

# The Nova Scotia Salmon Association



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## **Re: Response to Full Revised Environmental Impact Statement Atlantic Gold Corporation, Beaver Dam Mine Project**

The Nova Scotia Salmon Association is a multi-generational collection of passionate anglers and concerned conservationists representing the interests of over 25 river associations and their members, and we are the regional council of the Atlantic Salmon Federation. Since 1963, we have organized anglers to be the champions of anadromous salmon and trout in Nova Scotia – protecting the fish, their native waters, the surrounding lands, our privileges as anglers, and the importance of our relationship with wild species in our home province. We are also an internationally recognized leader in watershed stewardship, innovative aquatic habitat restoration, and conservation science. We have been providing training and oversight to aquatic restoration projects in Nova Scotia for 25 years.

As such, we are writing in response to the full revised Environmental Impact Statement (EIS) for the proposed Beaver Dam Mine project. In our submission of comments on round one of the environmental impact study, dated July 25, 2017, we outlined four major concerns with the project. The revised EIS has added a great deal of information regarding the proposed work, as detailed in the 4000+ pages of documents. This information partially addresses some aspects of the concerns that have been raised by the NSSA and our partners. However, the fundamental

issue remains, this proposed project represents a threat to a world class watershed restoration project that we have been working on with numerous partners for more than 20 years. In addition, we contend that the company has not made genuine progress toward reducing the potential for significant negative impacts on the area. The revised EIS continues to raise concerns that we feel have not been addressed. Below we note **six major concerns**.

### **CONCERN #1: THE WEST RIVER RESTORATION PROJECT IS TOO VALUABLE TO ACCEPT ANY LEVEL OF RISK**

The Nova Scotia Salmon Association and its partners have a large stake in the watershed where the Beaver Dam Mine is proposed. The Beaver Dam Mine, should its development proceed, would be situated in the heart of one of the largest, most innovative, and most successful aquatic ecosystem restoration initiatives in Canada. **Industrial development of this watershed would jeopardize more than two decades of hard work, massive investment, and a pronounced, yet still fragile recovery of Atlantic salmon – a COSEWIC assessed species at risk.**

The West River Acid Rain Mitigation Project is the flagship restoration project for the province of Nova Scotia, serving as the blueprint and testing ground for large aquatic restoration projects. It has drawn national recognition and international attention. A solution-based program, the project demonstrates that the legacy of acid rain can be addressed, and the recovery of Southern Upland Atlantic Salmon is achievable. This multi-faceted project has produced a measurable population response to recovery actions, and both a case study and a model for ecosystem-based recovery of biological diversity and species at risk.

Since 2001, the salmon conservation community has focussed its efforts on priority watersheds with the most likelihood of recovery, by addressing the most significant threats – the legacy of acid rain, thermal conditions, and freshwater reproduction capacity. The West River watershed, in its entirety, is the focus of more than two decades of sustained and expanding effort to restore Atlantic Salmon and the ecosystems they depend on.

The first in-stream lime doser began operating in 2005 on the upper main West River (45.054, -62.801), 30 km upriver of the Sheet Harbour estuary and 14.5 km from the confluence of the Killag River, the largest tributary to the West. The proposed Beaver Dam gold mine would be situated immediately adjacent to our second doser on the Killag River (45.063, -62.705). Installed in 2017, this doser treats an additional 16 km of Atlantic Salmon spawning and rearing habitat within the Killag River and contributes to the restoration of water quality below the confluence of the Killag and West Rivers. Combined, these two lime dosers restore water quality for over 70% of the known high-quality Atlantic Salmon habitat in the West River watershed by raising river pH to 5.5 or above.

In addition to the operation of North America's only automated lime dosers on a salmon river, this ongoing restoration program involves the following expansion projects:

- aerial application of lime using helicopters to treat smaller sub-catchments in the watershed,
- large-scale restoration of physical aquatic habitat that had been modified by past centuries' log driving activities,
- directed small-scale physical habitat restoration such as the removal of fine sediment in the Killag River (using Sand Wand technology)
- removal or improving barriers to fish migration, and
- trialing of novel approaches to the enhancement and creation of coldwater refugia to protect salmon and trout during the heat of summer

Further, effectiveness monitoring is conducted annually, including both adult and juvenile fish assessment facilities, widespread electrofishing surveys, salmon redd (spawning nest) surveys, and extensive water quality testing.

### PROJECT INVESTMENT

The NSSA and more than 20 partners – including First Nations, private industry, charitable ENGOs, academic institutes, and local conservation groups – have so far fundraised \$6M for direct conservation and restoration work within the West River watershed. Planning began in the late 1990s with the formation of an advisory committee and the collection of preliminary water

quality data, followed by the commissioning of a feasibility study by Norwegian experts, which was completed in 2001. Following the development of a business plan, the project commenced with installation of the first lime doser in 2005. The money needed to hire experts, complete baseline monitoring, commission, install and operate the first lime doser on the main West River was fundraised almost entirely privately from grassroots fundraising such as charity dinners, auctions, golf tournaments, raffles, and donations from supportive individuals within the angling and business communities. The volunteer commitment and contribution has also been enormous.

