



Independent Environmental Monitoring Agency

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Kate Witherly
Manager—Environmental Impact Assessment
Conservation, Assessment and Monitoring
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Government of the Northwest Territories
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Re: 2016 Conceptual Air Quality and Emission Monitoring and Management Plan for the Jay Project

Dear Ms. Lee and Ms. Witherly;

The Agency has had an opportunity to review Dominion Diamond Ekati Corp.'s (DDEC) Conceptual Air Quality and Emission Monitoring and Management Plan for the Jay Project and provides the following comments and recommendations.

General Comments

Incorporating Jay AQEMMP into the Site-wide Air Quality Management Plan

The *Introduction* section (page 1-2) states '*This version of the AQEMMP ... remains a conceptual document for discussion through the permitting process of the Project; it is not intended to replace the existing Ekati Air Quality Management Plan which is being updated to include the Lynx and Sable Projects*'. The Monitoring Agency recognises the early nature of the Jay Project and conceptual nature of the proposed document. However, the Agency could not identify any commitment by Dominion Diamond Ekati Corporation (DDEC) in the document to incorporate the Jay AQEMMP into the current site-wide Air Quality Management Plan once a final decision is made by the company to proceed with the Project.

Recommendation: DDEC should commit to incorporating the Jay AQEMMP into the site-wide Air Quality Management Plan within 12 month of initiating Project construction.

Update of Site-wide AQEMMP

The existing Ekati Air Quality Management Plan was last updated in 2009 and should now be updated to include the Lynx, Sable and Jay projects. A single amalgamated Plan would provide better clarity, consistency and certainty as well as support administrative and operational efficiency by DDEC and regulatory agencies.

Recommendation: The GNWT should require an updated Air Quality Emissions Monitoring and Management Plan for the entire site as envisioned by the Environmental Agreement.

GNWT Interim Dustfall Standard and Implementation

Measure 6-4 of the Report of Environmental Assessment directs the GNWT to develop an interim dustfall objective for all types of dust that impact caribou and caribou habitat; and directs DDEC to use the interim objective to inform its actions. Reference is made by DDEC to the proposed objective throughout the conceptual AQEMMP and, in section 1.3, DDEC commits to '*engage to develop an appropriate management strategy consistent with the Territorial (dustfall) Standard*'. The Monitoring Agency believes that the interim dustfall standard is a key air quality element moving forward. It will be a key benchmark against which DDEC's future dust abatement planning will be assessed and action levels and triggers will be measured.

Recommendation: Due to the key nature of the pending GNWT dustfall objective, DDEC should commit to:

1. Maintain the Jay AQEMMP as a *interim document* until the dustfall objective has been adopted by the GNWT; and
2. Update the Jay AQEMMP to incorporate the GNWT interim dustfall objective within six months of the objective being adopted.

Section 2: Air Quality Monitoring Program

General: Air Quality Monitoring Program - Location of Monitoring Stations

The conceptual AQEMMP is non-committal with respect to the specific location of Air Quality monitoring sites associated with the Jay Project. Map 2.2-1 Existing and Proposed Air Quality Monitoring Stations Locations does not identify any proposed Air Quality stations, only the existing ones under the Ekati AQMP. On page 2-1, DDEC states that '*engagement through the permitting process for the Project will inform the final locations of the monitoring stations*'. While qualitative statements have been included throughout the conceptual plan (i.e. sections 2.3.1 and 2.4.1), it remains difficult to assess the adequacy of the Air Quality monitoring program without information being provided on the specific proposed locations and numbers of monitoring stations.

Recommendation: The Jay AQEMMP should contain specific information on the location and type of all proposed Air Quality monitoring, including dustfall, snow and lichen sampling stations prior to commencement of construction.

Section 2.4: Dustfall Monitoring and Sulphate and Nitrate Deposition

Section 2.4.1 and Map 2.1-1 confirm that dustfall and Partisol monitors have been established near the Long Lake Containment Facility (LLCF). In its 2016 Environmental Impact Report (EIR), DDEC reports that total dustfall levels near the LLCF exceeded the BC Guideline upper threshold of 2.9 mg/dm²/day during 2012 and 2014, while approaching, but not exceeding, this value in 2013. The data suggests that the LLCF may be a significant source of fugitive dust to the receiving environment during the dry summer months when fine processed kimberlite is susceptible to disturbance by wind.

Recommendation: A dustfall transect, similar to transects established near the Misery and Fox haul roads, should be operated during the dry summer months (i.e. June, July, August) to monitor fugitive dust originating from the LLCF.

Section 2.6 and 2.7: Lichen Tissue and Snow Chemistry Sampling

An additional lichen and snow chemistry monitoring site is proposed to be co-located with the 90 meter station associated with the dustfall transect along the Jay Road. Currently, lichen and snow chemistry sites are located near the Narrows (southeast of the Jay Pit) and Counts Lake (northwest of the Jay Pit). No monitoring sites are currently proposed for the area located northeast of the Jay Pit. In our Closing Submission to the Mackenzie Valley Impact Review Board, the Monitoring Agency recommended that monitoring sites designed to capture dustfall, lichen and snow chemistry north and east of Lac du Sauvage should be included in the AQEMMP for the Jay Project.

