

Fifteen Mile Stream Gold Project

Project Description Summary

Highway 374
Trafalgar, Nova Scotia

Atlantic Mining NS Corp.

Suite 3083, Three Bentall Centre
595 Burrard Street, P.O. Box 49298
Vancouver, British Columbia
Canada V7X 1L3

May 22, 2018



ATLANTIC GOLD

Table of Contents

1.0 GENERAL INFORMATION 3

1.1 Project Name, Nature and Proposed Location 3

1.2 Proponent Information 4

1.3 Results of Consultation 5

1.4 Applicable Regulatory Framework 7

1.5 Other Environmental Studies 7

2.0 PROJECT INFORMATION..... 8

2.1 Project Context and Objectives..... 8

2.2 Provisions to the CEAA Regulations Designating Physical Activities..... 8

2.3 Description of Physical Works and Activities 8

2.4 Description of Production Capacity and Processes..... 10

2.5 Emissions, Discharges and Waste..... 17

2.6 Project Phases and Scheduling..... 18

2.7 Opportunities for Mine Life Extension 19

3.0 PROJECT LOCATION INFORMATION..... 19

3.1 Legal Description and Ownership..... 19

3.2 Proximity to Residences, Reserves, and Federal Lands 20

3.3 Current Land Use 20

4.0 FEDERAL INVOLVEMENT 20

4.1 Financial Support 20

4.2 Description of Federal Land Used 20

4.3 List of Permits, Licenses and other Authorizations..... 20

5.0 ENVIRONMENTAL EFFECTS..... 22

5.1 Spatial Boundaries 22

5.2 Biological Environment 22

5.3 Physical Environment..... 27

5.4 Human Environment..... 28

5.5 Effects of the Project on the Environment 30

5.6 Effects on Aboriginal Peoples..... 31

6.0 REFERENCES..... 33

ATTACHMENTS..... 33

Figure 1.1: Project Scope 34

Figure 2.1: Project Infrastructure 35

1.0 GENERAL INFORMATION

1.1 Project Name, Nature and Proposed Location

Name of the Designated Project

The designated project will be known as the “Fifteen Mile Stream Gold Project” (the Project).

The Project Nature

The Fifteen Mile Stream Gold (FMS) Project is contemplated to be developed in association with the currently operating Touquoy mine. The Project is planned to be permitted and operated as a separate satellite surface mine operating at a rate of approximately two million tonnes (Mt) of gold-bearing ore per year. FMS ore will be crushed and concentrated on site to produce a gold concentrate which will be hauled by on-road highway trucks to the Touquoy mine carbon-in-leach (CIL) processing facility for final processing into gold doré bar, a distance of just over 76 km on existing public roads. This will eliminate the need for a separate CIL cyanide leach circuit at the Project. The FMS concentrate will be processed at the Touquoy mine in conjunction with ore supply from Touquoy, Beaver Dam and Cochrane Hill surface mines.

The planned start date for construction for the Project is May 2020 with a scheduled start-up for 2021. The mine will operate for 6 years to 2026 and will employ up to 200 persons including both salaried and hourly personnel. At the cessation of mining activities, the site will be reclaimed.

Changes to the Touquoy mine as a result of the Project are anticipated to be minimal. Only minor changes to the existing processing facility at the Touquoy mine will be required, including the addition of concentrate storage and the addition of a second gravity concentrate leach reactor and a gravity electrowinning cell. These changes can be accommodated within the existing facility footprint. There will be a small increase in the volume of tailings deposition into the existing tailings management facility (TMF) and mined out Touquoy pit as a result of concentrate from the Project. Source terms from FMS tailings supernatant will be used to update the Touquoy water quality model to predict potential changes in water quality in the Touquoy TMF and open pit as a result of the addition of tailings from processing of FMS concentrate at the Touquoy mine. This information will be used in support of an application to amend the Touquoy Industrial Approval (IA) to allow processing of FMS concentrate and disposal of tailings from FMS concentrate to the Touquoy TMF and open pit. All other aspects of the Touquoy mine will remain the same as previously assessed including the disturbed footprint, tailings management aspects and the size and locations of stockpiles.

Operations at the Project will include mining, crushing, ore processing and concentration, and operation of a waste rock storage facility (WRSF), ore stockpiles and a TMF. A gold concentrate will be produced at site and transported to the Touquoy processing facility for final processing into gold doré. Tailings will be generated from mill processing and deposited into an above ground TMF. Infrastructure will include crushing facilities, fine ore stockpile and reclaim, concentrator facilities, maintenance facilities, fuel storage, office infrastructure and site haul roads.

An existing 69kV, north-south hydroelectric transmission line is located west of Highway 374 and This line will supply power to the site via a small spur line (approximately 5.3 km) and sub-station to step the voltage down to 4.16kV. It is anticipated that clearing for powerline corridors will be minimal.

Development of the Project will require the diversion of Seloam Brook to accommodate development of the open pit. A 1.3 km diversion channel will be constructed to divert Seloam Brook to the north of the proposed open pit.

Two processing concentrate streams will be produced at the Project, a gravity concentrate and a float concentrate. Both will be transported from the Project to the Touquoy mine utilizing existing highways in conjunction with the Beaver Dam haul road thus requiring minimal upgrades to existing road infrastructure. To start, gold concentrate will be hauled south along Highway 374 (31

km) to Highway 7, through Sheet Harbour (27 km) and onto Mooseland Road to the Touquoy mine (35 km). Once Beaver Dam mine is brought online, and the Beaver Dam haul route has been upgraded as part of that project, haul trucks from the Project are expected to take Highway 224 from Sheet Harbour to the Beaver Dam Cross Road (21 km) and the Beaver Dam haul route will be utilized for the remainder of the haul to the Touquoy mine (24 km). As a result of using existing road infrastructure, infrastructure previously upgraded for the Beaver Dam Project, and the very minor increase from FMS haul truck traffic, impacts to plant, animal or Mi'kmaq and /or archaeological resources are not anticipated to result from concentrate transport.

The majority of tailings will be stored in an approved above ground TMF. The containment dams will be constructed with rock aggregate material sourced from mine waste rock or nearby quarries with upstream impermeable membrane and seepage cut off constructed using local till material.

Final processing of gold concentrate will be undertaken at the Touquoy processing facility resulting in a minor quantity of additional tailings being initially deposited into the existing TMF and once the Touquoy open pit is exhausted, into the mined out Touquoy open pit. This allows the Touquoy mine footprint to be maintained as currently permitted. The approved reclamation plan for the Touquoy mine calls for the mined-out pit to be allowed to fill with water. At the end of processing at the Touquoy mine, the remaining volume within the open pit would naturally fill with water and the deposited tailings will be stored under a water cap, creating a lake as per the approved plan for the reclaimed Touquoy pit, albeit slightly shallower. "Wet" disposal is accepted internationally as a superior method of permanent tailings management as opposed to "dry" storage.

The Project Scope (PS) includes the Project, two options for transportation of gold concentrate (an initial route, and a second main route once Beaver Dam becomes operational both on existing public roads) and the necessary components of the Touquoy mine to process the gold concentrate and manage the associated additional tailings. This PS is shown on Figure 1-1 attached to this document.

The total infrastructure footprint of the Project is approximately 280 hectares (ha). The Project Area for the purpose of the environmental assessment is the infrastructure footprint plus an associated buffer and is also shown on Figure 1-1.

Project Location

The Project is located at the eastern boundary of Halifax County, central Nova Scotia, approximately 95km northeast of Halifax and 17km to the northeast of Atlantic Mining's Beaver Dam Project. The property covers the historic Fifteen Mile Stream Gold District located on NTS sheets 11E01/C and 11E02/D and is centred at 45°08'30" north latitude and 62° 32' 00" west longitude. The Touquoy mine is located on the NTS sheet 11D15 and is centred at 44°59'09" north latitude and 62° 56' 16" west longitude.

1.2 Proponent Information

Atlantic Mining NS Corp.

Corporate Office

Suite 3083, Three Bentall Centre
595 Burrard Street, P.O. Box 49298
Vancouver, British Columbia
Canada V7X 1L3

Chairman and Chief Executive Officer

Steven Dean
Phone: (604) 689-5564
Email: sdean@atlanticgoldcorporation.com
Toll Free: 1-877-689-5599

Local Office

6749 Moose River Road,
Moose River Gold Mines,
RR2 Middle Musquodoboit, Nova Scotia
Canada B0N 1X0

President and Chief Operating Officer

Maryse Belanger
Phone: (604) 689-5564
Email: mbelanger@atlanticgoldcorporation.com
Toll Free: 1-877-689-5599

Project Description Contact

The Project Description was produced by McCallum Environmental Ltd. under contract to the Proponent.

McCallum Environmental Ltd.

115, 2 Bluewater Road

Bedford, Nova Scotia

Canada, B4B 1G7

Phone: (902) 446-8252

Meghan Milloy – Vice President

Email: meghan@mccallumenvironmental.com

1.3 Results of Consultation

Primarily, public engagement with stakeholders has consisted of discussion with the landowners on site access and regulators over the nature of scientific work being undertaken in relation to the environmental baseline studies during planning and design of the Project. Engagement with local stakeholder groups and the surrounding community members has also commenced. Regulatory consultation commenced in early 2017, and a public engagement program commenced in February 2018 for the Project.

The following jurisdictions and parties have been consulted during the preparation of this project description:

Government

The Government of Canada

- Environment and Climate Change Canada
- The Canadian Environmental Assessment Agency
- Fisheries and Oceans Canada
- Natural Resources Canada
- Transport Canada

The Province of Nova Scotia

- Premier's Office
- Environment (Environmental Assessment, Wetlands, Protected Areas)
- Natural Resources (Geoscience and Mines, Crown Lands, Wildlife, Forestry)
- Labour and Advanced Education (Health and Safety - Technical Services)
- Transportation and Infrastructure Renewal
- Office of Aboriginal Affairs
- Finance (Statistics)

Halifax Regional Municipality

- Planning and Development

First Nations

Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO)

Assembly of Nova Scotia Mi'kmaq Chiefs

Sipekne'katik First Nation

Millbrook First Nation

Native Council of Nova Scotia

Consultation with Public

A public engagement program to provide project details to local communities and provide an opportunity for public input to the proposed mine development commenced in March 2018 with a public open house in Sheet Harbour and a second event is planned for Fall 2018 once more project details are available. The Sheet Harbour event on March 27, 2018, was well attended with approximately 35 people present. The event was advertised in the Chronicle Herald and flyers were posted in local businesses and also sent through Canada Post to nearby residences (approximately 600 homes). The event was held at the local Legion and consisted of a series of poster boards describing the general location and description of the project, identification of the EA process and opportunities for public input, preliminary Valued Components (VC) identified for the Project, details relating to reclamation and ore processing, and a poster outlining engagement methods and a request for people interested in participating in the planned Community Liaison Committee (CLC) for this project.

The open house was focused on sharing the general description of the Project and listening to the questions posed by members of the public, understanding any concerns they might have, and determining the best methods of engagement during the preparation of the Environmental Impact Statement (EIS). The attendees asked general questions about the proposed mining operation and details on operational considerations, as provided in this Project Description, were shared by the Proponent team with all attendees.

Consultation with Regulators

For the Project, regulatory consultation officially began on July 5th, 2017 with a Provincial “One Window Process: Mineral Development in Nova Scotia” meeting to present the planned project and to receive feedback on the regulatory regime and regional expertise. The purpose of the meeting was to provide guidance to the Proponent on the processes and timelines for regulatory approvals and other issues regarding development of the FMS and Cochrane Hill gold projects. A One Window update meeting was held February 21st, 2018 to allow the Proponent to introduce their new ‘Life of Mine Plan’ and for attendees to share information on the processes and timelines for regulatory approvals and to discuss any issues or concerns regarding the Proponent’s plan. Informal regulatory consultation with relevant provincial and federal agencies to inform and support field programming has been on-going since Spring 2017.