### PROJECT RESULTS: RECOVERY

With the operation of the West River lime doser, this program has successfully increased the production of juvenile Atlantic Salmon in the West River system. Annual monitoring data suggest that the abundance of juvenile salmon in the limed section of the river has increased three-fold from approx. 3,000 smolts (sea-bound juveniles) produced per year to over 11,000 smolts per year. Meanwhile, salmon in untreated sections of the watershed remain at low abundance. This is the only monitored population in Atlantic Canada and the Northeast USA to experience population gains of this magnitude. **This is, arguably, one of the most important Atlantic Salmon conservation initiatives in Canada.**

The early and sustained response of the Atlantic Salmon population in the West River encouraged the NSSA and its partners and inspired large investments from government and private sources to continue to expand restoration work for full watershed recovery. Since 2015, the West River Project has attracted large investments from the Atlantic Canada Opportunities Agency, Fisheries and Oceans Canada, and the Province of Nova Scotia to extend restoration efforts to more areas of the watershed – including a lime doser to treat the Killag River, an aerial catchment liming program for Keef and Tent brooks, and main stem river and estuary habitat restoration.

### *RESEARCH AND DEVELOPMENT*

In addition to direct restoration action, the NSSA and our partners have fundraised more than \$2.5M of additional monies to support extensive ancillary research programs that leverage the

conservation work that has occurred within this watershed, such as student-led graduate projects including:

- biotelemetry projects that tracked hundreds of individual Atlantic Salmon and Brook Trout in this watershed;
- assessments of Atlantic Salmon physiology in relation to the acid rain mitigation work;
- pioneering research on individual personality traits of juvenile salmon and how our acid rain mitigation work can restore the natural behaviour of fish;
- forestry benefits of aerial catchment liming;
- water quality benefits from helicopter liming;
- novel ways to identify thermal refugia – areas where cold water infuses into the river and provides critical relief from our ever-warming summers (Notably, the Killag River appears to have some of the highest density of these important areas); and
- innovative restoration methods.

This research, along with all the monitoring infrastructure on this river, have led to the construction of a significant dataset which is geared toward the long-term assessment of freshwater restoration projects. Such long-term assessment allows for adaptive management and is essential in society's quest to be better stewards of our planet<sup>i</sup>. Should the gold mine introduce additional variability to the watershed, or alter the trajectory of ecosystem recovery, all the value in this significant research project will be lost.

### *REGIONAL RECOVERY PLANNING*

Most recently, based on the success of the West River project, and our track record of leading large-scale environmental projects, the NSSA is engaged in a multi-year initiative to develop strategic, long-term stewardship plans for the West River, the St. Mary's River, and six other watersheds along the Atlantic Coast of Nova Scotia. This work is funded by the Canada Nature Fund for Aquatic Species at Risk, which recognizes that the West and St. Mary's Rivers

are two of the most ecologically important watersheds for Atlantic Salmon recovery in Eastern Canada. We cannot imagine two locations less suited for extractive projects such as gold mining.

It is important to reiterate that the West River project is a world class restoration and research program, and that the gold mine could have major impacts on fish conservation efforts in Eastern Canada. Given the effort and success to date, this proposed watershed-altering and risky open-pit gold mine would deal a significant blow to the morale and momentum of volunteer groups working toward the recovery of our renewable resources and the ecosystems on which they depend. **The generic bare-minimum preventative measures outlined in the revised EIS do not reflect the seriousness of the potential for negative impacts to this long-standing and critically important project.**

