Ecology Action Centre

tel. 902.429.2202
fax. 902.405.3716

2705 Fern Lane,
Halifax, NS, B3K 4L3

The Ecology Action Centre's response to the Beaver Dam Mine Project Revised Response to Information Requests Round 2 and Revised Environmental Impact Statement

December 17, 2021

The following submission in response to the Beaver Dam Mine Project Revised Response to Information Requests Round 2 and Revised Environmental Impact Statement is on behalf of the Ecology Action Centre. The Ecology Action Centre is a member-based environmental charity in Nova Scotia; we are the province's oldest and largest environmental NGO. Since 1971, the Ecology Action Centre has been working at the local, regional, national and international level to build a healthier and more sustainable world.

The Ecology Action Centre does not support the proposed gold mine. Below we have outlined our concerns regarding the project. In our comments, we include requests for additional information and questions that we ask the proponent to address.

30 Day Comment Period

The Ecology Action Centre believes that the 30-day comment period is not enough time to provide a full response. Together, the Revised Summary of the Environmental Impact Statement, Revised Environmental Impact Statement, and From Atlantic Mining NS Inc. To Impact Assessment Agency of Canada re: Revised Response to Information Requests Round 2 total thousands of pages. For most organizations, community groups and individuals, 30 days is not an adequate amount of time to review these documents and submit a thorough response. In addition, many of those who are interested in reviewing the documents and submitting comments do so on a volunteer basis and must dedicate a significant amount of time outside of their work and home life to write their comments. Please extend future public comment periods to at least 90 days so that organizations, groups and members of the public have a sufficient opportunity to review the relevant documents and form comments in response.

Alternative Means

1. In the Concordance Table for IR 2, under Guidelines Section 2.2 Alternative Means of Carrying Out the Project, the proponent is asked to address (among other things):

" - mine waste disposal (methods and sites considered including dry stack tailings disposal)1."

There is no discussion in any of the Beaver Dam documents of dry stack tailings disposal. **The proponent should discuss dry stack tailing disposal in their EIS, as required by IAAC, and as a relevant Alternative Means to disposing of tailings, given that dry stack tailing disposal is a viable and safer method of storing tailings than wet tailings management.**

2. In 2021 EIS Update Version 3 the proponent states:

"Due to the timing of the Beaver Dam Mine ore being processed at the Touquoy Mine site, the Beaver Dam tailings will not be stored in the Touquoy tailings management facility, but instead would be permanently stored in the pit after the Touquoy gold deposit has been mined."

Mining at the Beaver Dam site is currently contingent on having the expired pit at Touquoy as the storage location for tailings from Beaver Dam. However, the Touquoy pit is not permitted for disposal of tailings from Beaver Dam, nor is there a request to the Province of Nova Scotia to do this. **The proponent should describe as an Alternative Means how tailings from Beaver Dam could be managed at the Beaver Dam site.** Failure to describe this means the Beaver Dam EIS is incomplete, as it would not examine the impacts from a possible scenario in which Touquoy is not permitted as a disposal site for Beaver Dam tailings.

3. The 2021 EIS Update Version 3 states that:

"The environmental effects of underground mining would be similar to those of open pit mining at the Beaver Dam Mine Site with the need for the infrastructure noted for the surface operation with a smaller disturbed footprint but likely a longer duration for ore extraction and overall project activities."

Ecology Action Centre disagrees with this unsupported statement. It stands to reason that open pit mines impact a larger area of land, wetlands, and water than underground mines – the open pits are surely wider and longer at the surface than an opening to an underground mine. **The proponent should provide an analysis of how large the opening for an underground mine would be relative to an open pit mine.** This could be a form of describing Alternative Means for the project. In fact, with underground mines, it is possible to dispose of much of the tailings in abandoned mine once extraction is completed ("backfilling" of tailings, see this NRCan resource for basic explanation), so examining an Alternative Means of mining should also result in describing an Alternative Means of disposing of tailings.

4. The 2021 EIS Update Version 3 states that:

"Historic tailings will be transported off site and disposed of in the Touquoy mined out pit."

