9 SUMMARY OF ENVIRONMENTAL EFFECTS ASSESSMENT MITIGATIONS AND ENVIRONMENTAL RESIDUAL EFFECTS

This section provides tables summarizing the following key information:

- Proposed mitigation measures to address the effects identified above as described in Section 6 of this EIS. AMNS acknowledges that responsibility for implementation of all mitigation measures proposed within this EIS during the Project phases (i.e., construction, operation, active closure, and post-closure) ultimately rests with AMNS; and
- Potential residual effects and the significance of the residual environmental effects for each Valued Components (VCs (Section 6) and the cumulative effects assessment (Section 8).

9.1 Summary of the Environmental Impact Statement

As described throughout the EIS, Project-environment interactions are expected to occur throughout the life of the Project during the construction, operations, active closure (i.e., decommissioning and reclamation), and post-closure phases. These interactions are expected and are typical of environmental impacts associated with mineral extraction projects in the region.

Given the considerations identified above and based on baseline studies completed for each of the identified VCs, the Project is not predicted to result in any significant adverse environmental effects after mitigation measures have been applied. Monitoring programs will proceed to gather pre-construction data for select VCs. This data will be used to refine mitigation measures and monitoring programs for the construction, operation, reclamation and decommissioning, and post-closure phases. Monitoring programs will continue throughout the life of the Project to verify baseline conditions and to determine the effects of the Project on the surrounding environment.

Key mitigation measures that will specifically mitigate the potential adverse residual effects are summarized in Table 9.1-1. Proposed mitigation measures are described in greater detail in the effects assessment for each individual VC in Section 6. A summary of the potential adverse residual effects associated with the Project, and their associated significance, and the Project's cumulative effects is summarized in Table 9.1-2, 9.1-3, and 9.1-4.

Table 9.1-5 summarized the general overall commitments for the Beaver Dam Mine Project.

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
Noise		
C, O	Operations, infrastructure, and property boundaries for the Beaver Dam Mine have been updated to mitigate predicted noise levels at the property line. The following noise mitigation measures are incorporated into the current design of the Beaver Dam Mine: • The pit entrance/exit has been relocated to the west side of the pit, farther from the northeast property boundary. • No more than four drills will operate concurrently during any day, evening or nighttime hour. • Increase the height of the safety berm along the north boundary of the pit.	6.1.7.3.2
C, O	Restrict blasting to a specific and regular daytime schedule during weekdays. Specifically, blasting will not be undertaken on Sundays, or statutory holidays (NSEL 1999)	6.1.8
C	Haul road construction will be restricted to the day and evening periods	6.1.8
O	Implement safety berm along the north boundary of the pit, with maximum height in accordance with the constraints of topography and mine infrastructure requirements, and respecting wetlands and watercourse buffers.	6.1.8
O	Operating hours for trucking on the Haul Road will be restricted to the day and evening periods only (7:00 AM to 11:00 PM)	6.1.8
O	Maximum 4 drills will operate at the Beaver Dam Mine Site pit at any time during the Operation Phase of the Project.	6.1.8
C, O, CL	Implement preventative maintenance plans for all mobile and stationary equipment.	6.1.8
C, O, CL	Noise-reduction as criteria in equipment selection.	6.1.8
C, O	Communicate general blasting schedule to the local community.	6.1.8
C	Consider the use of natural landforms when available as noise barriers when designing final site details and when placing fixed equipment.	6.1.8
O	Regular check by site manager for excessive noise on site and in relation to sensitive receptors so that resolution can be timely.	6.1.8
C, O	Speed reduction.	6.1.8
C, O	Use equipment that meets appropriate noise emission standards for off-road diesel equipment.	6.1.8
C, O	Subcontractor agreements will include an obligation to comply with environmental protection including noise reduction.	6.1.8
C, O	Site design to reduce need for reversing and vehicle reversing alarms.	6.1.8
C, O	A procedure, including a response plan, will be available for public to be able to register complaints regarding noise concerns.	6.1.8
Air		
C, O	Use wet suppression controls on unpaved surfaces.	6.2.8
C, O	Utilize paved surfaces where available.	6.2.8
C, O	Speed reduction.	6.2.8
O	Apply stabilized covers on inactive stockpiles.	6.2.8

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
O	Apply dust suppressants, when and where practicable, to target 80% percent effectiveness.	6.2.8
O	Size haul vehicles appropriately to minimize trip frequency.	6.2.8
O	Implement Dust Suppression Plan as part of the Fugitive Dust Control Plan.	6.2.8, Appendix C.3
O	A procedure, including a response plan, will be available for public to be able to register complaints regarding dust concerns.	6.2.8
CL	Stabilize slopes on inactive stockpiles to a safe and long-term angle of repose.	6.2.8
CL	Use soil and organics stockpiles for final capping and stabilization. Hydroseed as required.	6.2.8
Light		
C	Temporary lighting will be directly focused on work areas and shielded where practicable to avoid light trespass	6.3.8
C, O, CL	Use of only downward-facing lights on site infrastructure and Mine Site roads	6.3.8
	Install motion-sensing lights, where practicable	6.3.8
	Only use direct and focused light when needed for worker safety	6.3.8
	All floodlights will employ full horizontal cutoff, as appropriate	6.3.8
	Lighting not in use will be turned off, whenever practicable	6.3.8
	Site perimeter lighting will be directed to minimize light offsite light trespass	6.3.8
	Utilize efficient sources of light to reduce overall magnitude of light, wherever practicable	6.3.8
	A procedure, including a response plan, will be available for public to be able to register complaints regarding light concerns	6.3.8
Greenhouse Gases		
C, O, CL	Limit engine idling where practicable.	6.4.8
C, O, CL	Implement fuel efficiencies where practicable.	6.4.8
C, O, CL	Implement preventative maintenance plans for all mobile and stationary equipment.	6.4.8
C, O, CL	Use renewable energy where reasonable (e.g., solar-powered lights).	6.4.8

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
Geology, Soils and Sediment		
C, O, CL	Use of the following routine controls, as needed: • Silt fences • Silt curtains • Riprap • Check dams • Settling ponds	6.5.8, Appendix C of Appendix P.4 (Mine Water Management Plan)
C, O, CL	Segregate and manage waste rock with the potential for acid generation	6.5.8
C, O	Implement Erosion and Sediment Control Plan	6.5.8, Appendix C of Appendix P.4 (Mine Water Management Plan)
C, O	Secure overburden stockpiles using a combination of mulching, hydroseeding, and slope stabilization	6.5.8
C, O, CL	Limit exposed soil	6.5.8
CL	Use soil and organics stockpiles for final capping and stabilization. Hydroseed as required	6.5.8
Groundwater		
C	Conduct pre-construction well survey at Beaver Lake IR 17.	6.6.8
C, O	Use above ground fuel storage tanks that meet applicable regulatory standards.	6.6.8
C, O	Select appropriate type of explosive that will minimize nitrogen release to surface water and groundwater. An explosive management plan will be developed prior to construction and a Nitrogen Management Plan will be developed with site specific adaptive management measures in the event that Nitrogen levels exceed predictions.	6.6.8
C, O, CL	Sub-aqueous deposition of mine tailings to reduce/prevent oxides and leaching.	6.6.8
CL	In the event of acid rock drainage and metal leaching, implement mitigative measures that will manage the source material and drainage effectively utilizing methods such as an engineered cover to reduce infiltration and oxidation thereby limiting potential acid drainage.	6.6.8
C, O, CL	Flowage, and existing groundwater wells at Touquoy between the open pit and the Moose River. The purpose of this groundwater treatment is to intersect groundwater seepage impacted with COCs above Tier 2 pathway specific guidelines or groundwater baseline/background prior to seepage discharging into surface waterbodies.	6.6.8
C, O	Use blasting and pit construction techniques that minimize the potential for negatively interacting the adjacent groundwater table and nearby surface water	6.6.8
C, O	Implement water conservation program for onsite facilities.	6.6.8
C, O	Recycle site water for reuse wherever practical to reduce water withdrawal from lakes or streams.	6.6.8

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O	Recycled water must meet acceptable water quality criteria for its intended use.	6.6.8
Surface Water		
C, O, CL	Use of the following structures, as needed: • Silt fences • Silt curtains • Riprap • Check dams	6.7.9, Appendix C of Appendix P.4 (Mine Water Management Plan)
C, O, CL	Limit exposed soil	6.7.9
C, O	Implement Erosion and Sediment Control Plan	6.7.9, Appendix C of Appendix P.4 (Mine Water Management Plan)
O, CL	Segregate and manage waste rock with the potential for acid generation	6.7.9
O	Use adequately sized settling and containment ponds as required	6.7.9
O	Use flocculants and coagulants as required	6.7.9
C, O	Install perimeter ditches around site infrastructure	6.7.9
O	Provide appropriate settling time for suspended solids prior to discharge	6.7.9
O	Ensure pit water meets applicable regulatory quality criteria for discharge – otherwise treat water prior to discharge	6.7.9
O	Direct drainage ditches to designated settling ponds or other locations	6.7.9
C, O	Use above ground fuel storage tanks that meet applicable regulatory standards	6.7.9
C, O	Select appropriate type of explosive that will minimize nitrogen release to surface water and groundwater	6.7.9
C, O	Implement Surface Water Management Plan	6.7.9, Appendix P.4 (Mine Water Management Plan)
C, O	Develop and implement an Emergency Response Spill Contingency Plan	6.7.9, Appendix G of Appendix P.1 (draft Emergency Response Plan)
C, O	Use clean, non-ore-bearing, non-watercourse derived and non-toxic materials for erosion control methods	6.7.9
C, O, CL	Sub-aqueous deposition of mine tailings to reduce/prevent oxides and leaching	6.7.9

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
CL	In the event of the potential for acid rock drainage and metal leaching, implement additional studies required to assess to actual risk and, as warranted, implement mitigative measures that will manage the source material and drainage effectively utilizing methods such as segregation and encapsulation	6.7.9
C, O, CL, PC	Minimize snow deposition into watercourses during snow removal activities	6.7.9
C	Construct drainage ditches and ponds to maintain natural flow directions when practical	6.7.9
O	Control release of settling ponds to mimic natural hydrograph, where practicable	6.7.9
O	Recycle site water for reuse wherever practical to reduce water withdrawal from lakes or streams	6.7.9
O	Recycled water must meet acceptable water quality criteria for its intended use	6.7.9
C	Mine infrastructure will be designed to minimize erosion during construction and operations, so as to preserve the stability of the ground surface surrounding mine infrastructure, SWM ditches, settling ponds and conveyance pathways, dykes, berms and any other Mine installations. The potential for scouring downstream of structures and the potential impacts of sudden changes in flow volume will also be considered. Short courses on erosion and sediment control design and inspection will be given to all managers and supervisors prior to mining or construction activities that may cause erosion or sediment movement and deposition. Environmental monitors will participate in a short course or seminar on inspection activities associated with erosion and sediment control. An 'Erosion Awareness and Identification' module will be a component of Mine specific training provided to all workers associated with earthwork mining activities. Principles for the ESCP for the Site include: 1. Fit the activity to the existing topography, soils, waterways, and natural vegetation of the site 2. Expose the smallest practical area of land for the shortest possible time 3. Apply erosion control practices as the primary method to prevent on-site damage 4. Apply sediment control practices as perimeter protection to prevent off-site damage 5. Implement a thorough maintenance plan during construction and operations	Appendix C draft Erosion and Sediment Control Plan of Appendix P.4 (Mine Water Management Plan)
C	To prevent discharge of sediment laden water from the Site during construction the first piece of site infrastructure to be constructed is to be the north settling pond. All site water will be directed towards the north settling pond (via an expanding network of surface water ditches or via pumping) prior to discharge until the east settling pond and south settling pond have been constructed. The north settling pond is to be constructed prior to any clearing or grubbing for other components of the Mine Site.	Appendix C draft Erosion and Sediment Control Plan of Appendix P.4 (Mine Water Management Plan)
C	Following the development of the north settling pond, other aspects of the mine will be developed including the open pit, administrative areas, and haul road. Prior to the development of other aspects of the mine the associated mine water infrastructure components are to be developed as well. For example, prior to clearing, grubbing and development of the till and organics stockpile areas the east and south settling ponds must be developed first. The contact water ditch network is to be developed in conjunction with the stockpile and haul road development, starting at the downstream end and working upstream.	Appendix C draft Erosion and Sediment Control Plan of Appendix P.4 (Mine Water Management Plan)
O	Climate change impacts were accounted for in the design of mine water management infrastructure using Nova Scotia Environment climate change projections for the province.	Section 2.2 Mine Water Management Plan (Appendix P.4)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
O	All site contact water will be collected into the north settling pond during construction and operations. The north pond will be connected to a robust water treatment system to ensure discharge water quality meets regulatory guidelines. An emergency spillway has been designed to direct excess runoff water into the open pit should an event larger than a 1:100 year storm event occur, to mitigate against the potential release of non-treated contact water from an extreme flood event.	Mine Water Management Plan (Appendix P.4, Appendix B Hydrologic Modelling Section 4)
O	All settling ponds include a filter berm to further improve the removal of TSS prior to discharge into the natural environment	Section 3.3 Mine Water Management Plan (Appendix P.4)
O	The settling ponds have been designed to control discharge for all storm events up to and including the 100-year design storm event over a minimum of duration of 24 hours. All ponds also include an emergency overflow spillway that has been designed to control the largest hurricane on record, Hurricane Beth	Section 3.3 Mine Water Management Plan (Appendix P.4)
O	Contact water ditches are proposed to be lined with impermeable membranes to mitigate against infiltration into the groundwater system	Section 6.1 Mine Water Management Plan (Appendix P.4)
O	Water treatment system used during dewatering of historical tailings (construction period) will remain on-site and connected to the north pond system to be used if it is identified, through on-going monitoring, that discharge water exceeds regulatory discharge requirements	Section 7.2 Mine Water Management Plan (Appendix P.4)
O	The proposed mine development is anticipated to increase streamflow volumes in the Killag River. AMNS will ensure post-development peak discharge does not exceed baseline peak discharge in the Killag River by providing peak flow attenuation through the settling ponds	Mine Water Management Plan Appendix A Water Balance Analysis Section 6 (Appendix P.4)
O	To further mitigate impacts to fish and fish habitat downstream of the settling ponds during more frequent events, all pond outlet structures (including the aeration lagoon) will be equipped with emergency shut-off valves that will be closed if any water quality parameter exceedances are triggered. The east, south and west settling ponds can contain the 10-year 24-hour rain event with no outflow, while the north settling pond can contain up to the 5-year 24-hour event with no outflow.	Mine Water Management Plan Appendix B Hydrologic Modelling Section 3 (Appendix P.4)
O	If the nitrite or metal concentration objectives are exceeded in the east or south settling ponds, the impacted water will be pumped, or collected in a vacuum truck, and transported to the north settling pond for further treatment.	Mine Water Management Plan Appendix B Hydrologic Modelling Section 3 (Appendix P.4)
O	Each settling pond will maintain a permanent pool to the level of the first low flow orifice and will control the three design storms with a minimum detention time of 24 hours. There will be a minimum of 0.3 m of freeboard between the 100-year design event and the emergency spillway invert. Above the 100-year event, the emergency spillway is designed to pass Hurricane Beth	Mine Water Management Plan Appendix B Hydrologic Modelling Section 4 (Appendix P.4)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
CL	The WBM predicts a decrease in streamflow at the Killag River DS assessment point while the pit is being filled with water in PC conditions. AMNS will implement a circular pumping system that uses water collected in the open pit, (including groundwater that is drawn from the Killag River), to mitigate against baseflow reduction in the Killag River caused by the open pit during low flow periods as described in the Baseflow Mitigation Assessment	Mine Water Management Plan Appendix H Baseflow Mitigation Assessment (Appendix P.4)
CL	The north settling pond will remain active during post closure and pit lake filling. The purpose will be to allow for the diversion of flow directly to the Killag River during low flow periods to augment flow volume to maintain environmental flows	Section 3.3 Mine Water Management Plan (Appendix P.4)
CL	The PAG waste rock pile will be capped with an impermeable liner and vegetated to reduce infiltration and seepage of contact water.	Section 3.3 Mine Water Management Plan (Appendix P.4)
CL	As part of the reclamation plan, the LGO stockpile will be removed and surface runoff from this area will be directed back toward Mud Lake to reduce the environmental impact to the lake	Section 3.3 Mine Water Management Plan (Appendix P.4)
CL	Based on the results from the Baseflow Mitigation Study, the discharge point of the Pit Lake has been set to re-establish ~99% of baseflow through this section of Cameron Flowage	Mine Water Management Plan Appendix H Baseflow Mitigation Assessment (Appendix P.4)
Wetlands		
C, O, CL	Complete pre-construction site meetings for all relevant staff/contractors related to working around wetlands and watercourses to minimize unauthorized disturbance, such as the introduction of invasive species	6.8.8.2
C, O, CL	Implement Erosion and Sediment Control Plan and measures to ensure site runoff is not directed towards wetlands to ensure habitat integrity and existing drainage patterns are maintained.	6.8.8.2, Appendix C draft Erosion and Sediment Control Plan of Appendix P.4 (Mine Water Management Plan)
C, O, CL	Maintain pre-construction hydrological flows through wetland habitats and partially altered wetlands, wherever practicable	6.8.8.2
C, O, CL	Topsoil will be salvaged and stored for use in site restoration where practicable.	6.8.8.2
C, O, CL	Re-vegetate slopes adjacent to wetlands, using native seed mixes, to limit erosion and sediment release	6.8.8.2
C, O, CL	Implement the Preliminary Wetland Monitoring Plan, as refined through the permitting process.	6.8.8.2, Preliminary Wetland Compensation Plan (Appendix H.3)
C	Ensure all wetlands are visually delineated (e.g., flagged)	6.8.8.2