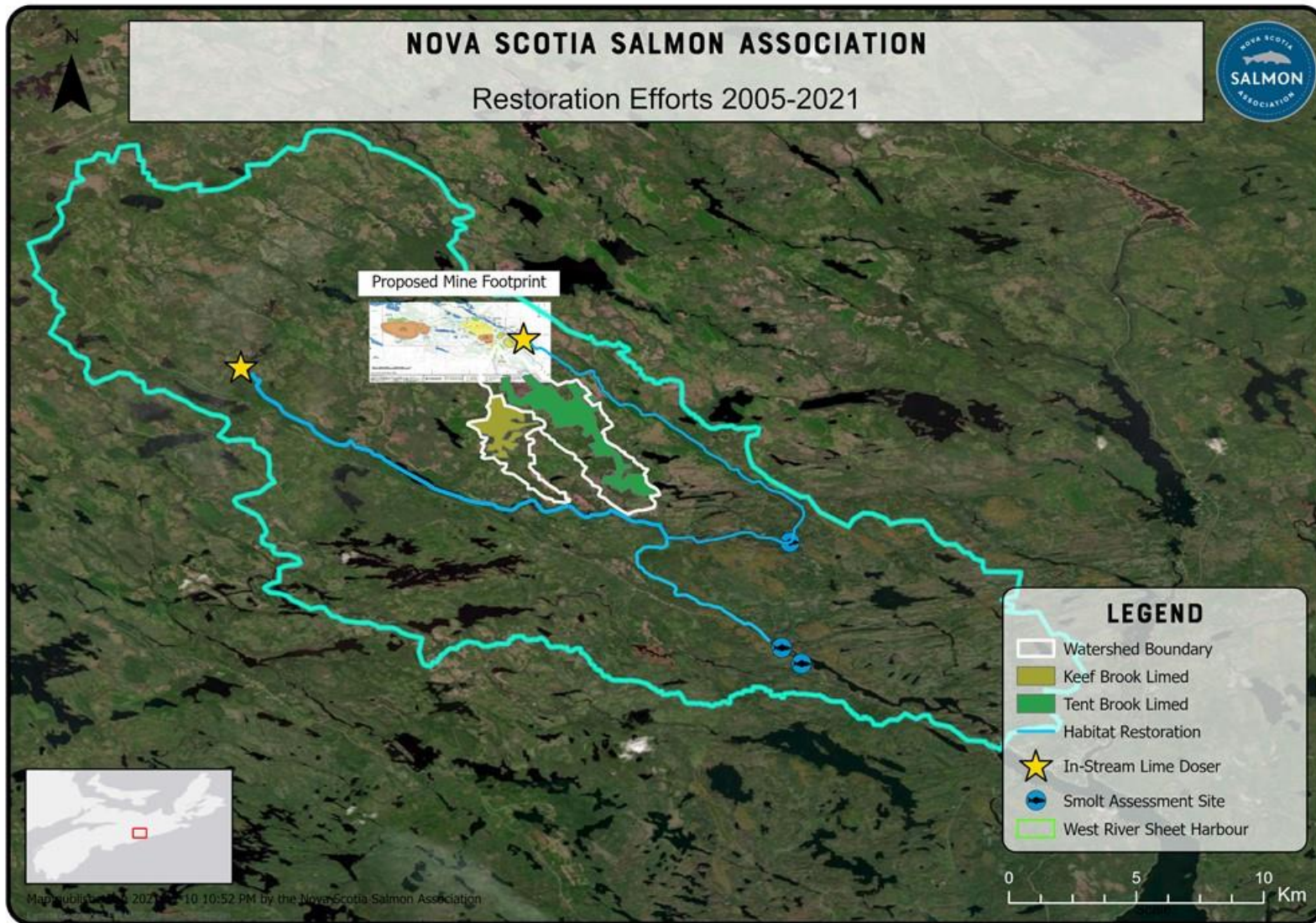


Figure 1 – Map of the West River Sheet Harbour watershed, showing the location of lime dosers, helicopter catchment liming, instream habitat restoration, and smolt monitoring – with proposed mine site plan superimposed (to scale) Not shown (to minimize clutter) are the >3 dozen sites throughout the watershed where monitoring of water quality, population densities (by electrofishing), temperature, and other parameters occur.

**CONCERN #2: THE REVISED EIS DOES NOT ADEQUATELY CONSIDER THE WATERSHED DOWNSTREAM FROM THE MINE FOOTPRINT**

As noted in the NSSA comments on round one of the EIS in July 2017, we had concerns regarding the rigor and accuracy of the fish assessment. To the credit of the proponent, this section of the EIS has improved, with more and better background assessment. The findings now echo our concerns that there are more fish in the mine footprint than originally discussed, and that Atlantic Salmon are indeed present in Cameron Flowage/Killag River. However, we continue to have concerns regarding fish populations downstream of the proposed work. This aspect of our 2017 submission has not been addressed. Based on the definition of the spatial boundaries for effects for surface water (Sec. 6.7.7.1), additional focus should be placed on the regional assessment area. Clearly, any impacts to water quality and quantity will influence the fish that reside downstream of this site. There is 16 linear km of excellent salmon habitat in the Killag River, 7 linear km of very good (and recently restored) salmon habitat in the main branch of the West River below its confluence with the Killag River, and a large fluvial lake below this. In total, the downstream area that could be directly impacted by inputs to the Killag River at Cameron Flowage represents approximately 70% of the known high-quality salmon habitat in the West River watershed, and it represents 81% of the habitat that has been restored by the Nova Scotia Salmon Association and our partners.

*TEMPERATURE INCREASE UNACCEPTABLE*

As acknowledged by the proponent, one anticipated impact to the downstream habitats is that the water discharging from the work site during the end-of-mine period will raise the Killag River water temperature by an average of +0.5°C (Appendix P.5, Sec. 4.15). A half a degree increase will be a major impact to the Killag River – the most important tributary in the West River watershed, providing the best cool water habitat that is available to this population of Atlantic Salmon. Brook Trout experience thermal stress beginning at 20°C, whereas Atlantic Salmon experience thermal stress beginning at 23°C. During summer, large aggregations of sea-run and resident Brook Trout migrate to the Killag River to avoid the high temperatures elsewhere in the watershed. Raising the water temperature in this important tributary would have a significant impact on these populations of fish, including increased metabolic demands,



increased disease and parasite loading, altered interspecific competition, and decreased growth - all of which affect survival, reproductive fitness, and ultimately the viability of these populations. International targets are to limit global warming to 1.5°C<sup>ii</sup>. In this scenario, researchers predict that there will be significant negative impacts on Atlantic Salmon and Brook Trout. Adding an additional 0.5°C of warming to the nearly inevitable climate-induced warming does not make for sound climate resiliency planning for any Nova Scotia freshwater systems. This is even more critical for the Killag River, which we classify as some of the premier cool-water habitat in this watershed and regionally.



Figure 2 – Collage of various aspects of the West River restoration project.

**CONCERN #3: THE PROPOSED QUARRY PIT IS SIMPLY TOO CLOSE TO THE KILLAG RIVER (CAMERON FLOWAGE).**

As part of the NSSA's 2017 comments regarding round one of the Beaver Dam EIS, we expressed concerns regarding the proximity of the mine to the Killag River/Cameron Flowage and the NSSA's Killag River lime doser. This crucial component of the entire restoration project is located just 80m from the proposed Beaver Dam mine property, just 275m from a till stockpile, and only 600m from the edge of the quarry pit where blasting will occur. Our concerns focused on water quantity and quality in the Killag River, with emphasis on effluent from the mine (via settling pond release or overland flow) and the potential for dewatering of the Killag River.