Once again, this use of the yet-to-be-exhausted Touquoy pit is not yet permitted, and this use has not been applied for. **The proponent should describe an Alternative Means of deposing of historic tailings from Beaver Dam that does not use the Touquoy pit.**

Fish Habitat Destruction

In the document "Beaver Dam Mine Project Responses to the Information Request, Round 2" the proponent states that destruction of fish habitat will be "offset" by measures to be taken on the Musquodoboit River to create habitat. This river is 14km away, in a different watershed, and has a different fish community (see Table CEAA 2-07-4), even though it is a potential restoration river for Atlantic Salmon. **The proponent should describe offset measure that could be taken in the Killag River to support the fish community that already exists there.**

Ecology Action Centre believes that the massive destruction of fish habitat that would take place as part of the construction and operation of the Beaver Dam project (and Haul Road) is unacceptable. In this time of catastrophic biodiversity loss, which actions in Nova Scotia has contributed to, a project that

would further decrease wildlife habitat on a large scale should not be permitted. Habitat loss and degradation is the primary cause of species loss globally. Ecology Action Centre advocates for the conservation and restoration of Nova Scotia's biodiversity. Our work towards this saving Nova's Scotia biodiversity would be impacted by the fish habitat destruction proposed in this project. The Killag River's fish biodiversity has been studied, and restoration efforts aimed at Atlantic Salmon, but benefitting multiple species, have been successful thus far. It goes against what Ecology Action Centre is trying to achieve if the Beaver Dam project is permitted to destroy functioning fish habitat that has been successfully improved.

Ecology Action Centre stands in solidarity with Nova Scotia Salmon Association and Atlantic Salmon Federation in calling for this project to not be advanced in part because of the unacceptable level of risk and actual damage it would cause towards Atlantic Salmon and other fish species in a river where habitat restoration is being achieved.

Haul Road

The proponent should compare the relative impacts on wetlands for each of the alternate sections for the Haul Road (for New Construction sections only).

In the maps of Beaver Dam Mine Project 2021 EIS Update Version 3, the proponent outlines the borders of the Project Area along the Haul Road. **The proponent should provide an explanation of how the width of the boundary was determined.**

Infrastructure Failure

In Section 2.6.1.4, the proponent writes that "failure should not occur without being acted upon by extreme natural causes, such as a hurricane or earthquake, or human error." There is concern of the likelihood of infrastructure failure given that Nova Scotia is on the path of hurricanes and post-tropical storms; because of climate change, the most recent hurricane seasons in the Atlantic Ocean have been more active than normal, and predictions state future seasons will be increasingly active. **The proponent should provide a detailed discussion about the risk of infrastructure failure due to an increase in effects of climate change.**

Maps

Several of the maps created by McCallum Environmental Ltd. have no name for "Drawn By" or "Reviewed By" in the information box about the map (instead they have XX). **The proponent should track down who created each map, and confirm if maps were reviewed.**

Haul Road map (Figure 2.3-1): **The proponent should add to the legend the roads or trails in red dotted lines on the map.**

"A new section of road (approximately 4.0 km) constructed to the same design standards through a greenfield environment will also be required between the Beaver Dam Mines Road and the existing Moose River Cross Road"

The proponent should provide a map of these roads (they are not shown in Figure 2.3-1).

Plant Communities

The 2021 EIS Update Version 3 states: "None of the plant communities found in these wetlands were found to be regionally or provincially rare in either the Beaver Dam Mine Site or the Haul Road." **The proponent should name and describe the ranking system used for comparison to determine the relative regional or provincial rarity of wetland plant communities.**

Reclamation

The 2021 revised EIS states that: "Ultimately the land will be returned to conditions similar to its original state as a natural woodland and wetland habitat used for recreation and forestry. The existing conditions at the site have been previously described as being in a disturbed state in many areas and therefore improvements at the site will be realized through the reclamation activities proposed"

The proponent should describe which improvements from the disturbed state will be realized through reclamation. Will improvements be linked to VC that were damaged as a result of the project? Also, the statement of conditions being in a

"disturbed state in many areas and therefore improvements" would be made at the site is in conflicted with a different statement in the EIS that the vegetation community of many wetlands are moderate to high integrity. **The site may be "disturbed," but will the proponent be able to improve upon the moderate to high integrity of many of the wetlands?**

Unplanned Explosive Events

The 2021 EIS Update Version 3 states: "An unplanned explosive event is limited to the site preparation and construction, and operation and maintenance phases of the Project. Explosives will be supplied by an off-site contractor and there will be no requirement for an on-site magazine." This statement seems to say that unplanned explosive events could not take place during operations because explosive would be stored off-site. However, multiple maps (e.g. Figure 1.2-2) shows Explosive Storage next to the river. **The proponent should describe the potential impacts of unplanned explosive event at the explosive storage site next to the Killag River.**