Consultation with First Nations

Since the initiation of the Touquoy mine, the proponent has engaged in a pro-active and mutually beneficial relationship with the Mi’kmaq of Nova Scotia. The relationship has been close to ten years in the making and continues to be of mutual benefit. An overview of more recent and relevant engagement is noted below.

The Made in Nova Scotia process establishes a mechanism for Mi’kmaq engagement in Nova Scotia that is unique in Canada. It is a three-government agreement between the federal, provincial and Mi’kmaq that outlines the responsibilities regardless if the Project is reviewed formally by the federal or provincial government. The Proponent has shown its commitment to this process and respect for their input by inviting representatives from the KMKNO, Millbrook and Sipekne’katik to the One Window meeting in February 2018, a meeting normally reserved for federal and provincial government officials.

Table 1 - Summary of First Nations Consultation for the Project

Date	Meeting Summary
February 20, 2018	Email correspondence from the proponent team to Millbrook, KMKNO and Sipekne’katik requesting a meeting with each group to introduce the project.
February 21, 2018	KMKNO and Sipekne’katik participated in One Window update meeting at NSDNR

Date	Meeting Summary
February 28, 2018	The Proponent and MEL met with KMKNO (Melissa Nevin) and introduced the Project formally.
Mar 2018	Sipekne'katik, Millbrook and the KMKNO were invited to attend the Open House in Sheet Harbour.
April 12, 2018	Proponent completed a scheduled meeting with Millbrook to introduce the Fifteen Mile Project.

Formal consultation is expected to continue through 2018 and 2019 as part of the EA process with the Mi'kmaq of Nova Scotia according to the Made in Nova Scotia Process. The Mi'kmaq have a knowledge level of the Project which is significant and gained through the EA process for Touquoy mine, the EA process for Beaver Dam, and through ongoing discussion as previously noted.

The Proponent will continue to engage with the KMKNO, Sipekne'katik First Nation, and Millbrook First Nation specific to the Project. To date, no specific comments or concerns have been received from the Mi'kmaq relating to the project. Questions asked to date have been focused on understanding project components, as described in this Project Description. The Proponent will look to find opportunities to engage with the communities to understand how the Project may overlap with traditional uses of the Mi'kmaq. Regular correspondence and face to face meetings will occur between the Proponent and KMKNO, Millbrook and Sipekne'katik to provide all parties ample opportunity to review and discuss the Project.

1.4 Applicable Regulatory Framework

The Project will require Environmental Assessment (EA) approval from CEAA and a Class I Environmental Assessment Approval from Nova Scotia Environment (NSE). The government of Nova Scotia employs a “One Window” process for reviewing, permitting and monitoring mine development projects in the province. This approach formalizes how government departments (including federal authorities) involved with mine development activities act collectively to streamline the review process for both government and industry.

The Project mining infrastructure will require the rerouting of Seloam Brook and will encroach on waters frequented by fish. In the presence of impacts to recognized fish or fish habitat, authorization will be required from Fisheries and Oceans Canada (DFO) under Paragraph 35(2)(b) of the *Fisheries Act*. The Environmental Impact Statement (EIS) will address potential effects of the proposed Project activities on fish and fish habitat.

Migratory birds will be assessed through Canadian Wildlife Service (CWS) protocols and breeding birds point count methodology during appropriate breeding windows in the Project Area of the proposed Project.

The potential effects of the construction and operation of the Project on vegetation, aquatic life and wildlife and their habitat will be assessed as they relate to the *Species at a Risk Act*. The Project design has considered minimization of the Project footprint based on the existing knowledge of the site.

The Project is located within the Musquodoboit Valley/Dutch Settlement Plan Area. The properties are designated Mixed Use (MU) and zoned Mixed Use (MU). The MU zone permits extractive facilities as a listed permitted use (pers. comm. Langille, 2018).

1.5 Other Environmental Studies

A review of CEAA and NS EA Projects database indicates that no regional environmental studies have been undertaken or are currently being conducted for the region or in the vicinity of the designated project within the spatial confines of the databases. The

studies that have been completed for review closest to the proposed project site include: Touquoy mine - 35 km (2008); Cooks Brook Sand and Gravel Pit – 61 km (2013), ScoZinc Operations Southwest Mine Expansion - 65 km (2011), Goldboro LNG Plant – 70 km (2014), Loch Katrine Quarry Expansion- 52 km (2016), and Beaver Dam Mine – 17 km (2017). Of these projects, only Beaver Dam Mine include the Project in their regional context.

Beaver Dam Mine Project considers the Project in its cumulative effects assessment. No adverse cumulative effects were predicted.

No relevant regional studies of environmental effects from other projects are available.

2.0 PROJECT INFORMATION

2.1 Project Context and Objectives

The Project will comprise the development, operation, closure and reclamation of a surface gold mine near Trafalgar, Nova Scotia. This will consist of the development of an open pit mine, milling facilities (e.g. primary crusher and concentrator), WRSF, TMF, mine haul roads and associated mine infrastructure (e.g. maintenance facilities, local supply systems, explosive storage, fuel storage and mine offices). Associated with development of the Project will be additional gold production output from the existing processing facility at the Touquoy mine which will process concentrate from the Project and include deposition of concentrate tails into the Touquoy TMF and the exhausted Touquoy pit. Project development will include a 1.3 km diversion of Seloam Brook to allow construction of the open pit.

The planned start date for construction for the Project is May 2020 with a scheduled start-up for 2021. The mine will operate for six years to 2026 and will employ up to 200 persons including both salaried and hourly personnel. At the cessation of mining activities, the site will be reclaimed.

2.2 Provisions to the CEAA Regulations Designating Physical Activities

The Project activity designated in the Schedule to the Regulations Designating Physical Activities (CEAA, 2012a) that may necessitate a federal environmental assessment for this Project is:

16(c) The construction, operation, decommissioning and abandonment of a new rare earth element mine or gold mine, other than a placer mine, with an ore production capacity of 600 t/day or more.

This Project Description provides information on the Project components and potential environmental effects as described in “Prescribed Information for a Description of a Designated Project Regulations” (CEAA, 2012b). Further, the content of this document conforms to the “Guide to Preparing a Description of a Designated Project under CEAA 2012” (CEAA, March 2015).

2.3 Description of Physical Works and Activities

The Project will comprise the development, operation, closure and reclamation of a surface gold mine near Trafalgar, Nova Scotia.

The main elements of the Project, as described in NI 43-101 Technical Report on Moose River Consolidated Phase 1 and Phase 2 Expansion, are as follows:

- An open-pit mine (Egerton-McLean deposit) from which an estimated 32.4 Mt of rock will be excavated, comprising 10.8 Mt of ore at 1.24 g/t Au, 20.3 Mt of waste rock and 1.3 Mt of overburden. The pit will be 625 m long and 425 m wide and will have a maximum depth of 150 m based on the current mining scenario;

- Twelve month pre-production period, followed by five and a half years of production at an average extraction rate of 16,430 tons per day (tpd), including ore production of 5,479 tpd;
- Construction of a 1.3 km diversion channel to divert Seloam Brook to the north of the planned open pit. This will divert the majority of the surface water away from operations. The surface and groundwater that finds its way into the open pit will be collected using sumps and pumping stations and will be directed to the TMF. Runoff from the waste rock piles will be directed to seepage collection ditches and/or ponds. If unsuitable for discharge to the receiving environment it will be directed to the TMF to supplement process water requirements;
- Crushing and Concentrator facilities to process 2.0 Mt/yr of ore producing a gold concentrate for transport to the Touquoy processing facility;
- Transportation of gold concentrate via existing highways and Beaver Dam haul road of up to 300 tpd using a C Train truck configuration;
- Separate Run of Mine (ROM) and a low grade ore stockpile (LGO), for a total capacity of 0.1Mt and 1.1 Mt respectively;
- A waste rock pile, with a capacity of 16.2Mt of waste rock. Additional waste rock will be used to build the TMF;
- Overburden piles which will contain 1.2 Mt of material;
- Top soil and organics storage piles that will contain 0.1 Mt of material;
- Tailings storage in an above ground management facility (TMF) with a design storage capacity of 8.3 Mm³ of tailings solids;
- Discharge works associated with the removal of excess water from the TMF. Initial water balance calculations indicate the TMF will operate under surplus water conditions and require a discharge. Further work will be undertaken to determine the need for and design of any treatment works to ensure such discharge meets environmental discharge requirements;
- Administrative, mine employee, and maintenance buildings and a small volume petroleum product storage facility;
- Additional minor tailings storage initially in the Touquoy TMF and then in the mined out open pit as a result of final processing of gold concentrate with a water cover on reclamation; and,
- On-site borrow and quarry development to support infrastructure requirements for aggregate and till/clay materials. Some or much of this material may be generated from waste rock and till recovered from the pit and vicinity, however, further quarrying/borrowing may be required in the event the pit material is insufficient in quantity or quality. An aggregate/borrow investigation study will be conducted to assess these requirements during the IA application phase of the Project.

The total infrastructure footprint of the Project is approximately 280 hectares (ha) as detailed below. Upgrades to existing road infrastructure, such as minor widening, improving the road base, ditching and other potential improvements will also occur.

- i. Ore extraction area (open pit) (20 ha);
- ii. Materials storage (waste rock, till/overburden, low grade ore) (65 ha);
- iii. Crusher and concentrator facilities (10 ha);
- iv. Site infrastructure (5 ha);
- v. TMF (165 ha);

- vi. Mine site haul roads (10 ha);
- vii. Access roads (5 ha); and,
- viii. Seloam Brook Diversion (1.3 km).

At closure, all facilities will be removed, disturbed lands rehabilitated, and the property returned to otherwise functional use according to approved reclamation plans and accepted prices at the time of closure.

Operations at the Project will include mining, crushing, concentration and operation of a WRSF, LGO and TMF. A gold concentrate will be produced at site and transported to the Touquoy processing facility for final processing into gold doré. Tailings will be generated from mill processing at the Project and deposited into an above ground TMF. Infrastructure will include crushing facilities, fine ore stockpile and reclaim, concentrator facilities, maintenance facilities, fuel storage, office infrastructure and site haul roads.

An existing 69kV, north-south hydroelectric transmission line is located west of Highway 374. This line will supply power to the site via a small spur line (approximately 5.3 km) and sub-station to step the voltage down to 4.16kV. It is anticipated that clearing for powerline corridors will be minimal.

Development of the Project will require the diversion of Seloam Brook to accommodate development of the open pit. A 1.3 km diversion channel will be constructed to divert Seloam Brook to the north of the proposed open pit.

Two concentrate streams will be produced at the Project, a gravity concentrate and a float concentrate. Both will be transported from the Project to the Touquoy mine utilizing existing highways in conjunction with the Beaver Dam haul road thus requiring minimal upgrades to existing road infrastructure. To start, gold concentrate will be hauled south along Highway 374 (31 km) to Highway 7, through Sheet Harbour (27 km) and onto Mooseland Road to the Touquoy mine (35 km). Once Beaver Dam mine is brought online, and the Beaver Dam haul route has been upgraded as part of that project, haul trucks from the Project are expected to take Highway 224 from Sheet Harbour to the Beaver Dam Cross Road (21 km) and the Beaver Dam haul route will be utilized for the remainder of the haul to the Touquoy mine (24 km). As a result of using existing road infrastructure, infrastructure previously upgraded for the Beaver Dam Project, and the insignificant increase from FMS haul truck traffic, impacts to plant, animal or Mi'kmaq and /or archaeological resources are not anticipated as a result of concentrate transport.

The majority of tailings will be stored in an approved above ground TMF located at the site. The containment dams will be constructed with rock aggregate sourced from mine waste rock or nearby quarries with upstream impermeable membrane and seepage cut off constructed using local till material.