*RISK OF UNEXPECTED FRACTURING IMPACT TO HYDRAULIC CONNECTIVITY*

This revised EIS makes significant additions of hydrogeological modelling and predictions about how groundwater and surface water is likely to be altered by the mine. The EIS reports that local slug testing shows only moderate hydraulic conductivity in the overburden, and shallow and deep bedrock (Appendix P.4, Sec. 2.3.1), suggesting that hydraulic connectivity between the pit and river would be only moderate. However, despite our limited expertise in the field of geomorphology and hydrostratigraphy, we have identified what we determine to be a continued lack of certainty and insufficient consideration regarding the potential for unexpected fracturing in the land proposed to separate the mine and Cameron Flowage. We contend that the geological structure in the area between the proposed quarry pit and the Killag River (Cameron Flowage) may be less stable than described in the EIS, and that the geological models that rely on core sampling from across the footprint may not be directly transferable to the land that will act as the barrier between the river and proposed work. The rationale for our concern is that the area is highly dynamic, with the Mud Lake Fault and Cameron Flowage Fault intersecting near the mine site, and this whole complex is situated on top of a large anticline. All of this introduces geological variation and boundaries between distinct geological formations – it is a dynamic area. Presumably, much of the groundwater flow is expected to follow dominant fault trends and/or boundaries of dynamic areas.

Our concern is that this dynamic nature of the area may result in unexpected fracturing and thus unexpected hydraulic connectivity between the river and the quarry pit, particularly following disturbance such as blasting.

For an analogous example, we need only look at the situation which occurred at the Atlantic Gold Touquoy mine site. There, the results of slug testing revealed hydraulic conductivity was moderate and comparable to that reported for the Beaver Dam site (Appendix I.4, Sec.3.2.2). Following mine construction, exposed faults with groundwater seepage were observed. Atlantic Gold suggests that there was not strong hydraulic connectivity between the pit and the Moose River, but this was attributed to the fortunate circumstance that faults were located on the pit walls furthest from the Moose River. In the case of the proposed Beaver Dam pit, we may not be so fortunate, given the dynamic nature of the geology nearest the river. If significant faults are revealed in the pit wall nearest the Killag River, water seepage would act to drain the river at an unknown rate. Further, mitigating this would be difficult as the water recovered from the quarry pit could not be rapidly pumped back into the Killag River because of the requirement to treat this water prior to release, via settling ponds and other methods.

### *CUMULATIVE IMPACTS OF BLASTING ON FISH*

We are also concerned that the issue of explosives and blasting failed to be adequately addressed on two points: First, the EIS report does not clearly define the size of the detonation charge that will be used during blasting. This is important, as the DFO guidelines<sup>iii</sup> cited in the EIS and other guidelines focusing on salmonid fishes<sup>iv</sup> have determined the minimum set-back distance based on detonation charge. For example, at a 100kg charge, the minimum setback from spawning habitat is 150m. Based on NSSA electrofishing and eDNA survey data,<sup>v</sup> and the conclusion on the fish assessment portion of this revised EIS, Atlantic Salmon, Brook Trout, and other sensitive species are indeed present in the adjacent Killag River, with suitable spawning habitat nearby.

Secondly, the EIS considers only the acute or direct lethal effects of blasting on fish but does not address the fact that operations are intended to occur 365 days per year and thus the potential

for sub-lethal behavioural responses of fish to the frequent blasting. Noise has the potential of disrupting normal fish behaviour. The cumulative effect of continual and frequent blasting on fish behaviour is not well understood, and the available guidelines do not address this topic. It is reasonable to assume that fish would exhibit an avoidance response to such frequent blasting, considering that acoustic and pressure-based methods are used to deter fish from areas of concern (e.g., the intakes of dams)<sup>vi</sup>. Further, repeated or prolonged exposure to continuous noise, such as the proposed blasting, rock handling, and trucking, can also bring about hearing loss. A phenomenon known to audiologists as “threshold shift” is when exposure to damaging noise raises one’s acoustic threshold by a few decibels (dB). For fish and other wild animals, each additional dB can mean a loss of vital information, such as the detection of approaching predators or cues to alert fish to nearby prey. It is not clear how much habitat might be affected by blasting, but any behavioural deterrent of fish in the Killag River, or loss of fitness associated with reduced predator avoidance or foraging success, would reduce the productivity of the river and thus the viability of this important population of Atlantic Salmon and other fishes.

#### SETBACK INADEQUATE

We maintain that the minimum setback from the Killag River (only 50m) is far too small, considering the importance of this river to the recovering but still-fragile Atlantic Salmon population within it. By contrast, the minimum setback from surveyed locations containing the endangered Boreal Felt Lichen is 500m (Sec. 2.7.1). The Nova Scotia Salmon Association is bewildered how this setback for Boreal Felt Lichen can be a magnitude of order larger than the proposed setback from a population of Atlantic Salmon that is critical to the Southern Upland designatable unit (DU) of Atlantic Salmon – a DU that has been recommended to be listed as endangered by COSWEIC and DFO’s own recovery potential assessment. The proposed mine is simply too close to the river.