VC Potentially Affected

i) Physical and Cultural Heritage
A settling pond failure could impact the VC Physical and Cultural Heritage. Specifically, it could impact the Killag River and archeological sites along it. Table 5.8-1 does not include this VC but should.

ii) Avifauna
The 2021 EIS Update Version 3 describes using a bird deterrent program in several situations, including to reduce the chance of birds nesting in wetlands where recommended setbacks from bird habitat (including wetlands) cannot be maintained. **The proponent should describe how bird deterrent programs would affect Mi'kmaw hunters' hunting of birds, including bird species not targeted by the bird deterrents (e.g., grouse).**

iii) Terrestrial Fauna - Lichens
From the 2021 EIS Update Version 3: "Three locations of boreal felt lichen were confirmed during field surveys within Wetland 29 on May 8, 2015, as discussed in Section 6.13.4.3 and shown on Figure 6.13-2A. However, its location is beyond the PA and as such, impacts are not expected as a result of the Project. A follow

up survey conducted in the fall of 2016 determined that all three thalli were no longer present. This absence was reconfirmed on December 4, 2017. Infrastructure micro-siting has increased the distance between Project infrastructure and Wetland 29 (wetland and phorophyte critical function zone) as per the Amended Recovery Strategy for boreal felt lichen (ECCC, 2018). Wetland 29 was identified as a WSS based on historical presence of boreal felt lichen discussed above under Identification of Exceptional Features." This finding may provide evidence that activities that occurred too close to the three locations of Boreal Felt Lichen caused it demise. **The proponent should investigate this since it provides an opportunity for the proponent to not perpetuate the activities that may have killed these thalli (e.g., removal of trees in the wetland associated with the lost thalli).**

Research on Boreal Felt Lichen has found that forestry and other activities within 500m thalli impact the lichen (Cameron & Bayne, 2021. Identifying lichen-rich areas in Nova Scotia. Proceedings of the Nova Scotia Institute of Science 50 (2): 227 – 231). The Canadian Recovery Strategy for Boreal Felt Lichen describes the critical function zone (a component of Critical Habitat) for Boreal Felt Lichen as an area 500m around the lichen. Therefore, Ecology Action Centre strongly advocates that no alteration of forest or wetland within 500m of Boreal Felt Lichen, and supports designation of Wetland 29 as a WSS. There should be no direct or indirect impact to Wetland 29.

Blue Felt Lichen (Nova Scotia's provincial lichen) may be strongly associated with a nearby wetland when it is found close to one. As such, wetlands with Blue Felt Lichen in close proximity should be designated WSS, and should not have any impacts. **The proponent should ensure that Wetlands 1 and 61 are considered WSS in addition to WSS that are designated because of Blue Felt Lichen observations *within* the wetland.**

"The impacted areas of these Wetlands 14 and 17 do not contain occurrences of blue felt lichen. A mine road will bisect the western end of Wetland 14. The blue felt lichen occurrences are within the eastern side of this Wetland 14 and there is no planned development within 100 m of these occurrences. Wetland 205 will be partially directly impacted by the NAG waste rock stockpile, including the area that contains one occurrence of blue felt lichen. As avoidance of this wetland is not practicable (Section 6.8.8.1), translocation of the blue felt lichen (detailed in Appendix P.6 [Preliminary Lichen Mitigation and

Monitoring Plan]) is proposed, to mitigate impact to this species." The Ecology Action Centre does not agree with this approach. Blue Felt Lichen is present in Wetlands 14 and 17, and these are consequently WSS. It is not acceptable to divide up wetlands into "sides," and make the assumption that alterations to one "side" will not adversely affect the remainder of the wetland. The wetlands are functional units in their entirety. **The proponent should not alter Wetlands 14 and 17.**

Additionally, there is no peer-reviewed science to support that there are no negative impacts to translocating Blue Felt Lichen in Nova Scotia. Until there is, translocation should not be an acceptable form of mitigation.

iv) Terrestrial Fauna - Mainland Moose
The proponent should discuss how the proposed project's construction and operation interact with Mainland Moose critical habitat, which is described and mapped in the Recovery Plan for the Moose (*Alces alces americana*) in Mainland Nova Scotia (2021).

The 2021 revised EIS states that:

"Considering the mobility of mainland moose and the presence of other unimpacted foraging habitat within the Beaver Dam Mine Site and Haul Road (e.g., wetlands surrounding Crusher Lake and Mud Lake), and Local Assessment Area (LAA) and Regional Assessment Area (RAA) (Section 6.8.7.2). Wetlands 56, 206 and 210 were not determined to be WSS."