Final processing of gold concentrate will be undertaken at the Touquoy processing facility resulting in a minor quantity of additional tailings being initially deposited into the existing TMF, and once the Touquoy pit is exhausted, into the mined out Touquoy open pit. This allows the Touquoy mine footprint to be maintained as currently permitted. The approved reclamation plan for the Touquoy mine calls for the mined-out pit to be allowed to fill with water. At the end of processing at the Touquoy mine, the remaining volume within the open pit would naturally fill with water and the deposited tailings will be stored under a water cap, creating a lake as per the approved plan for the reclaimed Touquoy pit, albeit slightly shallower. "Wet" disposal is accepted internationally as a superior method of permanent tailings management as opposed to "dry" storage.

2.4 Description of Production Capacity and Processes

The surface mining operations are planned to be typical of similar small-scale operations in generally flat terrain. The mine operations at the Project are planned to commence in year 2021 with gold concentrate being transported to the Touquoy processing

facility for final processing. The footprint of the surface mine development in relation to the environment is shown on Figure 2-1, attached to this summary document.

Mine Development

A twelve-month pre-production period is anticipated to supply material for construction including internal haul roads and TMF starter dams. The planned mine mobile equipment fleet will be procured and utilized for pre-production operations.

The open pit footprint, mine infrastructure and waste rock storage areas will be cleared and grubbed in advance of operations with the timing informed by Environment and Climate Change Canada (ECCC) directives relative to migratory bird nesting. Topsoil will be salvaged to a nearby stockpile for later use in reclamation activities. Glacial till overburden within the open pit footprint will be salvaged to a till stockpile storage area for later use to support reclamation activities.

Mine Operations

An open-pit mine will be developed, from which 32.4 Mt of material will be excavated, comprising 10.8 Mt of ore at 1.24 g/t Au, 20.3 Mt of waste rock and 1.3 Mt of overburden. The pit will be 625 m long and 425 m wide and will have a maximum depth of 150 m based on the current mining scenario. The pit will be developed as a series of pushbacks in an effort to minimize upfront stripping and to maximize ore extraction. Access to active mine areas will be via a single ramp system designed to allow dual lane traffic flow. Pit walls will be developed based on independent geotechnical engineering recommendations to ensure stability and safety.

In the active mining area, in-situ rock is drilled and blasted on 5 m to 10 m bench heights. Diesel powered down-the-hole hammer drills will be used for production drilling and will also be used for horizontal highwall depressurization drilling on the ultimate pit walls. Blasting will typically occur two to three times per week.

Additional grade control drilling is carried out to better delineate the ore and waste rock in advance of mining. Ore and waste rock will be defined in the blasted rock material with a grade control system based on dedicated reverse circulation (RC) grade control drilling and sampling, and a fleet management system will keep track of each load.

A contract explosives supplier will provide the blasting supplies and materials for the mine. Emulsion will be the primary blasting agent as the majority of holes will be wet. Explosives and all accessories will be supplied on an as needed basis from the contractor's base location off-site and delivered to the Proponents explosive storage facilities or directly to the blast holes typically using the contractor's equipment. All on and off-site permitting requirements will be the responsibility of the contractor through Natural Resources Canada for this Project.

Diesel powered hydraulic excavators will load both ore and waste rock into haul trucks. These loading units will also function to re-handle low grade ore material from stockpile and load overburden and topsoil for transport to stockpile.

All ore will be loaded into off-highway rigid frame haul trucks and hauled to the ROM pad and primary crusher. All waste rock will be loaded into off-highway rigid frame haul trucks and hauled to the WRSF. If dust is generated from hauling in the warmer months of the year, it will be controlled by applying water and/or chemical dust suppressants to the haul roads utilizing specialized water trucks.

At the ROM pad, haul trucks will dump ore material directly into the primary crusher or place it in an active stockpile on the pad, to be re-handled as crusher feed later on. Crusher loading of the stockpiled ore will be accomplished with a diesel-powered wheel loader.

At the WRSF, the haul trucks will dump waste rock in lifts.

A small support fleet will be utilized for mine operations support services. A fleet of diesel powered mobile equipment is specified to handle pit support activities and include a hydraulic excavator, wheeled loader, track dozers and motor grader.

Maintenance activities on the mine mobile fleet will be performed in a mine maintenance facility located near the primary crusher, as well as in the field. Fuel, lube and field maintenance will be performed with a mobile maintenance fleet of equipment by qualified and trained staff.

Diesel fuel and lubricant storage will be located near the primary crusher, and a dedicated fuel and lube truck will deliver these materials to the mine and maintenance mobile fleet. Diesel will be supplied from local sources by road tankers and stored in approved, above ground double walled tanks. From there, fuel will be distributed to equipment consumers by means of a dedicated fuel truck or cardlock system located at the storage facility.

The fleet of road trucks required to transport the gold concentrate from the Project to the process plant at the Touquoy mine will be refueled at the Project as needed using the cardlock system noted above.

The workforce at the Project will be approximately 200 persons working two shifts per day or approximately 50 persons per shift (personnel will work four days on and four days off), similar to that at the operating Touquoy mine.

In addition, the trucking operation hauling concentrate from the Project to the Touquoy mine will create approximately 10 jobs which will be contract positions to drive the highway trucks and conduct vehicle maintenance.

Waste Rock Management

All waste rock removed from the open pit will be placed in the WRSF, shown on Figure 2-1.

The WRSF will range in height from 15 m to 40 m above the existing ground surface and will contain waste rock excavated from the pit. This height generally conforms with local topographic variations. A haul ramp along the north-eastern limit of the WRSF will provide access to the lift elevations. Total capacity of the WRSF will be 16.2 Mt. A separate stockpile will be constructed to the northeast to contain unconsolidated overburden. This material will be utilized for reclamation of the WRSF.

The WRSF will be typically built bottom-up in lifts, spread out and compacted by track type dozers. Haul trucks will deliver the waste rock to the WRSF, then dump out either as free dump piles, or off the edge of an established dump lift over a safety berm. Once these smaller lifts reach 10 m in height, the face of the lift will be re-sloped to 2:1 for use in reclamation activities. Re-sloping will be completed by track type dozers and hydraulic excavators.

The waste rock will be placed according to standard practices and will ensure compliance with provincial regulations with respect to slopes, potentially acid generating material (if any), and surface water run-off.

Runoff from the WRSF will be collected in seepage ditches and/or ponds prior to release to the environment. If unsuitable for release to the environment such seepage water will be directed to the TMF to supplement processing water requirements.

Low Grade Ore Stockpile

To ensure continuity of mill feed and allow initial processing of higher grade material, a LGO will be developed to the north of the plant (Figure 2-1). The northern edge of the LGO will have a maximum height of 25 m while the southern edge will be tied into natural topography. Total capacity of the LGO is approximately 1.1 Mt.

As with the WRSF, the LGO will be built bottom-up in lifts, spread out and compacted by track type dozers. Haul trucks will deliver the low-grade ore to the LGO, then dump out either as free dump piles, or off the edge of an established dump lift over a safety berm. Unlike the WRSF, this stockpile is planned to be progressively reclaimed for milling over the mine life. The remaining footprint will be reclaimed upon closure.

The low grade ore will be placed according to standard practices and will ensure compliance with provincial regulations with respect to slopes, potentially acid generating material (if any), and surface water run-off.

Runoff from the LGO will be collected in seepage ditches and/or ponds prior to release to the environment. If unsuitable for release to the environment such seepage water will be directed to the TMF to supplement processing water requirements.

Milling Operations

The mill is located south-east of the proposed pit area and southwest of the TMF. The approach by road to the plant will be from the west off of Highway 374.

The main plant building houses the grinding, gravity recovery, flotation, concentrate dewatering and reagent sections. The concentrate storage will be located in a separate building. The three-stage crushing circuit is based on modular mobile crushing equipment and will be located to the south of the main plant building. The fine ore stockpile is covered for snow protection and dust control.

Process water will be reclaimed from the TMF for re-use in the milling operations. Initial start-up water and ongoing make-up water is expected to be sourced from nearby Seloam Lake or Anti-Dam Flowage through application for a surface water withdrawal approval (NSE).

Tailings Management- FMS

The principal design objectives for the TMF are to protect the regional groundwater and surface water resources during both operations and in the long term (after closure), and to achieve effective reclamation at mine closure. The design of the TMF takes into account the following requirements:

- minimizing impact and risks to the surrounding environment;
- permanent, secure, and total confinement of all solid tailings materials within engineered storage facilities;
- control, collection, and removal of free-draining liquids from the tailings during operations for recycling as process water to the maximum practical extent;
- discharge of surplus water collected in the TMF with treatment as necessary;
- the inclusion of monitoring features for the facility to demonstrate performance goals are achieved and design criteria and assumptions are met;
- staged development of the facility over the life of the proposed project to allow for efficient use of materials from pre-production and operational pit development as construction materials for the TMF; and,
- Some of the materials may be obtained from separate aggregate quarries and borrow pits based on volume and quality factors.

The selected TMF option is located to the east and up-gradient of the proposed open pit and is situated in a position that limits impacts to wetlands and streams frequented by fish to the maximum practical extent. The TMF positioned in this manner allows the mine facilities to be clustered upstream of the open pit and simplifies surface water and groundwater management requirements for the mine site. The TMF has been designed to permanently store tailings material generated by the ore milling process. Specific overall features of the TMF are listed below:

- Zoned water-retaining earth-rockfill dam;

- Interior rockfill causeways located within the TMF;
- Diversion channels and dams that route water around the TMF during construction;
- Perimeter road and seepage collection ditches;
- Sediment ponds and seepage collection ponds;
- Surplus water pipelines, pump systems, and surplus water management pond;
- Tailings distribution system;
- Reclaim water system;
- Raw water intake and pipeline for initial filling of TMF and ongoing makeup water for the plant operations;
- Tailings beaches;
- Supernatant water pond; and,
- Discharge works associated with the removal of excess water from the TMF. Initial water balance calculations indicate the TMF will operate under surplus water conditions and require a discharge. Further work will be undertaken to determine the need for and design of any treatment works to ensure such discharge meets environmental requirements.

Water Management

The landscape in the Project Area is characterized by undulating to rolling topography, wetlands and woodlands dissected by a few lakes and streams. The Project is situated to the east of Highway 374 and Fifteen Mile Stream and to the south of Seloam Lake. The project facilities are located entirely in the drainage area of Seloam Brook or its tributaries, and are confined by natural topography to the west and south.

The proposed open pit lies below Seloam Brook, which will necessitate diversion of Seloam Brook around the open pit limits prior to commencement of mining. Seloam Brook will be re-routed into a permanent constructed stream channel approximately 1,300 m long. The route design will avoid existing fish habitat to the greatest extent practical, and requires construction of a trapezoidal shaped channel approximately 2 m deep and 5 m wide. The channel design will be completed in consultation with regulatory agencies and affected stakeholders, and will include appropriate gravel streambed material and fish habitat complexing. The stream re-route will isolate the mine facilities to the south and east from the unaffected areas to the north and west, and maintain drainage of Seloam Lake through to Fifteen Mile Stream. The TMF will act both as containment for tailings and site contact water unsuitable for discharge. Initial water balance calculations indicate the TMF will operate under surplus water conditions and require a discharge. Further work will be undertaken to determine the need for and design of any treatment works to ensure such discharge meets environmental requirements.

Water collection ditches will be established surrounding the bases of the WRSF and LGO. Relief is designed into these facilities so that surface water that comes into contact with them will run to the surrounding collection ditches by gravity. Runoff from the active mine areas will be collected in the Site Management pond and discharged to the receiving environment or conveyed to the TMF supernatant pond if unsuitable for discharge and used as process water.

A plant site management pond will be located adjacent to the plant facilities. Water collection ditches will be established surrounding the facilities area, as well as the ROM ore stockpile, that will divert collected surface water to this water management pond. The earthworks for the facilities are designed with enough relief that contact surface water will run by gravity into these surrounding collection ditches, and into the water management pond. Settled water will be released to the environment if of suitable quality or if unsuitable pumped to the TMF for use as process water. In addition to the Seloam Brook diversion channel, locally placed berms surrounding the open pit will direct surface water away from the open pit and into the surrounding drainage basin. An in-pit water diversion ditch will be established along the top bench of the open pit to intercept any surface water that makes it through the berm and comes into contact with the open pit. This ditch will direct water to in-pit sumps for collection, where it will be pumped out of the pit and to the TMF.