#### **CONCERN #4: THE SPATIAL EXTENT OF THE PROPOSED WORK IS TOO LARGE AND UNNECESSARILY ENCROACHES ON ADJACENT SUB WATERSHEDS.**

A common first principle in the management of environmental risk is to limit the spread of activities to as few distinct environments as possible. Following this principle, the footprint of the mine, should the project proceed, clearly needs to be restricted to the Crusher Lake sub-watershed, and those sub-watersheds subject to road construction. We see no need to encroach upon adjacent sub-watersheds such as Paul Brook, and more importantly, Tent Brook. The placement of the organic stockpiles has changed from the location originally proposed in round one of the EIS and is now situated in the headwaters of Tent Brook, which is the location of a large-scale restoration project. In partnership with the Province of Nova Scotia, Fisheries and Oceans Canada, Dalhousie University, Northern Pulp, and several other partners, the NSSA has been liming the forested catchment of Tent Brook to recover this area from the legacy impacts of acid rain. Since 2019, we have restored 274 hectares of headwater forested land by applying > 2700 metric tonnes of powdered limestone to the catchment via helicopter. The 2019-2021 cost to complete this work has been \$924,000, including in-kind contributions of machinery, materials, and personnel. In 2022 we intend to complete an additional 115 ha of restoration at a projected cost of \$380,000 (see map below for location of proposed organic stockpile relative to ongoing helicopter catchment liming).

### *PROPOSED STOCKPILE LOCATION*

This work has already begun to improve the water chemistry of Tent Brook, and we have evidence that catchment liming is dramatically improving soil and tree health. We have documented Atlantic Salmon in the lower portions of Tent Brook. Further, extensive thermal mapping in the West River watershed demonstrated that Tent Brook provides some of the highest quality cold water habitat in the region – presumably the main reason for a healthy Brook Trout population in this stream.

In a meeting with Atlantic Gold in 2020, the NSSA learned that the company intends to move the organics stockpile into the Tent Brook watershed. At that time, we described the work that was ongoing in this area and asked that the placement of this stockpile be reconsidered., We still hope to proceed with planned habitat restoration work in this area as it is an important

component of the Tent Brook Catchment liming program, and we do not want to see these investments and ecological benefits buried. Based on the current EIS documents, the proposed location of the organics stockpile has not been changed.

Our concern with the placement of the organics stockpile is two-fold. First, modelling predicts that, in some months, the flow may be altered by up to 6.7% in the downstream Tent Brook (Appendix P.4, Section 4.3.3), although these alterations are likely to be more extreme in the upper portions of the watershed. Any change in flow could affect temperature, the ability of fish to migrate through the brook, the phenological regimes of the ecosystem (e.g., the timing of spawning or insect hatches), or the effectiveness of liming as a restoration tool. Secondly, we are concerned that the organics stockpile could introduce a significant amount of dissolved and particulate organic matter, rich in organic acids, into the Tent Brook watershed. The company states that runoff will be managed, but there is significant reason to be unassured of 100% compliance, considering the recently publicized infractions at the Touquoy site<sup>vii</sup>. Considering that the goal of the Tent Brook restoration project is to raise stream pH to suitable levels for Atlantic Salmon (as was the case prior to human-induced acidification of the 1970s-1990s), the addition of yet more human-influenced acidic substances would be a step in the wrong direction for the ecosystem, and a significant blow to the restoration science, as we have compiled a dataset to serve as baseline and early post-treatment data for this long-term research program. It would also send a message that even the most innovative and engaging conservation programs – which generate real partnerships between charitable, academic, Indigenous, private, and government bodies – can be sacrificed for the profit of international companies.