This perpetuates the assumption that Mainland Moose can just move elsewhere when disturbed, or when their habitat is degraded or lost. **The proponent should provide evidence that Mainland Moose exhibit this behaviour and are not negatively impacted by it at the population level.** In fact, there is evidence that Mainland Moose have moved away from some parts of their historic range within Nova Scotia due to habitat degradation and loss in those areas. For example, concentrations of the remaining Mainland Moose are now in areas that do not provide optimal habitat, but rather they are now found in the areas that are the least covered in roads in Nova Scotia. Roads negatively impact Mainland Moose directly and indirectly. "Mobile" Mainland Moose are not simply able to move away from the Beaver Dam and Haul Road areas to "unimpacted foraging habitat." The habitat in those "other" areas are already

degraded by roads and are maybe even less suitable for Mainland Moose than the present-day Beaver Dam and Haul Road sites.

Wetlands

Almost a quarter (i.e., 24%) of the total Beaver Dam Mine Site Area is made up of wetland, and 13% of the total Haul Road area. Within the Beaver Dam Mine Site 117 wetlands were identified, and 121 wetlands were identified along the current Haul Road layout. The total area of wetland within the Project Area is 166 hectares, of which, 96 hectares are expected to be directly impacted (i.e., 73 hectares of expected direct wetland impacts within the Beaver Dam Mine Site, 23 hectares of expected direct wetland impacts along the Haul Road).

Globally, over 64% of wetlands have been lost due to human activity since 1900, and as we lose wetlands, we also lose their incredible benefits and services that they provide to both humans and the natural environment. A GPI Atlantic study (2000), on NS's water resource values wetlands provide an estimated $7.9 billion worth of benefits in ecosystem services to Nova Scotians annually. In addition, a recent study on Nova Scotia wetlands found that, "the value of wetlands is roughly $124-$373 ha-1 yr-1, and ranges from $5,105 to $39,795 ha-1" and that "carbon sequestration may provide benefits to Nova Scotia on the order of C$10 billion" (Gallant, Withey, Risk, Cornelis van Kooten, & Spafford, 2020).

We have concerns about the direct and indirect impacts of the mining activities and how they will contribute to the continued loss and destruction of natural wetlands. The loss or destruction of wetlands can result in: degradation, fragmentation and loss of wetland habitat and local biodiversity, deterioration of water quality from lack of natural water purification, increased sedimentation and soil erosion, changes in natural hydraulic systems and disruption to the local watershed, reduction in water supply and water storage, higher threat of flooding, and reduction in groundwater recharge and higher vulnerability to droughts. Taking into account the aforementioned estimates of wetland loss, in addition to the indirect impacts that will be caused by this project, we do not believe these plans are appropriate or justified.

2.3.1.5 Waste Rock Storage Area

In the Beaver Dam Mine Project 2021 Environmental Impact Statement Summary, the proponent states that "The waste rock (NAG and PAG) stockpiles locations are within areas to avoid water courses, surveyed lichen and lichen habitat buffer zones and the crusher lake buffer zone (AMNS 2021)." As the impacts of climate change continue to intensify, Nova Scotia will experience more precipitation, and more storms (e.g., hurricanes) in both frequency and severity. **The proponent should answer the following questions: Considering these climate change impacts, how well are watercourses protected from stockpile runoff? During a heavy-rain event, where will the surplus runoff from the stockpiles drain?**

Similarly, the proponent describes that closure drainage will be directed towards the pit. However, given that the province will see more precipitation and heavy-rain events, there is concern about proper drainage and the water levels in the pit. **The proponent should provide information about how drainage and water levels will be monitored. How will leakage or overflow be avoided?**

The proponent also writes that "Stockpiles are also sited to minimize disturbance of surveyed wetland area." **The proponent should provide a description of what types of minimal disturbances from the stockpiles are possible to this wetland area.**

2.5 Project Activities

In the Beaver Dam Mine Project 2021 Environmental Impact Statement Summary (section 2.5.1.1), the proponent states that, "development of the mine site will cause direct and indirect impacts to wetlands mostly within the construction phase of the Project. Direct impacts will be associated with clearing, grubbing, infilling and development of the mine and its associated infrastructure." There is concern regarding the loss and destruction of wetlands that will take place over the life of the project.