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C	Complete detailed design of Haul Road and micro-siting of Beaver Dam Mine Site infrastructure to avoid or minimize impacts to wetlands	6.8.8.2
C	Implement construction methods that reduce the potential to drain or flood surrounding wetlands	6.8.8.2
C	Acquire and adhere to wetland alteration permits	6.8.8.2
C	Detailed culvert design of upgraded/replaced culverts to maintain current hydrology and necessary fish passage.	6.8.8.2, 6.9.8.2.3
C	Translocation of blue felt lichen and monitoring of lichen SAR where direct and indirect impacts are expected to occur as per the Preliminary Lichen Mitigation and Monitoring Plan.	6.8.8.2, 6.10.8, 6.13.8.2, draft Lichen Mitigation and Monitoring Plan (Appendix P.6)
C	Complete work within Wetland 64 outside of the breeding season in consideration of greater yellowlegs observations and probable breeding habitat.	6.8.8.2, 6.13.8
C, O	Direct runoff through natural vegetation, wherever practicable	6.8.8.2
C, O	Minimize erosion of wetland soils by limiting flow velocities by means of hydraulic dissipation techniques	6.8.8.2
C, O	Minimize the rutting of wetland habitat by limiting the use of machinery within wetland habitat and use of swamp mats/corduroy bridges as required	6.8.8.2
C, O	Conduct vegetation management (cutting and clearing) in or near wetlands and watercourses in accordance with applicable guidelines	6.8.8.2
C, O	Employ measures to reduce the spread of invasive species (particularly by vehicles) into wetlands and retain habitat integrity Inspect vehicles regularly, particularly vehicles arriving from outside the PA. If necessary, cleaning will be undertaken at a designated cleaning station, away from wetlands and watercourses.	6.8.8.2
CL	Compensate for permanent loss of wetland function through implementation of the Preliminary Wetland Compensation Plan, subject to NSE approval. The preliminary plan includes: On-the-ground restoration opportunities to meet a minimum 2:1 ratio and to be completed in a watershed near the Project area to the extent practicable; Wetland restoration opportunities within the Beaver Dam Mine Site will be considered where practicable; Other secondary forms of compensation that ECCC and NSE consider valuable to support the wetland conservation program in Nova Scotia; Collaboration with local community groups and the Mi'kmaq of Nova Scotia to the extent possible; and Inclusion of a conservation allowance in the Preliminary Wetland Compensation Plan to address restoration of equivalent habitat for wildlife SAR.	6.8.8.2, Preliminary Wetland Compensation Plan (Appendix H.3), draft Lichen Mitigation and Monitoring Plan (Appendix P.6)
CL	Review and consider alternatives to traditional hydroseeding methods to advance vegetation re-establishment and reclamation methods	6.8.8.2

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
Post-Closure	Follow monitoring requirements in wetland alteration permits and final Wetland Monitoring Plan (to be completed at permitting stage).	6.8.8.2, Preliminary Wetland Compensation Plan (Appendix H.3)
Fish and Fish Habitat		
C, O, CL	Complete site meetings with relevant staff/contractors to educate and confirm policies related to working around fish bearing surface water systems including schedule of construction activities to minimize unauthorized disturbance and limit vegetation clearing.	6.9.8.2.3
C, O, CL	Implement a groundwater interceptor trench on the west side of the PAG stockpile, if necessary.	6.9.8.2.3
C, O, CL	Collect and treat all contact water, as required.	6.9.8.2.3
C, O, CL	Implement Erosion and Sediment Control Plan	6.9.8.2.3, Appendix C draft Erosion and Sediment Control Plan of Appendix P.4 (Mine Water Management Plan)
C, O, CL	Maintain pre-construction hydrological flows into and out of down-stream surface water habitats, to the extent practicable, to limit indirect impacts to fish habitat	6.9.8.2.3
C, O, CL	Complete offsetting for HADD including for permanent loss of fish habitat through fish habitat restoration activities, subject to DFO approval, as required under the *Fisheries Act*	6.9.8.2.3, 6.13.8
C, O, CL	Develop and implement the Aquatic Effects Monitoring Program (to be completed prior to the permitting stage) to identify and further mitigate any additional adverse impacts to fish and fish habitat	6.9.8.2.3
C, O, CL	Provide signage on fish habitat streams	6.9.8.2.3
C, O, CL	Complete micro siting of mine infrastructure to avoid or minimize fish habitat impact as necessary	6.9.8.2.3
C, O, CL	Complete fish rescue within all fish bearing streams to be impacted by the Project, prior to commencement of mine development, with DFO approval if required	6.9.8.2.3
C, O, CL	Implement construction methods that reduce potential interaction with fish habitat and limit vegetation clearing around watercourses	6.9.8.2.3
C, O, CL	Complete culvert installations and upgrades in accordance with the NSE Watercourse Standard (2015) or as updated at time of construction. Limit vegetation clearing	6.9.8.2.3, 6.8.9
C, O, CL	Minimize the removal of vegetation upgradient of watercourses and stabilize shorelines or banks disturbed by any activity associated with Project activities	6.9.8.2.3
C, O, CL	Minimize the temporal extent of in-stream works as much as practicable	6.9.8.2.3

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	Monitoring of standard mitigations will be supported by the Mine Water Management Plan and Aquatic Effects Monitoring Program (to be submitted as part of the Industrial Approval), both of which will be in place prior to construction activities to minimize possible disturbances of fish and fish habitat.	6.9.8.2.3, Appendix P.4 (Mine Water Management Plan)
C, O	Maintain 30 m riparian wetland and watercourse buffers, where practicable.	6.9.8.2.3
C, O	Use vegetated buffers and aquatic vegetation wherever practicable to provide shade to on-site ponds.	6.9.8.2.3
C, O	Install groundwater pumps to supplement baseflow in Cameron Flowage, if necessary	6.9.8.2.3
C, O	Follow DFO-advised Measures to avoid causing harm to fish and fish habitat pertaining to blasting (DFO 2019)	6.9.8.2.3
C, O	A detailed explosive management plan will be developed as part of the permitting process.	6.9.8.2.3
C, O	Use an emulsion-type explosive that will minimize nitrogen release to surface water and groundwater	6.9.8.2.3
C, O	Use clean, non-ore-bearing, non-watercourse derived and non-toxic materials for erosion control methods	6.9.8.2.3
C, O	Incorporate drainage structures, where necessary, to dissipate hydraulic energy and maintain flow velocities sufficiently low to prevent erosion of native soil material	6.9.8.2.3
C, O	Limit clearing within confirmed fish habitat outside of approved alteration areas to within approved areas.	6.9.8.2.3
C, O	Acquire and follow watercourse alteration permits	6.9.8.2.3, 6.7.9
C, O	Adhere to applicable timing windows, as directed by DFO, for construction where infilling has been approved in wetlands and watercourses where fish habitat is present	6.9.8.2.3
C, O	Ensure fueling areas are a minimum of 30 m from waterbodies.	6.9.8.2.3
C, O	Use and maintain properly sized screens on any water intakes or outlet pipes to prevent entrainment or impingement of fish (DFO, 2020)	6.9.8.2.3
C, O	Ensure that machinery arrives on site in a clean condition and is maintained and free of fluid leaks	6.9.8.2.3, 6.18
C, O	Develop and implement Mine Water Management Plan	6.9.8.2.3, Appendix P.4 (Mine Water Management Plan)
Habitat and Flora		
C, O	Intact forest stands and wetlands will be avoided wherever practicable during detailed Project planning and design in favor of previously disturbed areas (e.g., stands disturbed by timber harvesting, roads, or other development).	6.10.8
C, O	Where natural, intact habitat cannot be avoided, maintain existing vegetation cover whenever practicable and minimize overall areas of disturbance.	6.10.8
C, O	A wetland alteration application will be submitted during Project planning and design to request an authorization to alter wetland habitat and to address loss of wetland function.	6.10.8

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O	Compensation for permanent loss of wetland function will be completed through wetland restoration activities to support no net loss of wetland function, subject to NSE approval.	6.10.8, Preliminary Wetland Compensation Plan (Appendix H.3)
C, O	Topsoil will be salvaged and stored for use in site restoration where possible. Upland and wetland soils should be stockpiled separately.	6.10.8
C, O	Conduct vegetation management by cutting (e.g., no use of herbicides)	6.10.8
C, O	Implement Erosion and Sediment Control Plan and measures to ensure site runoff is not directed towards unaltered habitat where possible to ensure existing drainage patterns are maintained.	6.10.8, Appendix C of Appendix P.4 (Mine Water Management Plan)
C, O	Avoid frequent or unnecessary travel over erosion prone areas through communication with personnel and project planning	6.10.8
C, O	Monitor dust conditions and implement dust suppression mitigation (refer to air mitigation) when normal precipitation levels are not enough to suppress fugitive dust. In addition to water suppression, provincially approvable chemical dust suppressants will be used along the Haul Road. Implement Dust Control Plan.	6.10.8, Appendix C.3 (draft Fugitive Dust Control Plan)
C, O	Haul trucks will be equipped with spill kits and instructed on their use and spill prevention and appropriate site personnel will be trained in spill isolation, containment, and recovery.	6.10.8
C, O	Winter road maintenance will include conventional snow clearing and deposition of sand for traction control where necessary.	6.10.8
C, O	Employ measures to reduce the spread of invasive species (particularly by vehicles) and retain habitat integrity. Inspect vehicles regularly, particularly vehicles arriving from outside the PA. If necessary, cleaning will be undertaken at a designated cleaning station, away from wetlands and watercourses.	6.10.8
C, O	Confirm Potential Old Growth areas with NSLF and asses possible avoidance through the alternative Haul Road route, dependant on NSLF findings.	6.10.8
C, O	Consider on-site opportunities for progressive reclamation during construction and operations to avoid viability issues with long-term stockpiling of organic material.	6.10.8
C, O	Translocation of blue felt lichen and monitoring of lichen SAR where direct and indirect impacts are expected to occur as per the draft Lichen Mitigation and Monitoring Plan.	6.8.8.2, 6.10.8, 6.13.8.2, draft Lichen Mitigation Monitoring Plan (Appendix P.6)
CL	Hydroseed areas that have erosion potential to return the area to pre-disturbance conditions in a timely fashion upon final reclamation	6.10.8
CL	Alternatives to traditional hydroseeding methods will be reviewed to advance vegetation re-establishment and reclamation methods. Consideration will be given to native species with Indigenous significance.	6.10.8
CL	Implement reclamation program within the Beaver Dam Mine Site to re-establish native vegetation communities	6.10.8

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
CL	Consider on-site opportunities for progressive reclamation during construction and operations to avoid viability issues with long-term stockpiling of organic material.	6.10.8
Terrestrial Fauna		
C, O	Provide wildlife awareness training to site personnel to reduce interactions between site personnel and wildlife.	6.11.8
C, O	Intact forest stands and wetlands will be avoided wherever practicable during detailed Project planning and design in favor of previously disturbed areas (e.g., stands disturbed by timber harvesting, roads, or other development). Micro-site Haul Road and mine infrastructure to avoid major fauna habitat.	6.11.8
C, O	Where natural, intact habitat cannot be avoided, maintain existing vegetation cover whenever practicable and minimize overall areas of disturbance.	6.11.8
C, O	Minimization of impact to old forest.	6.11.8, 6.10.8
C, O	For those species reliant on wetland habitat, a wetland alteration application will be submitted during Project planning and design to request an authorization to alter wetland habitat and to address loss of wetland function.	6.11.8, Preliminary Wetland Compensation Plan (Appendix H.3)
C, O	Compensation for permanent loss of wetland function will be completed through wetland restoration activities to support no net loss of wetland function, subject to NSE approval.	6.11.8, Preliminary Wetland Compensation Plan (Appendix H.3)
C, O	Habitat fragmentation will be reduced by limiting the area of new roads, favoring upgrading of existing roads where possible instead.	6.11.8
C, O	Site infrastructure will be fenced in, where practical, to reduce interactions between Project infrastructure and wildlife.	6.11.8
C, O	A speed limit of 40 km/hr within the Beaver Dam Mine Site and 70 km/hr along the Haul Road (or not exceeding posted speed limits) will be implemented to reduce likelihood of collisions with fauna.	6.11.8
C, O	Install signage where specific wildlife concerns have been identified. Vehicles will yield to wildlife on roads.	6.11.8
C, O	Monitor and manage road conditions through dust suppression and traction control (sand on icy roads) to reduce potential for collisions with wildlife. Implement Dust Control Plan.	6.11.8, Appendix C.3 (draft Fugitive Dust Control Plan)
C, O	An un-vegetated buffer of 10 m along roadsides will be maintained, where possible, to improve visibility along roadsides and reduce the potential for collisions with wildlife.	6.11.8
C, O	Clearing and construction will be limited within wetlands that could support snapping turtles during winter hibernation period	6.11.8
C, O	Erosion and sediment control planning will be completed to ensure site runoff is not directed towards unaltered habitat. Implement Erosion and Sediment Control Plan.	6.11.8, Appendix C of Appendix P.4 (Mine Water Management Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O	Culverts installed within wetlands and watercourses will provide an alternative crossing location to amphibians and reptiles, thereby reducing direct mortality of species attempting to cross a road. Upgrade culverts along the new and upgraded Haul Road sections to improve habitat connectivity.	6.11.8, 6.8.8.2
C, O	Implement Emergency Response and Spill Contingency Plans to protect fauna and their habitat from accidental spills	6.11.8, 6.18, Appendix G of Appendix P.1 (draft Emergency Response Plan)
C, O	Store hazardous and non-hazardous waste in designated locations, in appropriate containers to reduce potential for spills, and to prevent attracting wildlife (e.g., food waste in bear proof containers).	6.11.8, 6.18
C, O	Follow the Pit and Quarry Guidelines to reduce impact of noise and vibration on wildlife	6.11.8
C, O	Limit use of lights to the amount necessary to ensure safe operation within the PA, with the recognition that excessive lighting can be disruptive to wildlife. Install lights facing downward and wherever practicable using motion-sensing lights.	6.11.8, 6.3.8
C, O	Consider limiting use of lights that emit more blue shortwave light (e.g., LEDs, metal halides) which have greater impacts to wildlife at night, where practicable and considering operational safety.	6.11.8, 6.3.8
C, O	Restrict blasting to a specific and regular daytime schedule during weekdays to allow time for wildlife to recover from potential noise disturbance.	6.11.8
C, O	Implement Wildlife Mitigation and Monitoring Plan	6.11.8, draft Wildlife Mitigation and Monitoring Plan (Appendix P.7)
C, O	Site-specific measures to protect wildlife will be addressed in the EPP.	6.11.8
CL	Implement remediation plans to restore natural habitat and food source re-establishment to support fauna	6.11.8
CL	Install signage where specific wildlife concerns have been identified. Vehicles will yield to wildlife on roads.	6.11.8
Post-Closure	A deterrent system will be considered at the Touquoy Mine Site when the pit fills as tailing deposition will be present. This will deter wildlife from using the pit during and after filling which may have deleterious effects resulting from long-term exposure.	6.11.8
Avifauna		
C, O, CL	Conduct routine inspections as directed by regulators. Inspections are anticipated to be conducted daily by operators, and as required by qualified avian experts during construction, operation and active closure activities to identify and remove any trapped or injured avifauna	6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7)
C	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	6.12.9

