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July 10, 2008

Environment Canada
Natural Resources Division
351 St Joseph Blvd
Gatineau, Quebec
Canada, K1A 0H3

Attention: Chris Doiron, Chief Mining and Minerals Section

Dear Mr. Doiron:

Please consider this letter to be our submission to Environment Canada concerning the recent (June 12, 2008) consultations on Vale-Inco's proposed Hydrometallurgical facility at Long Harbour, the proposed amendments to the Metal Mining Effluent Regulations to include the management of wastes from hydrometallurgical processing facilities in the regulation and the proposal to place Sandy Pond near Long Harbour, Newfoundland on Schedule 2 as a Tailings Impoundment Area..

Thank you for providing us with the opportunity to consult on this issue.

We have reviewed much of the available information concerning Vale-Inco's environmental assessment of the proposed project and we have some concerns we would like to share with the Environment Canada.

Using Sandy Pond for disposal of Hydrometallurgical processing waste residues

We find it disturbing that Vale-Inco has opted to promote the deposit of Hydrometallurgical processing waste residues into a pristine natural lake as the preferred method of waste storage and disposal for this project even though they have considered other viable, less environmentally destructive, albeit more expensive, options.

Our main concerns with this proposal are.

- 1) The potential long-term environmental impacts associated with the contamination of area groundwater as a consequence of using Sandy Pond as waste dump;
- 2) The proposed fish habitat compensation plan is, in our view, inadequate to compensate for the loss of fish habitat in Sandy Pond; and will likely not work as intended; and
- 3) The precedent that will be set by amending the MMERs to allow for mineral processing facilities to discharge wastes to Canada's water bodies.

Potential for Groundwater Contamination

In the Draft Screening Report issued by Fisheries and Oceans and Transport Canada (June 2008) these agencies identify that potential problems exist with groundwater flow in the vicinity of Sandy Pond and that Sandy Pond does, in fact, currently "leak" and contributes water to the surrounding groundwater. As such, they propose specific "mitigations" including grouting the pond. They state as well that, "*Within the TIA [Tailings Impoundment Area - Sandy Pond] shallow groundwater flow will be reduced by grouting. Any seepage will eventually discharge down gradient to the streambed 700-800 m north of Sandy Pond.*"

We also note that in the EIA (Amended Volume 2, First Part) Vale-Inco offers a discussion of groundwater flows in the area. In it they state:

- 1) **Deep groundwater flow** around Sandy Pond has been shown through modelling to **flow in the same general direction as the shallow groundwater**;
- 2) Similarly, shallow groundwater has been modelled and found to **flow from the area of Sandy Pond** and along a broad pathway that centres on Sandy Brook.
- 3) Groundwater discharge to the surface often typically occurs into ponds, streams, and at the foot of steep slopes where topographic gradients decrease or flatten out; and,
- 4) Because of the relatively high permeability of overburden material and upper levels of fractured bedrock, shallow groundwater quality is often very similar to that of surface water (freshwater) bodies.

As we read this, it tells us that Sandy Pond is generally situated in a shallow groundwater outflow area. Because of this the water quality in surface waters is essentially the same as that of the shallow groundwater. So, if/when Sandy Pond becomes toxic, it is also likely that so too will all the surface waters down slope of the lake that are in the pond's area of groundwater influence (Sandy Brook drainage)

We highly doubt that, despite what the DFO says, it will be feasible for Vale-Inco to grout the entire lake to ensure there is no groundwater seepage. We find this to be problematic in that there seems to be a tacit acceptance that eventually potentially toxic discharges from Sandy Pond could contaminate a large area down slope of the lake over time. This is not acceptable.

Fish Habitat Compensation Plan Inadequate

The proposed Sandy Pond Fish Habitat Compensation Plan is inadequate. It is based on only very preliminary and incomplete baseline biophysical data. This makes it impossible to determine the actual extent of compensation that will be needed to offset what is lost. Sandy Pond is roughly 37.5 hectares in area, has a maximum depth of 16.5 metres, contains approximately 3 billion litres of water and untold numbers and species of fish and is high quality, productive fish habitat. The compensation plan proposes to offset these losses (and surely all the fish and fish habitat in Sandy Pond will be lost once it becomes a TIA) with the creation of only 18.11 hectares of pond habitat that is outside the same ecological unit as Sandy Pond and doesn't even come close to Sandy Pond in terms of basic limnology (proposed ponds will only comprise 18 hectares with a maximum depth of 2- 8 metres - this is less than one half the "equivalent" surface area and depth of Sandy Pond) and is deemed to be "Like-for-Like" habitat. There does not appear to be any legitimate scientific information or rationale to support this supposition.