In the document titled "Beaver Dam Mine Project: EIS Guidelines" it is stated that "Nova Scotia requires wetland class to be based on the Canadian Wetland Classification System (NWWG 1997) and descriptions in the *Nova Scotia Wetland Conservation Policy*" and that evaluations should include "notable site specific functions that the wetland may provide." In the *Nova Scotia Wetland Conservation Policy*, one of the key functions of wetlands is "storing and

sequestering carbon from the atmosphere, potentially moderating climate effects." Notably, this function is also highlighted in *The Federal Policy on Wetland Conservation* (1991). However, the proponent does not include carbon sequestration in their discussion on wetland function. This is not only a concern as carbon sequestration is an important wetland function as highlighted by the *Nova Scotia Wetland Conservation Policy* and *The Federal Policy on Wetland Conservation*, but also because the sequestered carbon in the wetlands can be released into the atmosphere upon alteration and destruction of these wetlands, thus contributing further to climate change. **The proponent should provide a detailed discussion on the ability of the wetlands at the project site to sequester carbon, including predictions of how much carbon will be released upon wetland alteration.**

Wetlands also have the ability to store very large amounts of water, which is particularly important in Nova Scotia especially when taking into consideration the increase in precipitation and storms that the province will experience as the impacts of climate change intensify. In addition, the *Nova Scotia Wetland Conservation Policy* states that important functions of wetlands are "maintaining watershed health by moderating flood waters," and "buffering the impact of storm water runoff and maintaining natural drainage regimes." Similarly, The *Federal Policy on Wetland Conservation* (1991) makes notes that the ecological function of wetlands includes "water recharge, providing…storage of freshwater for humans and wildlife" and "natural flood reduction and control, through water storage and retention." Despite this, a proper consideration of the water storage capacity of the wetlands within the Project Area is not included. **The proponent should provide quantitative information on the water storage capacity of the wetlands at the Beaver Dam Mine Site and Haul Road and include how much of this natural storage capacity will be lost due to wetland alteration. The proponent should provide information on how precipitation and water will be absorbed, stored and maintained once the wetlands have been altered. How will the proponent ensure that other nearby waterways, land, and infrastructure are not flooded or negatively impacted by the increase of water that could have otherwise been absorbed by the original wetlands?**

In Beaver Dam Mine Project 2021 EIS Update Version 3 section 6.8.6.2.2 Modelling Limitations and Assumptions, the proponent states that "wetlands play numerous roles in an ecosystem, and it is difficult to narrow those functions down for the purposes of a modelling exercise. However, for the purpose of this

modelling exercise it was necessary to do so." The functions of carbon sequestration and water storage capacity are very important ecosystem services that wetlands provide and should not be excluded from discussions around the proposed wetland alterations. Proper discussions of these two functions are especially important as the impacts of climate change in Nova Scotia increases as these ecosystem services contribute to the mitigation of, and adaptation to, climate change.

2.5.3.1 Site Description at Closure

In the Beaver Dam Mine Project Environmental Impact Statement Summary, the proponent writes that upon closure of the mine site, "the open pit will be allowed to fill with water to eventually form a lake with a wetland edge habitat." There is concern about the toxicity and safety of this lake and wetland. **The proponent should provide more detailed information about this lake and wetland, including how safe the water will be for both human and wildlife use. The proponent should draw upon examples of other open pit gold mines that were transitioned to bodies of water after the completion of extraction activities.**

In this section, the proponent also mentions that there will be wetland improvements. **The proponent should provide more information about this.**

It is stated that "the land will be returned to conditions similar to its original state as a natural woodland and wetland habitat used for recreation and forestry." **The proponent should provide more information about how the proponent conceptualizes "conditions similar to its original state." With regards to wetlands, do the retuned conditions include both size and function? How will the success of this process be evaluated? What are the improvements that will be made?**

Table 6.17-4: Summary of Residual Effects and Associated Significance for each Valued Component

In the Beaver Dam Mine Project Environmental Impact Statement Summary, the proponent indicates that the residual effects to wetland habitat and wetland hydrology include habitat loss and disturbance, and that the significance of these effects are not significant. **The proponent should provide a description of how "not significant" is conceptualized in this context. What would qualify as significant?**

6.8.1 Baseline Program

Wetland 59 was assessed as a potential WSS based on the observation of a female snapping turtle and nest. The current plans indicate that a complete alteration is proposed for this wetland. **The proponent should clarify plans for wetland 59 should it be classified a WSS.**

In addition, in Table 6.11-1 the proponent writes that "Clearing and construction will be limited within wetlands that could support snapping turtles during winter hibernation period." **The proponent should provide information on which wetlands within the project site have been identified as places that support snapping turtles during winter hibernation period. The proponent should describe how the proponent plans to limit construction in these wetlands, including what type of construction will be allowed.**

There is also concern for the other dozen wetlands outlined in Table 6.8-6 that are proposed to be altered either completely or partially that have observed SAR. While these may not be classified as WSS, the presence of the SAR further highlight the importance of this site for biodiversity and valuable habitat in Nova Scotia, the need to preserve the wetlands in the area, and the threat to wildlife and wetlands that this project poses.