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C	If a raptor nest is found within the forested areas to be cleared, a buffer zone appropriate to the species (as determined in consultation with NSL&F) would be placed around the nest	6.12.9
C, O	Limit the amount of exposed soil during nesting season	6.12.9
C, O	Discourage ground-nesting or burrow-nesting species (such as common nighthawk and bank swallows), by limiting large piles or patches of bare soil during the breeding season, wherever practicable	6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7)
C, O	Should any ground- or burrow-nesting species initiate breeding activities on stockpiles or exposed areas, AMNS will work with ECCC and NSE to develop buffer zones that incorporate adaptive management	6.12.9
C, O	Maintain speed limits on mine roads (max. 40 km/hr. within Beaver Dam Mine Site, 70 km/hr. along Haul Road) to minimize collisions with avifauna	6.12.9
C, O	Implement Dust Control Plan	6.12.9, Appendix C.3 (draft Fugitive Dust Control Plan)
C, O	Install downward-facing lights on site infrastructure and mine site haul roads. Wherever practicable, install motion-sensing lights to ensure lights are not turned on when they are not necessary	6.12.9, 6.3.8
C, O	Consider limiting use of lights that emit more blue shortwave light (e.g., LEDs, metal halides) which have greater impacts to wildlife at night, where practicable and considering operational safety.	6.12.9, 6.3.8
C, O	Conduct mobile refueling at least 30 m from any identified breeding locations	6.12.9
C, O	Monitor known nests around stockpiles and exposed areas from a distance with a spotting scope or binoculars to verify the effectiveness of an identified buffer until the nests are inactive	6.12.9
C, O	Conduct routine inspections of the open pit area to remove any trapped or injured avifauna. If identified, determine a plan for removal in consultation with an avian expert	6.12.9
C, O	Notify ECCC within 24 hours in the event of the mortality or injury of ten or more migratory avifauna in a single event or in the event of the mortality or injury of a migratory avifauna SAR	6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7)
C, O	Mitigation measures will be applied to reduce the potential environmental impacts of the Project on migratory avifauna at the Touquoy Mine Site as per existing operational approvals. Audio and visual deterrents are currently being utilized at Touquoy Mine Site to dissuade avifauna from landing in the TMF.	6.12.9
CL	Continued monitoring	6.12.9

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
Species of Conservation Interest and Species at Risk		
C, O, CL	Blue Felt Lichen • Complete further detailed design of Haul Road and micro siting of mine infrastructure to avoid priority lichen species. • Reduce disturbance through buffering of habitat - maintain 100m buffer, wherever practicable • Implement air quality monitoring and dust suppression plans • Flag host trees and setback areas • Implement dust suppression plan • Provide map of all priority vascular and non-vascular flora, and their setbacks, to site personnel during site orientation • Implement the SAR Lichen Mitigation and Monitoring Plan, developed in consultation with lichen specialists and regulators, for observations within and in close proximity to the PA • Wherever avoidance of SAR lichen species is not possible, the Project Team will implement the SAR Lichen Mitigation and Monitoring Plan, developed in consultation with lichen specialists and regulators. The two directly impacted blue felt lichen occurrences are proposed for translocation. • Where avoidance and translocation are not possible, the Project Team will collect specimens for submission to Frances Anderson or equivalent contact at time of construction (Lichen Specialist, Research Associate, and Nova Scotia Museum)	6.8.8.2, 6.10.8, 6.13.8.2 Lichen Mitigation and Monitoring Plan (Appendix P.6)
C, O, CL	Frosted Glass-whiskers • Complete further detailed design of Haul Road and micro siting of mine infrastructure to avoid priority lichen species • Complete further detailed design of Haul Road and micro siting of mine infrastructure to avoid priority lichen species. • Reduce disturbance through buffering of habitat - maintain 100m buffer, wherever practicable • Implement air quality monitoring and dust suppression plans • Flag host trees and setback areas • Implement dust suppression plan • Provide map of all priority vascular and non-vascular flora, and their setbacks, to site personnel during site orientation • Implement the SAR Lichen Mitigation and Monitoring Plan, developed in consultation with lichen specialists and regulators, for observations within and in close proximity to the PA • Wherever avoidance of SAR lichen species is not possible, the Project Team will implement the SAR Lichen Mitigation and Monitoring Plan, developed in consultation with lichen specialists and regulators. Where avoidance and transplantation are not possible, the Project Team will collect specimens for submission to Frances Anderson or equivalent contact at time of construction (Lichen Specialist, Research Associate, and Nova Scotia Museum)	6.8.8.2, 6.10.8, 6.13.8.2 Lichen Mitigation and Monitoring Plan (Appendix P.6)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	<u>Boreal Felt Lichen</u> • Micro-siting of Project infrastructure has been completed to avoid observations and Boreal Felt Lichen Critical Habitat Areas • Continued detailed Project design to ensure no development occurs within the Boreal Felt Lichen Critical Habitat Areas • Implement air quality monitoring and dust suppression plans • Flag host tree and setback areas • Implement dust suppression plan • Provide map of all priority vascular and non-vascular flora, and their setbacks, to site personnel during site orientation • Implement the SAR Lichen Mitigation and Monitoring Plan, developed in consultation with lichen specialists and regulators.	6.8.9, 6.10.9, 6.13.9.2, Lichen Mitigation and Monitoring Plan (Appendix P.6)
C, O, CL	<u>Atlantic Salmon</u> • Complete further detailed surveys for wetland and watercourse alteration permitting • Complete further design phase micro siting of infrastructure and Haul Road to avoid or minimize impacts to fish and fish habitat • Complete fish rescue and relocation as anticipated for Wetland 59 prior to pit development • Adhere to approved timing windows for construction to minimize impact to eggs, larvae, and juvenile fish, wherever practicable • Limit direct alteration within the Beaver Dam Mine Site to first order streams that have limited potential to support spawning, wherever practicable • Limit access to the PA and prohibit staff fishing within the PA to avoid increased fishing pressures • Blasting activities will adhere to setback recommendations and other mitigation strategies advised by DFO for measures to avoid causing harm to fish and fish habitat • Implement accidental spill and contingency plans – e.g. use of spill kits and booms • Implement wetland and surface water quality monitoring programs • Implement downstream water quality and quantity monitoring program • Replace crushed, hung, or improperly installed culverts along the Haul Road that are impeding fish passage	6.13.8.1, 6.9.8.2.3

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	American Eel • Further detailed surveys for wetland and watercourse alteration permitting • Further design phase micro siting of infrastructure and Haul Road to avoid or minimize impacts to fish and fish habitat • Fish rescue and relocation is anticipated for Wetland 59 prior to pit development • Adherence to approved timing windows for construction to minimize impact to juvenile and adult eels. • Limit access to the PA and prohibit staff fishing within the PA to avoid increased fishing pressures • Blasting activities will adhere to setback recommendations and other mitigation strategies advised by DFO for measures to avoid causing harm to fish and fish habitat including aquatic species at risk. • Implementation of accidental spill and contingency plans – e.g. use of spill kits and booms • Implementation of wetland and surface water quality monitoring programs • Implementation of downstream water quality and quantity monitoring program • Replacement of crushed, hung, or improperly installed culverts along the Haul Road that are impeding fish passage	6.13.8.1, 6.9.8.2.3

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	<u>Snapping Turtle</u> • Include in the development and implementation of the draft Wildlife Mitigation and Monitoring Plan • Implement wildlife observation reporting to appropriate site personnel during construction, operation, and decommissioning of Project • Safety and Environment orientation and training will include information on turtles and nesting season awareness training, particularly along the Haul Road. • If snapping turtle activity is occurring within and/or adjacent to the Beaver Dam Mine Site or Haul Road, additional turtle awareness and management program will be implemented to ensure all staff are well informed regarding the increased turtle activity, especially during breeding season • Complete further detailed design of Haul Road and micro siting of Beaver Dam Mine Site infrastructure to avoid aquatic habitat • Upgrade existing roads, wherever practicable, instead of building new roads • Replace crushed, hung, or improperly installed culverts, wherever practicable, to improve habitat connectivity (while maintaining existing hydrological conditions) • Reduce disturbance through buffering of habitat - a 30m buffer on aquatic habitat deemed suitable for snapping turtles, wherever practicable • Where avoidance of potential turtle hibernation habitat is not possible, construction in these habitats will be limited to the growing season when hibernating turtles are not likely to be impacted (Overwintering period - October through April), wherever practicable • Implement surface water quality monitoring program • Install turtle crossing signs near major watercourse crossings, or in areas where snapping turtles have been observed, in an effort to increase awareness and reduce vehicular collisions - preferably only seasonally when turtles are active • Vehicles will yield to wildlife on roads • Dust suppression to improve visibility during nesting and hatchling emergence • Vehicles will adhere to safe speed limits, particularly around blind corners • An un-vegetated buffer along roadsides will be maintained, where possible, to improve visibility along roadsides and reduce the potential for collisions with wildlife • If a turtle is found, report immediately to site Environmental Technician; if found on road, move away provided not actively nesting using proper moving technique • Use predator excluders on identified nests • Install fencing, where practicable, to prevent wildlife from accessing areas with increased risk of injuries to wild species - appropriate dimensions to address and eliminate accidental falls of species of varying size including turtles into the open pit	6.11.8, 6.13.8.3, draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	Mainland Moose • Include in the development and implementation of the Wildlife Mitigation and Monitoring Plan. Implement Moose Management and Monitoring Program - including activities such as repeated winter track surveys and pellet group inventories, and collaboration with the Mi'kmaq of Nova Scotia to study Mainland Moose in a broader context • Implement wildlife observation reporting to appropriate site personnel during construction, operation, and decommissioning of Project • Vehicles will yield to wildlife on roads • Vehicles will adhere to safe speed limits, particularly around blind corners. • An un-vegetated buffer along roadsides will be maintained, where possible, to improve visibility along roadsides and reduce the potential for collisions with wildlife • Install fencing, where practicable, to prevent wildlife from accessing areas with increased risk of injuries to wild species - appropriate dimensions to address and eliminate accidental falls of species of varying size including deer and moose into the open pit • AMNS encourages the public to report mainland moose sightings to the province at https://novascotia.ca/natr/wildlife/sustainable/msform.asp.	6.11.8, 6.13.8.3, draft Wildlife Mitigation and Monitoring Plan (Appendix P.7)
C, O, CL	Common nighthawk • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Discourage ground- or burrow-nesting species by limiting the amount of exposed soil • Limit light use to direct and focused light when needed for worker safety • Implement noise management including use of mufflers on equipment and regular maintenance • Implement dust suppression plan • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.10.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	<u>Canada Warbler</u> • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement noise management including use of mufflers on equipment and regular maintenance • Implement dust suppression plan • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)
C, O, CL	<u>Olive-sided Flycatcher</u> • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement noise management including use of mufflers on equipment and regular maintenance • Implement dust suppression plan • Implement surface water quality monitoring program • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	Eastern Wood-Pewee • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement noise management including use of mufflers on equipment and regular maintenance • Implement dust suppression plan • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)
C, O, CL	Chimney Swift • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement dust suppression plan • Implement noise management including use of mufflers on equipment and regular maintenance • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act,* which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	Rusty Blackbird • Avoid clearing/grubbing activities during nesting season • Complete further detailed design of Haul Road and micro siting of mine infrastructure to avoid major wetlands. Where wetlands cannot be avoided, total Project footprint within the wetland will be minimized to the extent practicable. • Implement wetland monitoring programs • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement dust suppression plans • Implement noise management including use of mufflers on equipment and regular maintenance • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.8.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)
C, O, CL	Barn Swallow • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Check abandoned structures on site for nests prior to any demolition • Limit light use to direct and focused light when needed for worker safety • Implement dust suppression plans • Implement noise management including use of mufflers on equipment and regular maintenance • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act,* which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	<u>Evening Grosbeak</u> • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement dust suppression plans • Implement noise management including use of mufflers on equipment and regular maintenance • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)
C, O, CL	<u>Peregrine Falcon</u> • Avoid clearing/grubbing activities during nesting season • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity. If evidence of nesting is observed, the Proponent will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation • Limit light use to direct and focused light when needed for worker safety • Implement dust suppression plan • Implement noise management including use of mufflers on equipment and regular maintenance • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
C, O, CL	Greater Yellowlegs • Avoid clearing/grubbing activities during nesting season • Complete construction and upgrades of Haul Road within Wetland 64 outside of the active nesting season for Greater Yellowlegs, if practicable • If construction is required during the active nesting season, an avian specialist will monitor for nesting activity within Wetland 64 and adjacent undisturbed habitat. If evidence of nesting is observed, AMNS will consult with appropriate regulatory agencies to determine an appropriate spatial and temporal buffer, based on site and seasonal specific parameters at the time of the observation. • If new breeding evidence or nests are observed within 300 m of Project activities, a site mitigation plan will be developed in consultation with regulators. Nests will be monitored from a distance using binoculars or a spotting scope to avoid further human disturbance from monitoring. An acceptable setback (to be established in consultation with regulatory authorities) will be established. • New bypass roads have been micro-sited to avoid Wetland 64 and, as a result of PA and infrastructure modifications, a waterline has been rerouted and will no longer discharge into Wetland 64, avoiding resultant changes in hydrology • To avoid nesting activity, bird deterrents will be implemented within Wetland 64, as this is the only location where probably breading was observed, following best-management-practices used in the mining industry. • Implement dust suppression plans • Limit light use to direct and focused light when needed for worker safety • Implement noise management including use of mufflers on equipment and regular maintenance • Implement the Landbird SAR Mitigation and Monitoring Plan and Wildlife Mitigation and Monitoring Plan • All site workers shall comply with regulations outlined in the *Migratory Bird Convention Act*, which prohibits the disturbance of migratory birds, their nests and eggs. If any nest is identified, the Proponent Environmental Technician must be notified immediately, so steps can be taken to identify the species and determine appropriate mitigation or avoidance if required. Species identified of particular risk and several species of birds known to nest around active construction sites will be included in the Wildlife Sighting Report Card similar to those required at the Touquoy Mine Site	6.3.8, 6.8.8, 6.12.9, 6.13.8.4, SAR Landbird Mitigation and Monitoring Plan (Appendix A of Appendix P.7), draft Wildlife Mitigation and Monitoring Plan (Appendix P.7), Appendix C.3 (draft Fugitive Dust Control Plan)

