycling and associated eutrophication effects. Increases in the lake phosphorus budget associated with ongoing loadings can lead to: changes in type and	**July 3:** The anticipated effects of projected phosphorus annual loadings to Lac du Sauvage and increases of phosphorus in the immediate and adjacent receiving	

		number of plants, increased turbidity, increased organic matter falling to the bottom of the system, and associated winter anoxia. When oxygen is depleted, phosphorus that is locked in the sediment can be released back into the water column, propagating the nutrient issues. EC acknowledges the usefulness of orthophosphate loadings to project concentrations of orthoposphate and total phosphorus in the Lac du Sauvage. However, the overall effects of the loadings also need to be assessed for potential impacts, as loadings can further exacerbate an increase in productivity. **Recommendation** EC requests the Proponent provide the anticipated effects in the immediate and adjacent receiving environment given the projected annual loadings of 1798 kg/year during late operations.	environment of Lac du Sauvage, and downstream into Lac de Gras, were assessed and discussed in the Developer's Assessment Report (DAR). In particular, Section 8 of the DAR included an evaluation at the location of the conceptual diffuser (i.e., assessment node LDS-P1), and anticipated effects in other areas of Lac du Sauvage (i.e., LDS-P2 and LDS-P3; Map 8.5-1 in the DAR), and through Lac de Gras (i.e., LDG-P1 to LDG-P6; Map 8.5-2 in the DAR). Within Section 9 of the DAR (Fish and Fish Habitat), the effects of projected phosphorus increases to Lac du Sauvage extended further within the lake (Figure 9.4-2 in the DAR), and included additional representative nodes for each basin (i.e., AA-1, AB-1, AC-1, AD-1, AE-1, and AF-1; Map 8F2.2-1 in the DAR). The anticipated effects of phosphorus loads in the receiving environment were further explained in the Round 1 information requests (IR) responses (i.e., DAR-MVEIRB-IR-26, DAR-IEMA-IR-15, DAR-EC-IR-19, and DAR-KIA-IR-106). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*]	
6	GOC - TC - #1 Navigation Protection Act Authorization	**Comment** It is understood that Dominion Diamond anticipates to "Opt-In" under the Navigation Protection Act and submit a Notice of Work form for the proposed dike and dewatering activities within Lac du Sauvage. Based on the information Transport Canada has to date, any remaining in-water works/activities proposed by Dominion Diamond for the Jay Project are not on waterways listed in the NPA Schedule and are therefore does not require an application or to give notice to TC regarding the proposed project activities. Section 4(1) of the NPA contains a provision which allows Dominion Diamond the	**July 3:** A review of potential effects to navigability has been completed for all Jay Project (Project) activities, including infrastructure (Waste Rock Storage Areas, haul roads, pipelines, etc.) at watercourses, and the predicted changes in water levels and flows at waterbodies and watercourses. The watercourses	

		option to request to "opt-in" to Transport Canada's legislative regime and the NPA review process for any, or all of the in-water works/activities related to the jay Project. If accepted by TC under Section 4(1) then all provisions and review processes of the NPA would apply to the work. The following website provides more information on the NPA: http://www.tc.gc.ca/eng/programs-621.html **Recommendation** Does Dominion Diamond anticipate a request to "Opt-In" for any remaining in-water works / activities proposed for the Jay Project?	crossed by the Project infrastructure are identified and discussed in Section 8.4.2.4.1 and shown on Map 8.4-1 of the Developer's Assessment Report (DAR), and are determined to be non-navigable watercourses based on reconnaissance and field studies. In addition, an assessment of changes in water levels at lakes affected by the Project (other than Lac du Sauvage) considering surface water and groundwater was completed in Sections 8.4.2.4.1 and 8.5.3.2 of the DAR, which indicate that the predicted changes in water levels will have no effects to lake navigability at lakes other than Lac du Sauvage. Based on a review of navigability and potential effects to navigability at watercourses and waterbodies affected by the Project, Dominion Diamond does not anticipate to "Opt-In" to Transport Canada's legislative regime and the *Navigation Protection Act* review process for any other in-water works/activities related to the Project, other than the proposed dike, dewatering, and back-flooding activities within Lac du Sauvage.	
6	GOC - TC - #2 Navigation Protection Act Authorization	**Comment** It is understood that Dominion Diamond anticipates to "Opt-In" under the Navigation Protection Act and submit a Notice of Work form for the proposed dike and dewatering activities within Lac du Sauvage. **Recommendation** What is the known use of Lac du Sauvage for navigational purposes? Past and present.	**July 3:** The Lac du Sauvage area remains part of the traditional landscape of the Subarctic Dene, Inuit, and Métis people. This area remains an important part of their traditional territories embodying many social and cultural memories and connections. Information related to traditional travel routes, including the use of waterbodies and watercourses, can be found in the	

			Traditional Land Use and Traditional Knowledge Baseline Report (Annex XVII) of the Developer's Assessment Report (DAR). It is noted that historically, Dene people travelled largely by water in the spring, summer, and fall. Lac de Gras and surrounding area was reported as used for travel, both by water and land, by multiple Aboriginal groups. There is the potential that this may include Lac du Sauvage. Historical Inuit travel was predominately by foot, rather than by water, yet the Inuit hunted caribou from water using long thin kayaks in areas where caribou were plentiful. It was also noted that there were a lot of caribou at Tahikpak (Lac de Gras), crossing the Narrows (between Lac du Sauvage and Lac de Gras). Therefore, there is the potential that portions of Lac du Sauvage or the Narrows were travelled to support hunting in this manner. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*].	

Independent Environmental Monitoring Agency: Kevin O'Reilly

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
7	General File	**Comment** Cover Letter **Recommendation**		
8	General File	**Comment** Boulanger et al. 2012 paper **Recommendation**		
9	General File	**Comment** Caribou Zone of Influence Technical Task Group 2015 **Recommendation**		
1	Fish Impact	**Comment** DDEC states "The amount of cumulative change to	**July 3:** The objective of	

	Predictions (DDEC Response to MVEIRB-IR #67)	spawning shoal habitat for the Application Case is expected to result in no measurable effect to population abundance and distribution for fish." It is not clear what the extent of change will be from reference conditions in terms of abundance or distribution for all VEC fish species. **Recommendation** DDEC should clarify, for each VEC fish species, whether or not there will be measurable changes to fish abundance and distribution as a result of cumulative impacts on spawning habitat.	Section 9 of the Developer's Assessment Report (DAR) is to assess incremental and cumulative effects for valued components (VCs), including fish VCs, where Jay Project (Project) effects could contribute to a cumulative effect. Therefore, incremental and cumulative effects of the Project and other developments are analyzed and assessed together in the fish and fish habitat section of the DAR (Section 9). The fish and fish habitat assessment considered changes to spawning habitat for fish VCs (Lake Trout, Lake Whitefish, and Arctic Grayling), and how those changes could potentially affect the assessment endpoints of ongoing fisheries productivity and self-sustaining and ecologically effective fish populations. No measurable effects to the abundance of Lake Trout, Lake Whitefish, or Arctic Grayling are expected to result from changes to spawning habitat (DAR Section 9.6). Effects, if any, would be limited to a minor or local change in the distribution of fish within Lac du Sauvage, with no measurable cumulative effects to the ongoing productivity of fisheries in the Effects Study Area (ESA). These effects are not considered to significantly affect the Traditional Land Use assessment endpoint of continued opportunities for resource users to participate in traditional fishing (see the reply to Round 1 information request DAR-Tlicho-IR-22; DAR Section 15.4). *This response has been truncated, please refer to the attachment for a copy of the full response, including the*		

			applicable tables, figures and appendices.	
2	Air Quality Assessment Update (Golder, January 19, 2015, Table 4.3)	**Comment** DDEC now predicts annual exceedances of NWT Ambient Air Quality Guidelines would cover an area of 309 ha from the original estimate of 169 ha. DDEC also states "Results from the air quality assessment [are] passed on to vegetation and water quality teams for their assessments, which are then considered in barren-ground caribou, wildlife, fish and fish habitat assessment" (DAR-MVEIRB-UT-24, Table 24.1). It is not clear whether DDEC has reassessed its predicted impacts on water quality, aquatic biota and wildlife following these changes in its predicted dust deposition and air quality exceedances. **Recommendation** DDEC should verify the accuracy of its impact predictions and significance determinations on water quality, aquatic biota, vegetation and wildlife as a result of the increased area of dust deposition exceedances.	**July 3:** In the Developer's Assessment Report (DAR) for the Jay Project (Project), the assessment of the effects of the Project on air quality was provided in Section 7. As described in Section 7.3.2.1, the changes in air quality were included in the assessments of vegetation, wildlife, caribou, water quality, and fish and fish habitat. Subsequent to the filing of the DAR, updated air dispersion modelling predictions were provided in the Jay Project Air Quality Assessment Update Memo (Golder 2015). As described in the Air Quality Assessment Update Memo, the revisions have little effect on the assessment as a whole, and the impact classification and prediction of significance on all air quality endpoints remain unchanged from the DAR. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
3	Reclamation of Ore Transfer Pad and Diked Area (Technical Session – Fish and Fish Habitat Presentation, pg. 14 map)	**Comment** It appears the Ore Transfer Pad is part of the above-water features near the pit that will be inundated with water at closure. It is not clear how DDEC would avoid possible kimberlite contamination of the pit lake water. **Recommendation** DDEC should explain how the Ore Transfer Pad will be reclaimed so as avoid kimberlite contamination of Jay pit water quality at closure.	**July 3:** Ore storage pads are included in the Ekati Mine Interim Closure and Reclamation Plan (ICRP; BHP Billiton 2011). As per Section 5.7.9.7 of the ICRP, ore will be removed from ore storage areas and the pads will be re-contoured and scarified as necessary. The ICRP is expected to be amended to include Jay Project components during regulatory process with the Wek'èezhi`i Land and Water Board such that these requirements will	

			apply to transfer pads constructed for the Jay Project. As described above, kimberlite will not be left on the pad when the area is back-flooded. However, kimberlite is not characterized as potentially acid generating. The water in contact with any small amounts of residual kimberlite within the ore storage pad during back-flooding is not expected to produce measureable quantities of constituents in the water and is considered to be of negligible risk. Water quality monitoring within the diked area and Lac du Sauvage is planned during and after back-flooding, which will document water quality post closure. **References:** BHP Billiton (BHP Billiton Canada Inc.). 2011. Ekati Diamond Mine Interim Closure and Reclamation Plan. Prepared for the Wek'èezhi`i Land and Water Board. 842 pp.	
4	Compensatory Mitigation (Draft Conceptual Wildlife Effects Monitoring Plan - Jay Project; June 2015, s. 4, pg. 4-1)	**Comment** The third level of "standard mitigation hierarchy" addresses reclaiming, such as measures taken to rehabilitate degraded ecosystems or restore ecological function. The document does not consider compensatory mitigation (off-setting), which are measures implemented when despite avoidance and minimization, there are still net effects to caribou or their habitat. Given acknowledged net effects of development to caribou and their habitat and the perilous state of the herd, the company should explore all options to mitigate potential impacts. These might involve working collaboratively with those responsible for existing project that affect caribou to propose habitat trade-offs (to remove areas from potential development) or herd management to reduce other stresses on the herd. This should include consideration of further caribou mitigation, off-setting and compensatory mitigation as part of the existing and future Ekati operations. **Recommendation** Dominion should add the option of compensatory mitigation to the types of mitigation available.	**July 3:** Dominion Diamond provided a summary of hierarchial mitigation associated with Jay Project (Project) components and activities in a response to the Mackenzie Valley Environmental Impact Review Board's Round 1 Information Request DAR-MVEIRB-IR-90. This response included mitigation according to the standard mitigation hierarchy (IFC 2012; BBOP 2015). • **Avoid**: measures taken to completely avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure and engineered designs of facilities (e.g., waste rock storage areas). • **Minimize**: measures taken to reduce the duration, intensity and / or extent	

			of impacts that cannot be avoided. • **Reclaim**: measures taken to rehabilitate degraded ecosystems or restore ecological function following exposure to impacts that cannot be completely avoided and/ or minimized. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
5	Caribou Monitoring (Draft Conceptual Wildlife Effects Monitoring Plan - Jay Project; June 2015, s. 5.4, pgs. 5-8 to 5-16)	**Comment** Caribou monitoring methods are limited to incidental observations, behaviour/response to stressors, LLCF monitoring, and camera trapping (section 5.4, pgs 5-8 – 5-16). There is no discussion in this document about monitoring to trigger intensified mitigation along the road. Collars would play a larger role at greater distances, and road surveys or height of land surveys or some other innovative monitoring method could be employed at medium to closer distances. Although these will likely be provided in the revised caribou (wildlife) road mitigation plan, they should be outlined in the main document. **Recommendation** Dominion should provide details on monitoring that will be conducted to trigger mitigation for reducing sensory disturbance and the semi-permeable barrier effects of the roads.	**July 3:** Dominion Diamond is considering a number of different options for detecting and monitoring caribou at intermediate scales before caribou would be detected by road surveys. The options currently being considered include use of drones to survey for caribou and supporting the deployment of high location frequency global positioning system (GPS) collars that are geo-referenced to the Ekati Mine (including the Jay Project) jointly with communities and the Government of the Northwest Territories. These represent new technologies that are currently not being used for this purpose and Dominion Diamond will complete due diligence to determine whether these, or other, options are feasible and could provide value-added information for caribou monitoring and mitigation. At this time, Dominion Diamond cannot provide details on either of these monitoring options, as the information is not available. Dominion Diamond will also consider feedback on intermediate monitoring provided by regulators, communities, and the	