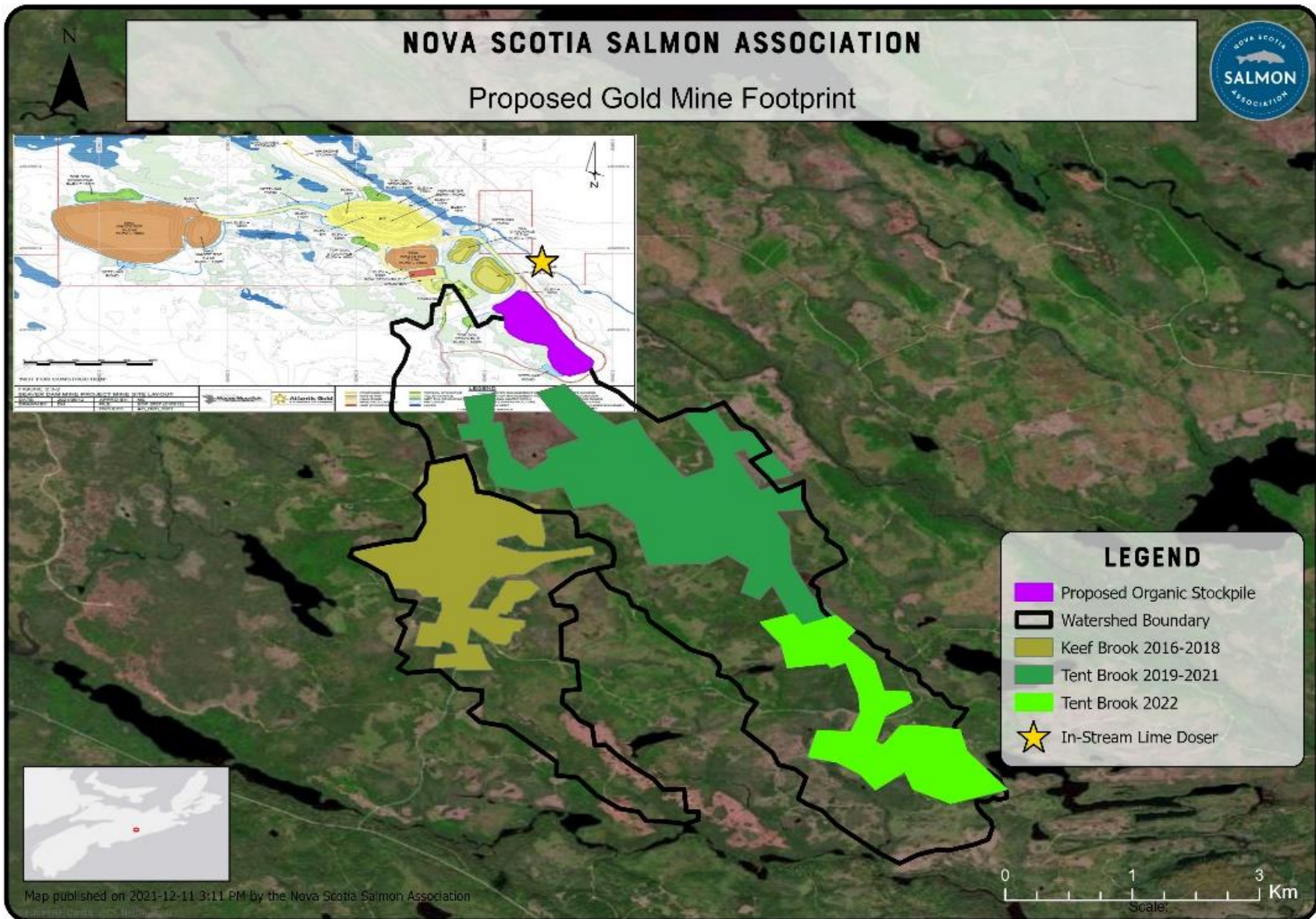


Figure 3 – Map of the West River Sheet Harbour catchment liming project, showing the location of restored forested land, the land where restoration is planned for 2022, and the proposed location of the organics stockpile.



**CONCERN #5: THE BENEFITS TO NOVA SCOTIA ARE MINOR RELATIVE TO THE VALUE OF THE RESTORATION PROJECT AND THE CONSERVATION PROGRESS ALREADY REALIZED.**

As a society, we must continually balance the need for resource extraction with goals for preservation of the natural world. The fundamental question to be asked is whether the benefits of proposed industrial activities outweigh the cost to the environment and the communities impacted by the work. In short, **it is a cost-benefit analysis.**

Atlantic Gold describes the projected benefits of the proposed work; however, these figures are projections which are non-verifiable and non-binding. A reasonable approach to estimating the true expected benefit of the proposed gold mine is to examine what has resulted from the existing Atlantic Gold Touquoy project. For example, based on Atlantic Gold's own reporting<sup>viii</sup>, between the beginning of operations at the Touquoy site in 2017 and the end of the 2020 financial reporting year, Atlantic Gold produced 290,531 ounces of gold, at a gross market value of ~\$575M and a resulting **estimated net income of ~\$350M**. From this, **Atlantic Gold has paid \$0 in federal or provincial taxes**, only \$4.5M in net-value royalties, and several hundred thousand dollars in provincial fees. During this time, Atlantic Gold has also been the recipient of ongoing lucrative provincial incentives for exploration, to the tune of several hundred thousand dollars. Additionally, the proposed Beaver Dam mine is likely to be more profitable than the Touquoy site as the upfront capital to access the gold is lower and the gold grade is relatively high.

We do recognize that jobs are an important consideration, however, these jobs will be short-lived given the expected short life of the mine (3.5 years). Atlantic Gold has reportedly paid below the standard wage common for mining work, and conditions have been such that workers voted to unionize in an effort to improve working conditions<sup>ix</sup>.

The proposed Beaver Dam Gold Mine is estimated to provide 330,000 additional ounces of gold, suggesting that the economic benefits to Nova Scotia will likely be comparable to the 2017-2020 values above. **Clearly, the benefit of the proposed Beaver Dam mine is too small to risk the potential impacts.**

Throughout this document, we describe what is at stake if this project proceeds. **Clearly, the cost of the proposed Beaver Dam mine is too large.** With impacts to the river, the at-risk population of fish within it, the community, and the long-term restoration and research project, what could be lost is immense. This project is structured such that the benefit is predominantly enjoyed by a private, international company, while the people of Nova Scotia will be left with a degraded environment, derailed conservation and research programs, and a scar on our land that will serve to remind future generations that such a project was once approved by a country committed to minimizing its contribution to climate change. Climate change is a fundamental issue for anadromous cold-water species (and the whole planet). This proposed mine development needs to be assessed on the basis of a robust carbon accounting for the life cycle of the project. This project relies heavily on trucking and processing a vast quantity of aggregate, which runs contrary to the direction our economy must take to meet the environmental goals and strategies for our citizenry, federal and provincial governments, and near future generations.