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
Mi'kmaq of Nova Scotia		
EIS Review	Support Mi'kmaq third party review of AMNS's EIS, including mitigation and monitoring programs.	6.14.8, 6.14.10
EIS Review	Continuing to provide the opportunity for Mi'kmaq to delineate the specificity of Mi'kmaq traditional use, and meet with the Mi'kmaq to receive feedback on EIS conclusions and impacts.	6.14.8
EIS Review	AMNS will establish a schedule of proposed technical workshops with Millbrook First Nation with the goal to: • review water quality predictions and surface water monitoring plans and Millbrook involvement in these monitoring programs • review human health risk assessment process and conclusions relating to risk to food consumption within indirect impact zones from dust/other contaminants • review dust predictions and proposed mitigation measures and monitoring program with Millbrook involvement • review wildlife patterns with Millbrook, incorporate this traditional knowledge into effects assessment, mitigation measures, and AMNS commitments	6.14.8
Pre-construction	Provide Mi'kmaq land users the opportunity to walk the Beaver Dam Mine Site and Haul Road with Proponent representatives to identify and document sensitive sites prior to construction	6.14.8
Pre-construction	Provide a tour of the Beaver Dam Mine Site and Haul Road and information on Project operations to interested Mi'kmaq peoples.	6.14.8
Pre-construction	Develop a Mi'kmaq Communication Plan with the Mi'kmaq of Nova Scotia that outlines an on-going two-way communication process throughout the lifecycle of the Project.	6.14.8
Pre-construction	As part of the existing communications process, AMNS will build upon and strengthen a Complaints Management and Action Program for Mi'kmaq input in advance of Project commencement, as an opportunity for having grievances heard and addressed, and development of a communication protocol.	6.14.8
Pre-construction	Possible establishment of Community Working Group with Millbrook First Nation to review proposed and develop additional environmental mitigation protocols, oversee monitoring procedures and review/evaluate results. This committee will be led by AMNS and Proponent environmental experts, and Millbrook First Nation, with additional representation from Unama'ki Institute of Natural Resources, the Mi'kmaq Conservation Group, and Nova Scotia Environment.	6.14.8
Pre-construction	In conjunction with Millbrook First Nation, complete a baseline country foods program. This baseline program can be community led and/or with active participation by Millbrook First Nation.	6.14.8
Construction	Design and construct bypass roads allow for travel routes to bypass the Beaver Dam Mine Site and Haul Road and allow access to areas surrounding the Project.	6.14.8, 6.15.8
Construction	If Mi'kmaw archaeological features are encountered during construction or operation of the Project, all work in the area will be halted and immediate notification made to the Special Places Coordinator, Nova Scotia Museum, the KMKNO and the communities of Sipekne'katik and Millbrook. As part of the EMS, AMNS will ensure mitigation measures are undertaken to prevent irreversible damage to Mi'kmaq archaeological resources and known burial site(s), including ensuring all Project activities are within the defined Project property boundaries only.	6.14.8, 6.14.10, Appendix N.1 to N.7

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
On-going	In conjunction with Millbrook First Nation, complete a country foods monitoring program to validate HHRA conclusions. This monitoring program can be community led and/or with active participation by Millbrook First Nation.	6.14.8
On-going	AMNS will provide various opportunities for Mi'kmaq participation in the Project, including opportunities to participate in environmental monitoring and implementation of Mi'kmaq projects such as fish habitat offsetting, wetland compensation, and others. AMNS will continue to engage with the Mi'kmaq on various Project benefits.	6.14.8
On-going	Engage in open dialogue with affected communities relating to issues of limited Mi'kmaq access to the Beaver Dam Mine Site and Haul Road for the eight year project window and continue to review and discuss mitigation options including suitable alternative crown land access in close proximity to the Beaver Dam Mine Site and Haul Road.	6.14.8
On-going	Continue to engage with the Mi'kmaq of Nova Scotia to determine how they would like to participate and integrate traditional knowledge into the Reclamation and Closure Plan for the Project. AMNS will also provide the opportunity for the Mi'kmaq to provide input on species end land uses, revegetation, reclamation techniques, and for Mi'kmaq members to join the reclamation team to execute this Project phase.	6.14.8
On-going	Commitment to developing and conducting a Mi'kmaq Cultural Awareness Program for staff and contractors. Scope to be determined based on further discussions.	6.14.8
Physical and Cultural Heritage		
C	A program of archaeological shovel testing was conducted in fall 2020, in advance of any disturbance to Site 6, Areas 2 and 3. CRM Group cleared these areas of any requirement for further archaeological investigation	6.15.8, Appendix N.1 to N.7
C	If any development is to occur within 100 metres of Crusher Lake, intensified reconnaissance (i.e., shovel testing) should be conducted to identify any additional features.	6.15.8, Appendix N.1 to N.7
C	If any development is to occur specifically around the historic features identified during the 2014, 2015, 2016, 2018 and 2019 reconnaissance, intensified historical research and archaeological shovel testing should be conducted in advance of disturbance.	6.15.8, Appendix N.1 to N.7
C	Any further changes in the layout of the mine and associated facilities be evaluated as to potential impacts to archaeological resources.	6.15.8, Appendix N.1 to N.7
O	In the event that archaeological resources or human remains are encountered during ground disturbance activities, it is required that all activity stop, and the Coordinator of Special Places, Nova Scotia Communities, Culture, & Heritage Department be contacted.	6.15.8, Appendix N.1 to N.7
Socio-economic Conditions		
C	Restriction of recreational activities within the spatial boundaries of the Project. Notification will be provided by signage. Communication Plan to communication access information to key stakeholders (Sections 3 and 4 [Public Engagement and Indigenous Peoples Engagement, respectively]). Liaison with any local recreation groups, such as ATV associations through an Ad Hoc group. Equipment maintenance. Reduction of mobile equipment accident risk through discussions with NSTIR, appropriate signage, and operator training.	6.16.11

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
O	Restriction of recreational activities within the spatial boundaries of the Project. Notification will be provided by signage. Liaison with local recreation groups, such as ATV associations. Equipment maintenance. Limiting haul truck operational hours to approximately 16 hours per day. Reduction of mobile equipment accident risk through discussions with NSTIR, appropriate signage, and operator training. Ongoing engagement with community associations, CLC and residents to assess and adaptively manage the site. Potential housing and employment studies to monitor impacts on population growth and housing market.	6.16.11
CL	Ongoing engagement with community associations, CLC and residents to assess and adaptively manage the site.	6.16.11
Accidents and Malfunctions		
Open Pit Mine Slope Failure	The pit slope design, construction and monitoring follow applicable regulations and recommendations provided by a qualified geotechnical professional.	6.18.6.1, Appendix A.2a and Golder (2021 In Progress)
Stockpile Slope Failure	The stockpile design, construction and monitoring follow applicable regulations and recommendations provided by a qualified geotechnical professional.	16.8.6.2
Settling Pond Failure	The water management ponds are designed by a qualified professional and lined with suitable materials, such as clay or a geosynthetic liner.	6.18.6.3
Infrastructure Failure	The infrastructure is designed following applicable regulations and recommendations provided by a qualified professional.	6.18.6.4
Fuel and/or other spills	Fuel delivery suppliers and their personnel will have certification and training in fuel transport and delivery in compliance with applicable regulatory requirements. Onsite storage and dispensing of fuel products will be conducted in accordance with applicable regulatory requirements and adhere to the Petroleum Operation Procedure and related site-specific procedures. Staff will be trained in spill response measures. Spill response kits will be accessible and dedicated in areas of fuel storage and transfer.	6.18.7.1, Appendix G draft Spill Contingency Plan of Appendix P.1 draft Emergency Response Plan
Mobile Equipment Accident	The Beaver Dam Mine Site will have restricted traffic patterns, speed limits, right-of-way signage and training that will minimize the risk of mobile equipment accidents. Highway haul trucks will be remotely tracked and monitored. Communications will be maintained between vehicles using radios to minimize adverse interactions and ensure prompt response to any incident.	6.18.7.3

Table 9.1-1: Summary of Key Mitigation Measures by Valued Component (continued)

Project Phase	Mitigation Measures	Corresponding EIS Section Number and/or Appendix
Tailings and Reclaim Water Pipelines Spills	Touquoy Mine tailings and reclaim pipelines between the plant site, TMF and open pit will be designed and constructed to minimize the potential for release. Not applicable at the Beaver Dam Mine Site. Measures at the Touquoy Mine may include double walled tailings pipes, lined service trenches and adequately sized, lined, collection pond capable of containing the volume of the pipeline. Not applicable at the Beaver Dam Mine Site. At the Touquoy Mine the catchment pond would be lined with suitable materials, such as clay or a geosynthetic liner. Not applicable at the Beaver Dam Mine Site.	6.18.7.4.1
Cyanide Release (Touquoy Mine Site)	For the Touquoy Mine cyanide is transported stored and handled in accordance with applicable regulatory requirements and the International Cyanide Management Code. Not applicable at the Beaver Dam Mine Site. At the Touquoy Mine cyanide is stored and handled inside the plant footprint within a restricted containment area. Not applicable at the Beaver Dam Mine Site.	6.18.7.4.2
Forest and/or Site Fires	Fire protection for the plant site will be via a "wet system" with hydrants located around the plant site area. The water contained within the lower portion of the raw water tank will be reserved for fire protection. Fire detection systems will be installed in buildings and key areas of the Beaver Dam Mine Site.	6.18.8.1
Effects of the Environment on the Project		
C	Project design to consider extreme weather events, temperature extremes, wind speed ranges, flood or drought conditions, lightning strikes. Project design will follow industry standards, including the National Building Code of Canada. An Emergency Response Plan will be implemented during the construction phase. An Occupational Health and Safety Plan will be implemented to protect worker health and safety	7.3
C	Stockpile design will consider collected geological data and will be designed with slopes at the angle determined by geotechnical analysis and acceptable safety factors. An Emergency Action Plan will be implemented during the construction phase	7.3
O	An Emergency Action Plan will be implemented during the operations phase. An Occupational Health and Safety Plan will be implemented to protect worker health and safety	7.3
O	Stockpile design will be re-assessed following material placement to ensure slopes are geotechnical stable and within acceptable safety factors An Emergency Action Plan will be implemented during the operation phase	7.3
CL	Stockpile design will consider collected geological data and will be designed with slopes at the angle determined by geotechnical analysis and acceptable safety factors.	7.3