			Independent Environmental Monitoring Agency during the Jay Project management and monitoring plan workshops currently scheduled for June 25 and 26, 2015.	
6	Mitigation of Effects on Caribou, (Boulanger et al. 2012 and Caribou Zone of Influence Technical Task Group 2015, both documents files with these IRs)	**Comment** The Boulanger et al. (2012) report determined a 14-km zone of influence (ZOI) for caribou surrounding the Ekati and Diavik mines from 2003–08 (the referenced document is provided to the Review Board for the public registry). More recent analyses have enabled more efficient determination of ZOI on an annual basis that can be used to examine trends in ZOI distance and magnitude over time (Appendix C in The Caribou Zone of Influence Technical Task Group. 2015. Draft guidance for monitoring the zone of influence (ZOI) of anthropogenic disturbance on barren-ground caribou, 10 Mar 2015 and provided to the Review Board with this IR for the public registry). Annual variation in ZOI could be related to patterns of mining activity (blasting, ore hauling, etc.). Dominion has shown that aerial survey data from 2009 and 2012 are available (response to DAR-IEMA-IR-24). These two years are important in that they occurred during the lowest levels of herd size and when activity at Misery increased. Examination of the relationship between ZOI distance and magnitude with patterns of mine activity would provide direction to more effective mitigation of project effects. This analysis should indicate further opportunities for mitigation of effects on caribou that can be applied to the proposed Jay Project and existing operations. **Recommendation** Dominion should analyze the 2009 and 2012 aerial survey data from within the combined Ekati-Diavik study area using the new R code analysis to produce estimates of ZOI distance and magnitude. It would be even more helpful if DDEC would provide measures of mine activity on an annual basis that could be correlated with changes in ZOI. Those measures could include annual levels of blasting (amount of ammonium nitrate), amount of cumulative traffic, numbers of flights and a GANTT diagram showing underground and open pit timing. The lessons learned from this analysis should then be applied to adaptive management and mitigation of effects in relation to caribou from the Jay Project and existing operations.	**July 3:** Figure 3 of Appendix C (GNWT-ENR 2015), which provides annual zone of influence (ZOI) estimates from post-calving aerial survey data, shows very little annual variation (Figure 6-1). This figure indicates that ZOI estimates from 1998 to 2002 were not statistically significant (i.e., not statistically different than 0 kilometre [km]) and from 2003 to 2008 were statistically significant. For the years with statistically significant results, the confidence limits overlap one another indicating they are unlikely unique (Figure 6-1). Overall, the confidence limits from the annual point estimates overlap the ZOI of 14 km of Boulanger et al. (2012) and the 15 km used in the Developer's Assessment Report (DAR), and suggest little year-to-year variation. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	

Lutsel K'e Dene First Nation - Chief or Wildlife, Lands and Environment: Peter Unger

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Ambient Air Quality	**Comment**	**July 3:** In keeping with widely	

	Guidelines	**References**	Technical Session Undertaking #17	accepted practices in Canada for conducting environmental assessments, the determination of the significance for air quality includes a number of criteria, only one of which is magnitude. Dominion Diamond believes that the use of the Northwest Territories (NWT) ambient air quality guideline (GNWT-ENR 2014) within the development area in the Developer's Assessment Report (DAR) is appropriate for determining magnitude, one of the residual impact criteria used to evaluate significance of effects on air quality, where exceedances indicate a high magnitude. Other criteria considered when evaluating the potential significance of air quality effects include geographic extent, duration, frequency, reversibility, and likelihood. Based on available literature and experience from other projects, a significant air quality effect would occur if the Jay Project (Project) were to irreversibly result in ambient air concentrations beyond the development area that frequently or consistently exceed relevant established ambient air quality criteria, and that could not be mitigated. In the DAR, Section 7.1.4.1, the development area is defined as: [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
		Directed to	Project Proponent		
		Background			
		The GNWT has clarified the legal status of the NWT Ambient Air Quality Guidelines (AAQGs) as not being legally binding, but applying to the project area. The GNWT is currently developing legally binding air quality regulations.			
		Review Comment			
		The AAQGs were established to define acceptable air quality parameters for all parts of the Northwest Territories, including development projects. In the absence of legally binding regime, the AAQGs are the only available guidance from a regulatory body in the Northwest Territories. Given that this sole measure for what is acceptable air quality was designed with mining projects in mind and applies to the project area, as has been explicitly indicated, it would only seem logical that this should also be the benchmark for significance for the project's air quality.			
		Recommendation LKDFN requests that the proponent amend the definition of significance to include all exceedances of the AAQGs. Barring this, LKDFN wishes to know what steps the proponent is taking to prepare for the new air quality regulations being developed by the GNWT and if the project's definition of significance will change if new air quality regulations set legally binding limits at similar levels to those outlined in the AAQGs.			
2	Air Quality	**Comment**		**July 3: GNWT response:** At this time it is difficult to provide exact details on the regulatory framework, as we are in the early stages of	
		References	Technical Session Undertaking #17; GNWT response to YKDFN IR7		

Directed to	GNWT

Background

In the GNWT's response to YKDFN, the GNWT indicated that an MOU had been signed between the GNWT and De Beers to govern emissions from Gahcho Kue, but that no similar MOU was necessary with Dominion as emissions would be governed by regulations currently in development.

Review Comment

LKDFN would suggest that if a long-term development, such as the Jay Project, is to be governed by air quality regulations not yet in force, as explicitly stated by the GNWT, then the expectations of these regulations should be incorporated into the project design to the extent possible. The project has defined significance in terms of air quality as occasionally exceeding the limits set by the only official guidance available. If legally enforceable regulations were to incur consequences at these levels, it would be easier to address now rather than when operations have already started.

Recommendation LKDFN requests that the GNWT provide as much information as possible on the status of these regulations and enforcement measures. LKDFN also requests an approximate timeline for the implementation of these regulations. Lastly, LKDFN requests information on the measures being taken by the GNWT to prepare DDEC for these regulations to help ensure that Ekati and the Jay Project are compliant.

development; however, as part of this process, significant emission sources without clear regulatory guidance are being identified and prioritized. The Department of Environment and Natural Resources (ENR) is researching what regulatory tools could or should be established and enforced under the Environmental Protection Act (EPA) to address air emissions from developments. A timeframe for these regulatory tools has not yet been established; however, the types of regulatory tools implemented will be determined by what is most effective and timely. ENR has identified waste incineration as a high priority and is currently working with the Land and Water Boards (LWBs) and our legal counsel to develop tools to effectively regulate this emission source. ENR agrees that it is important to prepare DDEC for potential air regulatory tools that may be implemented to aid the Company in achieving future compliance. ENR has been consistent in promoting key principles for air quality and emissions management throughout EA or LWB processes, which will ultimately provide the basis for any regulatory tools that may be developed under the EPA. These include ENR's policy of Keeping Clean Areas Clean, reducing emissions at the source, monitoring the receiving environment, and incorporating adaptive management strategies based on those results. Correspondingly, ENR has requested that DDEC incorporate the following

			components into their air emissions management initiatives for the Jay Project: 1) Conduct incinerator air emissions stack testing every 3 years and comply with the applicable Canadian Council of Ministers of the Environment (CCME) standards. It is ENR's understanding that DDEC has committed to this request. 2) Apply a procurement policy such that all emission-generating equipment be selected using the principle of Best Available Technology in order to minimize emissions from the mine. 3) Implement adaptive management, incorporating ENR's Guideline for Ambient Air Quality Standards and establish appropriate pollutant threshold values and associated actions, into their air quality monitoring and management plan (AQMMP). DDEC has confirmed they are committed to developing and implementing this type of adaptive management system for air emissions. ENR believes that requesting DDEC implement these air emission management strategies now will help prepare the Company for future air regulatory tools that may be established.	
3	Caribou avoidance and power lines	**Comment** **References** Technical Session Day 2; response to LKDFN IR **Directed to** Project Proponent **Background** Recent research suggests that power lines could have more significant impacts on caribou than previously assumed (Breyer, HL; Gurarie, E; Borger, L; Panzacchi, M, Basille, M; Herfindal, I; Van Moorter, B; Lele, SR; and Matthiopoulos, J. 2014. 'You shall not pass!': quantifying barrier permeability and proximity avoidance by	**July 3:** As shown in the corresponding Map 94-1 of the response to DAR-MVEIRB-IR-94 (also provided below as Figure 3-1), the power line proposed for the Jay Project (Project) will be constructed within 25 metres of the Jay Road. As noted in the response to DAR-LKDFN-IR-16 during the first round of information requests, a qualitative analysis of the potential effects of the	

		animals. Journal of Animal Ecology. doi: 10.1111/1365-2656.12275; Tyler, N., Stokkan, K.-A., Hogg, C., Nellemann, C., Vistnes, A.-I. and Jeffery, G. 2014. *Ultraviolet Vision and Avoidance of Power Lines in Birds and Mammals*. Conservation Biology, 28: 630–631. doi: 10.1111/cobi.12262). Despite this, DDEC has stated that it currently has no measures in place to mitigate avoidance by caribou (Technical Session, Day 2). DDEC has cited a level of uncertainty as to the level of impact on caribou. **Review Comment** Given the level of uncertainty and that no measures are being implemented to mitigate the impacts of power lines on caribou movement, it would be good to gain a bit more certainty as to how power lines affect caribou migrations in the Northwest Territories. **Recommendation** LKDFN requests that DDEC include studies on caribou avoidance of power lines as part of the caribou monitoring program for this project. LKDFN requests that DDEC publish the methodology for observations of interactions between caribou and power lines before operations begin.	power distribution line was presented in the Developer's Assessment Report (DAR) Section 12.4.2.2.2 (pages 12-97 and 12-98). The analysis identified a range of magnitude of observed effects from power lines, roads, traffic, and human activity levels on caribou (Berger et al. 2000; Reimers et al. 2000; Vistnes and Nellemann 2001; Reimers et al. 2007; Vistnes et al. 2008). Potential effects from corona noise and ultraviolet light were also considered (Flydal et al. 2003, 2009; Harper 2014; Hogg et al. 2014; Tyler et al. 2014). Overall, the information suggests that above-ground power lines have smaller effects on caribou movement and distribution than the physical presence of roads and vehicle traffic. Therefore, it will not be possible to distinguish an avoidance effect of the Project power line versus the effect from the Jay Road. Additionally, other sources of disturbance such as noise, smells, dust, or vibration will be present during Project construction and operation, which prevent isolation of different sensory disturbance effects. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
4	Greenhouse gas emissions/alternative energy	**Comment** **References** Paths to a Renewable North: Pan-Territorial Renewable Energy Inventory **Directed to** GNWT **Background**	**July 3: GNWT response:** Following the release of the Pan-territorial "Paths to a Renewable Future" inventory, the GNWT prepared a renewed Greenhouse Gas Strategy for the Northwest Territories. Building	

At the 2009 Northern Premiers' Forum, the three territorial Premiers committed to developing an inventory of current and future renewable energy resources. In the resulting presentation, the first priority mentioned for the Northwest Territories is the possibility of new mining developments using alternative energies.
Review Comment
It would be good to know how this approach applies to this specific project.