As a final point, we are concerned that approval of the Beaver Dam mine project will only accelerate the momentum for gold mining in the region and make it more difficult to critically examine proposed work in other nearby locations currently being considered (e.g., Fifteen Mile Stream in the East River and Cochrane Hill in the St. Mary's River) or yet-to-be revealed plans. If a gold mine is permitted in the heart of this long-standing conservation project, in this area of such significance, we worry that it will be permitted anywhere.

**CONCERN #6: THE NSSA GENERALLY LACKS CONFIDENCE THAT ATLANTIC GOLD WILL PRIORITIZE PROTECTION OF THE ENVIRONMENT AND THE WEST RIVER RESTORATION PROJECT**

This round of the EIS has a significant amount of detail; it is a lengthy main body of work, with 50 appendices and an estimated 5,000 total pages of documents. Reviewing this in the allotted 30-day period is a daunting task, and the short turnaround could result in important details being overlooked. Nonetheless, we note that much of the modelling, planning, and proposed mitigation does not adequately account for uncertainty about future climatic conditions, including major rain/flood events, such as those observed in Nova Scotia over the past three years.

Throughout the revised EIS, the proponent details how adverse environmental effects will be mitigated. For example, an estimated 550,000 to 1,450,000 litres of water will need to be removed from the quarry pit daily (Appendix P.5, p.51). Atlantic Gold states that this water will be treated via settling ponds prior to being discharged into the Killag River, and they state that water quality will meet all guidelines. Despite this commitment from the proponent, the NSSA, as a leader in acid rain mitigation, can attest to the difficulty in regulating water quality. There is reason to be pessimistic about self-monitoring and self-reporting by a mining company in Canada. A recent Canadian Auditor General's report<sup>x</sup> suggests that with regard to Environment and Climate Change Canada's inspections of metal mine sites, the auditor

*“found that the Department lacked some important controls to ensure the accuracy of companies' self-reported compliance data” (2.61).*

Further, regarding enforcement of agreed upon plans to compensate for damages to fish habitat, the auditor found that

*“Fisheries and Oceans Canada did not always monitor whether mining companies carried out their plans to counteract harm to fish and their habitat when the companies built tailings impoundment areas.” (2.17).*

If plans to reduce harm, report on harm, and compensate for harm are not well monitored or enforced, the entire EIS process loses validity.

Specific to Atlantic Gold, there has been recent evidence that their plans to control surface runoff and discharge water have failed, and that they have not fulfilled commitments to protect the environment from predicted impacts. Recently, 32 charges were laid against Atlantic Gold for contravening the conditions of an approval and releasing a substance into the environment in an amount, concentration, or level higher than approved<sup>xi</sup>. We ask what assurance do we have that this will not occur in the Killag and West River? What assurance do we have that this longstanding and successful restoration project will not be negatively impacted by comparable negligence and a failure to mitigate negative impacts?

## **CONCLUDING REMARKS**

The membership of the Nova Scotia Salmon Association values the West River watershed, including the Killag River, for angling, its importance to Atlantic Salmon recovery, and its intrinsic value. We support their views and stand with them. Representing our membership is our primary responsibility, and anything other than a clear message that this gold mine is not welcome is a betrayal to these people.

Transformative conservation work such as the West River Project requires widespread support from diverse partners and must consider viewpoints from many stakeholders and rightsholders. The Mi'kmaq of Nova Scotia, and in particular the Millbrook First Nation, have communities in the West River watershed, including Beaver Dam, Sheet Harbour, and elsewhere. As evidenced by a June 8<sup>th</sup>, 2021 submission from Millbrook First Nation to Mr. James Millard, Atlantic Gold's Manager of Environment and Community, Millbrook First Nation does not support the proposed Beaver Dam Gold Mine due to fear of negative impacts on health, livelihoods, and their way of life. We support them in this statement. In a time when reconciliation is at the forefront, these concerns cannot be taken lightly. This is not an abstract impact on First Nations, this is a project proposed directly within the Millbrook satellite community of Beaver Dam.

Other partners in this project include our affiliate groups, such as the Eastern Shore Wildlife Association. The ESWA values the West River watershed, with particular emphasis on the Killag River, for its great angling and hunting, its importance to Atlantic Salmon recovery, and for its natural beauty. We support their views and stand with this important partner. The NSSA has 25 such affiliate groups, and all endeavour to recover and maintain healthy fish populations and angling in Nova Scotia. We support their unanimously held view that this gold mine poses a great risk to the watershed and community.

In addition to everything outlined in this submission specific to the proposed Beaver Dam mine, we are also concerned about what approval of this mine might mean for Atlantic Salmon and wild rivers across this region. Similar to a question raised by Nova Scotia Environment (NSE 2-123 in the first round of the EIS), we contend that approval of this mine will only fuel further development and exploration at other sites, including Cochrane Hill on the St. Mary's River. Combined, the St. Mary's

River and West River comprise 25% of the priority Atlantic Salmon watersheds for which the federal government invested in a NSSA-led program to facilitate the recovery of salmon and the restoration of their habitat within Nova Scotia's Southern Upland.