6.8.1.1 Wetland Impacts

In the Beaver Dam Mine Project 2021 EIS Summary, it is written that "indirect impacts are a by-product of direct impacts associated with the construction activities, as well as potential indirect impacts to wetlands from mine operations (dewatering, blasting, and accidents)." **The proponent should provide detailed information about how the proponent plans to minimize risks of these indirect impacts.**

6.8.1.2 Potential Indirect Wetland Impacts

The Beaver Dam Mine Project 2021 EIS Summary outlines that indirect impact extents and magnitudes were reviewed to assess if hydrological changes will have potential impacts to wetlands beyond natural variability. **The proponent should provide more information about these reviews. In particular, did the**

reviews determine if hydrological changes will have potential impacts to wetlands beyond natural variability?

The proponent also describes plans to monitor potential indirect groundwater and flow reduction impacts, especially around wetlands where groundwater drawdown and flow reduction effects are anticipated. **The proponent should provide more information about the planned monitoring, including the frequency and duration of this monitoring.**

Table 6.8-1: Mitigation for Wetlands

In the Beaver Dam Mine Project 2021 EIS Summary, the proponent states that "topsoil will be salvaged and stored for use in site restoration where practicable." **The proponent should provide more detailed information including how the topsoil will be salvaged, where it will be stored and how the proponent contextualizes 'where practicable.' The proponent should provide an example where site restoration will not be practicable.**

The proponent plans to "minimize the rutting of wetland habitat by limiting the use of machinery within wetland habitat and use of swamp mats/corduroy bridges as required". **The proponent should provide more detailed information about what types of machinery will be used within wetlands and what the expected impacts of this are to the wetlands.** According to the *Off-Highway Vehicles Act* (1989) in Nova Scotia (Section 12) "No person shall operate an off-highway vehicle in or on (a) a wetland, swamp or marsh." There is concern that while off-highway vehicles are not allowed within wetlands, that machinery will be used and cause harm to the wetlands.

The proponent states that they will "conduct vegetation management (cutting and clearing) in or near wetlands and watercourses in accordance with applicable guidelines." **The proponent should provide information about which guideline are being used for this purpose.**

The proponent states that vehicles will be inspected regularly "particularly vehicles arriving from outside the PA. If necessary, cleaning will be undertaken at a designated cleaning station, away from wetlands and watercourses." **The proponent should provide more information about these vehicle inspections, including the frequency of inspections.**

6.8.4 Baseline Conditions

In Beaver Dam Mine Project 2021 EIS Update Version 3, the proponent writes that "it is important to note that open water within delineated wetland boundaries that could not be classified as an open water wetland as per the Canadian Wetland Classification System definition (NWWG 1997) has been removed from the calculation of wetland area (i.e., anthropogenically created waterbodies from historic mining operations (WL59))." However according to the Canadian Wetland Classification System (NWWG 1997) "in some situations, wetlands are created by agricultural activities, hydroelectric structures and through other human activities. Over time, these sites evolve into naturally functioning wetland systems and are classified accordingly. Constructed wetlands, such as those for habitat enhancement and wastewater treatment, are often included in the mapping of Canadian wetlands. However, they essentially lie outside the focus of The Canadian Wetland Classification System and are not included in this publication." While these types of wetlands may not be the focus of The Canadian Wetland Classification System, they can still be naturally functioning wetlands and thus should not be excluded. Furthermore, there is evidence throughout the Beaver Dam Mine Project 2021 EIS Update Version 3 that Wetland 59 is now in fact a naturally functioning wetland. In Table 6.8-2, the proponent lists Wetland 59 as "complex: coniferous treed swamp, emergent marsh, open water" with a total area of 65,304m2 (one of the larger wetlands at the site). In addition, Wetland 59 is highlighted as a possible WSS based on the observation of a female snapping turtle and nest. **The proponent should include Wetland 59 and any other naturally functioning wetlands in all wetland calculations and considerations.**