Recommendation LKDFN would like to know what steps the GNWT has taken to encourage the project proponent to use alternative energies, as per the intention listed in "Paths to a Renewable North."

on earlier experience to identify actions to control greenhouse gas emissions, the 2011 Strategy included a commitment to encourage adoption renewable energy and installation of energy efficient systems. Subsequently the Biomass Energy Strategy was updated and a new Solar Energy Strategy was introduced to support adoption of these renewable energy sources. Based on the experience gained through these actions, the GNWT provided earlier responses through this review process to the project proponent, encouraging them to undertake an analysis of the opportunity to install photovoltaic solar panels to produce electricity and reduce their greenhouse gas emissions. After the proponent indicated they would not accept this as an undertaking, the GNWT requested the Arctic Energy Alliance prepare a desktop analysis of installing 50 kW of solar at the Ekati Mine based on GNWT experience with solar power installations. The results of the Arctic Energy Alliance's analysis (provided as attachments to this IR response) indicate a 50 kW solar installation could generate about 48,000 kWh annually costing $0.208/kWh with an equity payback of 16.3 years from the savings over the cost of producing the same amount of electricity using conventional diesel generation. These systems have on operational life expectancy of over 25 years and it would become an asset with ongoing power production during the

			abandonment and restoration phase of the mine if no new kimberlite pipes are developed. Roof top space at the mine site could easily accommodate up to 1 MW to provide considerably more power and greenhouse gas emission reductions than the 50 kW system considered in this analysis.	
5	Greenhouse gas emissions/alternative energy	**Comment** **References** n/a **Directed to** Project Proponent **Background** The proponent has always maintained that the Jay Project is an expansion of the Ekati mine and not a new project. DDEC has also stated that it has an internal policy on GHG reduction with targets. **Review Comment** Given that the project is considered an expansion of the Ekati mine and that therefore this project will be extending the life of the mine. It seems reasonable to think longer-term about this mine. If DDEC has reduction of GHG emissions as a goal, alternative energies seem to be a reasonable choice. **Recommendation** If the Ekati mine's life is extended through this project, and the proponent has a sincere intention to reduce greenhouse gas emissions, why has there been no serious consideration of alternative energies, such as the wind turbines installed at Diavik?	**July 3:** Dominion Diamond is committed to reducing overall greenhouse gas emissions from the Ekati Mine. As noted in the response to DAR-NSMA-IR2-04, Dominion Diamond has set the following targets for reducing greenhouse gas emissions for fiscal year 2016 (February 1, 2015 to January 31, 2016): • Reduce energy baseload by 5% • Reduce Greenhouse Gas Emissions by 5% • Realize energy savings of $2 million • Reduce fuel consumption by 5% Dominion Diamond will continue to set targets for greenhouse gas emissions annually for the life of the Ekati Mine and this will be reported as part of the Air Quality Monitoring Program report, Mining Association of Canada Towards Sustainable Mining Program, and the Environment Canada Greenhouse Gas Inventory. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
6	Coordination of Bathurst herd conservation efforts	**Comment** **References** n/a **Directed to** GNWT ENR	**July 3: GNWT response**: When ENR comments on potential impacts of the Jay Project to the Bathurst herd throughout the Jay EA process, it is	

		Background The Bathurst caribou herd has suffered a dramatic decline. GNWT has made efforts to address this population crash through various efforts including hunting bans and range planning. The project proponent has stated that the project will not impact the caribou's ability to be "self-sustaining and ecologically effective;" however, it has admitted that there will be some impacts to the caribou population. **Review Comment** GNWT ENR has been in discussions with aboriginal groups, other government departments and other territorial governments to determine ways that the Bathurst caribou herd can be protected. These efforts have sometimes included sacrifices by some, such as hunters foregoing harvesting from the Bathurst herd. It is LKDFN's opinion that the effective protection of the Bathurst herd can only be achieved through coordination of all implicated parties, including government, industry, and aboriginal groups. **Recommendation** LKDFN would like to know what measures ENR has taken above and beyond established protocol to address the admitted impacts of this project on the Bathurst caribou herd population and how these measures are being coordinated with the efforts being taken on other fronts, such as hunting and range planning.	always in the context of other factors impacting the herd including human impacts on the range and harvest as well as other processes that are currently in place to address these. For example, in addition to specific comments made throughout the regulatory process on the Jay DAR and associated wildlife plans, ENR is working with partners to manage disturbance on the range through the Bathurst Range Planning process. In addition, ENR recognizes the need for a coordinated overall approach to conservation of the Bathurst herd and will continue to promote development of a management approach for this herd that includes all parties as envisioned in the Tlicho Agreement. As this process remains in the early stages, ENR will continue to engage in and provide consistent advice on environmental assessment processes in NWT and NU that may affect Bathurst caribou, and further development of the Bathurst range plan (which includes other government departments, NU agencies, and industry). Short-term and medium-term management measures such as harvest limitation will be re-visited with all affected parties in fall 2015 once survey numbers are available. Further meetings this coming fall and winter should provide LKDFN and others with ample opportunity to raise any issues that need to be addressed.	

Mackenzie Valley Environmental Impact Review Board: Chuck Hubert

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response

1	DAR Annex VIII Geochemistry Report	**Comment** Annex VIII of the DAR presents the Geochemistry Baseline assessment for the Jay Expansion project performed by Golder Associates. In this Annex, Golder indicates that they calculated the ratio of neutralization potential to acid generation potential (NP/AP) using the bulk NP (which consumes neutralization capacity of a sample with a known amount of acid and then back titrates to determine how much acid was consumed), with total sulfur as the basis for AP. Using total sulfur is somewhat conservative for estimating AP since sulfide, the form of total sulfur that generates the acid, is generally 50% to 95% of the total sulfur. However, the bulk NP may overestimate actual NP under field conditions. An alternative for NP would be to use the carbonate neutralization potential (calculated from inorganic carbon content), which has also been measured and reported in the Geochemistry Baseline Report. The bulk NP, by definition, measures both non-carbonate and carbonate neutralization, so is expected to be higher than carbonate NP. The bulk NP includes neutralizing effects from non-carbonate alkaline minerals like calcic feldspars, olivine, amphiboles, etc. These other alkaline minerals are not as "labile" for neutralizing any acid generated as carbonates typically are. The Geochemical Baseline Report acknowledges this in a couple of places (e.g., the last sentence on page 3-4 and the last bullet on page 4-15). The humidity cell data also suggest that bulk NP is a bit of an overstatement of "active" NP for the Jay Project waste rock because, for example, the depletion analysis for the metasediments indicates that the bulk NP is depleted well after the AP is exhausted, however the leachate from several of the cells is acidic. The concentration trend data presented (e.g., Figure 4.3-3) indicate that pH drops over the first 20 or so weeks and then stays constant or rises slightly and that constituent concentrations in the leachate increase while pH is dropping and then decrease after 50 or so weeks. This suggests that the carbonate NP is depleted within the first 20 weeks and the non-carbonate NP doesn't become important until after around 50 weeks. **Recommendation** Calculate the overall net neutralization potential of the combined waste rock using both the bulk and carbonate neutralization potential to determine if there is a significant difference, and to establish if the potential for ARD and the waste management plans need to be revised to consider that not all of the bulk NP is available to neutralize acids generated by the metasediments. Please also integrate the results and observations of seepage monitoring performed throughout the Ekati Mine over the past fifteen years into this evaluation.	**July 3:** Table 1-1 provides the total tonnages and relative proportions of each lithology that will be stored in the Jay waste rock storage area (WRSA) at the cessation of mining in the Jay Pit. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*		

2	Appendix E IR responses April 7 - Pre-feasibility dike design report	**Comment** Drawing 300-10 shows all lacustrine sediments absent beneath the footprint of the rockfill section. In Section 7.2 Stability Analysis, the third paragraph starts with "During construction of the rockfill platform, it is anticipated that rockfill will penetrate and/or displace the soft lakebed sediment." For sake of argument if: the average thickness of the lacustrine sediments is 2.5 m, the average width of the dyke is 100 m, and the length of the dyke over the sediments is 4000 m, then the lacustrine soils have a volume of one million cubic meters. Since no dredging is specified, this silt will either be displaced (as a mud wave) or incorporated into the rockfill. The silt quantity expected to be removed as listed in Appendix E is 60,000 cubic meters. This quantity is all from the central section excavation. In Appendix C Section 4.2 Dyke Stability paragraph 4 states " To be conservative, the dyke stability models also considered scenarios where a 1 m layer of lakebed sediment remains beneath the rockfill. Figure C2 in Appendix C shows lakebed sediment. Figures C8, C9, C10, and C11 do not show the lacustrine sediments. Table C-4 Material Properties for Stability Modelling lists only friction angles for lakebed sediments with no undrained strengths listed. Table C11 gives Factor of Safety for on-going construction which is either 1.1 or 1.0. Presumably, this is for the drained friction angles in Table C-4. The undrained strength of the lacustrine sediments will govern the stability of the rockfill dyke slopes. Otherwise it will not fail ("displaced or incorporated into the rockfill") as stated by the designers. **Recommendation** a) If some of the silt is displaced as a mud wave at the leading edge of rockfill placement, it will build up and have to be removed. How is this mud wave going to be removed? Where is this lacustrine silt going to be deposited? b) Given that the designers assumed failure of the lacustrine sediments to achieve displacement or incorporation into the rockfill, why is the FOS based on the drained strength during construction? Why is the design criteria set at a FOS of 1.3 when this cannot be achieved? Please clarify.	**July 3:** a) Based on information obtained from the cone penetration testing conducted as part of the winter 2015 investigation program, the lakebed sediments typically consist of two layers of materials, each with varying thickness. The upper layer of the lakebed sediment is very soft, sensitive fines that will readily be suspended within the water column or incorporated into the rockfill as the rockfill is placed, and are not anticipated to have sufficient consistency to form a mud wave. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
3	Caribou - assessment endpoints and significance determination, Technical session, April 21, Impacts to caribou, transcripts p 257-262	**Comment** In the first round of information requests, the Review Board asked parties (IR#77) to state their views on the developer's choice of assessment endpoints for caribou in determining significance of impacts. IEMA responded to the Review Board with an alternative to the ecological assessment endpoint of "self-sustaining and ecologically effective" for caribou as presented in Dominion's Jay Project DAR (DAR table 12.1-1). IEMA proposed that Dominion Diamond should also include the following assessment	**July 3:** a), b), c) Dominion Diamond submitted a Human and Wildlife (including caribou) Health Risk Assessment as part of the Developer's Assessment Report (DAR) in February 2015. The multimedia risk assessment for human health estimated long-term risks for combined exposures to	

		endpoints into significance determination: "safety of caribou for human consumption" and "continued ability of Aboriginal groups to sustainably harvest caribou". During the technical session on May 21, Board staff asked parties if they would support the assessment endpoint for caribou as proposed by IEMA. Positive responses were received from DKFN, NSMA, GNWT and LKDFN. Parties generally agreed that the ability of Aboriginal people to continue to harvest caribou is a desirable assessment endpoint. **Recommendation** a) Please conduct an effects assessment of the Jay Project combining the existing assessment endpoint in table 12.1-1, Chapter 12 of the DAR with the following assessment endpoints: "safety of caribou for human consumption" and "continued ability of Aboriginal groups to sustainably harvest caribou". b) Please combine and incorporate these assessment endpoints into the determination of significance for the Jay Project on caribou with those described in Section 12.6.1.2 of the DAR. c) Please conduct a cumulative effects assessment using the combined assessment endpoints described above with reasonably foreseeable developments including Sable, Diavik A21 and the Jay underground scenario as described in the technical session undertakings (DAR-MVEIRB-UT-04).	constituents of potential concern in air, water, soil, sediment, plants, fish, wild game and background dietary intake. The results of the human health multimedia risk assessment, which considered Jay Project (Project) activities contributing to deposition of particulate matter to terrestrial environments, and emission of substances to aquatic environments, during the life of the Project indicated that the residual effects of the Project to human health are not significant. Thus, the Project is predicted to have no significant effects on the safety of caribou for human consumption. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
4	Caribou - May 8 Technical session undertakings, DAR-MVEIRB-UT-03 - Dominion response to light pollution mitigation	**Comment** In its response to the undertaking MVEIRB-UT-03, Dominion provides examples of strategies to mitigate light pollution. These include fully shielded lighting fixtures, lighting design that involves tilt and orientation and switches or motion detectors in high illumination areas not occupied on a continuous basis. **Recommendation** As described in its response to DAR-MVEIRB-UT-03 for the Jay Project, describe the mitigation strategies to which Dominion Diamond will commit to implementing for light pollution. Please also describe how, when and where these mitigation strategies will be implemented and monitored for success.	**July 3:** As the reviewer noted, DAR-MVEIRB-UT-03 describes possible mitigation strategies for light pollution. These include utilization of fully shielded lighting fixtures, lighting design that involves tilt and orientation and meets the required light levels to ensure worker health and safety onsite while minimizing luminous flux, and where possible, dark colours or lower-reflectivity surfaces on buildings and other structures. Another mitigation option includes the use of switches or motion detectors in high illumination areas not occupied on a continuous basis (i.e., to light the area only when occupied). Dominion Diamond is committed to consider these and other mitigation strategies and their applicability to the Jay Project prior	