Where necessary, sub-horizontal drain holes will be established in the final open pit walls as they are exposed. On the active bench floor, the water that is collected from these drain holes, along with surface runoff, will be directed to a sump. All collected ground and surface water in the pit will be handled by high lift skid mounted pumps installed in each active pit bottom as part of the in-pit pumping system. The mine sump pumps will be connected to semi-permanent and permanent piping systems to convey water through a HDPE pipe directly to the TMF located east of the open pit. The in-pit sumps will be installed with each box cut as the benching is advanced.

Seepage from the tailings facility and runoff from the TMF embankment will be captured in the seepage collection ditches beyond the ultimate footprint of the embankment. Water will be conveyed to a central seepage collection point downstream of the embankment and pumped back to the tailings facility during operations and closure until water quality is suitable for release to the downstream receiving environment.

Water suitable for discharge will be released to a wetland area adjacent to the surplus water management pond and will subsequently flow northwest to Seloam Brook re-route and the downstream receiving environment.

Concentrate Loading and Haulage to the Touquoy Mine

The gold concentrate produced at the Project will consist of a gravity concentrate and a float concentrate. The gravity concentrate represents a small portion of the gold concentrate produced and will be stored and transported in specialized hoppers. The hoppers will be transported on the back of a flatbed once a hopper has been filled [in the order of one hopper every two days]. The majority of concentrate to be hauled will be float concentrate. Up to 105,000 t will be hauled on an annual basis in purpose built side dump haul trucks. The trucks will be loaded inside the concentrate loadout area by front-end loader. The concentrate will be covered to prevent any losses and the trucks weighed prior to leaving to ensure appropriate loading.

The concentrate from the Project will then be transported to the Touquoy process plant along a combination of existing public roads and private road. The initial route proposed is along Highway 374 south to Highway 7, east along Highway 7 through Sheet Harbour to Mooseland Road at Tangier, and then north-west along Mooseland Road to the Touquoy mine. Once the Beaver Dam Mine comes online (proposed in 2022), FMS haul trucks are expected to travel along Highway 374 south to Highway 7, east along Highway 7 through Sheet Harbour to Highway 224 and then north-west along Highway 224 connecting with the upgraded Beaver Dam Haul Road to Mooseland Road.

The initial route uses only public roads, with the 58 km section of public Highway (Highway 374 - 31 km and Highway 7 - 27 km) which forms a large part of the link being dual lane sealed roads built to support heavy truck traffic. The Mooseland Road (35 km) is a provincially owned road that has sealed and unsealed sections. The second phase of hauling will also use mainly public Highways (Highway 374 – 31 km, Highway 7 – 4 km, Highway 224 – 17 km). The Beaver Dam Haul Road (Moose River Cross Rd. - existing logging roads - 12.7 km) is a private logging road that will be upgraded as a result of the development of the Beaver Dam project. This upgrading will involve widening to two lanes and improving alignment to provide safer curves and gradients, and where necessary, to achieve an operational design speed of approximately 70 km/h.

The upgrade of the Beaver Dam Haul Road between Highway 224 and the Touquoy mine will be completed separately from the Project as part of the Beaver Dam Mine Project. The Project is not dependent on this upgrade as the initial haul route exists and as such, this project will not be considering this upgrade as a project activity.

The majority of dwellings located along the proposed haul routes are located in the community of Sheet Harbour with a lower density of dwellings located between Sheet Harbour (Highway 7), Mooseland (Mooseland Road), Tangier, and Marinette (Highway

224). These dwellings are currently exposed to highway traffic which includes logging trucks and aggregate haulers. For the remainder of the haul route, there are a small number of houses that will be affected by these vehicles.

The proposed truck traffic is envisaged to have a minor impact on the existing traffic on the segment of Highway 374, Highway 7, Mooseland Road, and Highway 224.

Touquoy Processing

Final processing of gold concentrate will take place at the existing Touquoy facility currently operating at the Touquoy mine. The Touquoy plant has the capacity and is designed to be able to treat FMS concentrate with only minor modifications required including:

- Concentrate storage;
- Gravity concentrate leach reactor; and,
- Gravity electrowinning cell.

With the exception of the concentrate storage, the changes to the gravity circuit can be accommodated within the existing process building footprint.

Tailings Management – Touquoy

Final processing of the gold concentrate will be undertaken at the Touquoy facility. The small volume of additional tailings generated from this operation will be pumped to the existing TMF at the Touquoy mine until mining operations cease at the Touquoy mine, approximately 12 months after start-up of the Project. Upon completion of mining in the open pit, tailings will then be discharged to the mined out Touquoy pit for storage. Process water will be recycled from the Touquoy TMF. At some point, based on the results of water balance, process water may be sourced from the exhausted Touquoy pit.

It is anticipated that approximately 105,000t of tailings will be deposited into the Touquoy TMF from the Project. This figure represents the first year of production, as the Project will commence production 12 months prior to the cessation of mining in the Touquoy pit. It is anticipated that this additional quantity of tailings will have a negligible impact on the existing facility as the additional represents only approximately 1% volume of the total tailings contained within the facility. Tailings disposal will be transferred to the mined out Touquoy pit following completion of mining at the Touquoy mine. Tailings from the FMS concentrate will be deposited in conjunction with tailings from Beaver Dam ore and Cochrane Hill concentrate. The tailings deposited represents an increase of approximately 7% volume over and above the total Beaver Dam tailings that will be deposited into the pit.

Source terms from FMS tailings supernatant will be used to update the Touquoy water quality model to predict potential changes in water quality in the Touquoy TMF and open pit as a result of the addition of tailings from processing of FMS concentrate at the Touquoy mine. This information will be used in support of an application for amendment of the Touquoy IA to accept processing of FMS concentrate and disposal of tailings from FMS concentrate to the Touquoy TMF and open pit.

The Touquoy pit is not expected to completely fill with water during the processing of FMS concentrate but if this does occur excess water will be pumped into the existing Touquoy tailings dam in order that it can pass through the water treatment system.

Reclamation

The goal of the reclamation plan is to return land and water disturbed by development to a safe and stable condition compatible with the surrounding landscape and final land use. The plan will employ recognized reclamation best practices, acknowledged principles of ecological restoration, and consultation with relevant stakeholders. The site has been used for past mining and exploration activities (decline installed, roads, exploration camps, water management pond system, and small waste piles of rock and overburden along with successive tree harvesting and silviculture activities) for the last 100 plus years. Evidence of limited

recreational use of the land (hunting, fishing and off-road vehicles) at the site suggests that these activities could be re-instated after the mining operation ceases and reclamation activities completed. The majority of the lands proposed for the mining operation and infrastructure are majority owned by a privately held company (MacGregor Properties Ltd.) and the Provincial Crown.

All marketable timber or biomass will be removed from the pit, crusher, plant site, TMF and waste rock disposal areas. Organic debris (roots, stumps, brush) will be stockpiled in conjunction with topsoil and used for reclamation at closure. All reclaimed areas will be covered with overburden and growing medium to a depth suitable to establish and support a self-sustaining vegetative cover.

At closure, all infrastructure will be removed. The open pit will be allowed to flood creating a lake. Re-contouring of the WRSF will be carried out progressively throughout the Project life where practical. The crusher site will be contoured to match the local topography.

The anticipated scenario for closure of the TMF is long term wet cover. Where practical, exposed tailings beaches will be covered and then re-vegetated. A spillway invert will be lowered within the tailings pond to allow free flow of runoff out of the facility once the contained water is confirmed suitable for discharge. Re-vegetation will establish hardy pioneer species and grasses to colonize disturbed areas and stabilize soil. Native species will be planted to hasten a return to a natural ecosystem reflecting the pre-development site.

All runoff associated with the site will be contained and directed to either the TMF or open pit until determined to be suitable for discharge. Runoff in the vicinity of the open pit will be directed as dispersed flow into the open pit to speed filling. The flooded pit will have shallow margins along the pit perimeter and will sustain a seasonal flow channel downstream of the pit. Runoff from stockpiles will be directed to stable channels and released to the natural drainages.

Decommissioning of the Project will require approximately three to five years after cessation of operations. Two years will be needed to complete the regrade and re-vegetation of the site, after which monitoring will continue until deemed no longer necessary – typically two to three years post-reclamation. The reclamation measures are designed to enable eventual walk away from the site, leaving the site in a safe and stable state. The self-sustaining site will be compatible with the surrounding environment and future land use. The Project site is intended to be returned to its previous land use after mining: recreation and forestry. Other opportunities may exist for the site. The final disposition of the site will be informed through consultation with community stakeholders throughout the course of the Project life and adherence to applicable legislation.

2.5 Emissions, Discharges and Waste

Dust emissions resulting from mine construction and operation will be controlled with the application of water obtained from Seloam Lake or Anti-Dam Flowage via a stand pipe on the raw water line, or the use of wet/chemical dust suppressants. Stockpiled soils and tills will be progressively revegetated as piles become stabilized. With a relatively short mine life, the majority of reclamation activities will be commencing at the end of the mining operation. However, where possible, inactive disturbed areas including stockpiles and roads will be reclaimed upon cessation of activity.

Combustion emissions, including nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide (CO₂), sulphur dioxide (SO₂), and particulate matter (PM), will be generated from the operation of Project equipment and vehicles. Emissions will be reduced by proper equipment selection, maintenance and inspection. Modern diesel engines utilizing low sulfur diesel fuels have reduced particulate and sulfur dioxide emissions compared to similar engines used in the past. Air quality monitoring will be conducted as per the conditions of an IA, Nova Scotia Air Quality Regulations and the National Ambient Air Quality Objectives. Predictive modelling relating to dust deposition is planned as part of the environmental assessment.

Noise and vibration from blasting and equipment will be controlled by attenuation (the distance between a noise source and a receptor), vertical separation, and equipment design. Predictive noise modelling is also planned to support the environmental assessment process.

Sediment and erosion control measures will be in place throughout all phases of the Project to ensure that surface runoff generated during operations is appropriately managed. Surface runoff will be collected in ditches and/or ponds and if of suitable quality discharged to the receiving environment. Groundwater and precipitation in the open pit, will be directed or pumped to the TMF for use as process water. Water from the water management pond(s) may be used in for dust suppression, to the extent feasible. Water management pond development across the site will be staged with the overall development and needs of the Project. Details regarding the required water management pond volumes for the control of surface water will be defined during the detailed design and reported in the EIS and/or EARD. Final design details will be a requirement of the provincial IA application.

Water discharges will be monitored and sampled in accordance with the terms and conditions of the provincial IA. Monitoring will ensure that total suspended solids (TSS) levels do not exceed the approved final discharge limits. The Proponent is aware of the requirements of the Metal Mining Effluent Regulations (MMER) and will comply with said requirements as applicable to the site. Since this is a satellite mine operation with no cyanide processing on-site, effluent will generally be tested for TSS, metals and pH and any other requirements stemming from Environment Canada or the Province via the IA process.

Solid and hazardous waste generated onsite will be minimal and limited to office and domestic refuse and oily waste. Waste streams will be managed by accredited waste collection contractors who will regularly pick up waste for transport to authorized/approved off-site disposal or recycling facilities utilizing legislated or approved methods. If a spill occurs, contaminated material will be removed from the site for disposal and recycling to an approved waste receiving facility. An on-site septic system will be designed and built for sewage and greywater disposal.

2.6 Project Phases and Scheduling

The construction of the Project pit operations will be timed so that the concentrate supply to the Touquoy process plant will begin as the Touquoy deposit is reaching exhaustion (one to two year overlap) and ahead of and concurrently with Beaver Dam mining operations (four to five years overlap). The Touquoy facility will undergo routine maintenance and minor upgrades in preparation to receive FMS concentrate which will be processed at the Touquoy processing plant.