6.8.4.1.1 Watershed Characteristics

In Beaver Dam Mine Project 2021 EIS Update Version 3, it is written that "the functional assessments conducted for the 236 wetlands located within the Beaver Dam Mine Site and the Haul Road determined that the overall watershed condition of the nine relevant tertiary watersheds is in a relatively unaltered state." Given that the watershed conditions are relatively unaltered, it would be in the best interest of people, wildlife and the planet to leave these watersheds in this state especially in light of the climate crisis, biodiversity crisis

and issue of water scarcity. It is not worth risking long term, and possibly permanent, harms to these watersheds.

The proponent describes that "most buffer areas surrounding the wetlands are highly vegetated. These wetlands and buffers generally offer high quality wildlife habitat and good water quality functions….Ninety-five percent of all wetlands assessed were determined to provide moderate-high plant community integrity with a diversity of species generally composed primarily of native species characteristic of the wetland type." Taking into account that the wetlands assessed offer both high quality wildlife habitat and provide a moderate-high plant community integrity, it is very concerning that many these valuable wetlands will be altered either partially or completely, and threated by direct and indirect impacts from mining activities.

The proponent outlines that the wetlands "identified within the Beaver Dam Mine Site and Haul Road were classified as swamps and account for 68% and 64% of all wetlands, respectively. Swamps identified in the PA are consistent with swamp habitats observed throughout the province and are predominantly coniferous or mixed-wood treed swamps." In light of the fact that these wetlands account for a significant percentage of the wetlands in the Beaver Dam Mine Site, there is concern that the discussions by the proponent do not fully consider the important value of treed swamps. The results from a recent study "strongly suggest that forested wetlands are avian diversity hotspots and, as such, key habitats for bird conservation in Nova Scotia. Forested wetlands in general had more bird species, more individuals, and higher abundance of several species and guilds of conservation concern than mature and regenerating upland sites" (Brazner & MacKinnon, 2020). In another study on bird communities in forested wetlands in Nova Scotia, it was found that "of the 208 documented breeding bird species in Nova Scotia, [the researchers] found evidence (mainly singing males) that 95 (46%) were breeding in the 229 FWs [they] surveyed. Given that [their] surveys were restricted to a single visit at only two points within each wetland, this is no doubt a conservative estimate of the diversity of breeding birds that are using these habitats…..These results and other studies suggest that a large number of bird species depend on or at least utilize [forested wetlands] in Nova Scotia during the breeding season and that they may play important roles in the conservation of several at-risk species" (Brazner & Achenbach, 2019). However, despite their high value, these types of wetlands "are being converted to other uses at a higher rate in Nova Scotia than other

wetland types" (Brazner & Achenbach, 2019). These studies highlight the high value of these wetlands and the importance of conserving them.

6.8.4.1.3 Identification of Exceptional Features

In Beaver Dam Mine Project 2021 EIS Update Version 3, the proponent outlines that "portions of Wetlands 205 and 220 contain potential rusty blackbird breeding habitat, both of which contain discontinuous patches of open water" and that there have been historical observations of the species at these wetlands. The proponent also writes that "extensive field work was conducted in these wetlands in July 2019 and within Watercourse 21, which runs between the two wetlands, in August, November and December 2019 as a result of fish and fish habitat surveys (Section 6.9). Neither rusty blackbird nor sign of the species was observed in any of these surveys. It is possible that breeding rusty blackbirds have relocated. As a result, Wetlands 205 and 220 were not determined a WSS." **The proponent should provide detailed information about the extensive field work that took place.** In light of the fact that rusty blackbirds have been observed in this area and that breeding habitat is present, the proponent should apply a precautionary principle approach; these wetlands should not be altered. **The proponent should include a discussion of how the proponent will use a precautionary principle approach for these wetlands.**

Throughout section 6.8.4.1.3 Identification of Exceptional Features, the proponent discusses several other wetlands that were identified as possible WSSs. Similar to that of Wetland 205 and 220, in many of the cases, the proponent is of the opinion that they are not in fact WSSs. However, in the discussion around the potential WSSs, the use of a precautionary principle approach was not appropriately addressed. It would be fitting that a precautionary principle approach should be apply in cases where there is mixed findings regarding whether a wetland should be considered a WSS. These wetlands should not be altered. **The proponent should include a discussion of how the proponent will use a precautionary principle approach for the wetlands highlighted in this section.**