			to the commencement of construction of new fixed structures or facilities. As discussed in the response to DAR-LKDFN-IR2-03, there are challenges with monitoring the effects or environmental success of mitigation for individual sensory effects (e.g., sounds, light, vehicles) on wildlife. Similarly, it is unlikely that a monitoring program would be possible that would isolate the effectiveness of light reduction strategies on caribou. Nonetheless, Dominion Diamond will seek to mitigate light effects to the extent practicable, as it does with other sources of sensory disturbance to wildlife, and the wildlife monitoring programs will seek to assess the overall effectiveness of the collective mitigations of sensory disturbances on wildlife if possible.	
5	Caribou - dustfall and mine levels of activity DAR-MVEIRB-IR-97 response follow-up	**Comment** The DAR presents monitoring data that has not yet, but could potentially be used to inform mitigation measures for the effects of dust on caribou from the Jay project. For example, dustfall levels as indexed by concentration of metals in lichens were higher in 2005 than in 2008. This was a time when ore was mined from Beartooth and Fox open pits and underground at Koala and Panda pits. Although mining at the Misery Pit stopped in 2005, ore was trucked along the Misery Road until fall 2007. Rescan (2011) reports that "Misery haul road was a major contributor to ambient PM2.5 concentrations within the EKATI claim boundary." In 2009-2011, total dustfall was higher near the Fox haul road compared to the Misery haul road, although dust suppression for 2009 to 2011 did not differ from previously. MVEIRB-IR-97 (follow-up) was partially unanswered. It included a requirement to describe how mitigation to reduce dustfall changed in 2005-2012 relative to changes in mining activity, and to provide a table (or graph) showing an indicator of mine activity to determine correlations with dustfall with a focus on comparing the two periods. In response to MVEIRB-IR-97 and YKDFN	**July 3:** a) The change in measurements between the 2005 and 2008 lichen results can be attributed to both mitigation and change of mining activity. It is likely a combination of reduced traffic intensity along Misery Road, and applications of DL-10 in 2008 around the Ekati Mine main camp and on the Fox Haul Road. b) Data are not available in a format that would allow for a table of material moved, diesel used, and mileage to be generated at this point in time. Dust generation is influenced by many variables including vehicle speed, precipitation, temperature, relative humidity, suppression use, winds, trucks loads, and truck weights, and therefore, a	

		IR 04MVEIRB-IR-78 the Developer described that A 21 will not increase dustfall despite the return of Diavik to open-pit mining (because A 21 will maintain Diavik's production level). When the two existing Diavik pits went underground, the dustfall declined. In the response to YKDFN IR 04 Dominion wrote; "Estimates of dust deposition rates at the Diavik Mine boundary have shown a reduction from 1,850 mg/dm2/year for the 2002 to 2005 period to 550 mg/dm2/year for the 2010 to 2013 period". **Recommendation** a) Clarify if mitigation reduced dustfall when dustfall changed 2005-2008 or if the change in dust was relative to mining activity. b) Summarize mine activity (e.g. rock trucked; diesel; truck mileage) in a table to determine correlations with dustfall. c) Describe how the correlation could guide adaptive management, to decide if and when mitigation should be intensified or reduced. d) Explain why A 21 open pit construction and operation at Diavik will not increase cumulative dustfall in the area. e) What was recorded at local dust stations and with lichen monitoring, what was recorded for caribou responses to Fox ore trucks during Fox pit production, and what was the mitigation for dust?	direct correlation between mine activity and dust is not practical. In broad terms, more dust is generated if suppression programs are not in place, and more dust is generated from larger equipment if not taking into account of larger haul trucks will result in fewer trips (e.g., larger haul trucks will result in less dust emissions per unit of ore or waste rock moved due to fewer trips required). During the life of the mine, the mining activity has changed (surface, underground) and locations have changed (closer or farther from the processing plant) which also impact the potential for dust generation, resulting in changes in dust deposition. Availability of water for road watering (Inspector Approval) and limitation of the application of DL-10 (dry, no rain) also affect the monthly and annual dust measurements. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
6	Caribou - ZOI size DAR Table 12.4-18 and Appendix D	**Comment** Appendix D acknowledges that the Jay project will increase ZOI but the details are not provided. The DAR Table 12.4-15 gives the areas of habitat altered but the figures include other developments rather than the mine zone of influence area. Appendix D Map 2 suggests closure of Diavik will reduce ZOI by ~10 km to south, implying that ZOI depends on mine activities. The corollary of this implication is that any other developments in Diavik-Ekati area would also increase ZOI (and projected cumulative effects). **Recommendation** To clarify please provide the area and periphery length of the Ekati ZOI, the Ekati +Jay ZOI and the Ekati +Jay +Sable ZOI. The three areas and periphery measurements will increase understanding of the encounter rates for caribou.	**July 3:** As requested, a 15 kilometre (km) zone of influence (ZOI) was placed around: the Ekati Mine; Ekati Mine with the Jay Project and Jay Road; and the Ekati Mine with the Jay Project, Jay Road, Sable Project, and Sable Road (Map 6-1). In all cases, the Ekati Mine was defined as illustrated in Map 6-1 (a), including the Misery Road and Misery waste rock storage area. To be consistent with the request, all development associated with the Diavik Mine were	

			excluded from these analyses. Zones of influence including the Diavik Mine were presented in Appendix D included with the first round of information requests. Note that for Appendix D calculations, ZOI areas were terrestrial habitats only. The areas within the ZOI around each of the three scenarios and the perimeter measurement of each ZOI are presented in Table 6-1. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
7	Caribou habitat loss - DAR Table 12.4-15	**Comment** The DAR Table 12.4-18 provides estimates of relative changes in amount of different quality habitats on the autumn range of the Bathurst caribou herd. However, using the fall range of the herd at peak size may dilute the effect of habitat loss, given the decline of the size of the fall range for since 2010. See figure 9.1 of the Volume 1 of the Adequacy Responses.(PR#254) **Recommendation** Please provide the relative loss of all different quality habitats on the autumn range of the Bathurst caribou herd from reference conditions to application case based on the average size of the fall range 2010-2014.	**July 3:** ***General Approach used in the Developer's Assessment Report*** The Developer's Assessment Report (DAR) used data from multi-year seasonal ranges and a temporal and spatially explicit development layer to calculate the changes in the amount of different quality habitats for each season under reference conditions, 2014 baseline conditions, Application Case, and Reasonably Foreseeable Development (RFD) Case. The ranges were delineated from radio-collar data that were collected from April 1996 to October 2013 from individuals of the Bathurst caribou herd. The multi-year autumn range (determined using data collected from September 1 to October 31 of each year) was 139,054 square kilometres. The kernel density analysis used in the determination of the autumn range preferentially weighted areas with higher densities of caribou collar locations (i.e., the size, location, and shape of the range was a function of core use areas over	

			time). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
8	Caribou - Integrating information on local caribou numbers with encounter rates DAR 12.2.2.1	**Comment** The assumption in the use of the satellite-collared caribou is that the collared caribou are representative of herd movements. Projection of incremental and cumulative effects is largely based on the encounter rates of the collared caribou with the Zone of Influence and the rates correlate with the results of the aerial surveys. At a finer scale such as the Misery Road, the correlation between collared caribou data and the actual encounters has not been examined. To examine the representativeness of the collared caribou, the rate of encounters could be compared with the sightings of caribou. The annual WEMP reports, but not the DAR, describe incidental caribou sightings at Ekati which have been collected since 2006 (Rescan 2012). The cameras are an additional dataset to build a composite picture of caribou abundance and distribution at Ekati (allowing for repeated sightings). **Recommendation** a) Summarize as tables or maps the annual and monthly incidental caribou sightings (2006-2014) and camera sightings at Misery Road. b) Table or graph the incidental and camera sightings relative to the encounter rates of collared caribou with the Zone of Influence.	**July 3:** The information requested is summarized for available years in the period from 2006 to 2014 (Table 8-1). Incidental observation data are available as annual summaries. Radio-collared caribou and camera data from the Misery Road were summarized for the period of June 15 to October 31. This time period is consistent with the encounter analysis presented in the Developer's Assessment Report and the Sable Addendum; they coincide with the post-calving and autumn seasons and represent times when calves accompanying adult females are likely most vulnerable to predation and changes to the nutritional condition of the cow. Except for collar data, which were provided by the Department of Environment and Natural Resources, all information was obtained from Ekati Mine Wildlife Effects Monitoring Program annual reports. *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
9	DAR-MVEIRB-UT-08 Lac de Gras Water Quality (Technical Session transcript April 22 p248 and	**Comment** Undertaking 8, as recorded by the Review Board and Dominion Diamond, requested information regarding "a comparison of the volumes of Lac de Gras and Snap Lake (including residency time/turnover of water in Lac de Gras) and the total volumes of effluent that will be discharged into these lakes". The Review Board	**July 3:** a) The maximum proportions of Lac du Sauvage and Lac de Gras predicted to be effluent (also referred to as minewater discharge in the Developer's	

	p250)	believes that the intent of the original question posed by the YKDFN was not adequately captured by this wording. The Review Board, therefore, would like to clarify this question based on statements taken directly from the Technical Session transcript. **Recommendation** a) Based on known volumes, effluent source loads (including Diavik and Ekati operations) and recharge rates, please provide an estimate of the percentage of Lac de Gras and Lac du Sauvage that would be effluent by the end of mine operations. b) Please quantitatively demonstrate that this effluent concentration will allow both Lac de Gras and Lac du Sauvage to remain below significance thresholds for water quality.	Assessment Report [DAR]), as based on the updated assessment case model (Golder 2015), occur during late operations of the Jay Project, are approximately 4 percent (%) and 6%, respectively. These proportions are predicted to decrease in the closure and post-closure periods. The proportions of Lac du Sauvage and Lac de Gras predicted to be minewater, respectively, were estimated from the lake hydrodynamic and site water quality models using chemically conservative conditions (i.e., assumed no natural degradation of constituents in the receiving environment). *This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*	
10	To ENR and Dominion Diamond- Technical Session Day 1- Wildlife (Technical Session transcript April 20 p137).	**Comment** The Review Board initiated a line of questioning regarding the potential for adverse effects on raptors and raptor nesting locations during pit flooding activities that have been approved as part of closure. Based on the discussion that followed, it was determined that, from ENR's perspective and assuming appropriate mitigation measures were followed, no significant adverse effects would be expected. The Review Board is required to consider potential effects to species at risk, including raptors such as Peregrine Falcons, under section 79 of the Species at Risk Act. **Recommendation** Will Dominion Diamond commit to working collaboratively with the GNWT to incorporate raptor nesting deterrence and additional monitoring and management activities as required in the open pit flooding plans?	**July 3:** Dominion Diamond is committed to continue working collaboratively with the Government of the Northwest Territories, Environment and Natural Resources (GNWT-ENR) to identify and mitigate any potential risks or impacts to raptors and their nests during mining operations and pit back-flooding during closure. Dominion Diamond will continue to monitor all pits during operations and engage with GNWT-ENR on the appropriate preventative measures or deterrent methods to ensure the safety of raptors, their nests and young during both operations and closure.	
11	To all Parties- EA Approach-ToR s. 4.1 Significance	**Comment** The developer has provided its framework for significance, in terms of assessment endpoints for the Key Lines of Inquiry (e.g. p12-129 for caribou; p8-4 and 8-448 for water quality; p9-6 and Table	**June 24:** MVEIRB #11 - Environment Canada, Transport Canada, and Fisheries and Oceans	