Recommendation: Monitoring and sampling sites to capture dustfall, lichen and snow chemistry should be established on the northern and eastern shores to Lac du Sauvage.

Section 2.8.2: Continuous Particulate, SO₂ and NO₂ Monitoring

The 2016 EIR reports that the historic issue of low percentage data capture from continuous air monitoring equipment has largely been resolved. The Monitoring Agency acknowledges DDEC's successful efforts in this regard. Section 2.8.2 of the conceptual AQEMMP confirms that QA/QC procedures have been established for the calibration of continuous Particulate, SO₂ and NO₂ monitors and for downloading data consistent with written operating instructions. However, the section is silent on the subject of data capture standards and objectives.

Recommendation: DDEC's air quality QA/QC procedures should include benchmarks for acceptable data capture from all continuous air monitoring equipment operating at the Ekati site and describe what actions would be taken should the benchmarks not be achieved.

Section 3.0: Emissions Monitoring Program

Section 3.2.1.7: Greenhouse Gas Emission Calculation Methods

This section provides methodology for calculating greenhouse gas emissions based on diesel fuel combustion. Other potential sources of GHG emissions, although admittedly smaller, exist at the Ekati Mine. One source is the composting of waste. Implemented in 2015, organic waste materials are currently fed into a Brome in-vessel composter where most of the available carbon is converted to CO₂ under aerobic conditions, and a small fraction converted to methane. A preliminary search through scientific literature identifies several methods for calculating GHG emissions from composting operations based on a carbon balance approach.

Recommendation: DDEC should include CO₂ and CH₄ emissions from the Brome in-vessel composter in the site-wide GHG emissions estimates

Section 3.4.1.2: Fugitive Dust Abatement Program – Methods

Section 3.4.1.2 states ‘*a discussion of fugitive dust abatement measures is provided in this section, as relating to mitigation to minimize dust from the drilling, blasting, ore handling and primary crushing activities associated with the Project*’. The Monitoring Agency could not find a description of these measures in the provided text.

Recommendation: DDEC should provide a description of fugitive dust abatement measures relating to minimizing and mitigating fugitive dust from drilling, blasting, ore handling and primary crushing activities associated with the Jay Project.

Section 4: Response Planning

Action Levels and Responses

Air quality Action Levels and responses are described in this section, including a hierarchical series of actions that will be implemented when triggers are exceeded. These actions (i.e. continue monitoring, internal review and development and implementation of a response plan, external review and development and implementation of a response plan) vary depending upon which Action Level (i.e. Action Level I, II or III) is reached. The basis for determining whether a response is required is a comparison of the monitoring data to the annual criteria used to determine compliance.

The Monitoring Agency has concerns with the proposed Action Levels for Total Suspended Particulate (TSP) and PM_{2.5}, and in particular use of the annual compliance criteria. On page 3-10 of the AQEMMP, DDEC confirms that winter dust emissions (when road conditions and the landscape in the Project area are dominated by snow and ice) are mitigated naturally by approximately 95%. If the accepted Action Level is based upon annual TSP and PM_{2.5} criteria, and levels are naturally mitigated by 95% during the

approximate 9 months of winter conditions, then levels could exceed the Action Level during the remaining 3 month summer period without triggering a management response.

DDEC currently uses Partisol samplers to monitor 24-hour TSP levels and Met-One BAM 1020 samplers to continuously monitor PM_{2.5} levels at several locations around the mine site

Recommendation: Exceedances of TSP and PM_{2.5} levels are typically short-term and episodic in nature during the dry summer months. DDEC currently uses air quality monitoring equipment which is designed to monitor daily TSP and continuous PM_{2.5} levels. DDEC should develop triggers for these parameters which are based on the GNWT 24-hour air quality standards instead of the current annual criteria.

Recommendation: Timeframes should be provided in the AQEMMP during which response plans will be developed and implemented in the event that Action Level II or III criteria are exceeded.

Recommendation: DDEC should commit to develop and implement a dustfall Action Level trigger within six months of the GNWT interim dustfall objective being adopted.

Section 5: AQEMMP Reporting

Section 5 describes the type of information that will be included in the annual data report. The listing appears to be extensive, with the exception of reporting results from the 3-year incinerator stack emissions testing program.

Recommendation: Results from the 3-year incinerator emissions testing program should be reported in the annual data report for years during which incinerator testing is performed.

The Agency looks forward to discussing these items at the upcoming Air Quality Workshop. Should you have any questions concerning these comments, the Agency would be pleased to discuss these at your convenience.

Sincerely,



Jaida Ohokannoak
Chairperson

cc. Society Members

Meghan Schnurr, Wek'eezhi Land and Water Board

Mark D'Aguiar, DFO

Lorretta Ransom, Environment Canada

Aileen Stevens, Government of the Northwest Territories – Environment and Natural Resources

