

10 FOLLOW-UP AND MONITORING PROGRAMS PROPOSED

10.1 Environmental Follow-Up Program

AMNS understands that monitoring is a mechanism to gauge Project performance and measure against baseline conditions and effects as predicted in the EIS, as well as expectations of regulators, the public, the Mi'kmaq of Nova Scotia and interested parties. Results of programs will be documented and where appropriate, summaries of compliance and effects monitoring programs will be available via stakeholder and Mi'kmaq engagement mechanisms, such as CLC and other ad-hoc groups as defined in the draft Public Engagement Plan (Appendix A.6).

The CLC is one of the primary opportunities for AMNS to include the participation of the local community, including First Nations communities wherever possible, during development and implementation of the Project. Beyond the CLC, AMNS will engage with local community groups and the Mi'kmaq of Nova Scotia, as well as sharing information with the public as defined in the draft Public Engagement Plan (Appendix A.6). AMNS recognizes the inherent value in an open and flexible approach to engagement and monitoring. The Proponent views engagement and monitoring programs as dynamic and not static, such as collection of data, review of data, and refinement of programs, as well as mechanisms to share the results of programs. AMNS's approach to engagement is presented in Section 3 (Public Engagement) and Section 4 (Indigenous Peoples Engagement) of the EIS as well as in the draft Public Engagement Plan (Appendix A.6).

Select VCs may be monitored, as defined in the EIS, before the start of construction. These monitoring programs will be undertaken to further design and guide mitigation measures as well as defining sampling program components, locations, frequency, and parameters related to the MDMER program and other related permitting, such as those required for wetland and watercourse alterations.

The results of follow-up monitoring programs will be provided to regulators as per the conditions of the EIS and other approvals and permits. The CLC and other interested stakeholders will be informed of the results of the follow-up programs and will be involved in the planning and implementation of these programs, where deemed appropriate and as defined in the draft Public Engagement Plan (Appendix A.6).

Monitoring results will be documented and reported in a format specified in approvals and permits.

10.2 Environmental Monitoring Plans

AMNS recognizes that the responsibility for all monitoring programs and mitigation commitments ultimately rest with the company. Many aspects of mitigation and monitoring that will occur during all phases of the Project (i.e., construction, operation, closure.) may be conducted through a sub contract but AMNS ultimately has responsibility for implementing mitigation and monitoring strategies committed to in the Updated 2021 EIS and for items added by regulators.

Proposed monitoring programs for the Project in the environmental follow-up program include noise, air, sediment, groundwater, surface water, wetlands, fish and fish habitat, habitat and flora, birds, and SOCI and SAR. AMNS commits to the involvement of the Mi'kmaq of Nova Scotia and in particular Millbrook First Nations in the development of monitoring programs for the Project.

The follow-up monitoring programs may be implemented up to one year prior to the start of construction; however, details of these programs will be determined following discussions with regulators. Preconstruction monitoring will be completed based on seasonality as required (e.g., breeding seasons, winter track surveys, vegetation surveys, etc.).

AMNS also recognizes that there may be additional requirements identified in approvals, such as the Industrial Approval that would be applied for from the Province of Nova Scotia through Part V – Approvals. Monitoring reports will be completed at a frequency determined by NSE. This is anticipated to be annual based on the existing Industrial Approval for the Touquoy Mine. The regulatory agencies will provide guidelines for preparing monitoring reports, such as the number, content, frequency, and format.

Operational practices and compliance programs will be routinely reviewed based on monitoring results and will be adaptively managed based on discussions with regulators, stakeholders, public and Mi'kmaq of Nova Scotia and in particular Millbrook First Nations, as necessary.