	determination factors; DAR s.6.2.2, Table 6.2-1 Assessment endpoints and measurement indicators; 6.7 Residual Impact Classification and Determination of Significance; 8.7.1.2 Determination fo Significance (water quality); 9.1.3 Fish and Fish Habita	9.1-2 for fish and fish habitat). These are summarized in column 3 of Table 6.2-1 (. p6-8). This helps the Review Board to understand what is meant when the DAR describes the developer's views on the potential significance of project impacts. **Recommendation** To all parties that did not respond to this IR during its first release: For key lines of inquiry on water and fish and fish habitat, please state your views on Dominion's choice of assessment endpoints for characterizing significant impacts.	have provided responses to this information request in the first round.	
12	To DFO- Technical Session Day 3- Fish and Aquatics (Technical Session transcript April 22 p98)	**Comment** The developer has indicated that the sub-basin B diversion channel is to be constructed as a "temporary channel...designed to move water outside of the diked area" and to "move spawning grayling, Arctic grayling, to upstream locations from Lac du Sauvage to upstream locations in Stream Ac35 and in Stream B1". During the technical session, DFO was asked if this design plan for the channel met DFO requirements. DFO responded that "Considering that the offsetting plan was really conceptual and not all the details were there, what has been proposed at the moment aligns with DFO's mandate, but it will have to be review(ed) deeper during the regulatory review". The Review Board needs to understand if a temporary migration channel will meet DFO's requirements in order to gauge if an offsetting plan will be adequate to mitigate significant adverse effects to the key line of inquiry of fish and fish habitat as a result of the Jay project. **Recommendation** To DFO: Does the construction of a temporary diversion channel built exclusively for migration purposes meet the requirements of a DFO offsetting and/or compensation plan? If, at this stage, DFO is unable to make a determination on this question, what additional information would allow them to make their determination?	**June 23:** Fisheries and Oceans Canada - Fisheries Protection Program (DFO-FPP) has reviewed the intervention provided by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) on June 5, 2015 during the second round of information requests (IR) for Dominion Diamond Ekati Corporation's (the Proponent) Jay project. The intervention addressed specifically to DFO contained the following questions: 1. MVEIRB IR#12: "Does the construction of a temporary diversion channel built exclusively for migration purposes meet the requirements of a DFO offsetting and/or compensation plan? If, at this stage, DFO is unable to make a determination on this question, what additional information would allow them to make their determination?" As mentioned at the technical meeting DFO-FPP can't confirm whether or not designing the diversion channel exclusively for fish migration meets the requirements of a DFO-FPP offsetting plan at this	

			time. More information will be required during the regulatory phase in order to make this determination. For your information, the proponent received a DFO- licence to fish for scientific purposes on May 14,2015 to carry out additional baseline studies in Streams Ac35, BO and B1 from May 18,2015 to September 30,2015. These baseline studies should provide more information on the species of fish that utilize these waterbodies, and which stages of their life cycle are carried out in these waterbodies. Once we have reviewed this information DFO-FPP will be able to confirm whether or not the diversion channel as currently designed meets our requirements or if it will need to be redesigned.	
13	Information Request TG #22- Impacts to traditional fishing and significance determination	**Comment** In its response to Tlicho Government's IR 22, Dominion Diamond states "The residual impact classification of cumulative effects to the opportunities to participate in traditional fishing were determined to be negative, low to moderate in magnitude, regional, long term, continuous and irreversible. These effects are not considered to significantly affect the assessment endpoint of maintaining continued opportunities to participate in traditional fishing". This determination is extremely important, as it relates directly to the ability of aboriginal peoples to continue traditional activities and exercise treaty rights. **Recommendation** Please provide rationale for the determination of non-significance for an impact of the project on the opportunities for participation in traditional fishing that is negative, moderate, regional, continuous and irreversible.	**July 3:** Results from the residual impact classification in Section 15.4.1.3 of the Developer's Assessment Report (DAR) were used to determine the environmental significance from the Project and other developments on the assessment endpoint of continued opportunities for participation in traditional fishing. The classification of impacts were based on changes in measurement indicators, which represent properties of the environment that when changed, could result in, or contribute to, an effect on the assessment endpoint. Six criteria were considered: magnitude, geographic extent,	

			duration, frequency, reversibility, and likelihood of change. Of these criteria, magnitude is the primary criterion used to determine significance, while geographic extent and duration (which includes reversibility) are used as modifiers and to provide context when assigning magnitude. To assess the effects on continued opportunities to participate in traditional fish harvesting, the following measurement indicators were identified (Table 15.2-1 of the DAR; also see the reply to Round 1 Information Request DAR- Tlicho-IR-22): [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*].	
14	Information Request YKDFN #2- Closure objectives for aquatic communities	**Comment** YKDFN's IR#2 asks for information regarding what type of ecosystem will be attained post-closure. Dominion Diamond's response is that "similar aquatic communities" will be present post-closure. **Recommendation** The Review Board seeks clarification on what, in Dominion Diamond's opinion, "similar aquatic communities" means with respect to overall closure objectives. Specifically, will closure conditions be similar to reference or baseline conditions? What metrics will be used to determine similarity? How closely must the aquatic communities in closure resemble reference or baseline communities in order for the closure objective to be met?	**July 3:** Note that this Information Request (IR) references the response to Round 1 IR DAR-YKDFN-IR-01. As described in DAR-YKDFN-IR-01, once water quality conditions within the diked area meet closure criteria, the dike will be breached to allow connectivity with the main body of Lac du Sauvage. The water quality acceptability criteria will be determined through the water licencing process through the Wek'èezhi`i Land and Water Board (WLWB) prior to closure. The dike breaching will allow water circulation with the main basin to maintain water quality similar to Lac du Sauvage and to support reestablishment of aquatic species. [*This response has been truncated, please refer to the attachment for a*	

			copy of the full response, including the applicable tables, figures and appendices.]	
15	Conceptual Offsetting Plan- S09A p27	**Comment** p27 of the Conceptual Offsetting plan says the "predicted abundance (of fish) in Lac du Sauvage is ~197,000 fish using median density statistic and 828,200 using the 75th percentile". The DAR also indicates that between 7100 and 23400 fish will be removed from Lac du Sauvage during the fish out. This corresponds to ~3.6% of the fish in this lake (DAR p9-173). **Recommendation** Please provide an estimate of what percent change to and absolute number of fish removed from the fish population in Lac du Sauvage would constitute a significant adverse effect? The Review Board also requests information on when a less variable population estimate will be available in order to appropriately quantify offsetting requirements.	**July 3:** Residual effects to fish and fish habitat from the fish-out pathway are discussed in Section 9 of the Developer's Assessment Report (DAR Section 9.4.3.1.2). Before the dewatering, a fish-out will be conducted to remove fish from the dewatered area of Lac du Sauvage. To estimate the number of fish to be removed from the dewatered area for the environmental assessment, fish densities were calculated for yearling and older fish using hydroacoustic data (DAR Section 9.2; Annex XIV). The predicted abundance in the dewatered area was approximately 7,100 fish. For comparison, the predicted abundance estimated in Lac du Sauvage was approximately 197,400 fish. Thus, approximately 3.6% of the total number of fish in Lac du Sauvage will be targeted for removal from the dewatered area. Assuming the same density of fish in Lac du Sauvage applies to Lac de Gras, a much smaller percentage of the fish population (i.e., less than 1%) will be affected at the scale of the Effects Study Area (ESA). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.].*	
16	TO DFO- Conceptual Offsetting Plan- S09A p27	**Comment** Population estimates of fish in Lac du Sauvage range from 197,000-828,200 (using either the median or 75th percential population estimate, respectively). This large range introduces some	**June 23:** 2. MVEIRB IR #16: "What	

			level of difficulty into the development of an offsetting plan. **Recommendation** What type of confidence in population estimates does DFO require in order to adequately develop an Offsetting Plan with Dominion? Additionally, with what level of conservatism will DFO approach this plan's development, given the high level of uncertainty involved?		type of confidence in population estimates does DFO require in order to adequately develop an Offsetting Plan with Dominion? Additionally, with what level of conservatism will DFO approach this plan's development, given the high level of uncertainty involved?" It is acknowledged that there is uncertainty associated with fish population estimates provided during the Environmental Assessment Phase. The population estimates will be confirmed during the fish-out program. Generally, the proponent provides an estimate of the fish population in the offsetting plan; if based on the data from the fish-out program it is determined that the proponent underestimated the population, they have to offset for the actual loss of fish and not the estimated amount. During the Regulatory Phase, the	

			Fisheries Act authorization will specify that the fish population is to be confirmed during the fish-out.	
17	Conceptual Fish Out Plan S09B p8	**Comment** p.8 of the Conceptual fish out plan indicates that "turbidity curtains will be installed near the portion of the alignment where dike construction will occur" and that "once isolation structures are in place, gill netting would begin". Additionally, table 3.2-1 on p.3-6 of the Project Description document clearly states that construction activities will include "fish-out within (the) diked area". **Recommendation** Since there is no fish-out between the diked area and turbidity curtain during dike construction, how will fish located between the outer wall of the dike and the turbidity curtains be managed?	**July 3:** Prior to summer-season construction of the Jay Dike, turbidity curtains will be installed near thealignment, adjacent to the inner and outer perimeter of the dike alignment (Dominion Diamond 2015). The relatively small area of water that is contained within the curtains may include fish. However, it is anticipated that most of the resident fish will evacuate the immediate area in response to construction activities and that the potential for fish to be isolated between the dike and the turbidity curtains will be low. Fish often exhibit avoidance behaviours in response to noise and vibrations (Nedwell et al. 1998; Nedwell et al. 2003; Turnpenny and Nedwell 1994), which are expected to result during curtain placement and from movement of the curtains in the water column upon installation. Although it is likely that some small-bodied fishes with limited mobility may become isolated in shallow areas when the turbidity curtain is installed, large-bodied fish with greater mobility, such as Arctic Grayling, Lake Trout, and Lake Whitefish, are more likely to avoid the turbidity curtain containment area with the initiation of construction activities. [*This response has been truncated, please refer to the attachment for a copy of*	

			the full response, including the applicable tables, figures and appendices.].	
18	MVEIRB 24- Closure	**Comment** MVEIRB IR 24 inquired about the influence of pit closure on water quality downstream of the LLCF. In its response, Dominion Diamond states that "When water quality monitoring in the back-flooded pits indicates closure criteria have been achieved, the Panda/Koala pit lakes will be reconnected to the Koala watershed, and they will flow into Kodiak Lake". The Jay project uses the Panda and Koala pits for long term storage of processed kimberlite. The Review Board requires information on the long term stability of closure infrastructure in order to ensure that no significant adverse effects to fish and fish habitat or water quality occur following the completion of closure activities. **Recommendation** Following connection of the Panda and Koala lakes to Kodiak lake, will the Panda Diversion Channel be maintained? What work will be conducted in either the Panda Diversion Channel or the pit lakes system in order to maintain fish passage post-closure?	**July 3:** The Panda Diversion Channel is a permanent structure that will remain in place post-closure. This is described in the Ekati Mine Interim Closure and Reclamation Plan (ICRP; BHP Billiton 2011), which has been approved by the Wek'èezhi`i Land and Water Board. The Panda Diversion Channel was constructed in 1997 to divert stream water around the Panda and Koala mining areas, and to provide compensationfor stream habitat that was lost for construction of the Ekati Mine. The Panda Diversion Channel was designed and constructed to be a permanent channel as part of a habitat compensation agreement for an authorization from Fisheries and Oceans Canada under the *Fisheries Act* for the Ekati Mine (SCA96021). The channel was monitored under the Fisheries Authorization and reported on annually until 2012, at which time, it was determined that the channel was successfully providing fish habitat as intended. Monitoring under the Fisheries Authorization was no longer necessary after that time. Bank stabilization work was undertaken from 2010 to 2014 and reported to the Wek'èezhi`i Land and Water Board. In addition to the channel bank modifications, the ICRP describes the removal of culverts and construction of a high-flow overflow channel at Panda Dam. No other work is anticipated for the Panda	