Table 9.1-2: Summary of Residual Effects by Valued Component

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
NOISE									
Construction – Beaver Dam Mine Site and Haul Road Noise from haul trucks, Haul Road widening and construction, and blasting and drilling of in-situ rocks	Equipment maintenance, best management practices, minimize blasting events.	N-L	Beaver Dam Mine Site and Haul Road LAA: Noise generated will likely extend beyond the PA	A	ST Effects can occur up to 1 year	R Effects occur regularly in the construction phase of the Project	R VC will recover to baseline conditions	Increased ambient noise	Not significant
Operations - Beaver Dam Mine Site and Haul Road Noise from haul trucks, blasting and drilling of in-situ rocks and the crushing of ore heavy machinery operation, and site vehicles	Equipment maintenance, dust suppression, hardened surface where practical, vehicle speed reduction, use of large haul vehicles to minimize trips, stabilization of stockpile slopes, covering of haul trucks, minimize blasts. Equipment maintenance, haul truck operations < 24 hours per day to minimize noise disturbance, limited engine idling, shutting off vehicle when parked unless this is precluded for safety or maintenance reasons.	N-L	At Points of Reception for Beaver Dam Mine Site, Haul Road, Touquoy Mine Sire) At Property Lines for Beaver Dam Mine Site, Haul Road LAA: effect extend beyond the PA into the LAA	A	LT Effects may extend beyond 3 years	R Effects occur regularly in the operational phase of the Project	R VC will recover to baseline conditions	Increased ambient noise	Not significant
Operations – Touquoy Mine Site Noise from blasting, crushing of ore, heavy machinery operation and site vehicles	Equipment maintenance, haul truck operations < 24 hours per day to minimize noise disturbance, limited engine idling, shutting off vehicle when parked unless this is precluded for safety or maintenance reasons.	N	At Property Lines LAA Noise generated is predicted to extend beyond the PA	A	LT Effects may extend beyond 3 years	R Effects occur regularly in the operational phase of the Project	R VC will recover to baseline conditions	Increased ambient noise	Not significant
AIR									
Construction – Beaver Dam Mine Site and Haul Road (Dust from haul trucks, Haul Road widening and construction)	Equipment maintenance, best management practices, minimize blasting events.	N Does not exceed guidelines or threshold	LAA Dust generated will likely extend beyond the PA	N/A VC is not expected to be affected by timing	MT Effects can occur beyond 12 months	R Effects occur regularly in the construction	R VC will recover to baseline conditions	Increased ambient dust	Not significant
Operations- Mine Site and Touquoy Mine Site at Property Lines and Points of Reception (Dust from onsite activities, vehicle travel, material handling and the crushing of ore)	Equipment maintenance, dust suppression, hardened surface where practical, vehicles to minimize trips, stabilization of stockpile slopes, cover of haul trucks, minimize blasts	N Does not exceed guidelines or threshold	LAA Dust generated will likely extend beyond the PA	N/A VC is not expected to be affected by timing	LT Effects may extend beyond 3 years	R Effects occur regularly during Operations	R VC will recover to baseline conditions	Increased ambient dust	Not significant
Operations- Haul Road at Property Lines (Dust from haul trucks)	Haul truck operations to minimize road surface disturbance during nighttime hours, implementation of Road Dust Best Management Practices Plan (with 80-90% or greater targeted dust suppression efficiency).	L Exceeds guidelines or threshold values by more than 20%	LAA Dust generated will likely extend beyond the PA	N/A VC is not expected to be affected by timing	LT Effects may extend beyond 3 years	S Exceedances are maximum values, sporadic to regular occurrence at Property Lines.	R VC will recover to baseline conditions	Increased ambient dust	Not Significant
Operations - Haul Road at Points of Reception (Dust from haul trucks)	Haul truck operations to minimize road surface disturbance during nighttime hours, implementation of Road Dust Best Management Practices Plan (with 80-90% or greater targeted dust suppression efficiency).	L Marginally exceeds guidelines or threshold values	LAA Dust generated will likely extend beyond the PA	N/A VC is not expected to be affected by timing	LT Effects may extend beyond 3 years	R Effects occur regularly in the operational phase of the Project	R VC will recover to baseline conditions	Increased ambient dust	Not Significant
LIGHT									
Construction and Active Closure – Beaver Dam Mine Site and Haul Road (Lights from haul trucks, site lighting)	Equipment maintenance, limited vegetation clearing.	L (qualitative assessment only – predicted to be less light propagation than operations phase described below)	RAA Lighting impacts may extend beyond the PA	A Seasonal aspects may affect VC (i.e., daylight hours)	MT Effects can occur beyond 12 months and up to 3 years	S Effects occur at regular intervals throughout the Project	R VC will return to baseline conditions	Increased ambient light	Not significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
Operational – Beaver Dam Mine Site, Haul Road, Touquoy Mine Site (Lights from haul trucks, site lighting)	Equipment maintenance, haul truck operation <24 hours per day, minimize lighting (downward facing lighting, motion sensor lights, light positioning away from property boundaries were practical).	L Less than or equal to appropriate guidelines or threshold values	RAA Lighting impacts may extend beyond the PA	A Seasonal aspects may affect VC (i.e., daylight hours)	LT Effects may extend beyond 3 years	R Effects occur at regular intervals throughout the Project	R VC will return to baseline conditions	Increased ambient light	Not significant
GREENHOUSE GASES									
Construction – Beaver Dam Mine Site and Haul Road (Haul Road widening and construction, use of heavy machinery, haul trucks and site vehicle emissions)	Equipment maintenance, implementing fuel efficiencies, limited engine idling, use of more fuel efficient vehicles.	L	RAA	N/A	ST	C	R	Increased greenhouse gas emissions during operations	Not Significant
Operation – Beaver Dam Mine Site, Haul Road and Touquoy Mine Site (Emissions from haul trucks, site vehicles, heavy machinery, blasting and drilling of in-situ rocks)	Equipment maintenance, implementing fuel efficiencies, minimizing blasts, limited engine idling, use of more fuel efficient vehicles.	L	RAA	N/A	MT	C	R	Increased greenhouse gas emissions	Not Significant
Active Closure – Beaver Dam Mine Site (Emissions from haul trucks, site vehicles, heavy machinery)	Equipment maintenance, implementing fuel efficiencies, limited engine idling, use of more fuel efficient vehicles.	N-L	RAA	N/A	MT	I	R	Increased greenhouse gas emissions	Not Significant
GEOLOGY, SOIL, AND SEDIMENT QUALITY									
Construction and Operation – Beaver Dam Mine Site (exposure of acid generating material, impacted soil/sediment through migration of contaminants via dust deposition and runoff events.)	Select removal of impacted materials, wet dust suppression controls, hardened surfaces where practical, covering of haul trucks to reduce dust during transportation, vehicle speed reduction to minimize dust, spill preparedness. reclaiming/spreading stockpiles, soil/sediment quality,	L Minor changes from baseline conditions	LAA Potential adverse effects to soil/sediment quality and quantity outside the PA	A Seasonal aspects may affect VC (i.e., wind)	LT Effects may extend beyond 3 years	S Effects occur at irregular intervals throughout the Project	IR VC will not recover to baseline conditions	Soil and sediment quality, increased dust impact (i.e., flora and fauna/habitat, human health, etc.)	Not significant
Construction and Operational – Haul Road (Haul Road widening and construction, trucking activity, and sediment quality impacts through migration of contaminants via dust deposition and runoff events.	Slope stabilization, sediment and erosion control, best management practices, spill preparedness. reclaiming/spreading stockpiles, soil/sediment quality	L Minor changes from baseline conditions	PA Potential adverse effects confined to the PA	N/A VC is not expected to be affected by timing	MT Effects can occur beyond 12 months and up to 3 years	O Potential effects to occur once during the construction phase	R Sediment Quality will recover to baseline conditions after cessation of activities/ closure of the mine IR Soil under the footprint of the road will be lost.	Erosion, soil and sediment quality	Not significant
Operational – Touquoy Mine Site (soil/sediment quality)	Covering of haul trucks to reduce dust during transportation onsite, vehicle speed reduction to minimize dust onsite. reclaiming/spreading stockpiles, soil/sediment quality	L Minor changes from baseline conditions	LAA Potential adverse effects to soil/sediment quality and quantity outside the PA	A Seasonal aspects may affect VC (i.e., wind)	LT Effects may extend beyond 3 years	S Effects occur at irregular intervals throughout the Project	R Soil Sediment Quality will recover to existing conditions after cessation of activities/ closure of the mine	Soil and sediment quality, increased dust impact (i.e., flora and fauna/habitat, human health, etc.)	Not significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
GROUNDWATER QUALITY AND QUANTITY									
Construction – Beaver Dam Mine Site and Haul Road (Surface Water Alteration resulting in reduction of recharge to groundwater, blasting effects on GW, elevated nitrogen in GW from blasting residue)	Sediment and erosion control, pre-blast surveys within 800 m of potable wells, watercourse alteration permitting, inclusion of use of pit dewatering water and collected surface water instead of groundwater for dust control in the project design	M Mitigation strategies and best management practices reduce the magnitude of impact	PA VC confined to the Mine Site	A VC interaction is by timing considerations/during low flows	LT VC interaction effects extend into PCs	R VC interaction will occur regularly during construction phase	PR Mitigation not necessarily return to baseline conditions	Reduction in Water Quantity	Not Significant
Post-Closure – Beaver Dam Mine Site (Groundwater seepage from stockpiles discharge to surface water [Mud Lake, outlet watercourse from Mud Lake, Crusher Lake])	Installation of groundwater wells at the shores of these locations; periodic sampling to evaluate this prediction; modelling updates to include updated source term data/water quality inputs; if necessary groundwater will be intercepted (i.e., interception trench) upstream of wells and treatment will be considered to meet regulatory requirements prior to discharge into receiving environment. Monitoring will determine if additional adaptive management measures will be applied.	L Mitigation strategies and best management practices reduce the magnitude of impact	PA VC confined to the Mine Site	A VC interaction during low flow conditions is assessed	LT VC interaction effects extend into PCs	R Effects will occur at regular intervals during post closure phase of project	PR Mitigation not necessarily return to baseline conditions	Reduction in Water Quality	Not Significant
SURFACE WATER QUANTITY AND QUALITY									
Surface Water Quantity									
Construction – Beaver Dam Mine Site and Haul Road	Project Design to evaluate hydrology patterns. Erosion and Sediment Control Measures	Low Minor changes from baseline conditions	Discrete Effects are confined to the PA (Beaver Dam Mine Site and Haul Road)	N/A	Short-Term	S VC interaction will occur at irregular intervals throughout construction phase	Reversible to Partially Reversible	Change in Water Quantity (baseflow, stream flow in Mud Lake and WC23, WC26 due to project development/construction of water management diversions etc.)	Not Significant
Surface Water Quality									
Construction – Beaver Dam Mine Site and Haul Road (TSS and Dust Deposition)	Project Design to evaluate hydrology patterns. Erosion and Sediment Control Measures	Low Minor changes from baseline conditions	Discrete Effects are confined to the PA (Beaver Dam Mine Site and Haul Road)	N/A	Short-Term Effects can occur beyond 12 months and up to three years	S VC interaction will occur at irregular intervals throughout construction phase	R VC will recover to baseline conditions	Change in Water Quality Disturbance	Not Significant
Surface Water Quantity									
Beaver Dam Mine Site (Crusher Lake, Killag River, Tent Brook)	Surface water from pit dewatering activities will be designed to discharge back into Cameron Flowage/Killag River at rates to mimic seasonal flows, where practicable.	Negligible to Low Minor changes from baseline conditions	Local Effect are confined to the near-field assessment area	N/A	Short-Term to Medium Term	R Effects will occur at regular intervals throughout operations	Reversible VC will recover to baseline conditions once project activities have been completed	Change in hydrology in Cameron Flowage/Killag River	Not Significant
Beaver Dam Mine Site (Reduction in base flow to WC26 and WC23)	Predicted flow reduction. Monitoring to confirm, watercourse alteration permitting, fisheries authorization, if required	Low to High VC interaction Causes reduction in surface flow	Discrete Effects are confined to the Beaver Dam Mine Site	N/A	P VC interaction is permanent	C VC interaction will occur continuously	Irreversible While effect is reduced in PC, it is still measurable/ medium to high magnetite	Disturbance; impacts are due to the placement of stockpiles catchment	Not Significant
Beaver Dam Mine Site (Mud Lake)	Predicted flow reduction. Monitoring to confirm.	Medium to High Resultant change is outside natural variations from baseline conditions	Discrete Effects are confined to the PA (Beaver Dam Mine Site)	N/A	Long Term	C VC interaction will occur continuously	Partially Reversible Effect decreases in PC phases	Disturbance	Not significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
Surface Water Quality									
Operations – Beaver Dam Mine Site (Surface water quality of Killag River from effluent discharge through north settling pond and groundwater seepage)	Water Treatment at discharge (as required)	Low to Negligible Negligible change in water quality	Local Effect are confined to the near-field assessment area	N/A	Short-Term to medium term	R VC interaction will occur regularly	IR VC will not return to baseline condition	Change in water quality in the Killag	Not significant
Operations Beaver Dam Mine Site and Haul Road (Release of non-mine-contact surface water to receiving waters resulting in reduction in water quality)	Erosion and Sediment Control Measures	Low to Negligible Minor change from baseline conditions	Local Effect are confined to the near-field assessment area	N/A	Short-Term to medium term	S VC interaction will occur sporadically	R VC will return to baseline conditions	Disturbance	Not Significant
Closure – Beaver Dam Mine Site (Surface water quality of Killag River from pit from effluent discharge)	Water Treatment at discharge (as required)	Low to Negligible Negligible change in water quality	Local Effect are confined to the near-field assessment area	N/A	Short-Term to medium term	R VC interaction will occur regularly	Partially Reversible Effect decreases in PC phases	Disturbance	Not Significant
Closure – Touquoy Mine Site (Storage of Beaver Dam tailings in the Touquoy open pit mine and surface water quality of Moose River from effluent discharge and groundwater seepage)	Treatment of water quality in pit as tailings are disposed in the open pit Water Treatment at discharge (as required) Continuation of the monitoring program that is currently underway at Touquoy since 2016	Low to Negligible Negligible change in water quality	Local Effect are confined to the near-field assessment area	N/A	Short-Term to medium term	R VC interaction will occur regularly	IR VC remains at the end of the activity	Disturbance	Not significant
WETLANDS									
Construction – Beaver Dam Mine Site and Haul Road (clearing and grubbing, direct wetland alteration, and upgrading and new Haul Road construction))	Sediment and erosion control, best management practices, spill preparedness, and engagement in the wetland permitting process.	M VC interaction causes direct loss of 4% of NSE mapped wetlands in the LAA. Direct impact to WSS.	PA Potential adverse effect to wetlands inside the PA	A Seasonal aspects may affect VC	P VC unlikely to recover to baseline conditions	O Effects occur once during the construction phase	IR VC will not recover to baseline conditions	Habitat Loss and Disturbance	Not Significant
Operational – Beaver Dam Mine Site (groundwater interactions, water quality, changes to flow regimes, accidents/malfunctions)	Sediment and erosion control, best management practices, spill preparedness, wetland monitoring and water management.	L VC interaction predicted to result in indirect loss of <1% of NSE mapped wetlands in the LAA	LAA Potential adverse effect to wetlands outside of the PA	A Seasonal aspects may affect VC	LT Effects may extend beyond 5 years	R Effects occur at regular intervals throughout the project	PR Mitigation cannot guarantee a return to baseline conditions	Disturbance	Not Significant
Operational – Haul Road (water quality, changes to flow regimes, accidents/malfunctions)	Sediment and erosion control, best management practices, spill preparedness, and wetland monitoring.	L Small change from baseline conditions	LAA Potential adverse effect to wetlands outside of the PA	A Seasonal aspects may affect VC	LT Effects may extend beyond 5 years	S Effects occur at irregular intervals throughout the Project	R VC will recover to baseline condition	Disturbance	Not Significant
Post Closure – Touquoy Mine Site (potential changes to hydrology in Moose River and associated riparian wetlands)	Sediment and erosion control, best management practices, and spill preparedness, wetland monitoring and water management. Discharge to mimic seasonal flows wherever practicable	N Negligible increase in water quantity, no expected impact to downstream wetlands	LAA VC interaction may extend beyond PA	A Seasonal aspects may affect VC	LT Effects may extend beyond 5 years	R Effects are expected to occur over a regular interval	PR VC will partially recover to baseline conditions	Disturbance	Not Significant
Closure (Active) – Beaver Dam Mine Site (wetland restoration and compensation)	Sediment and erosion control, best management practices, spill preparedness, wetland compensation	L VC interaction restores and compensates lost wetland habitat	PA Potential adverse effect confined to the PA	A Seasonal aspects may affect VC	LT Effects may extend beyond 5 years	O Effects occur once during the reclamation phase	PR Mitigation cannot guarantee a return to baseline conditions	Habitat Reclamation	Not Significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
FISH AND FISH HABITAT									
Direct									
Construction – Beaver Dam Mine Site & Haul Road Direct watercourse and wetland alteration	Sediment and erosion control, best management practices, spill preparedness, and completion of watercourse and fish habitat alteration permitting. Offset Plan. Fish Rescue	H VC interaction causes direct loss of fish habitat.	PA Potential adverse effect to fish habitat is limited to the PA	A Watercourse alteration will occur outside of sensitive periods for fish; however, other interactions may seasonally affect VC	P Effect is expected to be permanent	O Effects occur once during the construction phase	IR VC will not recover to baseline conditions	Habitat Alteration Disruption or Destruction	Not significant
Indirect									
Construction – Beaver Dam Mine Site Altered hydrology and altered surface water quality. Removal of historical tailings	Sediment and erosion control, best management practices, spill preparedness, and completion of watercourse and fish habitat alteration permitting. Offset Plan.	M (WC5) H (WC23, WC26, WC27)L moderate to high changes to baseline conditions on downstream habitats	LAA Potential adverse effect to fish habitat outside of the PA	A Seasonal habitat provisions may affect VC	P Effect is expected to be permanent	R Effects occur at regular intervals as construction progresses	IR VC will not recover to baseline conditions	Habitat Alteration	Not significant
Direct									
Construction – Haul Road Watercourse crossings	Sediment and erosion control, best management practices, spill preparedness, and completion of watercourse and fish habitat alteration permitting. Offset Plan.	L to H VC interaction causes direct loss of fish habitat. L < 20 m2, M 20 m2 - 100 m2, H > 100 m2 per crossing	PA Potential adverse effect to fish habitat is limited to the PA	A Seasonal habitat provisions may affect the VC	P Effect is expected to be permanent	O Effects occur once during the construction phase	IR VC will not return to baseline conditions	Habitat Alteration Disruption or Destruction	Not significant
Construction – Haul Road Watercourse crossings – improve fish passage	N/A	N/A	LAA Potential adverse effect to fish habitat outside of the PA	A Seasonal habitat provisions may affect the VC	P Increased habitat connectivity is permanent	O Effects occur once during the construction phase	IR VC will not return to baseline conditions	Increased habitat connectivity	Not significant
Indirect									
Operations –Beaver Dam Mine Site Indirect impacts including groundwater drawdown, groundwater seepage, altered surface water quality Cameron Flowage/Killag River Tent Lake Cope Brook	Interceptor trench west of PAG stockpile Water treatment (as required) Discharge point location at northern end of Cameron Flowage Surface water from pit dewatering activities will be designed to discharge back into Cameron Flowage/Killag River at rates to mimic seasonal flows, where practical Vegetative buffers to provide shade to on-site ponds Install groundwater pumps to supplement baseflow in Cameron Flowage Explosives Management Best Management Practices	L Interaction likely to cause indirect impacts to fish habitat	LAA Potential adverse effect to fish habitat outside of the PA	A Seasonal habitat provisions may affect VC	P Effect is expected to be permanent	R Effects occur at regular intervals throughout the Project	PR Groundwater drawdown effects will cease once the pit lake has filled. Surface water interactions are partially reversible	Habitat alteration	Not significant
Operations – Haul Road Indirect impacts to surface water quality	Sediment and erosion control, best management practices, and spill preparedness.	N Negligible change to fish and fish habitat	LAA Potential adverse effect to fish habitat outside of the PA	A Seasonal habitat provisions may affect VC	P Effect is expected to be permanent	R Effects occur at regular intervals throughout the Project	PR VC will partially return to baseline conditions (reduction in traffic once haul trucks cease)	Habitat alteration	Not significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
Post Closure – Beaver Dam Mine Site and Touquoy Mine site Surface water quality Cameron Flowage/Killag River Moose River	Water treatment (as required)	N VC interaction will remain below appropriate guidelines	LAA VC interaction will extend beyond PA	A Seasonal aspects will affect VC	P Effect is expected to be permanent	R Effects are expected to occur over a regular interval	PR VC will partially recover to baseline conditions	Change in water quality	Not significant
HABITAT AND FLORA									
Construction – Beaver Dam Mine Site and Haul Road (clearing and grubbing, and Haul Road widening and construction)	Limit habitat disturbance and minimize Project Area during detailed design, sediment and erosion control, best-management practices, spill preparedness, dust control, re-establish habitat and associated vegetation communities during closure.	M Direct loss to habitat and flora. Partial mitigation through restoration.	PA Effects confined to the PA.	N/A VC is not expected to be affected by timing.	MT (Beaver Dam Mine Site) Effects occur beyond 5 years when closure activities commence at Beaver Dam Mine Site. P (Haul Road) Closure of the Haul Road not expected.	O Effects occur once during the construction phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Disturbance, Habitat Loss	Not Significant
Operation – Beaver Dam Mine Site, Haul Road and Touquoy Mine Site (dust from haul trucks, heavy machinery and mine operations)	Dust control, sediment and erosion control, best management practices, and spill preparedness.	M	LAA Potential effects below guideline levels beyond the PA.	N/A VC is not expected to be affected by timing.	MT Effects may occur up to 5 years.	R Effects will occur at regular intervals.	R VC will return to baseline conditions.	Disturbance	Not Significant
Closure (Active) – Beaver Dam Mine Site (re-vegetate using stockpile materials)	N/A	L Minor change from baseline conditions.	LAA Potential effects beyond the PA.	N/A VC is not expected to be affected by timing.	LT Effects extend beyond active closure phase.	O Effects occur once during the closure phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Reclamation	Not Significant
TERRESTRIAL FAUNA									
Construction – Beaver Dam Mine Site and Haul Road (habitat loss and fragmentation from clearing and grubbing)	Limit habitat disturbance and minimize Project footprint during detailed design, implement speed limits, install fences where necessary, and minimize lighting.	L < 5% direct loss of habitat types used by observed species within the LAA Partial mitigation through restoration.	RAA Potential adverse effect to fauna outside of the LAA (fragmentation)	A VC interaction may affect seasonal aspects of fauna.	MT (Beaver Dam Mine Site) Effects occur beyond 5 years when closure activities commence at Beaver Dam Mine Site. P (Haul Road) Closure of the Haul Road not expected.	O Effects occur once during the construction phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Loss	
Construction – Beaver Dam Mine Site and Haul Road (sensory disturbance (noise, light, dust deposition) and wildlife vehicle collisions from construction activities)	Implement speed limits, install fences where necessary, and minimize lighting.	M	LAA Potential adverse effect to fauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	ST Effects are limited to occur from as little as 1 day to 12 months	R Effects occur at regular intervals during the construction phase	R VC will recover to baseline conditions	Disturbance	
Operational – Beaver Dam Mine Site, Haul Road and Touquoy Mine Site (disturbance (noise, light, dust deposition and wildlife vehicle collisions) from haul trucks, heavy machinery and mine operations)	Implement speed limits, install fences where necessary, and minimize lighting.	M Moderate changes relative to baseline conditions in remaining and surrounding habitat.	LAA Potential adverse effect to fauna beyond the PA.	A VC interaction may affect seasonal aspects of fauna.	MT Effects may occur up to 5 years.	R Effects occur at regular intervals.	R VC will recover to baseline conditions	Disturbance	
Closure (Active) – Beaver Dam Mine Site (re-establishment of habitat for fauna)	N/A	L Minor change from baseline conditions.	LAA Potential effect to fauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	LT Effects extend beyond active closure phase.	O Effects occur once during the closure phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Reclamation	