Removal of topsoil, overburden and waste rock from the top benches of the open pit will begin one and a half years prior to the crusher installation. Timing will be informed by nesting bird directives or as approved subject to pre-construction nesting bird surveys. During this time, stockpiles for the topsoil and overburden will be built, and the initial lift of the WRSF will be constructed. Also, surface and ground water management facilities, including monitoring wells, ditches and berms will be constructed.

All other development work on the plant site and TMF including construction and commissioning of the support infrastructure at the Project will be completed in the twelve months prior to commencement of operation.

Supply of power to the site and placement of the fuel storage facility and support facilities will be linked to the start of early mining pre-strip operations.

2.7 Opportunities for Mine Life Extension

The proposed development plan and current mine life for the Project as described in the foregoing is based upon extraction of the proven and probable reserves of 10.8 Mt of ore grading 1.24 g/t from the Egerton-McLean Zone. At this time these are the only mineralized zones on the property which have sufficient definition in order to determine them as being economic to mine.

As with most mining properties, however, additional mineralized zones have been identified within the Project Area which have been the subject of various levels of exploration over time.

At the Project, the most significant additional exploration targets include:

- extensions to the current mineralization at Egerton-McLean;
- the Hudson Zone located about 800m west of Egerton-McLean;
- the Plenty Zone located about 400m southwest of Egerton-McLean;
- the 350 m gap between the eastern end of the Plenty Zone and Egerton-McLean; and,
- the 149 Zone located about 1.5 km east of Egerton-McLean near the proposed TMF area.

Given their locations in close proximity to the planned site infrastructure, additional development of these zones would result in only a minor increase in the area of mine operations.

As further exploration and infill drilling is undertaken and resource estimates upgraded, any decision to mine these additional zones will be preceded by contact with regulatory authorities and applications to amend the appropriate operating permits and approvals.

3.0 PROJECT LOCATION INFORMATION

The Project is located at the eastern boundary of Halifax County, central Nova Scotia, approximately 95km northeast of Halifax and 17km to the northeast of Atlantic Mining's Beaver Dam Project. The property covers the historic Fifteen Mile Stream Gold District located on NTS sheets 11E01/C and 11E02/D and is centered at 45°08'30" north latitude and 62° 32' 00" west longitude. The Touquoy mine is located on the NTS sheet 11D15 and is centred at 44°59'09" north latitude and 62° 56' 16" west longitude.

3.1 Legal Description and Ownership

A large proportion of the surface rights in the Project Area are held by MacGregor Properties Ltd of Halifax, including the area over the Egerton-McLean, Hudson and Plenty Zones. An agreement is in place with MacGregor Properties Ltd. whereby Atlantic Gold, through Acadian Mining Nova Scotia Corporation a wholly owned subsidiary, can both explore and mine on the property after meeting various financial requirements. Most of the remaining surface area is held by the Crown (administered by the Province of Nova Scotia).

In terms of surface rights, there are two main landowners in the property area: MacGregor Properties Ltd. of Halifax and the Crown. Three of the four main zones of mineralization, the Egerton-McLean, the Hudson and the Plenty zones, occur on the MacGregor lands, with the 149 East Zone situated on land owned by the Crown.

An agreement to explore, develop and mine is in place with MacGregor Properties Ltd. Acadian signed an Access Agreement and Option to Lease with MacGregor Properties Limited on April 8, 2010, which provides Acadian with exclusive rights to conduct exploration on the MacGregor Properties Ltd. land and thereafter the option to lease the lands for mining. The exploration period timeframe extends until December 31, 2019 and the lease period timeframe extends from the lease commencement date until December 31, 2034. If a mine is operating on the area on December 31, 2034, then the lease period may be extended by agreement.

A Mining Lease will be sought once the Project receives Environmental Assessment Approval.

3.2 Proximity to Residences, Reserves, and Federal Lands

The Property is unpopulated and the nearest village to the property is Sheet Harbour, 33 km to the south along Highway 374, which has a population of about 800 people and services a broader population of about 5000 people, mostly distributed in a string of small communities along the coastline. It provides many amenities including a deep water port from which wood chips are currently shipped to various international destinations.

The Project is located within central Nova Scotia, a distance of over 100 km from the nearest provincial boundary - New Brunswick. The site is over 200 km from the United States (Maine border).

Kejimikujik National Park is the only National Park located on mainland Nova Scotia and is approximately 230km from the Project (as the crow flies). The closest national historic site is the Isgonish National Historic Site which is located approximately 77km from the Project. The two closest Mi'kmaq communities are the satellite communities to the Millbrook First Nation of Beaver Lake and Sheet Harbour. These two Indian Reserves (Beaver Lake IR 17, Sheet Harbour IR 36) are both located approximately 33km from the Project.

3.3 Current Land Use

The principal economic activity in the Project Area is forestry. Coastal settlements to the south support a long-standing lobster and fishing industry. Streams and waterways in the area support trout fishing and other recreational uses.

The Project Area has had previous exploration and mining activity. A series of historical and abandoned mine openings are present across the Project Area and Seloam Brook has been ditched and re-routed in multiple locations that allowed mining activities to occur in the past. There is a road network on the site to support previous exploration and mining activity, as well as forestry activity on provincially owned land within the Project Area. Access roads have been in place for decades for forestry and mining activities; others may use the roads from time to time for seasonal activities on the private and crown land. The use of the land by First Nations communities at this point has not yet been fully revealed and is currently being evaluated. The roads present opportunities for recreational vehicle use and foot traffic but the degree of use of the private and crown roads is not well documented.

4.0 FEDERAL INVOLVEMENT

4.1 Financial Support

No federal funding will be sought or has been received for this Project.

4.2 Description of Federal Land Used

No federal lands will be used to undertake this project.

4.3 List of Permits, Licenses and other Authorizations

Federal and provincial environmental acts and regulations apply to the Proponent regarding the design, site preparation, construction, operation, and rehabilitation of the proposed mine. In addition to the environmental legislation, other acts and regulations relating to labour standards, mining practices, and other phases are applicable to the Project. The Proponent is aware of the applicable acts and regulations that pertain to the proposed undertaking and the Proponent's project team have the demonstrated experience and ability to prepare the necessary information and design plans to obtain the required permits and

approvals, as well as having shown the ability to operate within the requirements of such acts and regulations at the Touquoy mine and other previously completed surface mining projects in other first world jurisdictions. The following provides a listing of some pertinent acts that may be applicable for the undertaking and/or were considered in the preparation of Project Description. Further reference will be made to specific legislation in the EIS/EARD.

Federal Legislation

- *Canada Wildlife Act* and Regulations
- *Canadian Environmental Assessment Act* and Regulations
- *Canadian Environmental Protection Act* and Regulations
- *Fisheries Act* and Regulations, including the Metal Mining Effluent Regulation (MMER)
- *Migratory Birds Convention Act* and Regulations
- *Transportation of Dangerous Goods Act* and Regulations
- *Species at Risk Act*

Based upon the absence of any designations of local waterways, the requirement of permits for navigable waters is not anticipated for the Project under the current Navigation Protection Act. The federal government recently proposed changes to these regulations and a Proposed *Canadian Navigable Waters Act* that would replace the *Navigation Protection Act* is under review and is expected to come into effect as early as June 2019. There is potential that, under this new regulation, waterways within the Project Area could require permitting. Further consultation with Transport Canada will be required as more information on the new act becomes available.

A contract explosives supplier will provide the blasting supplies and materials for the mine. Emulsion will be the primary blasting agent as the majority of holes will be wet. Explosives and all accessories will be supplied on an as needed basis from the contractor's base location off-site and delivered to the Proponents explosive storage facilities or directly to the blast holes typically using the contractor's equipment. All on and off-site permitting requirements will be the responsibility of the contractor through Natural Resources Canada for this Project. Nuclear density gauges will be used in the mill and as a consequence a license will be required under the *General Nuclear Safety and Control Act* and Regulations.

Provincial Legislation

- *Environment Act* and Regulations
- *Dangerous Goods Transportation Act* and Regulations
- *Endangered Species Act* and Regulations
- Labour Standards Code
- *Mineral Resources Act* and Regulations
- *Crown Lands Act* and Regulations
- *Occupational Health and Safety Act* and Regulations
- *Wildlife Act* and Regulations

The Proponent will follow provincial processes for watercourse and wetland permitting and standard mitigation methods (both NSE and DFO) will be adhered to for watercourse alteration, culvert installation and wetland alteration. Culvert installations will be completed in accordance with Nova Scotia Watercourse Alteration Standard (NSE 2015) and DFO guidelines for the design of fish passage for culverts in Nova Scotia (DFO February 2015). Should internal mine site road re-alignment be required to ensure safe passage for truck traffic, the new road sections will be aligned at 90 degrees to the watercourse channel at the crossing location wherever practical.

During the design process, the Proponent will work to avoid wetland habitat where possible. Where not possible, wetland alteration permitting will be completed to support mine development.

NSE will require an IA to construct, operate, reclaim and abandon the proposed mine; and Water Approval, to alter waterbodies and/or wetlands within the mine development. Both approvals are as described under the Activities Designation Regulations (*Nova Scotia Environment Act*, 2014) as follows:

Industrial Approval: An IA defines specific operational conditions and limitations, including dust, noise, surface water and groundwater discharge criteria and monitoring plans. An IA application would be made by the Proponent when EA approval is received. An application for an amendment to the Touquoy IA will also be made to allow for the acceptance and processing of FMS concentrate and disposal of the associated minor volumes of tailings in the Touquoy TMF and open pit.

Water Withdrawal Approval: This approval will be required prior to withdrawing groundwater or surface water to support mine development at a rate greater than 23,000L/day.

Wetlands Alteration Approval: This approval will be required prior to altering any wetlands in the Project Area. The approval application will include a functional assessment of the wetlands in question and a compensation plan.

Watercourse Alteration Approval: This approval will be required prior to altering any watercourse in the Project Area. The approval application will include a detailed assessment of the watercourses in question and a description of fish habitat and a fisheries off-setting plan.

5.0 ENVIRONMENTAL EFFECTS

5.1 Spatial Boundaries

The Project Area is defined as the current preferred layout for infrastructure plus an appropriate buffer setback to evaluate direct impacts. It is important to note that additional engineering and technical studies are still required to finalize site infrastructure.

The EIS Local Assessment Areas (LAA) for each VC have been drafted and will be discussed in detail in the EIS document. EIS Regional Assessment Areas (RAA) for each VC (as determined to be required for analysis) have also been drafted.

5.2 Biological Environment

The proposed Project is located in the eastern ecoregion, and further subdivided into the eastern interior ecodistrict. The ecoregion is underlain by quartzite and slate of the Meguma Group, with granitic intrusives. A variety of landforms are found in this ecoregion, which include rolling till plains, drumlin fields, extensive rockland, and wetlands. The bedrock is highly visible in those areas where the glacial till is very thin, exposing the ridge topography. Where the till is thicker, the ridged topography is masked and thick softwood forests occur. There are a few drumlins and hills scattered throughout the ecodistrict with fine textured soils derived from slates (Neily et. al, 2005).

The composition of the forests in this ecodistrict strongly reflects the depth of the soil profile. Thus, many climax compositions can be found throughout. On the shallow soils, repeated fires have reduced forest cover to scrub hardwoods such as red maple and white birch, with scattered white pine and black spruce underlain by a dense layer of ericaceous vegetation. However, on the deeper, well drained soils stands of red spruce will be found. On the crests and upper slopes of hills, drumlins, and some hummocks, stands of tolerant hardwood occur. Both beech and hemlock occur on these deeper, well drained soils, but their presence is usually individual and seldom of a high percentage in any stand. On the imperfectly and poorly drained soils, black spruce will dominate the stand composition.