6.8.4.1.9 Plant Community

In the 2021 EIS Update Version 3, it is stated that "the overall integrity and quality of plants has been determined to be high in 46 of the wetlands identified in the

Beaver Dam Mine Site (39%) and in 58 within the Haul Road (48%). Vegetation and habitat integrity remain moderate to high in the majority of wetlands despite disturbances in land surrounding the wetlands within Beaver Dam Mine Site and Haul Road (i.e., historic mining, timber harvesting, trail/road networks)." The Ecology Action Centre believes that moderate to high integrity wetlands should be conserved instead of destroyed. These ecosystems are needed to adapt to climate change impacts, and provide habitat for species that need wetlands, at a time were a substantial proportion of wetlands have been lost elsewhere.

6.8.4.2 Touquoy Mine Site

In the 2021 EIS Update Version 3, Six wetlands were identified within the Touquoy Mine Site in 2006 as part of the EARD process, five of which were assessed. One of these wetlands was deemed to not be affected from Project development and therefore was not evaluated (CRA 2007a).

A total of 52 wetlands were identified within the Touquoy Mine Site (including the western bypass road) during field studies by MEL biologists from 2015 to 2017. These wetlands were identified for wetland permitting process and functional assessments were completed to support permitting."

The proponent should analyze the differences between wetland location and extent predicted and field-verified in 2007, and the actual location and extent of wetlands at the site since the Touquoy site was built (most recent wetland assessment at the site is 2017). This would give a baseline of impacts from the Touquoy mining and should be used to predict potential future impacts from transport, processing, and deposition coming from the Beaver Dam site. This analysis would help support the statement that bringing Beaver Dam ore to Touquoy for processing and tailings management will not further impact wetlands at the Touquoy site.

6.8.6.2.2 Modelling Limitations and Assumptions

In this section, the proponent writes (and underlines) the following statement: "The analysis performed at the LAA and RAA levels underrepresent predicted suitable wetland habitat, making the comparative area of impacted suitable wetland habitat in the Beaver Dam Mine Site less than the results of the

modelling exercise suggests." This statement is unclear. **The proponent should provide further details to better clarify this statement.**

Additional Comments on statements in the Environmental Impact Statement Summary October 2021

1. From the Environmental Impact Statement Summary October 2021:

"The Proponent has designed a project that is in line with the intent of NSL&F for efficient use of mineral resources and to "*promote the concepts of environmental responsibility and sustainable development, stewardship of the mineral resource sector, and integrated resource planning*."

The proponent should describe how mineral resources are being efficiently used, given that the ore concentrations in the mineral deposited being mined is very low – lower than historic gold mining concentrations. The proponent response should examine how project design promote the concepts of environmental responsibility, stewardship of the mineral resource sector, and integrated resource planning. The response should examine how the gold will be efficiently used in Nova Scotia given that "gold is used primarily for jewelry and as a storage form of wealth with China and India forming the majority of the demand" (Environmental Impact Statement Summary October 2021).

2. From the Environmental Impact Statement Summary October 2021:

"All phases of the Project will provide employment opportunities for local residents and Indigenous Peoples, as well as provide tax revenue for the municipal, provincial, and federal levels of government."

The proponent should describe mechanisms that they will use to ensure all phases of the Project will provide employment opportunities for local residents specifically, and Indigenous People specifically.

3. From the Environmental Impact Statement Summary October 2021:

"It is anticipated that additional labour force will be required during construction and a smaller, but still significant, labour force will be required during operation."

The proponent should describe how the labour force required during construction is of a significant magnitude compared to other actual or potential construction projects in Nova Scotia.

4. From the Environmental Impact Statement Summary October 2021:

"Indirect employment will be generated by the Project through the use of external contractors and suppliers."

The proponent should provide example of indirect employment (e.g. use of external contractors and suppliers") that was generated by the their Touquoy project, and describe additional indirect employment (if any) that the Beaver Dam project would provide.

5. From the Environmental Impact Statement Summary October 2021:

"Tax revenue in the millions of dollars per year will be generated through corporate income taxes paid by the Proponent, as well as its contractors and suppliers."

The proponent should describe in more detail the tax revenue that will be generated as a result of the Beaver Dam project. In 2017, 2018, and 2019 the proponent did not pay any direct taxes (not royalties or employee's income taxes) to the provincial or federal government (Halifax Examiner, 2021). Would the proponent begin paying taxes with the commencement of the Beaver Dam project?