			Diversion Channel for the maintenance of post-closure fish passage. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
19	GNWT IR 45- Closure Plans and Pit Flooding	**Comment** GNWT 45 asks for information about measures that will be in place during the reconnection of Lynx Pit Lake to Lac de Gras that will prevent erosion and other adverse effects. Dominion Diamond indicates that the "final design of Lynx Pit Lake Outlet will include erosion protection features within the natural outlet channel to LDG, if required". **Recommendation** Will Dominion Diamond commit to developing re-connection plans for all flooded pit lakes as a requirement of its water license?	**July 3:** The Ekati Mine Interim Closure and Reclamation Plan (ICRP) was approved by the Wek'èezhi`i Land and Water Board in November 2011 (BHP Billiton 2011), and various updates have subsequently been approved though the Annual Reclamation Progress Reports. An outflow channel from the Lynx pit lake is part of the approved closure plan for the Lynx Pit, which has been incorporated into the ICRP. Outflow channels to connect all of the end pit lakes to the local receiving lakes are a requirement of the approved ICRP. The Jay Pit will be the single exception because it will be flooded under Lac du Sauvage. **References:** BHP Billiton (BHP Billiton Canada Inc.). 2011. Ekati Diamond Mine Interim Closure and Reclamation Plan. Prepared for the Wek'èezhi`i Land and Water Board. 842 pp.	
20	MVEIRB IR 20- Aquatic habitat alteration	**Comment** MVEIRB 20 asks for possible mitigations in case of adverse effects to habitat in lake C1 associated with changing water levels in Lac du Sauvage. Dominion Diamond's response indicates that "the need for, and extent of any, mitigation would be discussed with DFO as part of the monitoring and adaptive management framework". **Recommendation** The Review Board seeks information regarding what framework(s) exists, or could be put in place, between DFO and Dominion Diamond that would enable such adaptive management?	**July 3:** Potential changes in water levels in Lake C1 are a result of the conservative predictions in the hydrogeological model related to the location of the enhanced permeability zone (EPZ) near the Jay pipe. With these conservative assumptions in place, the resulting potential effect on Lake C1 is anticipated to be limited to small changes in water level and within the	

			natural range of variability (i.e., less than 0.04 metres [m] in the open water season). Therefore, there is limited potential for these water level changes to affect water quality and sediment, and effects to fish habitat are expected to be negligible. Lake C1 is a relatively deep lake (23.5 m in maximum depth), with habitat connectivity between Lac du Sauvage and Lake C1 maintained by Stream C1. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*].	
21	MVEIRB IR 22-Hydrogeological baseline study area	**Comment** MVEIRB 22 asks for details describing the boundary of hydrologic baseline study area (BSA). Discussion at the technical session (April 22 p129) indicates that the hydrologic BSA for the Jay project EA was "established prior to the extraction of the Cardinal part of the project, or part of the original mine plan". The Review Board needs to understand the predicted effects of the Jay project on hydrologic valued components are defensible in the context of the Jay project as opposed to the Jay and Cardinal project. **Recommendation** The Review Board seeks clarity on why a larger BSA would still be considered appropriate for the Jay project assessment. What is the effect of using a smaller, more Jay-specific, BSA on the determination of significance for any hydrological valued components?	**July 3:** Note that Round 1 Information Request (IR) DAR-MVEIRB–IR-22 described the hydrogeological baseline study area (BSA). However, the Preamble and Request for this IR reference the hydrological BSA; as such, the response below provides additional information for the hydrology BSA. As described in Section 6.1.3 of the Developer's Assessment Report (DAR), BSAs were designed to characterize existing environmental conditions on a continuum of spatial scales from the Jay Project (Project) site to broader, regional levels. Data collected at the Project site and local scales were used to provide precise measures of baseline environmental conditions and predict the direct and indirect changes from the Project on valued components (VCs). Data collected at larger scales were used to measure broader-scale baseline environmental conditions, and provide regional context for the	

			combined direct and indirect effects from the Project on VCs. BSAs may not necessarily represent the spatial boundary for the effects analysis (i.e., effects study area [ESA]). Selection of the boundary for ESAs was based on the physical and biological properties of VCs and designed to capture the maximum spatial extent of potential effects from the Project and other previous, existing, and reasonably foreseeable future developments. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
22	IEMA IR 4- Closure Objectives	**Comment** IEMA's IR 4 asks whether contaminants of potential concern and nutrients will return to baseline or reference conditions post-closure. Dominion Diamond's response was difficult to understand, yet seems to indicate that some parameters will return to baseline conditions, while others will return to reference and that some might potentially return to neither. **Recommendation** Please provide a simple table outlining the expected closure conditions for all contaminants of potential concern and nutrients (i.e. returning to reference, baseline or neither condition).	**July 3:** As described in the Developer's Assessment Report (DAR), and in the response to Round 1 Information Request (IR) DAR-IEMA-IR-04, water quality in Lac de Gras is predicted to change from existing conditions as a result of the activities associated with the Jay Project (Project). For the closure phase, predicted values were compared to guidelines and objectives, existing conditions (to 2014), and reference conditions (to 2000). For all phases of the assessment, concentrations are projected to be less than aquatic life and drinking water guidelines and objectives. In the post-closure period of the Project (i.e., 2033 to 2060), concentrations of some constituents in Lac de Gras (as modelled in the DAR, and the Updated Assessment and Reasonable Estimate Cases [Golder 2015]) are predicted to return to reference conditions or conditions	

			represented by the normal range1 (2007 to 2013), while concentrations of other constituents are predicted to remain slightly elevated above the normal range, or reference and/or existing conditions (i.e., there is a small persistent effect to water quality conditions for some water quality constituents). Projected concentrations in Lac de Gras for the last year of post-closure (i.e., Year 2059) for the Updated Assessment Case, (Golder 2015), along with comparison data representing the reference condition, existing condition, and the normal range are provided in Table 22-1. Projections were also developed for a Reasonable Estimate Case (Golder 2015); for that modelling scenario, projected concentrations were lower than or similar to those projected for the Updated Assessment Case, and thus, the summary statements in this response apply to both sets of modelled projections. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
23	MVEIRB IR 36- Misery pit water quality management strategies	**Comment** MVEIRB IR 40 requested information regarding water quality predictions in the Misery Pit. In its response (DAR-MVEIRB-IR-40 p 6), Dominion states that "One of the key advantages of the water management strategy is the majority of the minewater will be managed through the Misery Pit during operations....This approach allows sufficient monitoring results to be collected to develop a key understanding of the controls on Misery Pit water quality, facilitating proactive design of mitigation strategies, should they be required." **Recommendation** It is unclear to the Review Board how increased settling time could alleviate water quality concerns due to elevated nutrients or dissolved metals concentrations in Misery Pit. Please	**July 3:** The response to Round 1 information request (IR) DAR-MVEIRB-IR-40 makes no reference to settling of nutrients or dissolved metals in Misery Pit, nor are these constituent groups modelled as particulate bound fractions. As described in Appendix 8E of the Developer's Assessment Report (DAR), dissolved metals and nutrients were considered as conservative	

		either explain how settling time would lower nutrient or metals concentrations within Misery Pit or provide a list of additional potential mitigation options, should Misery Pit water quality prove to be unsuitable for discharge due to these contaminants of potential concern.	constituents, and settling or dimunition through mineral precipitation or natural degradation, respectively, was not accounted for in the Misery Pit. This approach is appropriate for providing a conservative estimate of the Misery Pit discharge water quality. : [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.].*	
24	Long term closure and stewardship, EC-IR-22	**Comment** Dominion Diamond's interim closure and reclamation plan indicates that closure objectives for open pits include "any permanent lake stratification caused by meromixis remains stable and pit lake water meets water licence criteria" (ICRP p-5-33). Dominion Diamond's response to EC-IR-22 indicates that pit lake water quality modelling was conducted for the 200 years following closure, and that no scenarios of full lake turn-over were modelled due to the projected stability of meromictic conditions (DAR-EC-IR-22). Despite the predicted low probability of a full turn-over of the pit lakes in the 200 years following closure, more information about the potential effects of such an event is required to evaluate the risk over the longer term (as risk is a function of both likelihood and consequence). **Recommendation** a) For the pit lakes used for the Jay project for water management and processed kimberlite storage, please describe what would happen downstream if turnover occurs post-closure. Please quantitatively demonstrate if water quality in Lac du Sauvage, Lac de Gras and the Coppermine River would still be below significance thresholds established in the DAR if the pit lakes were to turnover (individually and collectively). b) If the turnover of these pit lakes would affect water quality in these three water bodies such that significance thresholds are exceeded, please describe the types of circumstances or events that could initiate such a change. Please estimate the return periods of any such events.	**July 3:** For the Jay Project (the Project), Dominion Diamond proposes to store processed kimberlite (PK) in the mined out Panda and Koala pits. At the cessation of mining, the PK will be covered with a shallow freshwater cap and subsequently drain to the Koala watershed via the Long Lake Containment Facility and subsequently to Lac de Gras. The freshwater cap overlying PK in Panda and Koala will be shallow (approximately 30 metres [m] thick). Meromictic conditions, as described in Appendix 8G of the Developer's Assessment Report (DAR) for the back-flooded Misery and Jay pits, are not anticipated to develop in the Panda and Koala pits. The pits were, therefore, assumed to be fully mixed in water quality modelling included in the DAR and discharge was modelled using a mass balance approach (ERM Rescan 2014). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable*	

			tables, figures and appendices.]	
25	Water Quantity - the effect on the Narrows. Follow-up from response to homework assignment 17 from the technical session (see transcript from 24-April-2015, page 24)	**Comment** Dominion stated that the significance threshold for the Narrows would be if fish passage was prevented, "resulting in a long-term or permanent decrease in survival or reproduction rates which may decrease resilience and increase the risk to self-sustaining and ecological effective fish populations" and that this "would only occur if habitat fragmentation extended across multiple years..." Dominion stated that it considered it "highly unlikely" that water levels at the Narrows would ever be that low. The statement needs additional evidence to support it. **Recommendation** Please quantify the likelihood of the Narrows approaching a level where fish passage may be inhibited. This will include consideration of a sequence of multiple years of below average rainfall for the Lac du Sauvage catchment area and the modelling predictions (see IR 26 below).	**July 3:** Assessments of the available water depth within the Lac du Sauvage Narrows (the Narrows) have been completed for all Jay Project (Project) phases in Section 8.5.3.2 of the Developer's Assessment Report (DAR), with available depths during the Jay Pit back-flooding presented in Section 8.5.3.2.4 of the DAR. The methods are discussed in Section 8D3.1.4 of Appendix 8D of the DAR. Figure 8.5-60 of the DAR (and Tables in Section 8D5.5.3.6 of Appendix 8D of the DAR) provides the predicted effects to the maximum depth (depth available for fish passage) at the critical outlet transect in the Narrows during back-flooding, with the assessment of these changes on fish habitat and passage in Section 9.4.3.3 of the DAR. For a full discussion of the available depths in the Narrows for baseline and all Project Phases, please refer to the above sections of the DAR. An overview discussion and derivation of percent exceedance curves is provided below to quantify the likelihood water levels approaching a critical level for passage for fish Valued Components (VCs; Arctic Grayling, Lake Trout, and Lake Whitefish). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
26	Closure - confidence in closure predictions for meromixes within	**Comment** Not enough evidence has been presented to demonstrate the potential quality of water that would overflow from the Misery Pit to Lac de Gras after closure and the potential effects of changing	**July 3:** ***Question 1*** The water balance model was updated to include the assumption that 74	

	Misery Pit and effect on the Narrows.	water levels throughout the life of the Jay project on the Narrows. The modelling completed by Dominion was done for what it considers a "worst case scenario." This worst case was described by Dominion as representing an over-estimate of the amount of groundwater to manage and of the TDS concentrations. The Review Board has concerns related to the potential effects from overestimating the quantity and quality of the water and needs to understand the range of possible outcomes in order to understand what the likely significant adverse impacts may be. The Review Board is particularly concerned with: • Possible outcomes related to the quality of water discharged to Lac du Sauvage during operations; • The effect of decreased water levels and flows at the Narrows, and; • The quality of the overflow from Misery to Lac de Gras post closure. **Recommendation** Please provide the range of possibilities for the water predictions and, at a minimum, consider the following: 1. a reduction in the amount of water from the diked area pumped to Misery Pit during construction. The BGC report prepared for the Diavik A21 pit noted that 74% of the water within the diked off area for A418 was pumped directly to Lac de Gras. The modelling completed by Dominion assumed 50% of the water would be pumped to Misery. At a minimum, Dominion should consider 74% of water being discharged to Lac du Sauvage. 2. a reduction in rainfall . The water balance modelling assumed average rainfall for the duration of the model (construction to closure). If rainfall is below average the proportion of freshwater within the Misery pit would decrease. This would affect the quality of the water discharged during operations and the quality of the overflow water during post-closure. Dominion should complete the water balance model using the observed rainfall in the area and output the full range of realizations; 3. a range of TDS concentrations. TDS concentrations vary with depth. A range of TDS profiles should be considered. This should be presented in such a way that the Review board can have a clear understanding of the range of possible outcomes	percent (%) of the water in the diked area bounding the Jay Pit development would be pumped to Lac du Sauvage during construction. The remaining 26% of the water is assumed to be pumped to Misery Pit. All other inputs to the model were unchanged from those presented in the Developer's Assessment Report (DAR). To evaluate the influence of this change on water quality, total dissolved solids (TDS) concentrations in Misery Pit discharge were evaluated for the DAR and reasonable estimate cases. Updated predictions for these parameters are provided in Figure 26-1, respectively. For comparison, the results assuming only 50% of the water is pumped from the diked area to Lac du Sauvage during construction are also presented. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*		