The Project Area sits within the Liscomb game sanctuary. The closest wilderness areas are Toadfish Lakes wilderness area which is 1.8 km south of the Project Area, Boggy Lake wilderness area, which is 2.6 km southeast of the Project Area, and Twelve Mile Stream wilderness area, which is 5.5 km southwest of the Project Area. The closest nature reserves are Abraham Lake nature reserve which is 7 km west of the Project Area, and Rush Lake nature reserve which is 7 km to the northeast.

Geology

Nova Scotia can be divided into two distinct metallogenic terranes; the Avalon Terrane to the north and the Meguma Terrane to the south. These two terranes developed independently until they were juxtaposed along the Cobequid-Chedabucto Fault Zone during the mid-Devonian Acadian Orogeny.

The gold deposits in Nova Scotia are contained within the Meguma Supergroup which is divided into, the basal greywacke dominated Goldenville Group (5,600 m thick) and the overlying, finer grained, argillite dominated Halifax Group (4,400 m). These sediments were uplifted and deformed into a series of tightly folded subparallel northeast trending anticlines and synclines during the Acadian Orogeny. The Meguma Group rocks are metamorphosed to greenschist to amphibolite (staurolite) facies and were intruded by granites and minor mafic intrusions by circa 370 Ma (Smith and Kontak, 1996).

The FMS deposit is hosted in folded and faulted strata of the Moose River Formation within the axis and limbs of a north-dipping, overturned regional anticline. In this area, the anticline is commonly referred to as the FMS anticline; however, it may be equivalent to the Moose River–Beaver Dam anticline that hosts the Touquoy and Beaver Dam gold deposits to the southwest.

Parasitic folding and small-scale faulting in the FMS hinge zone is focused in the thick, comparatively incompetent and penetratively-foliated meta-mudstone units (e.g., Orient, Siegel), rather than in the more competent meta-sandstones. As a result, gold mineralization and bedding-parallel quartz veins are mainly confined to these meta-mudstone intervals. Metre-scale saddle-reef quartz veins also commonly occur within meta-mudstone units in the hinge zone, including a thick bedding-parallel quartz vein referred to as the 'Big Bull Vein' in the center of the property. However, these veins are generally barren, with mineralization instead focused in meta-mudstone wall rock and in thinner bedding-parallel quartz veins.

Acid Rock Drainage/Metals Leaching

Acid rock drainage (ARD) that is caused by human activity refers to the outflow of acidic water from metal mines, coal mines or disturbance from construction (highways, housing, commercial developments) where, due to blasting or excavation of geologic materials, iron sulphide minerals become exposed to the atmosphere. When these environments are disturbed and come into contact with water, oxygen, and certain bacteria, the sulphide minerals may oxidize and generate acid in the process.

The acid production potential (AP) of a material, based upon its sulphide content, may be offset by its neutralization potential (NP), which is most commonly afforded by carbonate minerals such as calcite and dolomite. The balance between these two factors (NP/AP) determines the likelihood of an exposed material type to generate net acidic drainage. However, besides the relative quantities, the reaction kinetics of acid-generating and acid-buffering phases also play an important role. The rate at which mineral-dissolution reactions occur is largely driven by the grain size, texture, mineral chemistry and ambient conditions (e.g., pH, temperature, etc.) under which the material is stored.

Metal leaching (ML) is a common phenomenon at mine sites and the relationship between ARD and ML is twofold. First, many sulphide minerals commonly host base metals (e.g., Cu, Cd, Zn, Pb) and metalloids in their crystal lattice, which will be released upon oxidation of the sulphide phase. Second, most metals that are commonly considered of environmental concern in tailings porewaters are more soluble under acidic condition, although several elements that exist as oxyanions under aerobic aqueous conditions may be mobile in a pH-neutral regime (e.g., As, Se).

In the absence of mitigation, ARD/ML can lead to contamination of natural waterways with elevated levels of metals and other elements as well as low pH conditions unsuitable for aquatic life. Potential current effects of ARD/ML will be studied via hydrogeological and surface water sampling programs that are underway and will continue through 2018.

A Phase I geochemical assessment study will be completed in 2018 including a static test program. As part of this program, drill core samples will be collected for geochemical testing (acid-base-accounting and metals) which will inform geochemical trends and recommendations with respect to material handling and storage. A Phase II geochemical assessment may follow that would include more detailed mineralogical work and kinetic testing to better understand elemental speciation as well as acid and metal release rates.

Groundwater

The Project is in a rural area of Halifax County that is sparsely populated. The nearest domestic well is likely to be, as recorded in a provincial well log database, 12.5 kilometres away from the site, down-gradient in a southerly direction at a residence along Highway 374. Site surveys indicate no other wells in closer proximity. Domestic wells are a mix of drilled and dug wells in the area based on a review of the Nova Scotia Well Log Database (NSDNR 2012). Domestic water supplies in the area are typically vulnerable to surface water entry and associated coliform bacteria issues and elevated iron and manganese concentrations (Lin 1970).

The site hydrogeology consists of a shallow fractured rock aquifer system which is overlain by a thin aquifer in the till. Based on previous studies of the hydrogeology of this deposit, and others in the area, the degree of hydraulic connection between the shallow bedrock fracture systems is likely poor to moderate, and the main zones that are capable of storing and transmitting relatively large volumes of groundwater are the larger scale fault systems. The water table is close to the surface within the Project Area, reflecting flat lying terrain, low permeability bedrock and an excess of annual rainfall over evaporation. Thus, the bedrock sequence and part of the overlying tills will be saturated with groundwater under ambient conditions.

The Touquoy mine was subjected to a hydrogeological investigation that consisted of a series of geotechnical/hydrogeological drill holes that were monitored for groundwater quality. Given that the geology at the Project is similar to that at the Touquoy mine it is anticipated that similar hydrogeological conditions exist. Results from the Touquoy mine indicate that groundwater is slightly basic (pH from 7.02 to 8.08) with elevated hardness (45- 160 mg/L). Certain metals such as aluminum, arsenic, manganese, strontium and zinc are elevated relative to guidelines for drinking water in Canada but within ranges found in groundwater in Nova Scotia.

Surface Water

The Project is located in the East River Sheet Harbour Secondary Watershed (1EM-1) which measures 57,666 hectares. It is one of the moderately sized watersheds in the Province. This area is located in a region of the province characterized by rolling till plains, drumlin fields, extensive rockland, and numerous freshwater lakes, streams, bogs and wetlands. The area can be further characterized as having relatively low relief, hummocky type terrain. Forests are predominantly coniferous of red and black spruce. According to NSDNR, the site in the Eastern Interior eodistrict, one of the largest in the province, is typified by areas of thin glacial till and exposed bedrock. Where the till is thicker, the ridged topography is masked and thick softwood forests occur. Freshwater lakes are abundant. The majority of the site is typified by hummocky topography with imperfectly drained, medium-coarse textured soils. This inland area is somewhat removed from the immediate climatic influence of the Atlantic Ocean and is characterized by warmer summers and cooler winters.

The East River Sheet Harbour drainage basin is drained by the East River Sheet Harbour and its tributaries, from north to south. Commencing in the headwaters of the secondary basin, the watershed drains south to the confluence of the Fifteen Mile Stream with the Twelve Mile Stream at Marshall Flowage, where the East River Sheet Harbour then drains south from Marshall Flowage,

through the Malay Falls Flowage and Ruth Falls Flowage, to the Atlantic Ocean at Sheet Harbour. Elevation range within the catchment is 0 to 210 metres above sea level (masl), which varies from approximately 200 to 210 masl in the headwater areas and gradually decreases to sea level at the final outlet at Sheet Harbour. The headwaters of the watershed are located along the topographic divide separating it from the St. Mary's Watershed to the northeast and the Liscomb River Watershed to the northwest. In the vicinity of the site, the Fifteen Mile Stream is the main mapped watercourse along with Seloam Lake and Anti-Dam Flowage as the major mapped waterbodies. The proposed project infrastructure lies entirely within the Seloam Brook tertiary watershed (1EM-1-B). This tertiary watershed drains through the Project from northeast to west initiating in the tributaries of Seloam Lake that drains to Seloam Brook and into Fifteen Mile Stream and on to Anti-Dam Flowage.

The complex system of streams, lakes, bogs and wetlands is a direct result of the underlying bedrock geology of greywacke and slate found in the region. These relatively impermeable and poorly jointed rocks result in slow groundwater recharge and most of the excess surface water is retained on the surface, often called a 'deranged' drainage pattern. The basin ultimately drains to the south via the East River Sheet Harbour, and discharge peaks are attenuated to a large extent by the numerous hydroelectric dams and associated reservoirs owned and operated by Nova Scotia Power (NSPI) through which runoff is routed (Seloam Lake, Anti Dam Flowage, Marshall Falls, Malay Falls, Ruth Falls and the Barrier Dam).

Wetlands

Wetland locations are determined by a combination of available information derived from the Nova Scotia Topographic Database, Nova Scotia Wetland Database, Nova Scotia Wet Areas Mapping, and aerial photo interpretation. If identified using the above noted data sources, the wetlands are considered "mapped wetlands". There are several mapped wetlands within or surrounding the Project Area. This information was used to assist wetland specialists to identify the potential locations of wetlands for further field surveys and assessments. Wetland surveys commenced in 2017 within the Project Area and will continue in 2018.

Habitat and Flora

Within the Project Area, there are a number of ecosites, each within a variety of moisture regimes including dry, fresh, and moist, with poor, medium and rich nutrient regimes. These ecosites generally support forest group vegetation types from that include Black Spruce, Red Maple, Balsam Fir, White Pine, Red Spruce, Yellow Birch, and White Birch. In areas affected by natural or anthropogenic disturbance (such as wind throw or tree harvesting), early successional stands were determined to be in the mixed wood or softwood forest group. The dominant disturbance regime in the Project Area is timber harvesting, which is present in patches through upland forests. Vegetation is found on a range of slope positions and most sites are non-rocky. Soils are mainly derived from glacial till deposits. Generally speaking, uplands within the Project Area contain immature or uneven-aged stands. Habitat assessments in the Project Area were initiated in 2017 and will continue in the 2018 field season as necessary.

Botanical surveys were completed throughout the Project Area primarily in wetlands, and intact and disturbed upland habitats during baseline assessments in 2017 and will continue in 2018. No SARA listed vascular plant species have been identified to date within the Project Area.

Lichen surveys were completed throughout the Project Area during 2017 and will continue in 2018. Lichen surveys to date have not identified any Boreal Felt Lichen (*Erioderma pedicellatum*) (SARA endangered, NSESA endangered) within the Project Area. Blue Felt Lichen (*Degelia plumbea*) (SARA special concern, COSEWIC special concern, NSESA vulnerable) was identified within the Project Area. No other SARA listed lichen species have been identified to date.

Overall, the Project Area is primarily comprised of disturbed areas from clear cutting and historical mining activities consisting of disturbance-thriving species. However, a series of high integrity peatland ecosystems exist consisting of high flora biodiversity. The majority of the landscapes within the Project Area lack the over mature red maple and balsam fir required to support many of the rare lichen species (Pepper, 2017, personal communication).

Birds

Targeted breeding season, fall migration, and Common Nighthawk surveys were completed in 2017, and opportunistic sightings of birds identified in wetland habitats were recorded as part of an ongoing avian use assessment within the Project Area. Sixty-eight species have been identified, including 23 species of conservation interest or species at risk which have been classified as priority bird species for the purposes of the effects assessment. Potential impacts to migratory birds and their habitat should be minimized during all stages of the Project.

Bird surveys will continue in 2018 within the Project Area with Spring Migration surveys, nocturnal owl surveys, and additional Breeding Bird surveys. Published and collected data and consultation with regulators will be used to further assess potential impacts to birds, including breeding birds.