To summarize, *the Nova Scotia Salmon Association does not support the proposed Beaver Dam Mine project*, and it is our desire that this industrial activity, with limited benefits for Nova Scotia, does not jeopardize this important river ecosystem and the restoration and research program upon which we and our partners have worked so hard. Approval of this project would **send a message that even the most innovative, successful, and engaging conservation programs – that generate real partnerships between charitable, academic, Indigenous, private, and government bodies – can be sacrificed for the profit of international companies.**

However, if our concerns are ignored and the project proceeds, there are clear activities that could be implemented which would allow for some assurance that any damages to our work could be, at least partially, addressed. Given the projected profitability of this project, the company should be well positioned to deliver these activities. At a minimum these include:

(1) That Atlantic Gold establish an environmental damages bond to be earmarked specifically for the West River recovery project operated by the NSSA and partners. This bond would ensure that the NSSA and partners would have the financial resources to recommence a comparable restoration project within the river should the proposed gold mine damage the river and undo the significant investments made and the progress toward ecological restoration of this watershed. This would be in addition to the liability and onus for Atlantic Gold to repair any damages. The value of this project-specific bond would need to exceed the value of expenditures to date plus a valuation of the potential lost opportunities associated with the research data set.

(2) That Atlantic Gold pay to establish and maintain a live gene banking (LGB) program for the duration of the project plus one generation of salmon (5 years) under the direction of Department of Fisheries and Oceans with input from the NSSA, Nova Scotia Department of Fisheries and Aquaculture, Mi'kmaw Conservation Group and other relevant fish experts such as the Dalhousie Aquatron Research Facility. Such LGB programs would reduce the likelihood of population extirpation if unintended catastrophic events occur. A LGB program would work by housing several

life stages of salmon in captivity, and thus maintaining live fish that are representative of the genetic basis (i.e., diversity, family lines) of the Atlantic Salmon population within the Killag and West River. In short, this is akin to regularly ‘backing up a hard-drive’ in the event that something happens to the valuable fish in the river and their distinct genetic makeup.

(3) That Atlantic Gold commits to maintenance of the resulting lake beyond the end of the mine period, including: the maintenance of water quality; annual liming to reduce the potential for this lake to act as a static source of acidic water entering the river immediately above the Killag lime doser (and thus jeopardizing the effectiveness and annual cost of our project); the installation and maintenance of an aquatic aeration system such that the deeper hypolimnetic waters maintain sufficient dissolved oxygen levels to permit aerobic biological activity; the construction of adequate littoral habitat in the lake to complement the deep water habitat that will be present, (including the construction of upwelling spawning gravel beds using incoming groundwater); and other measures to be agreed upon by fish habitat restoration specialists including the NSSA.

In closing, the Nova Scotia Salmon Association appreciates the opportunity to respond to the Full Revised Environmental Impact Statement for this project and for your consideration of our concerns.



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Executive Director  
Nova Scotia Salmon Association



Ms. Amy Weston  
Manager of NSSA Habitat Programs  
Nova Scotia Salmon Association



Ms. Jillian Leonard  
Conservation Biologist  
Nova Scotia Salmon Association



Edmund A. Halfyard, PhD  
Research Scientist  
Nova Scotia Salmon Association

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## APPENDICES

- [A.1] Round 1 EIS submission from NSSA & ASF 2017
- [A.2.1] Response to J. Millard email [December 16, 2021]
- [A.2.2] Atlantic Gold Letter requesting additional information
- [A.3] Response to L. Brownlie email [June 19, 2021]

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<sup>i</sup> <https://academic.oup.com/icesjms/advance-article/doi/10.1093/icesjms/fsab201/6425092>

<sup>ii</sup> [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/Climate-change/pdf/CCCR\\_FULLREPORT-EN-FINAL.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/Climate-change/pdf/CCCR_FULLREPORT-EN-FINAL.pdf)

<sup>iii</sup> <https://publications.gc.ca/collections/Collection/Fs97-6-2107E.pdf>

<sup>iv</sup> [https://www.adfg.alaska.gov/static/home/library/pdfs/habitat/blasting\\_report.pdf](https://www.adfg.alaska.gov/static/home/library/pdfs/habitat/blasting_report.pdf)

<sup>v</sup>

[https://static1.squarespace.com/static/5ecd24878a34587413bda07e/t/5fbc62d1d334513fae30e4d2/1606181588157/FINAL\\_2019+NS+Eastern+Shore+eDNA.pdf](https://static1.squarespace.com/static/5ecd24878a34587413bda07e/t/5fbc62d1d334513fae30e4d2/1606181588157/FINAL_2019+NS+Eastern+Shore+eDNA.pdf)

<sup>vi</sup> [http://fishlab.nres.illinois.edu/Reprints/Noatch\\_Suski\\_2012.pdf](http://fishlab.nres.illinois.edu/Reprints/Noatch_Suski_2012.pdf)

<sup>vii</sup> <https://www.cbc.ca/news/canada/nova-scotia/atlantic-gold-in-court-facing-32-environment-charges-1.5887795>

<sup>viii</sup> <https://www.nrcan.gc.ca/our-natural-resources/minerals-mining/extractive-sector-transparency-measures-act/links-estma-reports/18198>

<sup>ix</sup> <https://www.halifaxexaminer.ca/featured/who-really-benefits-from-atlantic-golds-nova-scotia-operations/>

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<sup>x</sup> [https://www.oag-bvg.gc.ca/internet/English/parl\\_cesd\\_201904\\_02\\_e\\_43308.html#hd2e](https://www.oag-bvg.gc.ca/internet/English/parl_cesd_201904_02_e_43308.html#hd2e)

<sup>xi</sup> <https://www.saltwire.com/nova-scotia/news/atlantic-gold-faces-32-charges-under-nova-scotia-environmental-act-545182/>