Table 10.1-1: Beaver Dam Mine Project Monitoring Commitments

Valued Component	General Monitoring Commitments	Detailed Monitoring Commitments (if applicable)	Corresponding EIS Section Number
Noise	At the Touquoy Mine Site and Beaver Dam Mine Project, noise monitoring will be undertaken throughout the operation of the facility if any complaints or concerns are received.	No noise monitoring is required since the nearest residence is approximately 5 km south of the BDM Mine Site. However, some noise monitoring at site may be undertaken to determine appropriate noise mitigation.	Section 6.1.4.2
	Further assessment of baseline monitoring before construction, during construction, and during mining operations will be conducted to ensure impacts are below the Nova Scotia Environment (NSE) guidelines and the Health Canada noise guidance which allows for an incremental increase in the percentage of highly annoyed population in the community to remain below 6.5 percent at sensitive receptors.		Section 6.1.7.4.1
	Additional noise monitoring could be undertaken in the future if required as part of the Industrial Approval process.		Section 6.1.7.4.1
	Noise monitoring would be completed during each blasting event, as required by the Nova Scotia Environment and Labour (NSEL) Pit and Quarry Guidelines (NSEL 1999). Blast monitoring generally involves noise and vibration monitoring during each blasting event and includes monitoring at the nearest residence to the Beaver Dam Mine Site, which in this case would be at Beaver Lake IR 17.		Section 6.1.8
	Noise monitoring will be completed as directed by regulators or as a result of a complaint or engagement.		
Air	Ongoing monitoring of air pollutants will determine compliance with these standards, and any exceedance or complaint by the general public and/or Mi'kmaq o Nova Scotia and in particular Millbrook First Nations, will be discussed with regulators and/or the Citizen Liaison Committee (CLC), and mitigation programs and operational practices will be reviewed to determine the appropriate course of action.	Air Monitoring Program will be established as directed by NSE. AMNS will implement a Fugitive Dust Monitoring Program A draft Engagement Plan (Appendix A.6) has been developed to help guide engagement over the life of the Project	Section 6.2.10 Appendix A.6
Light	No additional monitoring is recommended. Additional ambient light monitoring would occur if directed by regulators or as a result of a complaint.		Sections 6.3.8, 6.3.10
Greenhouse Gases (GHGs)	Facilities with emissions falling below the reporting threshold of 50 kilotonnes (kt) per year can voluntarily report their GHG emissions. Atlantic Mining NS Inc. (AMNS) voluntarily reports GHG at the Touquoy Mine and will continue to do so should Beaver Mine Project be approved.		Section 6.4.4.1
	AMNS will continue to evaluate opportunities at the sites to reduce GHG emissions at their existing and proposed operations.		Section 6.4.5
	GHG emissions will be reviewed on an annual basis throughout the operation of the Touquoy processing facility.		Section 6.4.10
Geology, Soils, and Sediment	Construction techniques, erosion and sediment control measures, and a sediment monitoring program for the receiving environment is described in the draft Erosion and Sediment Control Plan that will be finalized and submitted as part of Industrial Approval Application process.		Appendix C of Water Management Plan (Appendix P.4)

Table 10.1-1: Beaver Dam Mine Project Monitoring Commitments (continued)