Watercourses and Aquatic Habitat

The Project Area is located between Seloam Lake to the northeast and Fifteen Mile Stream to the west. Seloam Brook connects these two waterbodies, flowing through the Project Area from northeast to southwest. The Project is located within the East River Sheet Harbour Watershed, which is inaccessible to anadromous fish due to a series of water storage and hydroelectric dams constructed since the 1920s (O'Neil, Harvie and Longard, DFO, 1997). Dams are present along Fifteen Mile Stream including upstream of the Project at Seloam Lake, and directly downstream of the Project at the Anti-Dam Flowage. Further downstream, there are several dams on the East River Sheet Harbour: Marshall Falls, Malay Falls, Ruth Falls and the Barrier Dam, all of which are unpassable to fish except for Barrier Dam under high water conditions. Historical mining activity around Fifteen Mile Stream and Seloam Brook dates back to 1878 (Drage, 2015). This, in addition to watercourse management for hydroelectricity has resulted in alterations to watercourse morphology, location, and flow, and consequently there have been countless alterations to fish habitat, populations, and distribution.

Despite the historic changes to watercourses, Seloam Brook, Fifteen Mile Stream, and other unnamed watercourses within the Project Area provide fish habitat by supporting foraging, passage, overwintering, spawning and/or rearing habitat. The following fish species were recorded during electrofishing in 2017 within Seloam Brook: Banded Killifish, Brown Bullhead, Lake Chub, White Sucker, Brook Trout, Pearl Dace, and one Dace identified at the species level.

Evaluation of appropriate watercourse habitats (Seloam Brook to Fifteen Mile Stream, and unnamed watercourses) was completed in spring 2017 for Wood Turtle and Snapping Turtle habitat and species presence. No turtles were observed, although potential habitat was identified.

Fauna

Targeted field surveys and incidental observations on various fauna species were completed throughout the field season in 2017 and winter 2018 within the Project Area. Targeted surveys were completed for bats, mainland moose and lepidopterans. Incidental observations were recorded for all other fauna species including other mammals, reptiles and amphibians, and invertebrates (including freshwater molluscs, lepidopterans, and odonates). The goal of both targeted surveys and incidental observations was to understand which species are present within the Project Area and how they are using the area to allow for an evaluation of Project interactions and mitigation measures.

Incidental observations of mammals and various signs of mammals within the Project Area were documented and photographed during all field surveys. Signs included features such as dens and nests, scat, tracks, and forage evidence. Incidental observations for priority invertebrates occurred during all field programs, particularly wetland and watercourse delineation, and fish habitat surveys. Signs of odonates and lepidopterans included live adults, larvae, or cast skins. Signs of molluscs included live or dead individuals, or shells.

Twelve mammal species were observed within the Project Area during the 2017 and 2018 field surveys

SARA Listed Species

SARA listed species identified within the Project Area during 2017 assessments include: SARA threatened - Canada warbler, common nighthawk, and olive-sided flycatcher; and SARA Special Concern - Blue Felt Lichen.

No SARA listed species of vascular plants have been identified to date within the Project Area. No SARA listed mammals have been identified to date within the Project Area. No SARA listed amphibians have been identified to date within the Project Area. No SARA listed fish have been identified to date within the Project Area.

5.3 Physical Environment

Air Quality

Mining activities such as blasting, on site vehicle operations, crushing, and wind erosion from waste rock piles all can contribute to increased particulate levels. Based on Nova Scotia Air Quality Regulations; a significant adverse environmental effect with respect to total suspended particulate is one that would reduce air quality, such that the level of total suspended particulate matter exceeds 120 ug/m³ over a 24-hour averaging period or 70 ug/m³ over an annual averaging period.

Modelling is currently underway to report on expected values in comparison to the maximum permissible ground level concentration of 120 ug/m³ as outlined in Schedule A of the Nova Scotia Air Quality Regulations. Particulate releases are expected to be similar to those reported at the Touquoy mine.

Noise

Baseline noise monitoring was completed at the Project in 2017 and modelling is underway. Noise is defined as any unwanted sound which may be hazardous to health, interfere with speech and verbal communications or is otherwise disturbing, irritating or annoying. Blasting, on site vehicle operations and crushing can contribute to an increase in noise levels. As specified in the Noise Measurement and Assessment Guidelines, Leq values should be within the following limits:

1. ≤ 65 dBA between the hours of 0700 and 1900 hours;
2. ≤ 60 dBA between the hours 1900 and 2300 hours; and
3. ≤ 55 dBA between the hours of 2300 and 0700 hours.

Noise outputs are expected to be similar to the Touquoy mine. Modelling will determine the predicted levels at the receptors and if those predictions are within the above guidelines.

Light

The Project is in a remote location. Ambient night time light conditions would be minimal and typical of an undeveloped rural area. There are no perennial artificial light sources in the Project Area and any artificial light would be from occasional sources like an all-terrain vehicle or highway traffic. Light monitoring was not completed at the Project during the baseline studies as ambient night time light conditions are not anticipated to cause any effects on the nearest residences over 10 km away. Hauling of concentrate will not occur overnight. Light modelling is currently underway. Light monitoring may be undertaken as a condition of IA. Mitigation strategies will be developed for dealing with any unacceptable light results identified through modelling or operational monitoring.

Greenhouse Gases

The total estimated predicted GHG emissions for the Five Mile Stream operation for one year is presented in Table 2. The estimate only includes primary sources and not support or indirect sources. The primary sources include diesel hydraulic DTH drills, diesel hydraulic RC drill, hydraulic excavators, wheel loaders and haul trucks. This estimate is has been calculated conservatively, and will be refined during the EA.

Table 2: Predicted GHG Emissions for Five Mile Stream

Onsite Mobile Sources	Total CO ₂ e (kt/year)
Five Mile Stream Primary Sources	20.1

The predicted total GHG emissions for Five Mile Stream represent approximately 0.12% of the total Nova Scotia GHGs (based 2015 data from the NPRI).

5.4 Human Environment

The nearest regional center to the Project Area is Sheet Harbour, located 33 km south of the Project Area. Sheet Harbour and surrounding smaller communities provide basic supply needs to surrounding farm, fishing and forestry communities. Sheet Harbour, located 100km east of Halifax on the Eastern Shore, is a local service center that provides basic needs to the local economy that is dependent on fishing, forestry and some extractive industries.

The proposed mine is located approximately 10 km north of the nearest residence along Highway 374 and 33 km from the nearest federal Mi'kmaq community (Beaver Lake IR and Sheet Harbour IR). This area has very few permanent and seasonal cottages.

Socio-economic Setting

The region is primarily dependent on resource industries, predominantly forestry, agriculture, and to a lesser extent, mining/quarrying. Mineral exploration activity in the region has been constant for decades but has grown and declined over the years depending on the economic conditions of the day. The mining industry represents a significant potential source of employment in this region that has historically seen considerable mining focus over the last 150 years. Forestry and tourism have fluctuated significantly in response to prevailing economic conditions. Due to the strong dependence on the resource sector, the economy is typified by "boom and bust" patterns. These key activities are anticipated to continue to form the basis of the regional economy.

The socio-economic effects of the Project can potentially be beneficial for the region, as it would provide employment and taxes locally and regionally. It could potentially reduce and possibly reverse an outward migration trend of people moving to larger centers. The Proponent intends to work with local communities to maximize benefits through employment, business opportunities, training, and skills development.

Archaeological and Heritage Resources

In 2008, Acadian Mining undertook an archaeological screening and reconnaissance program in a specific area around the Egerton-McLean deposit. At that time, an open-pit mine was proposed as well as associated mine features including a crusher, a settling pond, stock piles of overburden and product, and service roads. The reconnaissance noted six features, all believed to be associated with past mining operations, which were within close proximity to the Egerton-McLean along the Seloam Lake road.

The archaeologist (CRM Group) recommended that the features and the high potential areas be subject to shovel testing and the industrial features subject to detailed documentation if any of them fell within areas of future development.

CRM Group was again retained on behalf of the Proponent to conduct a site visit in the Project Area in September 2017. Building upon the research and reconnaissance undertaken on the property in 2008, CRM Group revisited several of the sites previously noted to confirm their presence and implement a buffer zone for avoidance during exploratory drilling, including the remnants of the cellar of the New Egerton Gold Mining Company office, the wooden sill foundation of a 19th century school house and features of the New Egerton Gold Mining Company store. CRM Group recommended that any development around the identified features (6 in total) would require shovel testing and intensified historical research. In addition, any development planned outside of their original study area from 2008 should be subject to a larger search.

The broader archaeological field program across the Project Area is planned for Summer 2018 to allow for further archaeological investigation encompassing the proposed infrastructure and development footprint.

Traditional Use by First Nations People

A Mi'kmaq Ecological Knowledge Study (MEKS) has been initiated for the Project and will be completed according to the Mi'kmaq Ecological Knowledge Study Protocol (ANSMC 2007). Engagement with Millbrook First Nation as the closest Mi'kmaq community has also commenced to support identification of current uses of the land surrounding the Project. To date, no specific information relating to the current use of the land by the Mi'kmaq within and surrounding the Project Area has been revealed. There is no present indication of expected elevated current use of the Project Area based on distance to the nearest Mi'kmaq community (33km) and no observations of unique ecological features or species of elevated interest to the Mi'kmaq during baseline surveys to date. Additionally, the limited 2009 archaeological report completed around the Egerton-McLean deposit did identify several archaeological features but all features were associated with historical mining activities, not Mi'kmaq resources.

Existing information relating to the baseline health and socio-economic conditions of the nearest Mi'kmaq community is limited. Interactions between the Mi'kmaq and the Project are anticipated to be low, for the reasons identified above. The expected interaction with the Mi'kmaq relates to potential use of the land for traditional hunting, plant gathering, and fishing. If the current use of the area is limited, then the need for data relating to baseline health and socio-economic conditions is low, given limited additional potential interaction with the Mi'kmaq. Collection of baseline health and socio-economic will be completed as is possible and available, and evaluation of the effects of the project on the health and socio-economic condition of the Mi'kmaq will be evaluated in the EIS.

The Project lies within Eskikewa'kik or the "skin dressing territory". This particular district spans from Halifax County across to Guysborough County. Various authors and historians have differed in their description of how far this territory expands, but all have agreed that the Project lies within this district.

Beaver Lake Indian Reserve 17 is located along Highway 224, approximately 33 km as the crow flies (56 km via provincial highway) from the Project; and, is a satellite community associated with Millbrook First Nation. The reserve was established on March 2, 1867 and is approximately 49.4 ha in size. There are five homes and four small seasonal cottages or hunting camps located on the property with an estimated population on reserve of 21 persons. Lands surrounding the Reserve are used for traditional hunting and gathering. The proposed transportation route for FMS concentrate will not travel past this IR (initial transportation route or main transportation route once Beaver Dam project is operational).

Sheet Harbour Indian Reserve 36 is located just west of Sheet Harbour, approximately 33 km from the Project and is also a satellite community associated with Millbrook First Nation. The reserve is 32.7 ha in size. There are nine homes and an estimated population on reserve of 25 people. Both proposed transportation routes for FMS concentrate will travel past this IR along Highway 7.

There is no land claim registered with the Specific Claims Branch of Indian and Northern Affairs Canada in Ottawa for any of the Mi'kmaq communities in Nova Scotia within the Project Area. However, that does not suggest that any other Mi'kmaq claimants for this area may not submit land claims in the future.

In the event that Mi'kmaq archaeological deposits are encountered during construction or operation of the Project, work will be halted in the vicinity of the discovery and immediate contact will be made with the Nova Scotia Museum and The Confederacy of Mainland Mi'kmaq. Should the proposed project site change or expand, additional research will be conducted. The Proponent will continue to communicate with the Mi'kmaq on a mutual benefits agreement and Memorandum of Understanding for its Nova Scotia mining interests.

5.5 Effects of the Project on the Environment

The *Fisheries Act* protects the sustainability and productivity of recreational, commercial and Aboriginal fisheries. The likelihood of residual effects to fish, fish habitat, and aquatic resources from the Project will be based upon impacts of the Project to surface water quantity and quality. The distribution of fish in streams within the Project Area is affected by the presence of barriers (Nova Scotia Power dam infrastructure). Direct impact to fish bearing watercourses and waterbodies will be required to support pit development with the planned re-route of Seloam Brook.