Accordingly we feel that this project will result in a significant loss of fish habitat in and is directly contrary to DFO's "No Net Loss" policy.

This is not a concession that should be afforded any new industrial operations and we feel that more extensive work on the part of Vale-Inco is required to develop a comprehensive plan that ensures no net loss of productive fish habitat if this project is to proceed.

Amending the MMERS to permit mines and metal processing facilities to use lakes as waste disposal facilities

We are also concerned generally about the precedent that will be set by amending the MMERS to add Canada's pristine lakes as Tailings Impoundment Areas to Schedule 2 and to include waste disposal from mineral processing facilities generally into the regulation. Our understanding is that Schedule 2 was

originally implemented to grandfather mines that were already discharging to lakes to bring them into compliance with the law, not to add new lakes at the whim of industry.

In 1998, the Mining Association of Canada published a document entitled “*A Guide to the Management of Tailings Facilities*.” This guide recommends the implementation of a tailings/waste management framework to integrate environmental and safety considerations into the process of tailings management by mine operators in Canada. The guide was developed collaboratively by Canadian mining industry practitioners and experts and its purpose was three-fold:

- To provide information on safe and environmentally responsible management of tailings facilities;
- To help companies develop tailings management systems that include environmental and safety criteria; and,
- To improve the consistency of application of sound engineering and management principles on tailings facilities and through their full life cycle.

However, in the case of Vale-Inco, the cCompany does not appear to have followed the procedures outlined in these guidelines, which are industry standard, in developing a waste management system for this project that is **environmentally responsible**. The full range of available options for residue management have not been adequately explored. One option that was not even considered in the EIA is a developing and accepted method of treating and managing residues as secondary resources such as for use as flocculants, for recovery of iron (hematite recovery), as fillers in making cement or for use as bricks for building. Additionally, there are technologies available that allow for dewatering of waste residues using high efficiency thickeners and placing the dried waste in engineered and managed stacks at on-land impoundment areas lined with impervious clay (called dry stacking).

Although the company has considered dry stacking as a disposal option in its preliminary analysis we feel it was too quickly ruled out and that not all dry stacking methods were given due consideration.

There are many advantages to using this method of tailings/waste management including:

- It can be used in areas where water conservation is critical.
- It is suited to areas of high seismic activity as the construction of retention embankments is prevented.
- For cold climates, like northern Canada, dry stacking prevents pipe freezes and frosting problems associated with conventional impoundments.
- Groundwater contamination through seepage is virtually eliminated.
- Filtered tailings allow better recovery of dissolved metals and process chemicals (e.g. gold and cyanide); and,
- Dry stack facilities are easier to close and rehabilitate, require a smaller footprint compared to other surface tailings storage options (i.e. higher density), can be utilized in aggressive environments (e.g. undulating and steep terrain – terrain that is common around the proposed project site) and generate better regulator and public perceptions of tailings/wastes.

Further, we are concerned that if the option of depositing the waste residues from the Hydrometallurgical plant into Sandy Pond is allowed to proceed in the absence of due diligence in considering all other options in this instance it will set a dangerous precedent in that Environment Canada will be forced to consider this option of waste disposal for other proposed mineral processing facilities in Canada.

This is not a sustainable way to control acid mine drainage. With more and more metal mines being proposed in Canada many more lakes and streams will come under pressure as they are viewed to be

economically convenient waste disposal sites. Having a ready-made basin into which one can deposit waste, be it tailings from mines or mineral processing wastes is an attractive option to any company that wishes to maximize its long-term profit and reduce its long-term environmental commitments where it comes to control of Acid Mine Drainage

Many mines operate quite profitably using other tailings/waste storage options such as building their own storage ponds in areas where fish habitat would not be impacted. The preservation of water, fish habitat and fish stocks should not be sacrificed just to improve profitability.

In Vale-Inco's EIA documents ("*Hydromet Plant Residue Storage Options for the Commercial Nickel Processing Plant at Long Harbour Newfoundland and Labrador*")¹, the company, in regards to their proposal to dispose of waste residues into Sandy Pond, concludes in their summary of disposal options that with respect to neutralized leach residue (NLR) and neutralized combined residue (NCR), the two most problematic waste streams, that:

*"Based on the results of sub-aerial and sub-aqueous testing of these residues, sub-aqueous storage of the NLR and NCR residues is **the only viable option.**"*

And,

"Rapid acidification, would require effluent treatment system in perpetuity, not a viable option.."