		and should at a minimum consider the lower bound and upper bound limits for total dissolved solids with depth as described in the DAR. 4. a reduction in the groundwater quantity: • Dominion stated during the technical session (April 22, 2015 transcript, page 31, lines 15 - 24) that the hydraulic conductivities used in the model were not consistently observed during the 2015 drill program. A reduction in hydraulic conductivity would reduce the amount of groundwater to manage. Dominion will consider a range of hydraulic conductivity values for the EPZ and competent bedrock for depths to estimate how this may affect the water quality and quantity predictions. The competent bedrock should also be assessed since a reduction in EPZ flows may increase the proportional contribution of the competent bedrock. The estimates should consider both the upper and lower bounds. • The EPZ is continuous in the model (vertically and laterally). Related to the vertical dimensions, Dominion used EPZ widths of 100 m and 60 m and demonstrated that the width affects the amount of groundwater. Dominion will provide evidence to if smaller widths are possible and provide quantity and quality estimates with the smaller width. • Regarding the lateral extent of the EPZ, Dominion stated in the technical session (April 22 transcript, page 32) that a shorter range (2 km as opposed to over the entire model domain) reduced groundwater flows by 24%. This should be considered in the estimated range of predictions. Dominion will present evidence about what the extents for the groundwater model could be and provide estimates for groundwater predictions that reflect those extents. The model predictions should be provided in detail and should describe the likelihood of the estimates quantitatively.		
27	Clarification of definition for "assessment endpoints"	**Comment** Assessment endpoints are defined in the DAR, section 6.2.2, as "qualitative expressions used to determine the significance of effects on VCs and represent the key properties of VCs that should be protected for future human generations (i.e., incorporates sustainability)." The DAR elaborates on assessment endpoints as: *...typically not quantifiable and require the identification*	**July 3:** The term assessment endpoint was adopted from the literature on ecological risk assessment. Suter (2000) defines an assessment endpoint as "an explicit expression of the environmental	

		of one or more measurement indicators that can be directly linked to the assessment endpoint. Measurement indicators represent properties or attributes of the environment and VCs that, when changed, could result in, or contribute to, an effect on assessment endpoints. Measurement indicators may be quantitative (e.g., concentrations of metals in surface water) or qualitative (e.g., movement and behaviour of wildlife from disturbance to habitat and travel corridors). Measurement indicators also provide the primary factors for discussing the uncertainty of effects on VCs and, subsequently, are key variables for study in follow-up and monitoring programs. Assessment endpoints are recognized processes in the field of ecological risk assessment. It is not clear if the provided definition is a standard definition or a definition modified for the Northwest Territories environment. **Recommendation** Please indicate the source of the definition used for assessment endpoints in the DAR. Please describe and provide rationale for any variances between the described definition and an established standard definition.	value to be protected, operationally defined by an ecological entity and its attributes". In the Developer's Assessment Report (DAR), assessment endpoints are qualitative expressions used to determine the significance of effects on valued components (VCs) and represent the key properties of VCs that should be protected for future human generations (Section 6.2.2), and as such meets the definition provided by Suter (2000). Indicators are measures used in environmental monitoring programs to provide an indication of the condition of the environment (Suter 2000). As described in the DAR, and stated above, measurement indicators provide the primary factors for discussing the uncertainty of effects on VCs, and subsequently, are key variables for study in follow-up and monitoring programs (Section 6.2.2, page 6-6). [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*.	
28	Assessment endpoint for air quality - DAR page 7-3 and developer's Tech Session presentation	**Comment** It is unclear how the definition of "assessment endpoint" provided by the developer applies to the assessment endpoint identified for air quality, which is the GNWT Guideline for Ambient Air Quality. An assessment endpoint must consider an ecological component and the effects it may experience due to the project. The assessment endpoint provided by the developer does not consider an ecological component, although it is implied in the standard because the standards states that meeting the standards protects human health and environment. **Recommendation** a) Please explain how Dominion is in compliance with the Ambient Air Quality Guideline? b) What is the method by which Dominion determines that it is complying with the GNWT Ambient Air Quality Guidelines? c) At what distance from the source of	**July 3:** a) The Developer's Assessment Report (DAR) and the Jay Project (Project) Air Quality Assessment Update Memo (Golder 2015) acknowledge that based on the modelling predictions, which can be conservative, there is a potential for ground-level concentrations of nitrogen dioxide (NO2), particulate matter with a mean aerodynamic diameter of 2.5 microns (µm) or smaller (PM2.5), and total suspended particulate (TSP) to exceed the	

		emissions is compliance measured in order to meet the assessment endpoint. d) Please describe the triggers for applying mitigations that are intended to mitigate effects to air quality? e) Are valued components other than ambient air quality, such as people, vegetation, water or wildlife, considered when determining triggers and action levels for the implementation of mitigation?	Northwest Territories (NWT) ambient air quality guidelines outside the development area. In the DAR, the development area is defined as: "An area that includes the Project footprint and the mine footprints of the Ekati Mine and Diavik Mine. This area is either already physically disturbed by existing or planned mining activities, or has limited public access." [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
29	Greenhouse gas emissions - technical session transcripts p 45-46, 97	**Comment** In the Review Board's view, responses to round one information requests and the technical session transcripts reveal that Dominion has not adequately answered questions regarding emission of greenhouse gasses at Ekati and changes in emissions due to the Jay project. For example, in response to a question from a party on targets to reduce energy consumption and greenhouse gas emissions (March 25 technical session transcripts, p96), Dominion responded that "those are internal at this time" (March 25 Technical session transcripts p96). In addition, GNWT asked Dominion whether it would "commit to reviewing the prices of solar energy at your facility and adding that generation capacity" and further "commit to getting some cost estimates on what adding solar (energy) to your project would be" (Ibid. p110-111). Dominion responded that "this is one of those issue that is going to have to move to another phase of the process" (Ibid. p.111). In order to conduct a fair and transparent EA process, both parties and the Review Board require answers to the questions above as well as the following questions. **Recommendation** a) Please provide a quantitative analysis of greenhouse gas reduction strategies that Dominion has implemented at the mine site to date including the amount of greenhouse gas emissions reduced due to these strategies. b) Please provide any additional greenhouse reduction strategies Dominion intends to implement as part of the Jay Project. c) Please describe and quantify the change in greenhouse gas emissions from all sources from the existing Ekati Mine to the continued operation of the Ekati Mine with the Jay Project. d) Please provide greenhouse gas reduction targets for	**July 3:** a) Since Dominion Diamond took ownership of the Ekati Mine, several programs and improvements have been put in place. Dominion Diamond has put in place a Greenhouse Gas and Energy Management Steering Committee comprising of energy leaders in each area of the business. The Steering Committee's mandate is to "*ensure that effective and efficient energy use remains part of the way that we do business and to ensure that we seek out opportunities to reduce our energy use and greenhouse gas emissions at Ekati*". The Steering Committee has prepared and released a monthly dashboard on energy and diesel use and emissions generated for the information of staff. The Steering Committee is also responsible for reviewing and identifying projects that meet the above mandate (see Table 29-1), as well as potential alternative energy projects. [*This response has been truncated,*	

		the Jay Project.	*please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
30	Tlicho IR 14-Socioeconomic trends and determination of significance	**Comment** Many of the health and well-being indicator trends identified for effected communities in the Community and Diamonds Report (Table 14-1) are adverse (such as increasing rates of sexually transmitted infections, increasing crime rates, decreasing use of aboriginal language). In its response to Tlicho Government's IR14, Dominion Diamond states that "Given that the Jay Project is an extension of the existing Ekati Mine, and does not represent a completely new development to the territory, the assessment assumes that if all else is equal then the Jay Project itself would not lead to new or different trends in health and well-being indicators." Dominion further states, in section 14.6 of the DAR, that "Given the limited possibility for the Project to result in change... the Project's effects on health and well-being are not assessed as significant". The developer's argument appears to be that (a) a continuation of an adverse trend could not constitute a significant adverse impact, and that (b) since the Jay project is not solely able to address or responsible for a negative trend, therefore its effects are not significant. The Review Board understands that a project's potential contribution to cumulative impacts on health and wellbeing must be viewed both within a project-specific and broader socioeconomic context. However, if a) and b) above were true, then no project could ever cause significant cumulative or indirect effects on health and well-being. **Recommendation** Please provide rationale for these two statements as premises in the assessment of health and well-being indicators.	**July 3:** The Information Request DAR-MVEIRB-IR2-30 asks for clarification on what appears to be Dominion Diamond's arguments for determining the significance of the Jay Project (Project)'s effects on health andwell-being. The first argument, as interpreted above by the reviewer, is: a. "a continuation of an adverse trend could not constitute a significant adverse impact." [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.].*	
31	To all parties and Dominion Diamond: Health and well-being indicator levels of significance.	**Comment** Section 14.6 of the DAR states that "... the Project's effects on health and well-being are not assessed as significant". Indicators within the 2014 Communities and Diamonds report (PR#415) suggest adverse trends in several health and well-being indicators in communities effected by diamond mining (See Summary table on p7 of the 2014 Communities and Diamonds report for a list of these indicators). The Review Board needs to understand what parties and the developer deem a reasonable rate of change to health and well-being indicators that have an adverse trend. The Board also seeks to understand parties' and the developer's views on significance thresholds for these health and well-being indicators. **Recommendation** a) Please provide an opinion on what rate of	**June 24:** MVEIRB IR#31 – This information request is outside the mandates of Environment Canada, Transport Canada and Fisheries and Oceans Canada. As such, these parties will not be providing a response to this request. **July 3:** ~MVEIRB IR#31 (Response from GNWT) Health and well-being indicator levels of significance Section 14.6 of the Developer's Assessment Report (DAR) states that	

			change would be acceptable for health and well-being indicators that are currently trending adversely in potentially affected diamond mine communities as listed in the 2014 Communities and Diamonds report. b) Please describe thresholds beyond which significant adverse effects to people and communities might be expected to occur for the health and well-being indicators referenced above.	"... Dominion Diamond Ekati Corporation the Project's effects on health and well-being are not assessed as significant". Indicators within the 2014 Communities and Diamonds report (PR#415) suggest adverse trends in several health and well-being indicators in communities effected by diamond mining (See Summary table on p7 of the 2014 Communities and Diamonds report for a list of these indicators). The Review Board needs to understand what parties and the developer deem a reasonable rate of change to health and well-being indicators that have an adverse trend. The Board also seeks to understand parties' and the developer's views on significance thresholds for these health and well-being indicators. a) Please provide an opinion on what rate of change would be acceptable for health and well-being indicators that are currently trending adversely in potentially affected diamond mine communities as listed in the 2014 Communities and Diamonds report. b) Please describe thresholds beyond which significant adverse effects to people and communities might be expected to occur for the health and well-being indicators referenced above. The annual Communities and Diamonds report tracks current trends against historical data. Departments comment on: ? The direction of a trend in the pre-mine phase; ? The direction of a trend in the post-mine phase; ? The direction of current trends relative to historical data; and ? An historical increase or		

decrease that has a probable cause (such as an outbreak or natural disaster). A 'threshold', as requested by MVEIRB, does not exist. The departments monitor programs and services to strategically plan territory wide programming to best meet the need of Northwest Territories (NWT) residents. It is important to differentiate negative trends from 'significant adverse impacts'. There are a number of factors influencing the wellness of individuals, families, and communities and negative trends may be attributable to rapid social, cultural or environmental change at both a local and territorial level, in addition to potential impacts from resource development. The departments consider data that includes capturing changes in the population, employment and education levels, trapping, hunting and fishing activity across the territory and are committed to using this data to be both proactive and responsive in the programs and services delivered to minimize negative health and well-being changes. Data, such as that found in the Communities and Diamonds report, demonstrates a correlation between resource development activity and community wellness – it does not provide causality or speak to the magnitude of a trend. The departments have programming in place addressing social, cultural and economic wellbeing issues and actively adapt programs and services through ongoing performance measurement. The departments also

			meet regularly with the developers to identify areas for targeted collaboration. **July 3:** a) The 2014 Communities and Diamonds report identifies the following health and wellbeing indicators1 as trending adversely in the local study area (LSA) communities: • ? Potential years of life lost; • ? Single-parent families; • ? Sexually transmitted infections; • ? Crimes; • ? Violent crimes; • ? Other criminal code crimes; • ? Property crimes; • ? Federal statute crime; and, • ? Knowledge of an Aboriginal language. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.*].	