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
AVIFAUNA									
Construction – Beaver Dam Mine Site and Haul Road (habitat loss from clearing and grubbing)	Limit habitat disturbance and minimize Project Area during detailed design, implement speed limits and minimize lighting.	L < 5% direct loss of habitat types used by observed species within the LAA Partial mitigation through restoration.	LAA Potential adverse effect to avifauna outside of the PA	A Although clearing and grubbing will occur outside of the sensitive period for avifauna, other activities will not.	MT (Beaver Dam Mine Site) Effects occur beyond 5 years when closure activities commence at Beaver Dam Mine Site. P (Haul Road) Closure of the Haul Road not expected.	O Effects occur once during the construction phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Loss	Not Significant
Construction – Beaver Dam Mine Site and Haul Road (sensory disturbance (noise, light, dust deposition) and wildlife vehicle collisions from construction activities)	Implement speed limits and minimize lighting.	M	LAA Potential adverse effect to avifauna outside of the PA	A VC interaction may affect seasonal aspects of avifauna.	ST Effects are limited to occur from as little as 1 day to 12 months	R Effects occur at regular intervals during the construction phase	R VC will recover to baseline conditions	Disturbance	Not Significant
Operational – Beaver Dam Mine Site, Haul Road and Touquoy Mine Site (disturbance (noise, light, dust deposition and wildlife vehicle collisions) from haul trucks, heavy machinery and mine operations)	Implement speed limits, install fences where necessary, and minimize lighting.	M Moderate changes relative to baseline conditions in remaining and surrounding habitat.	LAA Potential adverse effect to avifauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	MT Effects may occur up to 5 years.	R Effects occur at regular intervals.	R VC will recover to baseline conditions	Disturbance	Not Significant
Operations – Touquoy Mine Site Tailings deposition	Best management practices, Bird Deterrent Program implementation	L Change in habitat for avifauna	PA VC interaction is confined to the PA.	A VC interaction may occur during sensitive period for avifauna.	LT Effects may extend beyond 5 years	R VC interaction will occur at regular intervals	PR Mitigation cannot guarantee a return to baseline conditions	Creation of potential open water habitat; decreased water quality	Not Significant
SPECIES OF CONSERVATION INTEREST AND SPECIES AT RISK									
Priority Fish									
Operations –Beaver Dam Mine Site Indirect impacts including groundwater drawdown, groundwater seepage, altered surface water quality Cameron Flowage/Killag River Tent Lake Cope Brook	Indirect	Interceptor trench west of PAG stockpile Water treatment (as required) Discharge point location at northern end of Cameron Flowage Vegetative buffers to provide shade to on-site ponds Install groundwater pumps to supplement baseflow in Cameron Flowage Explosives Management Best Management Practices	L Interaction likely to cause indirect impacts to fish habitat	LAA Potential adverse effect to fish habitat outside of the PA	A Seasonal habitat provisions may affect VC	P Effect is expected to be permanent	R Effects occur at regular intervals throughout the Project	PR Groundwater drawdown effects will cease once the pit lake has filled. Surface water interactions are partially reversible	Habitat alteration
Post Closure – Beaver Dam Mine Site and Touquoy Mine site Surface water quality Cameron Flowage/Killag River Moose River	Indirect	Water treatment (as required)	N VC interaction will remain below appropriate guidelines	LAA VC interaction will extend beyond PA	A Seasonal aspects will affect VC	P Effect is expected to be permanent	R Effects are expected to occur over a regular interval	PR VC will partially recover to baseline conditions	Change in water quality

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
Priority Terrestrial Fauna									
Construction – Beaver Dam Mine Site and Haul Road (habitat loss and fragmentation from clearing and grubbing)	Limit habitat disturbance and minimize Project footprint during detailed design, implement speed limits, install fences where necessary, and minimize lighting.	L < 5% direct loss of habitat types used by observed SAR and SOCI within the LAA Partial mitigation through restoration.	RAA Potential adverse effect to fauna outside of the LAA (fragmentation)	A VC interaction may affect seasonal aspects of fauna.	MT (Beaver Dam Mine Site) Effects occur beyond 5 years when closure activities commence at Beaver Dam Mine Site. P (Haul Road) Closure of the Haul Road not expected.	O Effects occur once during the construction phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Loss	Not Significant
Construction – Beaver Dam Mine Site and Haul Road (sensory disturbance (noise, light, dust deposition) and wildlife vehicle collisions from construction activities)	Implement speed limits, install fences where necessary, and minimize lighting.	M	LAA Potential adverse effect to fauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	ST Effects are limited to occur from as little as 1 day to 12 months	R Effects occur at regular intervals during the construction phase	R VC will recover to baseline conditions	Disturbance	Not Significant
Operational – Beaver Dam Mine Site, Haul Road and Touquoy Mine Site (disturbance (noise, light, dust deposition and wildlife vehicle collisions) from haul trucks, heavy machinery and mine operations)	Implement speed limits, install fences where necessary, and minimize lighting.	M Moderate changes relative to baseline conditions in remaining and surrounding habitat.	LAA Potential adverse effect to fauna beyond the PA.	A VC interaction may affect seasonal aspects of fauna.	MT Effects may occur up to 5 years.	R Effects occur at regular intervals.	R VC will recover to baseline conditions	Disturbance	Not Significant
Closure (Active) – Beaver Dam Mine Site (re-establishment of habitat for fauna)	N/A	L Minor change from baseline conditions.	LAA Potential effect to fauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	LT Effects extend beyond active closure phase.	O Effects occur once during the closure phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Reclamation	Not Significant
Priority Avifauna									
Construction – Beaver Dam Mine Site and Haul Road (habitat loss from clearing and grubbing)	Limit habitat disturbance and minimize Project footprint during detailed design, implement speed limits and minimize lighting.	L < 5% direct loss of habitat types used by observed species within the LAA Partial mitigation through restoration.	LAA Potential adverse effect to avifauna outside of the PA	A Although clearing and grubbing will occur outside of the sensitive period for avifauna, other activities will not.	MT (Beaver Dam Mine Site) Effects occur beyond 5 years when closure activities commence at Beaver Dam Mine Site. P (Haul Road) Closure of the Haul Road not expected.	O Effects occur once during the construction phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Loss	Not Significant
Construction – Beaver Dam Mine Site and Haul Road (sensory disturbance (noise, light, dust deposition) and wildlife vehicle collisions from construction activities)	Implement speed limits and minimize lighting.	M	LAA Potential adverse effect to avifauna outside of the PA	A VC interaction may affect seasonal aspects of avifauna.	ST Effects are limited to occur from as little as 1 day to 12 months	R Effects occur at regular intervals during the construction phase	R VC will recover to baseline conditions	Disturbance	Not Significant
Operational – Beaver Dam Mine Site, Haul Road and Touquoy Mine Site (disturbance (noise, light, dust deposition and wildlife vehicle collisions) from haul trucks, heavy machinery and mine operations)	Implement speed limits, install fences where necessary, and minimize lighting.	M Moderate changes relative to baseline conditions in remaining and surrounding habitat.	LAA Potential adverse effect to avifauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	MT Effects may occur up to 5 years.	R Effects occur at regular intervals.	R VC will recover to baseline conditions	Disturbance	Not Significant
Operations – Touquoy Mine Site Tailings deposition	Best management practices, Bird Deterrent Program implementation	L Change in habitat for avifauna	PA VC interaction is confined to the PA.	A VC interaction may occur during sensitive period for avifauna.	LT Effects may extend beyond 5 years	R VC interaction will occur at regular intervals	PR Mitigation cannot guarantee a return to baseline conditions	Creation of potential open water habitat; decreased water quality	Not Significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
Closure (Active) – Beaver Dam Mine Site (re-establishment of habitat for fauna)	N/A	L Minor change from baseline conditions.	LAA Potential effect to avifauna outside of the PA	A VC interaction may affect seasonal aspects of fauna.	LT Effects extend beyond active closure phase.	O Effects occur once during the closure phase.	PR Mitigation and reclamation cannot guarantee a return to baseline conditions.	Habitat Reclamation	Not Significant
MI'KMAQ OF NOVA SCOTIA									
Construction – Beaver Dam Mine Site and Haul Road Direct effect on archaeological resources and burial site	Ensure no Project activities occur outside of PA, education and procedures in place as part of the EPP to halt work and notify the Mi'kmaq if archaeological deposits are encountered.	N No interactions with known archaeological Mi'kmaq resources and burial sites are expected. Identified resources will be avoided	PA VC confined to the mine site	N/A This project interaction is not expected to be affected by timing	ST VC interaction will occur during construction phase	O VC interaction will occur once	IR VC remains at the end of the activity	None	Not Significant
Construction – Beaver Dam Mine Site and Haul Road Direct habitat loss, including wetlands, and loss of plants of significance to the Mi'kmaq	Minimize footprint as per Project design, implementation of mitigation and monitoring as per other VCs to minimize indirect effects, engagement and involvement of the Mi'kmaq throughout Project (including monitoring and compensation)	L Mitigation strategies and best management practices reduce the magnitude of impact	PA VC confined to the mine site	A timing is applicable and clearing and grubbing will be completed outside of the growing season wherever practicable	ST VC interaction will occur during construction phase	O VC interaction will occur once	PR VC remains at the end of the activity	Loss of plant specimens, habitat loss. Reclamation will restore some native plant species but not expected to return to baseline	Not Significant
Construction and Operations – Beaver Dam Mine Site and Haul Road Direct and indirect impacts to fish and fish habitat	Minimize footprint as per Project Design, erosion and sediment control to minimize impact, and water quality treatment, if required. Fisheries Act Authorization and Fish Habitat Offset Plan	L Mitigation strategies and best management practices reduce the magnitude of impact	PA/LAA Direct effect within PA, indirect effect within LAA	A Seasonality (spawning) windows applicable	MT VC interaction will occur during construction, operations and active reclamation	O/S Effects will be once from direct impacts, effects will be sporadic from indirect impacts	IR VC interactions are permanent	Habitat loss, change in water quality/quantity. Positive change in water quality due to historical tailings management	Not Significant
Construction and Operations – Beaver Dam Mine Site and Haul Road Indirect impacts to fauna- loss of habitat; noise and fragmentation	Minimize footprint as per Project Design, utilize existing roads wherever practicable, provision of bypass roads to maintain access.	L Mitigation and best management strategies reduce magnitude of impact	PA/LAA Direct effect within PA, indirect effect within LAA	A Seasonality (breeding windows) applicable	MT VC interaction will occur during construction, operations and active reclamation	R effects will be regular from indirect impacts	PR Traffic will reduce on roads once operations cease	Habitat loss, potential changes in species movement patterns	Not Significant
Construction and Operations – Beaver Dam Mine Site and Haul Road Predicted noise and air potential interaction with traditional practices surrounding the Project	Utilize berms and other mitigation where required to reduce noise levels to minimize indirect impact to Mi'kmaq; share noise study results and involve Mi'kmaq in data collection. Use of chemical dust suppressants on Haul Road to ensure 80% dust control.	L noise and dust levels predicted to be elevated above background but in compliance at the property boundaries,	LAA Noise will potentially affect wildlife patterns in close proximity to the Mine (LAA)	N/A This project interaction is not expected to be affected by timing	MT VC interaction will occur during construction, operations and active reclamation (2-3 yrs) phases of the Project	R VC interaction will occur at regular intervals throughout the Project	R VC interaction will recover to baseline after Project activities are completed	Sensory Disturbance	Not Significant
Construction and Operations – Beaver Dam Mine Site and Haul Road Predicted Light levels and potential interaction with traditional practices surrounding the Project	Maintenance of forested canopy wherever practicable within the Project property boundaries. Limit unnecessary lighting at Beaver Dam Mine Site; utilization of potential green energy options	L Light levels are predicted to meet guidelines at residences. Elevated light levels above background will be present up to 2 km from the Mine	LAA light from the Beaver Dam Mine Site is predicted to extend into the LAA	A Timing is applicable as visual effect is adjusted based on foliage on trees	MT VC interaction will occur during construction, operations and active reclamation (2-3 yrs) phases of the Project	R VC interaction will occur at regular intervals throughout the Project	R VC interaction will recover to baseline after Project activities are completed	Sensory Disturbance	Not Significant
Construction, Operations and Closure, Beaver Dam Mine Site and Haul Road Potential impact to human health from the Project	Implement mitigation and monitoring measures identified for each VC for the life of the Project as required	L Adverse health effects from dust exposure, the consumption of country foods harvested from the vicinity of the Mine Site, and recreational water use are not anticipated.	LAA This project interactions resulting in potential health effects extend into the LAA	N/A This project interaction is not expected to be affected by timing	MT VC interaction will occur during construction, operations and active reclamation (2-3 yrs) phases of the Project	R VC interaction will occur at regular intervals throughout the Project	R VC interaction will recover to baseline after Project activities are completed	Human Health	Not Significant

Table 9.1-2: Summary of Residual Effects by Valued Component (continued)