Based on a limited review of the technologies that are available worldwide to manage mine tailings and waste and control AMD, this does not appear to be true. In fact, in most cases, sub aqueous disposal of tailings into natural bodies of water, such as lakes, is prohibited by law. It is also illegal in Canada. However, this illegality can simply be nullified if the Governor General in Council of the day adds any water body in Canada to Schedule 2 of the Metal Mining Effluent Regulations.

In considering the potential for problems associated with reactive wastes (wastes with high sulfide content) and acid mine drainage control, we urge the Environment Canada to turn their minds to the following statement which is found in a document entitled "Handbook of Technologies for Avoidance and Remediation of Acid Mine Drainage" which was compiled by the US Avoidance and Remediation Working Group of the ACID DRAINAGE TECHNOLOGY INITIATIVE (ADTI)¹. They say:

*"Water management techniques for controlling AMD include water diversion, soil covers and plastic liners, dewatering, inundation, underground mine sealing, barriers, grout curtains and walls, and underground mine filling by injection. Each method is suited for specific situations and **good success can be realized when adequate planning, design, and construction are practiced. Water diversion is one of the easiest and cheapest methods for reducing the amount of water in contact with acid-producing materials**"*

In short, there are other less environmentally destructive methods of tailings, waste and AMD management for metal mines that should be considered for the Vale-Inco Long Harbour Project. As such, it is our position that the use of Sandy Pond as a waste management facility should not be permitted.

¹ Skousen, J., A. Rose, G. Geidel, J. Foreman, R. Evans, W. Hellier, and members of the Avoidance and Remediation Working Group of the ACID DRAINAGE TECHNOLOGY INITIATIVE (ADTI). 1998. Handbook of Technologies for Avoidance and Remediation of Acid Mine Drainage The National Mine Land Reclamation Center located at West Virginia University in Morgantown, West Virginia June 1, 1998

Failure of Vale-Inco to consider Natural Capital Values in the EIA

In a report titled “Counting Canada’s Natural Capital: Assessing the real value of Canada’s boreal ecosystems²”, the Alberta based Pembina Institute found that the total non-market value of Canada’s undisturbed boreal “ecosystem services” was \$93.2 billion, or \$159 per hectare, as compared to the boreal’s capital extraction values of \$37.8 billion, or \$83.63 per hectare.

The non-market “ecosystem services” referred to in this study included:

- flood control and water filtering of peat wetlands and other lands;
- pest control services by birds in Boreal forests;
- nature related activities; and,
- net carbon sequestration of boreal forests.

Market value items explored included:

- forests and forestry;
- minerals and subsoil assets (including oil and gas);
- water resources (including hydro electric power generation); and,
- related costs of extraction

This analysis actually shows that the Canada’s natural capital has greater value when it is intact than when it is disturbed by industrial activity.

In regards to how natural capital should be viewed as an item of consideration in environmental assessments, the *Canadian Environmental Assessment Act* defines **Environmental Assessment** as:

*“in respect of a project, an assessment of the **environmental effects** of the project that is conducted in accordance with this Act and the regulations”*

Environmental Effects are defined, in part, as:

“in respect of a project,

*(a) any change that the project may cause in the **environment**, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act,”*

Finally, the Act defines **Environment** as:

“the components of the Earth, and includes

(a) land, water and air, including all layers of the atmosphere,

(b) all organic and inorganic matter and living organisms, and

² Anielski, M and S. Wilson. 200 Counting Canada’s Natural Capital: Assessing the real value of Canada’s boreal ecosystems. A report prepared for the Pembina Institute and the Canadian Boreal Initiative. 78 pages

(c) the interacting natural systems that include components referred to in paragraphs (a) and (b);”

Taken together, all of these elements of the *Act* clearly contemplates that an environmental assessment should take things like natural capital values into consideration.

Vale-Inco has not even considered the natural capital values of Sandy Pond or the surrounding terrestrial environment in its analysis of the environmental impact of the proposed Hydrometallurgical facility and the disposal of wastes. In fact, they appear to view them as a free and disposable commodity. Therefore it is our view that the EIA is incomplete and does not meet the requirements of the *Act*.

We ask that the Environment Canada request that Northgate include an assessment of Natural Capital Values of the all the areas in which they propose to operate into their EIA and consider all of the potential impacts to those values including past and future exploration/expansion activities.

In conclusion, we do not support the proposed amendments to the MMERs to allow new mines in Canada to use our pristine lakes as TIAs. Nor do we support the proposed amendment to include hydrometallurgical processing facilities in the MMERs (even if they are a more environmentally sound option to smelting ore compared with other methods) as this will set a dangerous precedent and open the doors for all other types of processing facilities to seek similar inclusion in the MMERS.

Thank you for your time and consideration of these issues.

Sincerely



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Marine and Freshwater Conservation Program