North Slave Metis Alliance: Shin Shiga

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Ekati Mine Socio-Economic Agreement 4.3.4	**Comment** In this agreement BHP (now DDEC) agreed to provide "encouragement to women who apply to be employed in non-traditional ocupations" and develop "a strategy for the training, recruitment and employment of women in traditional and non-traditional occupations." Developer and GNWT have further obligations to monitor the related indicators. **Recommendation** 1. Please provide the "strategy for the training, recruitment and employment of women". 2. Please describe how DDEC uses the monitoring program results to modify and improve the strategy and programs. How are the programs evaluated? How often?	**July 3:** 1) As noted in the response to Round 1 Information Request (IR) DAR-NSMA-IR-29, Dominion Diamond recognizes there are barriers to women entering the workforce, particularly the mining workforce, in the Northwest Territories (NWT). The Northern Women in Mining, Oil and Gas Project (NWMOGP; Status of Women Council of the NWT 2010) has identified the following prominent	

			barriers specific to women: 1. Women have not, traditionally, been encouraged to gain an education related to trades-based occupations, and as a result, may lack the technical skills required for positions in mining. As identified by participants of the NWMOGP, a lack of relevant education, and the cost of obtaining an education, were the most prevalent barriers to securing employment in mining. 2. Low levels of literacy, and more unique to women, numeracy (i.e., mathematical skills), are a barrier to pursuing an education in the trades that would provide the skills needed for mining employment. 3. Being the primary or, in some cases, only caregiver for small children can be a barrier to women entering trades-based occupations. The traditional view is that women should remain home to care for children. The lack of qualified childcare facilities is also an issue. 4. There are perceptions that mine sites are work environments best suited for men. Women may feel intimidated in this type of environment, and so may lack the confidence or desire to work in a male-dominated workplace. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	
2	To GNWT and the regulatory Boards: Ekati Mine Socio-Economic Agreement	**Comment** GNWT agreed to consult with Boards, communities and orgnizations to review the results of the health and wellness report on how to improve the results. NSMA has no awareness of the results of consultations between GNWT and the Boards	**July 3: GNWT response July 3**: The Department of ECE is responsive to the needs of all NWT residents. The point of hire communities are a	

	5.2.5-7	**Recommendation** Please provide the outcome of the consultation meetings between GNWT and the Boards, and how they improved the results. Please also provide specific data, consultations outcome, and initiatives undertaken on "establishment of daycare programs" (5.2.6) and prevention of spousal abuse (5.2.7). Please clarify in your answer, which group the “Boards” refer to. If the originally intended organizations no longer exist, please explain how this commitment has been followed up since, by which alternative organizations, or through other consultative means. ”	targeted group covered by the SEA; however, benefits of initiatives accrue to all NWT residents. In 2014, ECE released a Framework and Action Plan for Early Childhood Development in the NWT. Under that plan, a series of actions were identified that would encourage community members to become involved in early childhood development by participating in the workforce in their communities. ECE is moving toward having a more qualified staff in its early childhood development programs, which will support participation in the workforce by community members. By increasing the incentive to work in the area of Early Childhood Development (ECD) and building capacity in ECD, there is more of an opportunity for all community members, particularly parents, to participate in the workforce. Under the Action Plan for ECD, Action #21 strives to increase the number of qualified early childhood development professionals in licensed programs. This action supports all existing early childhood staff to have the required minimum postsecondary education and ongoing annual professional development, as specified in the NWT Child Daycare Standards Regulations This action provides a tiered grant approach for people currently working in the ECD area. Participants are encouraged to use the grant to obtain qualifications; however, this is not a condition of the award. This also addresses the issue		

					of the low income earning potential for Early Childhood Development workers. In 2014, ECE awarded ten $5000 Scholarships to support Northerners to complete an ECD diploma or degree program. This provides further incentive for individuals to complete the necessary training to provide a high quality of service in ECD. In 2014, ECE held its first ever Early Childhood Symposium. The Department paid for one individual from every childcare center to come to Yellowknife to participate in the Symposium and had representation from every community. This leads to a better informed and equipped workforce which strengthens the services in the community and contributes to participation in the community. Action #15 of the Action Plan commits to restructure administration and finance processes for all early childhood development programs to promote equity, inclusion, quality and stability. All communities will benefit from the work that is underway. In June of 2015, a Feasibility Study of Universal Affordable Day Care in the NWT was tabled in the Legislative Assembly; the study refers to “day care” as “early childhood education and child care”. The study is evidence of ECE’s commitment to assess opportunities and challenges for improvement. HSS collaborates with Health Authorities to address and reduce family violence through prevention, intervention services and funding to support the five family violence		

				shelters and victims living in regions without shelters. The Department and Authorities spent approximately $3.2 million annually toward family violence prevention and intervention services, including funds for the Territorial Family Violence Shelter Network, which enables shelter staff to collaborate and build capacity to serve women and children fleeing violence. The Department's 2015/16 family violence prevention initiatives include: o Working with regions where no shelters exist on the development of protocols and response teams in their communities. o Providing recovery and support programs for children who have witnessed and/or have been victimized by family violence; and o Expanding the "What Will it Take?" (WWIT) social marketing campaign aimed at changing attitudes and beliefs about family violence. In the 2015/16 fiscal year, the Department will be supporting communities to deliver WWIT workshops as well as promoting the campaign to all NWT residents and those interested in having a workshop in their community or in becoming a facilitator can contact the Department of HSS. The WWIT campaign was launched in October 2014. A Territorial workshop was held in February 2015 with representation from all regions of the NWT. The workshop equipped participants to deliver WWIT workshops in their communities. The focus in 2015/16 is to expand the WWIT campaign, including		

dissemination of a recently developed promotional video and financial support to enable communities to deliver workshops. HSS supports the Premier's involvement with the National Roundtable on Missing and Murdered Aboriginal Women by providing program and funding information; the feedback and direction from the Roundtable informs future planning on family violence programs and services across the NWT. HSS is also exploring a partnership with FOXY (Fostering Open eXpression among Youth) to target a youth audience. The Department of Justice is also actively involved in the prevention and mitigation of abuse across the NWT; several initiatives are currently in place to help prevent and address family violence and spousal abuse:

• The 'New Day' Healing Program is a Justice-led pilot program under the Family Violence Framework that provides supports for adult men so that they can stop using violence in their intimate and family relationships. The goals of the program are to reduce violent behaviours and re-offending rates among violent men. Men over the age of 18 can self-identify, be referred by an agency or organization including NWT Corrections and Corrections Services Canada (CSC) to participate. They must be ready to make changes in their behaviours. The program is currently offered in Yellowknife. • The CSC Family Violence Prevention program is

available to eligible offenders serving sentences at the North Slave Correctional Facility. The goal of the program is to reduce violence and abuse towards intimate partners.
• The Domestic Violence Treatment Options (DVTO) Court is an option for low-risk offenders who are willing to take responsibility for their actions (plead guilty) and participate in a Planning Action Responsibly Towards Non-violent Empowered Relationships ("PARTNER") program. Offenders are carefully screened and are required to attend the eight-module program as ordered by the Court. Successful completion of the program is a mitigating factor in sentencing. The goal of the PARTNER program is to provide individuals with information and tools to reduce future incidents or escalation of domestic violence in their relationships. The Department provides support to the program in the areas of assessment of offenders, ongoing monitoring (bail supervision), delivery of the program, support for victims, and referrals to outside agencies (e.g. addictions treatment, counseling services). To date, 37 participants have successfully completed the program in Yellowknife. DVTO has been offered in Yellowknife since March 2011 (offenders from Behchoko who are willing to attend treatment sessions in Yellowknife are encouraged to participate). On April 27, 2015, DVTO expanded to Hay River and may also include residents of K'atl'odeeche and

					Enterprise. • The Family Violence Coordinator position at RCMP "G" Division is there to strengthen the RCMP's front line response to family violence by monitoring high risk files, providing training and support to members responding to family violence situations, and representing the RCMP on family violence committees. • The Protection Against Family Violence Act provides legal tools such as emergency protection orders for people who feel threatened with family violence. The process for applying has been simplified with 24-hr a day services available. • The GNWT continues to work with the Coalition Against Family Violence, along with other non-governmental organizations in exploring new ways to engage communities in the development and promotion of education and awareness campaigns and in identifying family violence prevention strategies that address the specific needs of each community. As outlined in the "Communities and Diamonds 2014" Report prepared by the GNWT, when the mines first became operational circa the mid-1990s, the rate of spousal assault had been going down in the small local communities (Behchokö, Detah, Gameti, Lutsel K'e, Wekweètì, and Whatì). Over the years, there have been increases and decreases in these communities, reaching a high point in 2011 and declining since. Data from the RCMP "G" Division shows that in 2013, the rate of spousal assault in these		

			communities had dipped below the pre-mine rate. The rate of spousal assault in Yellowknife has also experienced peaks and lows since the opening of the mines, but returned to its pre-mine rate in 2013. At this time, there is insufficient evidence to conclude that mining activity is influencing the rate of spousal assault in NWT communities.	
3	To GNWT Ekati Mine Socio-Economic Agreement Schedule D	**Comment** "GNWT has agreed to monitor selected indicators", which will be used to identify activities which strengthen benefits and mitigate negative impacts of social chage. **Recommendation** Please describe what activities were chosen to strengthens the benefits and mitigate the negative impacts. Please describe how the programs are evaluated, and data are utilized. If analyses were undertaken to isolate the effects of the DDEC (or diamond mine) development(s), please make the results available.	**July 3: GNWT response:** The GNWT has administered various programs to mitigate negative impacts, as well as maximize the benefits to Northerners in relation to indicators found in Schedule D of the Ekati SEA. Programs generally fall within the scope of human resource development, business development, and health and well-being. Human resource development programs aim to pair Northerners with jobs in the mining industry through training and promotion of these jobs. Examples include career fairs and counselling support, training programs, apprenticeships and skills development, and student financial assistance. ECE houses the student financial assistance (SFA) program to provide assistance to eligible NWT residents to help them with their postsecondary education-related expenses. Improvements to the program are in progress. The SFA Policy Manual, Regulations, and the Act are made available to the public in order to provide a foundation for fair and equal treatment for all SFA recipients. Assisting students with postsecondary education expenses	

				contributes to a trained and skilled northern workforce. ECE along with Aurora College, Skills Canada and the Mine Training Society work together to promote apprenticeship and occupation certification in the NWT. ECE, through the Advanced Education Division, administers the NWT Apprenticeship and Occupation Certification (AOC) program. This program supports the development, maintenance and delivery of trade and occupation training programs which contribute to the expansion of a trained and skilled northern workforce. ECE is leading a Skills 4 Success Initiative in partnership with key stakeholders to take a systematic look at our adult and postsecondary education, and skills training programs, supports, and pathways with the goal to improve employment success for NWT residents, close skill gaps for in-demand jobs, and more effectively respond to employer, industry, and community needs. ECE works in partnership with Aurora College, training providers, other government agencies, non-government organizations, industry, businesses, and employers to coordinate the delivery of training programs. This includes working closely with Service Canada and Aboriginal Skills and Employment Training Strategy (ASETS) agreement holders, who are responsible for delivering training or skills upgrading to help Aboriginal Canadians prepare for, find, and maintain jobs. Business development programs seek to help Northern		

companies conduct business directly with the mines, as well as in support industries. Examples include business training thorough Aurora College and the Small Business Development Program (SBDP), business counselling through Economic Development Officers, and business support through the Community Futures Program, amongst other programs. Health and wellbeing programs and services are delivered territory-wide to help residents of the NWT achieve the best possible physical, emotional and mental health and are offered in both clinical and non-clinical environments at the community and regional levels. The programs and services offered range from routine medical care, physical therapy and preventative medicine, to mental health and addictions counseling, family programs and programs for youth. These services are available to all residents of the NWT. The Department of HSS monitors selected indicators of health and wellbeing as part of ongoing territory-wide performance measurement and system accountability. Patient/Client satisfaction and feedback are among the most popular methods to assess whether programs are meeting the needs of NWT residents, and when combined with health data, can provide the basis to inform program improvement across the NWT. Results are made public on the Department's website and the most recent reports will be put on the Public Registry. GNWT programs and services are provided territory-wide.

			Some communities are affected by multiple mines, development, cultural change, and other determinants of individual, family, and community well-being. Given the broad scope of GNWT programs and external factors, data and analysis cannot separate the effect of a single mine or mining project but rather take into account the multitude of factors that contribute to change. Programming is developed and monitored accordingly.	
4	Climate Change	**Comment** DDEC commented during the April 2015 Technical Session that it had an internal policy and target for GHG reduction. NSMA is of the view that this information is relevant as it informs to what extent DDEC is trying to reduce GHG emission. **Recommendation** Please make DDEC target for GHG reduction available. Please also list what actions have been taken, and are planned to take place. Please quantify each action in terms of cost (or $ saved), CO2 equivalent reduced (in % and tons), and whether the initiative maybe categorized as; energy saving, renewable energy, or off-setting.	**July 3:** Dominion Diamond has set the following targets for fiscal year 2016 (February 1, 2015 to January 31, 2016): • Reduce energy baseload by 5 percent (%) • Reduce greenhouse gas (GHG) emissions by 5% • Realize energy savings of $2 million • Reduce fuel consumption by 5% Dominion Diamond will continue to set targets for greenhouse gas emissions annually for the life of the Ekati Mine and this will be reported as part of the Air Quality Monitoring Program report, Mining Association of Canada Towards Sustainable Mining Program, and the Environment Canada Greenhouse Gas Inventory. [*This response has been truncated, please refer to the attachment for a copy of the full response, including the applicable tables, figures and appendices.]*	