

Telkwa Coal EA comments  
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From the executive summary of the Atmospheric Environment VC, section 4 Ch. 1

With emphasis on Air Quality and Greenhouse Gas (GHG) Emissions

The third paragraph on page 10 (given as Roman numeral x) is reproduced here for reference:

Particulate matter (PM) currently represents the main air quality concern in the region, with ambient concentrations within populated areas exceeding the relevant ambient air quality criteria up to 8 percent (%) of the time. Major contributors to elevated levels of particulate matter include wood smoke as well as springtime snowmelt and associated accumulation of winter traction material on road surfaces. Dustfall deposition rates near unpaved roads such as the Telkwa Coalmine Road also tend to be high, occasionally exceeding the now rescinded provincial objectives. Concentrations of PM and dustfall deposition rates in more remote areas tend to be lower. Concentrations of nitrogen dioxide (NO<sub>2</sub>) and sulphur dioxide (SO<sub>2</sub>), both in populated and remote areas, are generally low and remain well below the relevant ambient air quality criteria.

The region must be presumed to be a study area. However, since the region is not defined here we are forced to assume it to be that described on page 10 following. PM is certainly of significant concern but at the moment – pre-project – it arises mostly from wood combustion. It is not gaseous and even though gas dispersion modelling is practical<sup>1</sup> it has not been specified as part of the assessment. Wood combustion is much less in quantity than the coal to be extracted in this project. Blasting will generate high temperatures that can easily result in emissions of both GHGs and CACs. In the case of CACs the devil is in the details – VOCs are mentioned but no speciation is explicit. To take only one example, CO is expected to have a residence time in the atmosphere of ~eight hours, transport can be significant here. There are hundreds at least of different volatile organic compounds, varying greatly in toxicity. A blanket description is inadequate. It is unfortunate that the only explicit reference to the objective rescinding is buried twenty pages on and in the bibliographic references.

An interesting legal opinion has been given by a Justice of the Alberta Court of Appeal that federal jurisdiction is engaged when provincially regulated projects have effects that are off-site, specifically in GHG production. No mention seems to have been made of this confounder of the proponent's

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<sup>1</sup> See Yanyan Lu - [https://www.researchgate.net/publication/345398840\\_A\\_numerical\\_study\\_of\\_harmful\\_gas\\_dispersion\\_based\\_on\\_CA\\_LPUFF\\_model](https://www.researchgate.net/publication/345398840_A_numerical_study_of_harmful_gas_dispersion_based_on_CA_LPUFF_model)

plans. If this is unintentional it is a significant lack, if not it raises the possibility that this document will mislead the regulator, another significant drawback to its credibility.

On the following page (xi) we can see

“Project-related GHG emissions represent 0.10% of existing GHG emissions in BC and 0.010% of existing GHG emissions in Canada. The GHG emission intensity associated with the Project is within the range of the industry profile.”

And the quantities given reflect only relative (not quantified) amounts with no reference to measurement (or estimation) dates or absolute amounts of species. This is sloppy.

On page 16, in section 4.1.2.2 is, “Therefore, baseline SO<sub>2</sub> concentrations were developed based on measurements from Terrace as recommended by the BC MECCS.” The Terrace airshed is part of the Kitimat Terrace valley airshed and its SO<sub>2</sub> levels are heavily influenced by RTA’s Kitimat smelter and its associated petcoke composition. The applicability of this baseline is speculative at best.

In the wind rose summaries of wind speed and direction shown are the considerable variation in speed and direction and two of special interest labelled 4.2-5 and 4.2-6 (pages 23 and 24). Although it is not stated here, these align nicely on a map of the area as blowing mostly along Coalmine Rd. into the populated area of Telkwa. The wind rose on page 21, figure 4.2-3 shows a secondary directional influence from about 330°, pointing to Telkwa and adding to background levels.

In the notes to table 4.2-1 is this statement, “Days with exceedances of ambient air quality criteria corresponding to known wildfire activity have been removed: August 9-11, 2017, and August 20-21, 2018.” The method and rationale for this move (data deletion to make measured levels lower) are not discussed, just relegated to a footnote.

Table 4.2-1 is confusing. PM measurements in Telkwa at the MECCS firehall station were turned off when the TEOM was removed from service and as far as I know no PM measurements have been made since then. This lack of clarity may have influenced some iffy charts immediately following on p. 26.

We can see on page 25, “PM<sub>2.5</sub> concentrations in Smithers and Telkwa tend to be highest in the winter (November to February) and may be attributable to increased usage of wood stoves during this time (Levelton Engineering Ltd. 2002)” I don’t have the report so I can’t comment directly on it but this is old science anyway. There is an invert sugar called levoglucosan which is a characteristic component of smoke from wood combustion. Measurement of this is reasonable as assessing the basis for what are here characterized as baseline levels but no indication is given that this was done or considered.

Table 4.2-2 suffers from the Terrace origin for SO<sub>2</sub> as I mentioned above.

The Summary of section 4.2 and Table 4.2-3 are as clear as can be expected given the shortcomings noted above but it is worthwhile noting that both background and new levels are subject to a large biological issue. It is not possible to breathe and average. It is not average levels that cause problems, but highest levels. It isn't average speeds that put you in the ditch but highest speeds. This is a highly suitable place to invoke the precautionary principle.

With respect to GHGs and this project, various details have been noted by other commenters. I want only to note that there is a very big elephant in the room – the entire project aims to convert this deposit to GHGs while extracting energy for demand intensive uses such as electricity generation or smelting. So that is the intended and explicit effect. It is undesirable as an existential threat in the face of global warming and for that reason alone ought not to be approved. We've only got one big atmosphere, geography means something different here.

Appendix 4.1-B Section 4.0 Environmental Effects Assessment  
Chapter 1 Atmospheric Environment Valued Component  
Air Quality Modelling Report

some comments

Section 2.1.3 – Blasting, page 2, gives emissions factors for PM and Table 2.2 gives factors for the ANFO used. The organic gases mentioned in section 2's first bullet list as the fourth point are not speciated further. It is the intended effect of blasting to break open the coal body into smaller pieces. Significant heat is generated in doing so and it is to be expected that some of the hydrocarbons comprised in the coal will be gasified in the process. Speciation of these gases is needed in order to assess and perhaps rank the adverse human health effects to be expected.

In section 3.3.2 we see, "A Cartesian grid of nested receptors was defined within the Air Quality LSA..." but if the RSA is not in the model domain it isn't clear how outside effects are to be taken into account. The only mention I've seen in my review has been the removal of wildfire smoke peaks. Handy for minimization but not persuasive.

In table 3.8 is a reference to flare sources as components of the model. What flare sources?

In section 4.2.5.6, discussing human health effects, in the summary is a table (4.2-1) reference to mercury as being both bioaccumulative and present in subsistence foods. Hg is a special case because of its enormously greater neurotoxicity. Toronto Public Health estimated it as seven orders of magnitude greater in its expected concentrations, making quantification and avoidance imperative. This has special importance with respect to Table 5.4-4 where the exposure increase due to operation

of the project is given as from .27 to .31 HQ for an adult user, a relative increase of ~15%. Given the unknown susceptibility of the adults exposed a precautionary approach is certainly indicated but is not specified.

In this proposal as in others a reliance on emissions factors and thresholds is routinely made but without any specified ongoing adaptivity or monitoring. What can be monitored cheaply and by others is sometimes an input to project management but where it can be avoided it is treated as an unnecessary cost.

I'm interested in being kept informed about developments related to these concerns. I can be reached either by postal mail or email.

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