Project - VC Interactions	Summary of Mitigation	Residual Environmental Effects Characteristics						Residual Effect	Significance of Residual Effect
		Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility		
Construction, Operations and Closure, Beaver Dam Mine Site and Haul Road Potential impact to the economic, social and mental well being of the Mi'kmaq of Nova Scotia from the Project	Continue discussions with the Mi'kmaq to determine appropriate mitigation and compensation requirements, where appropriate. Proposed multi-use bypass road. Potentially suitable alternative tracts of Crown land are available surrounding the Beaver Dam Mine Site and Haul Road. Mi'kmaq participation in monitoring programs and development of Reclamation and Closure Plan for the Project.	L	LAA	A	MT VC interaction will occur during construction, operations and active reclamation (2-3 yrs) phases of the Project	C	PR	Change in economic, social and mental well being of the Mi'kmaq of Nova Scotia	Not Significant
Construction, Operations and Closure – Beaver Dam Mine Site and Haul Road Restriction and loss of access for traditional practice during construction, operations and active reclamation of the Mine	Continue discussions with the Mi'kmaq to determine appropriate mitigation and compensation requirements, where appropriate. Proposed multi-use bypass road. Potentially suitable alternative tracts of crown land are available surrounding the Beaver Dam Mine Site and Haul Road	L Mitigation strategies and best management practices reduce the magnitude of impact	LAA Access restriction is confined to PA; hunting effects may be felt within LAA due to sensory disturbance and/or firearm restrictions	N/A This project interaction is not expected to be affected by timing	MT VC interaction will occur during construction, operations and active reclamation (2-3 yrs) phases of the Project	R VC interaction will occur regularly	R VC returns to baseline conditions at the end of the activity	Loss of Access	Not Significant
Construction, Operations and Closure – Beaver Dam Mine Site and Haul Road Development of Project	Continue confidential discussions with the Mi'kmaq of Nova Scotia (parallel to the federal environmental assessment) to identify employment, community and economic benefits.	L Considerable and tangible opportunities for Mi'kmaq communities	RAA Opportunities can be considered across the RAA	N/A This project interaction is not expected to be affected by timing	MT to LT Opportunities will extend past operational period into reclamation and post closure.	C There are continuous opportunities throughout all project phases.	R VC returns to baseline conditions at the end of the activity	Benefits to the Mi'kmaq of Nova Scotia	Not Significant
PHYSICAL AND CULTURAL HERITAGE									
Construction – Beaver Dam Mine Site and Haul Road (Identification and/or damage to physical and cultural heritage resources – Site 6 and Areas 2 and 3)	Evaluate changes to layout for potential impacts to archaeological resources. Complete intensified historical research, additional shovel pit testing, where required, and detailed documentation at archeological features prior to disturbance cause by Project activities, in conjunction with Mi'kmaq agencies as required. Contact Coordinator of Special Places, Nova Scotia Communities, Culture, & Heritage Department if human remains or archaeological deposits are identified.	L Site 6 will be lost due to Project activities. This site contains the remains of a twentieth century structure. Impacts to Areas 2 and 3 will be minimized where practicable. These areas underwent additional shovel tests in fall 2020 and were cleared of further investigation.	PA Effects confined to the PA.	N/A VC is not expected to be affected by timing.	P Effects are permanent.	O Effects will occur once within the life of the Project.	IR VC will not return to baseline conditions.	Loss of resource	Not significant

Notes: See each valued components thresholds for determination subsections for specific for magnitude criteria definitions (Sections 6.1.6.2, 6.2.6.2, 6.3.6.3, 6.4.6.2, 6.5.6.2, 6.6.6.4, 6.7.7.2, 6.8.6.3, 6.9.6.2, 6.10.6.2, 6.11.6.2, 6.12.7.2, 6.13.6.2, 6.14.6.2, and 6.15.6.2) and Section 5.11, Table 5.11-1 for general definitions of the below characteristics.

Magnitude		Geographic Extent		Timing		Duration		Frequency		Reversibility	
N	Negligible	PA	Project Area	N/A	Not Applicable	ST	Short-Term	O	Once	R	Reversible
L	Low	LAA	Local Assessment Area	A	Applicable	MT	Medium-Term	S	Sporadic	IR	Irreversible
M	Moderate	RAA	Regional Assessment Area			LT	Long-Term	R	Regular	PR	Partially Reversible
H	High					P	Permanent	C	Continuous		

Table 9.1-3: Summary of Residual Effects for Socio-economic Conditions

Theme Areas	Topics within Theme Area	Linkages to other Plans and Guiding Documents	Pathway	Mitigation	Direction	Magnitude	Duration	Geographical Extent	Reversibility	Frequency	Residual Effect
Workforce Development	Training Opportunities	One NS Goal, Atlantic Growth Strategy	Apprenticeship training program and internal training opportunities provide opportunities for certifications and training.	N/A	Positive	L	Short Term	RAA	N/A	C	Insignificant
	Opportunities for Advancement within career	One NS Goal	Internal hiring and opportunities for graduates provided by AMNS employment opportunities, support career advancement.	N/A	Positive	L	Short Term	RAA	N/A	C	Insignificant
	New employment - direct and indirect	One NS Goal, Atlantic Growth Strategy	Beaver Dam will provide new employment opportunities, both through direct and indirect sources.	N/A	Positive	H	Short Term	LAA	N/A	C	Significant
	Labour Force attachment	One NS Goal	New high quality employment opportunities provide opportunities for working age people to attached to the labour force.	N/A	Positive	L	Short Term	RAA	N/A	C	Insignificant
	Impact on Educational Attainment	One NS Goal, Atlantic Growth Strategy; SDG	Apprenticeship training program supports educational attainment and providing opportunity for graduates of both NSCC and university programs.	N/A	Positive	N	Short Term	RAA	N/A	C	Insignificant
	Youth Employment Rate	One NS Goal; Halifax Partnership	Employment opportunities for young people (under 30) through both direct and indirect sources.	N/A	Positive	N	Short Term	RAA	N/A	C	Insignificant
	Suppliers	Halifax Partnership, One NS Goal	There will be need for suppliers from the local areas to provide supports, which may impact the suppliers labour needs.	N/A	Positive	M	Short Term	RAA	N/A	C	Significant
	Labour Force Attachment - Indigenous	One NS Goal; Halifax Partnership; KMKNO Pillars	MOU and IBA provide support to Mi'kmaq lead employment programs.	N/A	Positive	N	Short Term	RAA	N/A	C	Insignificant
Demographics	In-Migration	Halifax Partnership, One NS Goal, Atlantic Growth Strategy	New employment opportunities may attract new residents to the province.	N/A	Positive	N	Short Term	LAA	N/A	C	Insignificant
	Rural Re-Population	Halifax Partnership, One NS Goal	New employment opportunities may attract new residents to the LOA supporting communities that are seeing population declines.	Monitoring of population growth related to mine operations	Positive	N	Short Term	LAA	N/A	C	Insignificant
Healthy Communities	Hospitals	SDG	With new populations and industry, local hospital usage may increase.	N/A	Negative	N	Short Term	LAA	R	C	Insignificant
	Family Doctor Availability	SDG	New resident may impact family doctor availability.	N/A	Negative	N	Short Term	LAA	R	C	Insignificant
	Seniors Supports	SDG	Through Community investment AMNS has made and plans to continue to make investments to seniors related initiatives.	N/A	Positive	N	Short Term	LAA	R	I	Insignificant
	Schools	SDG	If rural re-population occurs, there may be an increase in school populations.	N/A	Positive	N	Short Term	LAA	R	C	Insignificant
	Recreational Facilities		Potential increase of recreational facilities or support for new recreation facilities planned for the area.	N/A	Positive	N	Short Term	LAA	R	I	Insignificant
	Housing	SDG	Impact on housing availability requires further study and is market dependent	Monitoring of population increase on housing market		U	Short Term	LAA	R		
	Climate Change and Energy	SDG					Short Term				
	Local Taxation	Once Nova Scotia	Direct and indirect benefits to the local, provincial and federal governments.	N/A	Positive	L	Short Term	LAA	R	C	Insignificant

Table 9.1-3: Summary of Residual Effects for Socio-economic Conditions (continued)

Theme Areas	Topics within Theme Area	Linkages to other Plans and Guiding Documents	Pathway	Mitigation	Direction	Magnitude	Duration	Geographical Extent	Reversibility	Frequency	Residual Effect
Land Use, Recreational	Snowmobiling and ATV Use	Halifax Partnership	Support and upgrades to existing and proposes off-road trail systems and potential partnership opportunities.	Construction of bypass roads.	Positive	N	Long Term	LAA	R	C	Significant
	Active Transportation	HRM Policies	Increased traffic on public roads in limited locations may create concerns about walking and biking safety.	Construction of bypass roads	Negative	N	Long Term	LAA	R	C	Significant
	Access to Camps		With the construction of a haul road, access to camps will be maintained or possibly improved.	Construction of bypass roads	Positive	N	Long Term	LAA	R	C	Significant
	Haul Road Safety		The existing haul road will have increase operational safety parameters which will improve the safety on the road by separating heavy traffic from recreational users, small vehicles and non motorized usage.	Construction of bypass roads	Positive	N	Short Term	LAA	R	C	Significant
	Noise		See section on noise.	Section 6.1.8					R		
	Hunting and Fishing	Halifax Partnership	The haul road and mine site may impact hunting by altering migration patterns and by reducing hunting opportunities near the mine site and haul road, as required by the relevant act. Access to fishing areas will be improved, potentially leading to increased recreational fishing.	Construction of bypass roads	Negative	L	Short Term	LAA	R	C	Significant
Parks and Open Space, Tourism	Protected Areas and Wilderness Areas	Halifax Partnership	No impact.	N/A	Neutral	N	Short term	LAA	N/A	N/A	Insignificant
	Local Community Sites	SDG	No impact.	Protection of Date Rock	Neutral	N	Short Term	LAA	R	C	Insignificant
	Tourism Opportunities	Halifax Partnership, One NS Goal	Potential for increased attraction to the area to view mining related activities.	N/A	Positive	N	Short Term	LAA	N/A	N/A	Insignificant
	Regional Visitation	Halifax Partnership, One NS Goal	No anticipated impact.	N/A	Neutral	N	Short Term	LAA	N/A	N/A	Insignificant
Roads and Traffic	Traffic Impact		Increased traffic on public roads in limited locations may create concerns about walking and biking safety.	Access and Safety Plan	Negative	M	Short Term	LAA	R	C	Insignificant
	Road Infrastructure		Potential for improvements to public roads to address increased usage by proponent. Increased usage may result in negative impacts or degradation of public road infrastructure.	This concern has been forwarded to the CLC to assess next steps and possibly providing letter of support for paving.	Negative and Positive	M	Long Term	LAA	R	C	Insignificant
	Private Road Infrastructure		Private road will be improved to a high standard, which will be left in place after mine operations cease.	N/A	Positive	N	Long Term	LAA	R	C	Insignificant
	Public Road Crossings		Improvements to road crossings at the haul road and highway 224.	Install crossings to allow access to other lands	Positive	N	Permanent	LAA	R	C	Insignificant
	Pedestrian Safety		Increased traffic on public roads in limited locations may create concerns about walking and biking safety.	Access and Safety Plan	Negative	N	Short Term	LAA	R	C	Insignificant
Impact on Government Revenues	Provincial Taxation and Benefits	One Nova Scotia	Direct and indirect taxation benefits to the province.	N/A	Positive	L	Short Term	RAA	R	C	Insignificant
	Federal Taxation and Benefits	Atlantic Growth Strategy	Direct and indirect taxation benefits to the province.	N/A	Positive	L	Short Term	RAA	R	C	Insignificant

Notes: Section 6.16.12, Table 6.16-27 for specific Socio-economic Conditions residual effects and significance rating criteria and Section 5.11, Table 5.11-1 for general definitions of the below characteristics.

Magnitude		Geographic Extent		Timing		Duration		Frequency		Reversibility	
N	Negligible	LAA	Local Assessment Area	N/A	Not Applicable	ST	Short-Term – within life	O	Once	R	Reversible
L	Low	RAA	Regional Assessment Area	A	Applicable	LT	Long-Term Beyond life	I	Intermittent	IR	Irreversible
M	Moderate					P	Permanent	R	Regular		
H	High							C	Continuous		

Table 9.1-4: Summary of Residual Cumulative Effects by Valued Component

Residual Adverse Cumulative Effects (After Mitigation and Compensation if required)	Significance Levels						Overall Significance of Residual Adverse Effects and Rationale
	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	
NOISE							
Cumulative increased noise levels (Noise from construction, operation, reclamation, and operation of mining, haul trucks, forestry activities and haul road usage)	L Noise levels are expected to be less than or equal to appropriate guidelines or threshold values at the Beaver Dam Mine Site and Haul Road property boundary. Additive cumulative effects may occur when forestry operations occasionally coincide with Project activities and hauling ore from FMS and Cochrane Hill to Touquoy Mine Site for processing	LAA The cumulative effects causing increased background noise levels will not extend beyond the LAA.	A VC is expected to be affected by timing, with sporadic nature of timber harvesting.	LT Effects may extend beyond 8 years.	R Additive periods of potential effects from the Project and forestry operations are likely to be limited in frequency. However, cumulative effects to baseline noise levels from the use of the Beaver Dam Haul Road by Beaver Dam, Fifteen Mile Stream and Cochrane Hill Gold Projects will occur regularly throughout the operational phase of the Project.	R VC will recover to baseline conditions once operations have stopped.	Low Adverse Effect (Not Significant) Effects are limited to the LAA based on Project interactions and usage of the Beaver Dam Haul Road by various activities. Furthermore, the VC is anticipated to recover to baseline conditions once the operation of the mine has stopped. Effects would be confirmed through monitoring.
AIR							
Increased cumulative dust during operation of the Project (Dust from mining and haul trucks)	M Possible exceedance of guidelines or threshold values when forestry operations occasionally coincide with hauling from the Project to the Touquoy Processing Facility along with ore or concentrate from Fifteen Mile Stream and Cochrane Hill Projects.	LAA The cumulative effects causing increased background air concentrations will not extend beyond the LAA.	A VC will be affected by timing – drier periods will increase fugitive dust emissions relative to wetter times of the year.	LT Effects may extend beyond 7 years.	R Additive periods of potential effects from the Project and forestry operations are likely to be limited in frequency. However, cumulative effects to ambient dust levels from the use of the Beaver Dam Haul Road by the Project, the Fifteen Mile and Cochrane Hill Gold Projects will occur regularly throughout the operational phase of the Project.	R VC will recover to baseline conditions once operations have stopped.	Moderate Adverse Effect (Not Significant) Effects are limited to the LAA where there are limited sensitive receptors, and the use of the Beaver Dam Haul Road. Furthermore, the VC is anticipated to recover to baseline conditions once the operation Project has been completed. Effects would be confirmed through monitoring.
LIGHT							
Increased light levels during operation of the Project (operational light levels and light from transportation of gold concentrate and use of the Beaver Dam Haul Road by other projects)	L Less than or equal to appropriate guidelines or threshold values.	LAA The cumulative effects causing increased background light concentrations will not extend beyond the LAA. Exception to this is the cumulative light along the Beaver Dam Haul Road which is outside of the Project LAA but described herein.	N/A VC is not expected to be affected by timing.	LT Effects may extend beyond 8 years.	R Additive periods of potential effects from the Project and forestry operations are likely to be limited in frequency. However, cumulative effects to ambient light levels from the use of the Beaver Dam Haul Road Use by Fifteen Mile Stream and Cochrane Hill Gold Projects will occur regularly throughout the operational phase of the Project.	R VC will recover to baseline conditions once operations have stopped.	Low Adverse Effect (Not Significant) Effects are limited to the LAA where there are limited sensitive receptors, and the use of the Beaver Dam Haul Road. Furthermore, the VC is anticipated to recover to baseline conditions once the operation of the Beaver Dam Mine Site has been completed.
SURFACE WATER							
Potential for residual cumulative effects to all surface water systems within each RAA (Touquoy Mine Site and Beaver Dam Mine Site).	L With mitigation strategies, predicted receiver concentrations are predicted to be greater than guidelines and increase by greater than 10% over baseline levels, but remains well within the observed range of natural variation (25th to 75th percentile baseline water quality).	LAA Cumulative effects are confined to the LAA.	A Cumulative effect would be more significant during low flow conditions and/or sensitive spawning windows.	LT Effects may extend beyond 7 years.	R Effects will occur at regular intervals throughout operations.	PR Mitigation cannot guarantee a return to baseline conditions.	Minor Adverse Effect (Not Significant) Given implementation of proposed mitigation methods, no significant adverse cumulative effect is expected.
FISH AND FISH HABITAT							
Cumulative disturbance to fish and fish habitat within the RAA.	L Differing from the existing environment/ baseline conditions, within natural variation	LAA Potential adverse cumulative effect to fish habitat outside of the PA.	A Cumulative effect would be more significant during sensitive spawning windows.	P Effect is expected to be permanent.	C Effects will occur on a continuous basis throughout operations and closure.	IR Effects of flow reduction and direct impacts from Haul road crossings are expected to be irreversible.	Low Adverse Effect (Not Significant) Fish habitat offsetting is anticipated to compensate for lost fish habitat from the Project itself. No other pathway for residual effects from surrounding projects has been identified.