Valued Component	General Monitoring Commitments	Detailed Monitoring Commitments (if applicable)	Corresponding EIS Section Number
	<p>Monitoring will be undertaken to continue to define Historic Tailings Management.</p> <p>A draft Historic Tailings and Waste Rock Management Plan (Appendix has been drafted and will be finalized as part of the Industrial Approval Process.</p>	Delineation and subsequent management of historical tailings and waste rock (soil and sediment) that is located within the footprint of Project infrastructure	Appendix E.9
	A draft Beaver Dam Project - ML/ARD Assessment Report (Appendix E.2) will continue to assess geochemical source terms and determine PAG. The assessment monitoring report will be finalized as part of the Industrial Approval process.	Operational Geochemical Testing Program: confirmatory testing of open pit blast hole drill cuttings to confirm geochemical predictions of mine rock at a frequency to be determined by the Project geochemists, geologists, and with consideration of available NRCAN and comparable guidance documents.	Appendix E.2
		Geochemical source term predictions heavily rely on theoretical constraints, representative geochemical test work, and the availability of site analogue data. To close data gaps that would increase the confidence in the geochemical source term predictions for future model iterations, the following recommendations are made	Appendix E.2
Groundwater	<p>A draft Groundwater Monitoring Program has been developed (Appendix G of Water Management Plan P.4) that described monitoring that will continue during baseline/pre-construction, construction and through the closure phase to validate the predictions presented in the Groundwater Quality and Quantity Effects Assessment (Section 6.6).</p> <p>A groundwater monitoring program will be developed in association with requirements of wetland and watercourse alteration permits issued for direct wetland and watercourse alterations associated with the Project.</p>	The Groundwater Monitoring Program will form part of a broader Aquatic Effects Monitoring Program (AEMP), Appendix P.5, that will addresses interactions among VCs (e.g., surface water, fish and fish habitat).	Section 6.6.10 Appendix G of Water Management Plan (Appendix P.4)
Surface Water	A preliminary monitoring plan has been prepared as part of the Mine Water Management Plan (Appendix P.4, Section 8). This monitoring plan outlines the proposed monitoring commitments for water quality and quantity from baseline conditions through construction, operation, and closure. A total of 16 surface water assessment sites during the construction stage have been selected for continued monitoring at the Beaver Dam Mine for either quality, quantity, or both. Their locations and monitored metrics are shown on Figure 8-1 of the Mine Water Management Plan. total of 19 surface water assessment sites during the operation and 17 during PC have been proposed for continued monitoring at Beaver Dam for either quality, quantity or both. Their proposed locations and monitored metrics are shown on Figure 8-2 and Figure 8-3 respectively. Surface Water Monitoring will form part of part of a broader Aquatic Effects Monitoring Program (AEMP), Appendix P.5, that will addresses interactions among VCs a Mine Water Management Plan		Mine Water Management Plan (Appendix P.4)
Wetlands	A Preliminary Wetland Monitoring Plan has been prepared for the EIS. A detailed Wetland Monitoring Plan will be established to support the Industrial Approval application, through the life cycle of the permitting process and will commit to monitoring during baseline/pre-construction to establish baseline conditions, and through the operational phase, closure and post closure (as determined to be required). Wetland monitoring will be completed for the Project on selected representative wetlands that have been predicted to have direct or indirect effects from Project development.		6.8.10, Preliminary Wetland Monitoring Plan (Appendix H.3)

Table 10.1-1: Beaver Dam Mine Project Monitoring Commitments (continued)

