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Re: The Raven Coal Mine proposal draft AIR

I am particularly concerned by the lack of information on mine-waste storage and management contained in the proponents published plans and the draft AIR (Section 2.2). The coal rejects and other unwanted materials from the mining processes contain sulphur and sulphide which have the potential to oxidise and generate acid rock drainage (ARD). The following information and actions are inadequately described in the draft AIR and must be addressed in the proposal.

- ⤴ Data must be made available to the public to assess the quantity and ARD generating potential of this material. The draft AIR refers to use of standard BC procedures without further discussion or detail. Whatever procedure is followed e.g. careful mixing of materials, addition of lime etc., there will inevitably be ARD generation. This may occur in small foci and spread and it may start during mining operations or many years later.
- ⤴ A clear procedure must be described to adequately monitor wastes for generation of ARD both during mine operation and following decommissioning. Such monitoring may be needed for hundreds of years.
- ⤴ The mine and wastes management impoundments must be designed such that any ARD generated be confined to and treated on the mine site. The potential for ARD generation will continue for hundreds or thousands of years and treatments must be in place to cover all potential eventualities.
- ⤴ Monitoring of receiving groundwater aquifers and surface waters in the potentially affected catchments must be continued through the mine operation and thereafter as long as potential for ARD generation continues.
- ⤴ Who pays for monitoring and treatment? It should be the mine owner, not the tax payer. Prior to giving the go ahead for a mine, the owner/operator must post a bond to monitor the wastes for many years and to pay for any treatment and clean up of pollution.
- ⤴ There will be a major earthquake in the region. Will the waste management system be able to absorb the shock with no release of materials or changes which lead to pollution leaving the site?
- ⤴ The present climate has very heavy rain events in winter and prolonged droughts in summer. Extremes which are rarely found in other mining regions. The former increases the likelihood of wastes and contaminated waters overflowing the impoundments. The latter could increase potential infiltration of air (and ARD generating potential) into the wastes. Are standard

procedures adequate for this climate? This is not adequately addressed in the draft AIR.

- ⤴ With climate change, it is predicted that winters will get wetter, summers drier and extreme weather events in the region more frequent. Will the design and management of mine wastes be able to cope with such changes? This is not adequately addressed in the draft AIR.
- ⤴ The aquifers in the region must be adequately mapped in order to assess where and how fast contaminants would spread in the groundwater.
- ⤴ How would contaminated groundwater be treated? This is inadequately addressed in the AIR.

There are many other questions which are inadequately addressed in the draft AIR. I therefore call for a Joint Federal/Provincial Independent Expert Environmental Review Panel with full public hearings to determine whether this proposed mine should go beyond this pre-planning stage. A basic prerequisite must be a complete regional aquifer mapping and modelling.

Yours sincerely,

Andrew Fyson PhD

I am a biologist with a BA in Botany from Oxford University, a PhD in Plant Physiology, several post docs in soil microbiology and 17 years working in Canada and Germany cleaning up mine sites using natural processes. I am currently Lands Manager for the Denman Conservancy Association. I am also on the technical committee of the Comox Valley Coalwatch.