

Subject: [Fwd: EAs of: BHP Ekati Diamond Mine Expansion & Fort Liard Gas Pipeline (Ranger et al) Development]

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Subject: EAs of: BHP Ekati Diamond Mine Expansion & Fort Liard Gas Pipeline (Ranger et al) Development

Date: Mon, 23 Aug 1999 14:25:56 -0400

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Hi Gord

Below are Natural Resources Canada's initial comments on the BHP Ekati Diamond Expansion Project and the Fort Liard Gas Pipeline Development.

If you have any questions, feel free to contact me at (613) 947-1591, by Fax at (613) 995-5719, or by e-mail at jramsey@nrcan.gc.ca.

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BHP EKATI DIAMOND EXPANSION PROJECT

Surficial geology etc.

- * distribution and thickness of surficial materials
- * rock types
- * slope stability of pit walls and shafts
- * aggregate source for road building
- * reclamation of used pipes
- * drainage effects of spoil
- * water chemistry of spoil
- * chemistry of pipes and stability of kimberlite byproducts
- * Permafrost temperatures and ground ice conditions at mines and roadways, and in material being moved
- * thermal effects of mining
- * drainage of lakes/disposal of lake sediments to access kimberlite? are dykes required?
- * is there enough aggregate for construction? is source crushed rock or unconsolidated materials
- * final abandonment and restoration
- * information on remedial actions at minesite (waste dumps, tailings)
- * cumulative impacts on lupin winter road maintenance
- * where landfill/aggregate will come from
- * what waterways are affected, and how extensive
- * open pits or shafts?
- * how will disturbance to the environment (including thermal milieu) be limited
- * amount of overburden and rock to be removed, and its effects.

Permafrost aspects

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- * Baseline surficial sediment characteristics and permafrost physical conditions and thermal regime
- * Effects of pit or underground mining activities and infrastructure on permafrost regime and changes to physical strength characteristics/hydrogeological regime.
- * Capacity of existing and/or proposed tailings/mine water facilities in particular existing or proposed frozen core dams.

Hydrogeological and hydrogeochemical aspects

- * Baseline depth profiles of lake/stream sediment geochemistry with emphasis on heavy metals.
- * Effects of pit or underground dewatering on the water table and surface drainage.
- * Expected post-closure modifications to regional groundwater chemistry and flow patterns caused by flooded mining excavations.
- * Quantity and quality (salinity, phosphate, nitrogen, heavy metal content) of mine discharge waters; provisions for disposal and mitigation.
- * Quantity and quality of waters (including suspended sediments) draining waste rock and tailings facilities; and provisions for mitigation.
- * Expanded discussion of cumulative effects in light of Ekati, Diavik and potential future mining activity.

Explosives Factory and Storage

- * Information regarding the use of existing explosives facilities or construction of new facilities

Separate comment for MVEIRB in relation to above:

- * Given the ongoing diamond exploration efforts in the area and the numerous known prospects; and given the reliance of all mining ventures in the area on the Lupin mine winter road, the Mackenzie Valley Environmental Impacts Review Board should come up with some sort of master plan for the development of the entire Lac de Gras area, instead of evaluating the cumulative effects of each new diamond project in a piecemeal way. For example, what level of development can be sustained by the present logistical infrastructure? what level of development can be tolerated by the ecology at the regional scale? (ie without causing major shifts in caribou migration paths). At some future date, it may be anticipated that a proposed new mining project will have to be blocked simply because of the cumulative environmental effects of previous approved projects.

Seismic activity

Note: The work plan is of little value. If they propose water or sediment retention dikes (the scope of the work is not addressed), most of the comments made for Diavik are relevant but might need to be updated.

- * low probability hazard from nearby earthquakes
- * dike failure under earthquake loads

RANGER ET AL. GAS PIPELINE DEVELOPMENT

Surficial geology etc.

Note: No info was given about where this is, and if there is a port

- * distribution and thickness of surficial materials, including rock
- * source of aggregate for pads and roadbuilding
- * permafrost temperatures and ground ice along the route and at sites

- * remedial plan for spill containment
- * type of overburden tracked across
- * prediction of subsidence or heave
- * effect of traffic and construction on permafrost
- * how will temperatures in pipe and ground be maintained
- * effect of pipeline on permafrost temperatures and ground ice
- * geotechnical and ground ice conditions in each material crossed
- * effect of pipeline on drainage
- * seismic stability
- * effect of pipeline on vegetation equilibrium
- * affect of shaking or compaction due to traffic and construction on soil stability

Permafrost aspects

- * Baseline surficial sediment characteristics and permafrost physical conditions and thermal regime
- * Effects of gas development activities, infrastructure and pipeline right-of-ways on permafrost regime and strength characteristics of sediments and review of the monitoring activities and mitigative measures in place to minimize impacts

Hydrogeological and hydrogeochemical aspects

- * Detailed composition of the gas (including sulphur dioxide content)
- * Will there be any flaring of gas and if so, how efficient is the burning ?
- * Quantity and quality (geochemistry) of waste waters destined for re-injection.
- * Information pertaining to waste water disposal in an injection well : hydraulic properties of the host formation and adjacent confining layers; an assessment of the possibility of accidentally hydrofracturing the host formation or confining layers; an assessment of the possibility of formation cross-contamination due to improper grouting around injection well or presence of other unsealed deep wells in the area.

Seismic activity

Note: The work plan is of little value, but a bit better.

Earthquakes and seismic hazard (expect that this has been addressed for the existing pipeline, which would form a suitable starting point)