Valued Component	General Monitoring Commitments	Detailed Monitoring Commitments (if applicable)	Corresponding EIS Section Number
Fish and Fish Habitat	<p>Monitoring of standard mitigations described above will be supported by the Mine Water Management Plan, Appendix P.4 and Aquatic Effects Monitoring Program (AEMP), Appendix P.5. The AEMP will monitor all aquatic ecosystems where Project effects are predicted to validate impact predictions as well as to identify adaptive management measures that may be required during construction, operations, and closure. The scope of the draft AEMP (Appendix P.5, Section 4) involves monitoring of water quality, water quantity, sediment quality, periphyton, benthic invertebrates, fish habitat and community, and fish health and fish tissue. The draft AEMP (Appendix P.5, Section 4) describes the proposed sampling frequency, schedule and intensity, as well as identified significance thresholds, action levels and suggested responses should significant thresholds be exceeded. The AEMP (Appendix P.5, Section 5) also provides a proposed reporting schedule to federal and provincial regulators.</p> <p>Complete offsetting for HADD including the finalization of a Fish Habitat Offset Plan, for permanent loss of fish habitat through fish habitat restoration activities, subject to DFO approval, as required under the Fisheries Act. Monitoring will clearly be defined in the final Fish Habitat Offset Plan, in consultation with DFO.</p>		6.9.8.2, 6.9.8.3, 6.9.10, Appendix J.2 (Fish and Fish Habitat Baseline), Appendix P.5 (draft Aquatic Effects Monitoring Program), Appendix J.3 (draft Fish Habitat Offset Plan)
Habitat and Flora	No specific monitoring recommended. See SAR/SOCI monitoring recommendations.		6.10.10
Fauna	The draft Wildlife Mitigation and Monitoring Plan outlines protocols to minimize interactions between wildlife and Project activities. As part of the Wildlife Mitigation and Monitoring Plan, a Mainland Moose Management Plan (MMMP) will be developed and will commit to monitoring mainland moose during baseline/pre-construction to establish baseline conditions, and through the operational phase, closure, and post-closure (as determined to be required). Monitoring associated with the MMMP will be completed for the Project on selected transects within suitable mainland moose habitat and will be consistent with methods presented in the EIS, described in detail in Section 6.11.		6.11.9, 6.11.10, draft Wildlife Mitigation and Monitoring Plan (Appendix P.7)
Avifauna	Conduct routine inspections for avifauna during construction, operation and active closure activities as directed by regulators. See SAR/SOCI monitoring recommendations.	Avoid construction on native vegetation during the regional breeding season for migratory avifauna where practicable (beginning of April to end of August for migratory avifauna; ECCC 2015). Where this is not practicable, an avifauna nest mitigation plan will be developed.	6.12.10, 6.12.11
Species at Risk and Species of Conservation Interest	Specific plans have been developed for SAR/SOCI, as part of or in addition to those outlined in Fish and Fish Habitat, Fauna, Avifauna and Habitat and Flora. Permitting may be required for Species at Risk, and additional monitoring requirements will be determined during permitting, in consultation with NSL&F.	<p>Wetland Compensation Plan includes proposed SAR conservation allowances</p> <p>Wildlife Mitigation and Monitoring Plan includes Mainland Moose Management Plan (MMMP)</p> <p>Lichen Monitoring Plan</p> <p>Landbird SAR Mitigation and Monitoring Plan</p> <p>Aquatic Effects Monitoring Program includes priority fish species</p>	6.13.9, 6.13.10, Preliminary Wetland Compensation Plan (Appendix H.3), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Preliminary Lichen Mitigation and Monitoring Plan (Appendix P.6), Landbird SAR Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Aquatic Effects Monitoring Program (Appendix P.5)

Table 10.1-1: Beaver Dam Mine Project Monitoring Commitments (continued)

Valued Component	General Monitoring Commitments	Detailed Monitoring Commitments (if applicable)	Corresponding EIS Section Number
Mi'kmaq of Nova Scotia	<p>AMNS commits to providing the opportunity for Mi'kmaq participation in community-based monitoring programs and development of the Reclamation and Closure Plan.</p> <p>As the Project moves forward, discussions will continue with the Mi'kmaq of Nova Scotia regarding participation opportunity in the development, implementation and evaluation of proposed compliance and effects monitoring programs. These could include monitoring programs such as:</p> <ul style="list-style-type: none"> • Wetland Monitoring; • Wildlife Monitoring, including Moose; and • Other monitoring programs such for air, surface water, groundwater, and noise. <p>In addition, AMNS will hold periodic meetings with the Mi'kmaq of Nova Scotia, including Millbrook and Sipekne'katik First Nations, to review overall environmental compliance and effects monitoring programs associated with other VCs, and provide data and results of monitoring programs. On-going dialogue will continue with the Mi'kmaq of Nova Scotia regarding participation in, and implementation of, monitoring programs for the Project. The effects monitoring program will verify the effectiveness of mitigation measures associated with minimizing any potential effects to human health from consumption of or contact with country foods, water and soils, and results will be shared with local Indigenous groups.</p>		6.14.10
	<p>AMNS will develop a plain language summary for human health risk assessment there is a need to explain how the human health risk assessments are conducted in a manner that is understood by most of the community.</p> <p>AMNS will support the development and implementation of a country foods study with Millbrook First Nation community members. This work could be facilitated via the CWG Terms of Reference.</p>		6.14.9.1
Physical and Cultural Heritage	No additional monitoring is recommended, unless further changes to the Project layout or if development is to occur specifically around the historic features identified during the 2014, 2015, 2016, 2018 and 2019 reconnaissance.		6.15.8, 6.15.10
Accidents and Malfunctions	Undertaken as necessary, geotechnical monitoring will be ongoing		6.18
Effects of the Environment on the Project	Undertaken as necessary		7