Table 9.1-4: Summary of Residual Cumulative Effects by Valued Component (continued)

Residual Adverse Cumulative Effects (After Mitigation and Compensation if required)	Significance Levels						Overall Significance of Residual Adverse Effects and Rationale
	Magnitude	Geographic Extent	Timing	Duration	Frequency	Reversibility	
SPECIES OF CONSERVATION INTEREST AND SPECIES AT RISK							
Cumulative loss, alteration and the disturbance of habitats throughout the RAA relating to SOCI and SAR.	L The maximum cumulative Project edge effect will affect 512 ha of interior forest habitat in consideration of the Beaver Dam and FMS Projects, which accounts for 0.7% of predicted interior forest in the RAA. There is limited additional development pressures from other projects in the RAA, as demonstrated by the few projects identified within this evaluation.	RAA Loss of habitat used by priority species has occurred on a regional scale.	A Cumulative effect would be more significant during sensitive period for each priority species.	LT Effects may extend beyond 7 years.	S The loss of habitat associated with the Beaver Dam Mine Site will occur once. However, the potential future loss of habitat associated with the Beaver Dam Project and other regional projects in the future could occur throughout the lifetime of the Project.	PR Reclamation cannot guarantee a return to baseline conditions.	Low Adverse Effect (Not Significant) The small proportion of regional habitat that supports priority species that would be lost as a result of this Project will be restored during the reclamation stage of Closure Phase. There is limited additional development pressure from projects in the RAA.
MI'KMAQ OF NOVA SCOTIA							
Effects to Mi'kmaq of Nova Scotia and their traditional land use as a result from impacts to air quality, noise, light, surface water, fish habitat, and human health, and cumulative limitations to land use for traditional purposes from multiple projects within the RAA.	L Mitigation and best management strategies reduce magnitude of impact. The loss of access to a maximum area of 6,282 ha from all identified projects in the RAA accounts for 0.64% of all land within the RAA, and 0.88% of available crown land within the RAA.	LAA Direct cumulative effects within PA, indirect cumulative effects within LAA. BD Haul Road cumulative effects within LAA for BD Haul Road.	A Seasonal windows applicable. Air dispersion affected by season and wind direction, noise and light effects will be limited by foliage when present on trees, effects to fish and fish habitat are more sensitive during spawning windows (spring and fall).	LT Effects will extend beyond 8+ years – will extend to eight years of limited access to the Beaver Dam Mine Site, less than the defined 20 years in the context of the Mi'kmaq of Nova Scotia VC significant threshold.	R VC interaction will occur regularly.	R VC interaction will recover to baseline after Project activities are completed.	Moderate Adverse Effect (Not Significant) Assuming that the proposed compensation measures are applied for the Project and that they achieve their objectives, the predicted residual cumulative effects on the Mi'kmaq of Nova Scotia with regards to impacts to air quality, noise, light, surface water, fish habitat, and human health, are assessed to be adverse, but not significant. Loss of access is limited to 0.88% of available crown land within the RAA.

Notes: See each Valued Components Thresholds for Determination subsections for specific for magnitude criteria definitions (Sections 6.1.6.2, 6.2.6.2, 6.3.6.3, 6.7.7.2, 6.9.6.2, 6.13.6.2, and 6.14.6.2) and Section 5.11, Table 5.11-1 for general definitions of the below characteristics.

Magnitude		Geographic Extent		Timing		Duration		Frequency		Reversibility	
N	Negligible	PA	Project Area	N/A	Not Applicable	ST	Short-Term	O	Once	R	Reversible
L	Low	LAA	Local Assessment Area	A	Applicable	MT	Medium-Term	S	Sporadic	IR	Irreversible
M	Moderate	RAA	Regional Assessment Area			LT	Long-Term	R	Regular		
H	High					P	Permanent	C	Continuous		

Table 9.1-5: Summary of Atlantic Mining NS Inc. Beaver Dam Mine Project General Commitments

Project Phase	General Commitments	EIS Section
Pre-construction	AMNS will voluntarily establish an Independent Geotechnical and Tailings Dam Review Board for design, construction and operational phases of the AMNS projects.	Section 1 Introduction
Construction, Operation, Closure	AMNS intends to maintain adequate insurance and bonding to ensure its commitments are met. This includes maintaining financial bonding to ensure that adequate reclamation security is in place at all times during the construction, development and operational phases of the mining projects, as well as appropriate environmental impairment liability insurance.	Section 1 Introduction
Pre-Construction, Construction, Operation, Closure	AMNS commits to completing its operations in adherence with best available practices (BAPs) and industry standards as per guides developed by Mining Association of Canada, such as the Towards Sustainable Mining initiative, and the Canadian Dam Association.	Section 1 Introduction
Pre-Construction, Construction, Operation, Closure	AMNS is committed to the highest practical standards of corporate governance and to being a responsible corporate citizen.	Section 1 Introduction
On-going	AMNS is committed to working with local communities and the Mi'kmaq of Nova Scotia to maximize socio-economic benefits as the Company developments its projects in the Province, including the Beaver Dam Mine Project.	Section 1 Introduction
On-going	St. Barbara Limited is committed to carbon neutrality across its mining operations by 2050. AMNS is continually looking for opportunities target carbon neutrally by 2025.	Section 2 Project Description
Construction	AMNS is committed to removing the historic tailings and waste rock from the site and disposing in the mined-out pit at Touquoy.	Section 2 Project Description
On-going	AMNS is committed to maintaining its CLC for the life of the Project.	Section 3 Public Engagement
On-going	AMNS is committed to working with stakeholders and rightsholders throughout the EA process and life of the project, extending beyond EA activities.	Section 3 Public Engagement
On-going	AMNS is committed to addressing complaints in a timely and respectful manner. Information gathered under the Complaint Resolution Plan is shared with the CLC and Nova Scotia Environment on a quarterly basis, including any corrective actions. A draft Complaint Resolution Plan has been developed.	Section 3 Public Engagement
On-going	AMNS is committed to working with this community on potential mitigation options, adaptive management inputs and to identify community development opportunities.	Section 3 Public Engagement
Construction	AMNS is committing to the construction of bypass roads that will allow recreational vehicles, light trucks, and active transportation users to access the desired recreational areas, which will mitigate impacts of perceived or actual impacts on recreational land use on or around the Haul Road. In addition to the bypass roads, AMNS will identify crossings for the Haul Road for recreational users and include specific protocols in the Access and Safety Management Plan for road usage.	Section 3 Public Engagement
Operations	AMNS commits to improving visibility and removing debris at the Mooseland Road crossing using a skid steer with a broom dedicated to cleaning the crossing.	Section 3 Public Engagement
Construction, Operations	AMNS committed to installing digital speed sign as a pilot project.	Section 3 Public Engagement

Table 9.1-5: Summary of Atlantic Mining NS Inc. Beaver Dam Mine Project General Commitments (continued)

Project Phase	General Commitments	EIS Section
On-going	AMNS is committed to developing a long-term, positive and productive relationship with the Mi'kmaq of Nova Scotia based on principles of mutual respect, transparency, honesty and integrity, and a partnership approach to engagement.	Section 4 Indigenous Peoples Engagement Program
Construction and Operation to plan for Closure	Commitment to reclamation with Mi'kmaq participation in planning and implementation to restore habitats and allow traditional practices to resume within the Mine Site.	Section 4 Indigenous Peoples Engagement
On-going	AMNS is committed to ongoing Mi'kmaq engagement for the life of the MRC Project, including Beaver Dam Mine Project.	Section 4 Indigenous Peoples Engagement
Ongoing	Strong commitments to ongoing Mi'kmaq engagement, including specific activities to further support the participation of the Mi'kmaq in the EA process. This will require ongoing dialogue regarding potential impacts on Mi'kmaq communities, and AMNS is committed to continuing those discussions. AMNS looks forward to receiving feedback and commits to discussing with Millbrook First Nation how best to address their feed back into Project design, mitigation and monitoring measures and potentially additional monitoring and mitigation measures.	Section 4 Indigenous Peoples Engagement
Operation	AMNS has committed to implementation of a water treatment system to ensure that all site effluent water meets MDMER and will reflect assimilation capacity of the receiving environment, such that any potential effects to the Surface Water Quality VC, and downstream water users, will be fully mitigated	Section 6.7 Surface Water Quantity and Quality
Construction	AMNS has committed to identifying culverts that require maintenance and removing or upgrading them where appropriate.	Section 6.8 Wetlands
Construction, Operation, Closure	AMNS is committed to engaging in wetland compensation activities for the wetland loss associated with the Project as required by the provincial wetland alteration process.	Section 6.8 Wetlands
Construction, Operation, Closure	Development of the Preliminary Aquatic Effects Monitoring Plan (AEMP), Aquatic Effects Monitoring Program and Mine Water Management Plan (MWMP). Monitoring will be completed to demonstrate that temperature changes within Cameron Flowage are within the predicted range.	Section 6.9 Fish and Fish Habitat
Construction, Operation, Closure	AMNS commits to maintaining compliance with all applicable water quality guidelines at the site discharge points, and within the receiving aquatic environment (Cameron Flowage/Killag River), given the proposed contact water collection and treatment plan.	Section 6.9 Fish and Fish Habitat
Construction, Operation, Closure	AMNS commits to adhering to the site-specific draft Erosion and Sediment Control Plan, as such all potential indirect effects to fish habitat through construction of the Haul Road are expected to be negligible.	Section 6.9 Fish and Fish Habitat
Construction	AMNS commits to adhering to approved timing windows for construction to minimize impact to eggs, larvae, and juvenile fish, wherever practicable.	Section 6.9 Fish and Fish Habitat
Construction	To avoid or mitigate additional loss of waters frequented by fish or harm to fish habitat during Project construction, operations and closure phases, a combination of site-specific mitigation measures as defined through permitting, approvals and environmental assessment commitments and best management practices will be used.	Section 6.9 Fish and Fish Habitat
Construction	AMNS commits to a reasonable level of effort to rescue as many fish as practicable, and that the details surrounding reasonable depletion efforts is completed at the permitting phase in consultation with DFO.	Section 6.9 Fish and Fish Habitat

Table 9.1-5: Summary of Atlantic Mining NS Inc. Beaver Dam Mine Project General Commitments (continued)

Project Phase	General Commitments	EIS Section
Pre-Construction, Construction, Operation, Closure	The monitoring of vascular plants will be encompassed within the Wetland Monitoring Plan. This plan will be established 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, closure and post closure phases.	Section 6.10 Habitat and Flora
Pre-construction (on-going)	On-going refinement of a communication protocol which will describe how AMNS will communicate with the Mi'kmaq of Nova Scotia during ongoing exploration and operational phases of the projects, and in the event of a release or spill of a hazardous substance	Section 6.14 Mi'kmaq of Nova Scotia
On-going	AMNS is committed to ongoing Mi'kmaq engagement and participation for the life the Project – prior to, during and post environmental assessment. This includes communication and information sharing, face-to-face meetings, discussion of impacts and mitigations, and any other issues that may arise as the Project develops.	Section 4 Indigenous Peoples Engagement Program Section 6.14 Mi'kmaq of Nova Scotia
On-going	AMNS commits to maintaining an on-going relationship with Millbrook First Nation and will continue engage on this potential development and the Beaver Dam Mine Project throughout all stages of permitting, construction, operations and active closure	Section 6.14 Mi'kmaq of Nova Scotia
On-going	AMNS will continue to work with the Mi'kmaq of Nova Scotia to provide specificity in analysis, where possible, to support comprehensive conclusions of Project impacts and to support mitigation and accommodation opportunities.	Section 6.14 Mi'kmaq of Nova Scotia
On-going and Pre-construction	The results of Mi'kmaq engagement have been considered and incorporated in the environmental effects assessment and are reflected in AMNS's commitments to involve the Mi'kmaq in the development and implementation of mitigation and monitoring measures and proposed compliance and effects monitoring programs.	Section 6.14 Mi'kmaq of Nova Scotia
Pre-construction	Develop potential partnerships with Mi'kmaq environmental groups on specific ecological monitoring and restoration projects.	Section 6.14 Mi'kmaq of Nova Scotia
On-going	AMNS commitment to developing and conducting a Mi'kmaq Cultural Awareness Program for staff and contractors.	Section 6.14 Mi'kmaq of Nova Scotia
Construction	The Project may have a negative localized impact on Millbrook First Nation and other Mi'kmaq individuals partaking in traditional practices within proximity to the mine. AMNS acknowledges this localized effect and has committed to mitigation measures to maintain access to lands surrounding the Project and has reviewed available Crown land surrounding the property that can continue to be used by Millbrook First Nation and the Mi'kmaq of Nova Scotia	Section 6.14 Mi'kmaq of Nova Scotia
On-going	AMNS commits to working with Millbrook First Nation to develop a Health and Wellness Study.	Section 6.14 Mi'kmaq of Nova Scotia
On-going	In the event that Mi'kmaw archaeological features are encountered during construction or operation of the Project, all work in the area will be halted and immediate notification made to the Special Places Coordinator, Nova Scotia Museum, the KMKNO and the communities of Sipekne'katik and Millbrook.	Section 6.15 Physical and Cultural Heritage
Pre-Construction, Construction, Operation, Closure	AMNS is committed to reducing Greenhouse Gas Emissions, responding to climate change and advancing clean growth in Atlantic Canada.	Section 6.4 Greenhouse Gases Section 6.16 Socio-economic Conditions

Table 9.1-5: Summary of Atlantic Mining NS Inc. Beaver Dam Mine Project General Commitments (continued)

Project Phase	General Commitments	EIS Section
On-going	Development of partnerships between AMNS and St. Mary's University Research program regarding historic tailings	Section 6.16 Socio-Economic Conditions
Pre-construction	AMNS will develop an Access and Safety Management Plan that will guide Haul Road Usage through the establishment of an Ad Hoc Advisory group	Section 6.16 Socio-economic Conditions
Pre-construction	AMNS intends to establish Ad Hoc Advisory Group in 2021	Section 6.16 Socio-economic Conditions
On-going	AMSN is committed to diversity in the workplace.	Section 6.16 Socio-Economic Conditions
On-going	AMNS commits to encourage a safe and tolerant workplace and has adopted an Equal Employment Opportunity Policy from the parent company St Barbara Limited.	Section 6.16 Socio-Economic Conditions
On-going	The AMNS Supplier Code of Conduct commits to using suppliers who match the corporate values. This requires that suppliers comply with the Supplier Code of Conduct	Section 6.16 Socio-Economic Conditions
Closure	AMNS is committed by legislation to reclamation planning that is focused on safety and creating physically, chemically and biologically stable elements that are self sustaining ecosystems in keeping with the surrounding natural areas.	Section 6.16 Socio-Economic Conditions
Pre-construction	Development of an Emergency Response Plan and Operational Procedures to include contingency planning for accidents and malfunctions	Section 6.18 Accidents and Malfunctions
On-going	Land directly adjacent to the mine site is leased by the Nova Scotia Salmon Association for a lime doser and AMNS has committed to work with the NSSA to provide access to this site	Section 6.17 Assessment of Valued Components within Federal Jurisdiction
Operations	AMNS has committed to keep fuel storage on site.	Section 6.18 Accidents and Malfunctions
Construction, Operation, Closure	AMNS has committed to the use of chemical dust suppressants as required to reduce dust by 80% on the Haul Road.	Section 8.5 Cumulative Effects Assessments of Valued Components
Operations	AMNS is committed to engaging in fisheries offsetting plans, and wetland compensation activities for the fish habitat and wetland loss associated with the Project as required by the Fisheries Act Authorization Process and provincial wetland alteration process for the Project.	Section 8.5 Cumulative Effects Assessments of Valued Components
Operation	AMNS is committed to treat effluent to MDMER discharge limits and water quality objective prior to release and ensure acceptable water quality in the receiving environmental that is protective of aquatic life	Section 8.5 Cumulative Effects Assessments of Valued Components