The *Migratory Birds Convention Act* protects migratory bird species. The potential effects related to migratory birds and that are associated with the construction and operation phases of the Project are as follows:

- Direct temporary and long-term loss of habitat for birds due to clearing and grubbing of the open pit, waste rock storage areas and tailings management area;
- Destruction or displacement of birds in areas of excavation and piling of mine wastes;
- Increase in dust levels from heavy machinery operation and a general increase in vehicular activity, amongst other things, may affect vegetative growth and indirectly cause a decrease in prey populations;
- Bird injury and mortality from vehicle collisions and entrapment (i.e. in the open pit);
- Disturbance resulting from reduced habitat, anthropogenic noise and vibrations;
- Attraction and disorientation resulting from night-lighting; and,
- Other effects.

The *Species at Risk Act* protects wildlife species from becoming extinct through prohibitions against killing, harming, harassing, capturing or taking species-at-risk, and against destroying their critical habitats. Surveys are on-going to identify the presence of species at risk within the Project Area. Direct effect to aquatic species at risk, if identified within the Project Area is possible, with the required re-routing of Seloam Brook.

An overview of potential effects of the project on the environment are as follows:

- The FMS deposit is characterized by low concentrations of potentially acid generating sulphide minerals. At this time, the potential for substantial acid generation would be expected to be limited, however ongoing geochemical test work will provide confirmation;
- The physical nature and extent of interaction between the groundwater and surface water and how they might be affected by mining is not yet known. Given the distance to the nearest residence, it is highly improbable that any potable groundwater resources will be affected;
- Discharges from the Project will include surface water runoff and from the pit and stockpiles, and discharge from the TMF. All water will be captured in water management ponds to reduce total suspended solids (TSS) and to ensure water meets regulatory requirements for quality prior to release to the environment;

- Potential exists for a total loss of species and habitat during construction and operational activities within the operational footprint. Introduction and spread of invasive and exotic species during operations and associated maintenance may be of concern, but weed management programs will minimize the associated impacts;
- Potential impacts to the wetland systems may correlate to construction, operation and maintenance of project infrastructure within wetlands. Loss of wetlands in the proposed project facilities footprint is expected to be the main effect to wetlands. Changes in surface water drainage patterns could result in indirect impacts to wetlands outside of the Project Area, however, monitoring programs will act as early warning systems to reduce these indirect impacts to wetlands from occurring;
- Wildlife Species listed under the Species at Risk Act, COSEWIC, NSESA, or NS *Wildlife Act* have the potential to occur, within the Project Area. The Project has the potential to affect wildlife through the loss of habitat because of site clearing activities and disturbance from noise and project-related traffic and habitat fragmentation. The potential exists for increased mortality risk through clearing activities. Sensory disturbance can occur primarily through Project generated noise, as well as ingestion of contaminants directly or indirectly and dermal absorption. Studies indicate that wildlife populations may be expected to disperse from the area during periods of construction and/or operation. Assuming wildlife species are displaced from the Project Area, this will reduce the available habitat. However, this displacement is generally of short temporal disturbance as most cases reveal that wildlife returned after human activity has ceased;
- Air-borne particulate matter will be generated during construction and operation phases of the Project. The control of fugitive dust from the mining operations will center on provision of moisture control measures, such as spraying with water as required, or other methods of dust control. During construction, water from water management ponds and the ground water in-flow to the pit may be used for dust suppression, along with chemical dust suppressants, as required. In-pit operations will not generally have much direct offsite impact, but could contribute to general dust levels if not controlled;
- Noise generated throughout the mining development and operation will originate from drilling and blasting, crushing, milling and transport of ore which may affect behaviours of birds and mammals. The noise from mining will be generally contained to the Project Area. Given that there will be no residential buildings (10 km) located near the proposed open pit area, increased noise from operations, will not affect residents in that area;
- The Project would provide many opportunities for employment in this part of Halifax County. The area has a rich natural resource history including mining and forestry. Mining jobs pay a premium over many other occupations;
- Due to the distance (more than 10 km) of the proposed Project from most residences and groundwater users, impacts on existing and future adjacent land uses are not expected; and,
- The loss or destruction of heritage or archaeological resource material is a potential environmental effect of the Project. Based on the existing knowledge there is potential for the Project to interact with identified heritage resources that have been associated with historic mining at or near the site.

Changes to the environment are not expected to occur on federal lands, in a province other than the province in which the project is proposed to be carried out or outside of Canada.

5.6 Effects on Aboriginal Peoples

It has not been confirmed at this point whether the Project will use lands and resources that are used for traditional purposes by First Nations peoples. The Mi'kmaq Ecological Knowledge Study (MEKS) is on-going and to date, conclusions have not been formulated relating to current use of the Project Area and surrounding lands by First Nations communities. An understanding of current use will also be further examined during early engagement activities and consultation with local residents of Sheet Harbour IR and the Beaver Lake IR and other Mi'kmaq community members who may utilize the Project Area and surrounding areas. Once this current use is revealed, interactions and potential effects to the Mi'kmaq First Nations peoples will be evaluated as part of the development of the Environmental Impact Statement (EIS).

The Project has the potential to bring positive socioeconomic change in the form of well-paying jobs for members of nearby First Nation Communities, that is in keeping with the Memorandum of Understanding currently in place with the Proponent and any future Mutual Benefits Agreement that is negotiated.

6.0 REFERENCES

- ANSMC: Assembly of Nova Scotia Mi'kmaq Chiefs. 2007. Mi'kmaq Ecological Knowledge Study Protocol. 23 pp. and 2nd edition, accessed at: <https://novascotia.ca/abor/aborlearn/docs/MEK%20Protocol%20Second%20Edition.pdf>
- Atlantic Gold Corporation, NI 43-101 Technical Report on Moose River Consolidated Phase 1 and Phase 2 Expansion, http://atlanticgoldcorporation.com/_resources/reports/Moose-River-Consolidated-Technical-Report_reduced.pdf
- Canadian Environmental Assessment Act: Regulations Designating Physical Activities (2012a) <http://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-147/>(accessed April 2018).
- Canadian Environmental Assessment Act: Prescribed Information for a Description of a Designated Project Regulations (2012b) <http://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-148> (accessed April 2018).
- Canadian Environmental Assessment Agency (CEAA). 2015: "Guide to Preparing a Description of a Designated Project under CEAA 2012" <http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=3CA9CEE5-1> (accessed April 2018).
- Chris Pepper, Independent Lichenologist, personal communication (telephone call), October 2017.
- Drage, J. 2015. Review of the Environmental Impacts of Historic Gold Mine Tailings in Nova Scotia. Nova Scotia Department of Natural Resources. Open File Report ME 2015-004.
- Lin, C.L. 1970: Hydrogeology of the Musquodoboit River Valley, Nova Scotia. Nova Scotia Department of Mines, Report 70-3, 67p.
- Neily, P.D., Quigley, E., Benjamin, L., Stewart, B., and Duke, T. 2005. Ecological Land Classification for Nova Scotia. Nova Scotia Department of Natural Resources. Retrieved April 2018 from: https://fernow.novascotia.ca/nsforest/elc_2005.pdf
- O'Neil, S.F., Harvie, C.J., and D.A. Longard. 1997. Stock Status of Atlantic Salmon on the Eastern Shore of Nova Scotia, Salmon Fishing Area 20 in 1995. Diadromous Fish Division Department of Fisheries and Ocean, P.O. Box 550, Halifax, NS.
- Smith P. K. and Kontak D. J. 1996: Gold Deposits in the Meguma Group of Nova Scotia. Department of Natural Resources, Minerals and Energy Branch, Information Circular 51.
- Thea Langille, Principal Planner, Halifax Regional Municipality, personal communication (Email), April 2018.

ATTACHMENTS

Figure 1.1: Project Scope

Figure 2.1: Project Infrastructure

Prepared For:







ATLANTIC GOLD

FIGURE 1-1

Fifteen Mile Stream Gold Project Scope

Halifax County

Project Scope

-  Fifteen Mile Stream PA
-  Touquoy Mine Site
-  Haul route (once Beaver Dam is built)
-  Initial haul route



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter



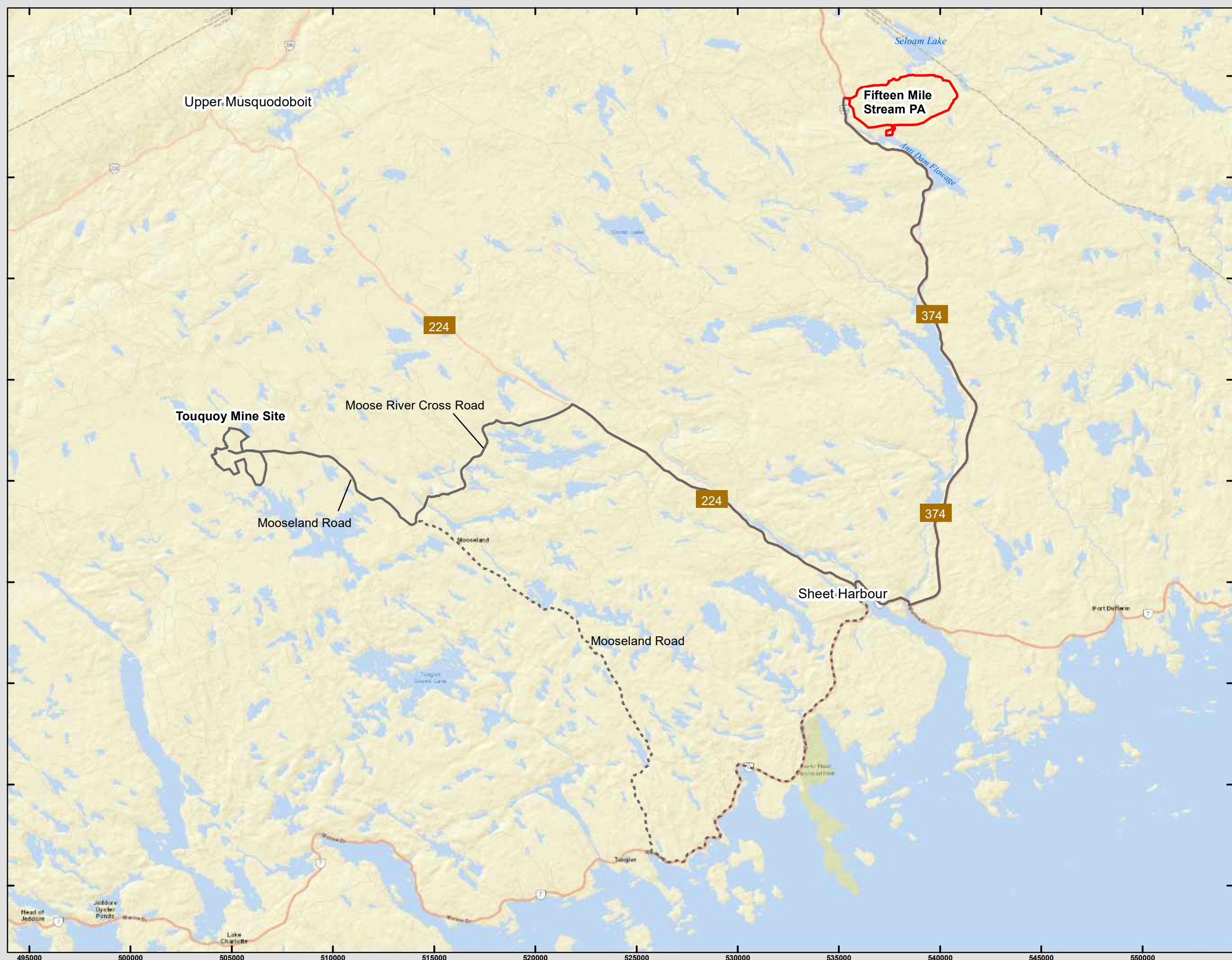
0 2 4 8 Kilometers

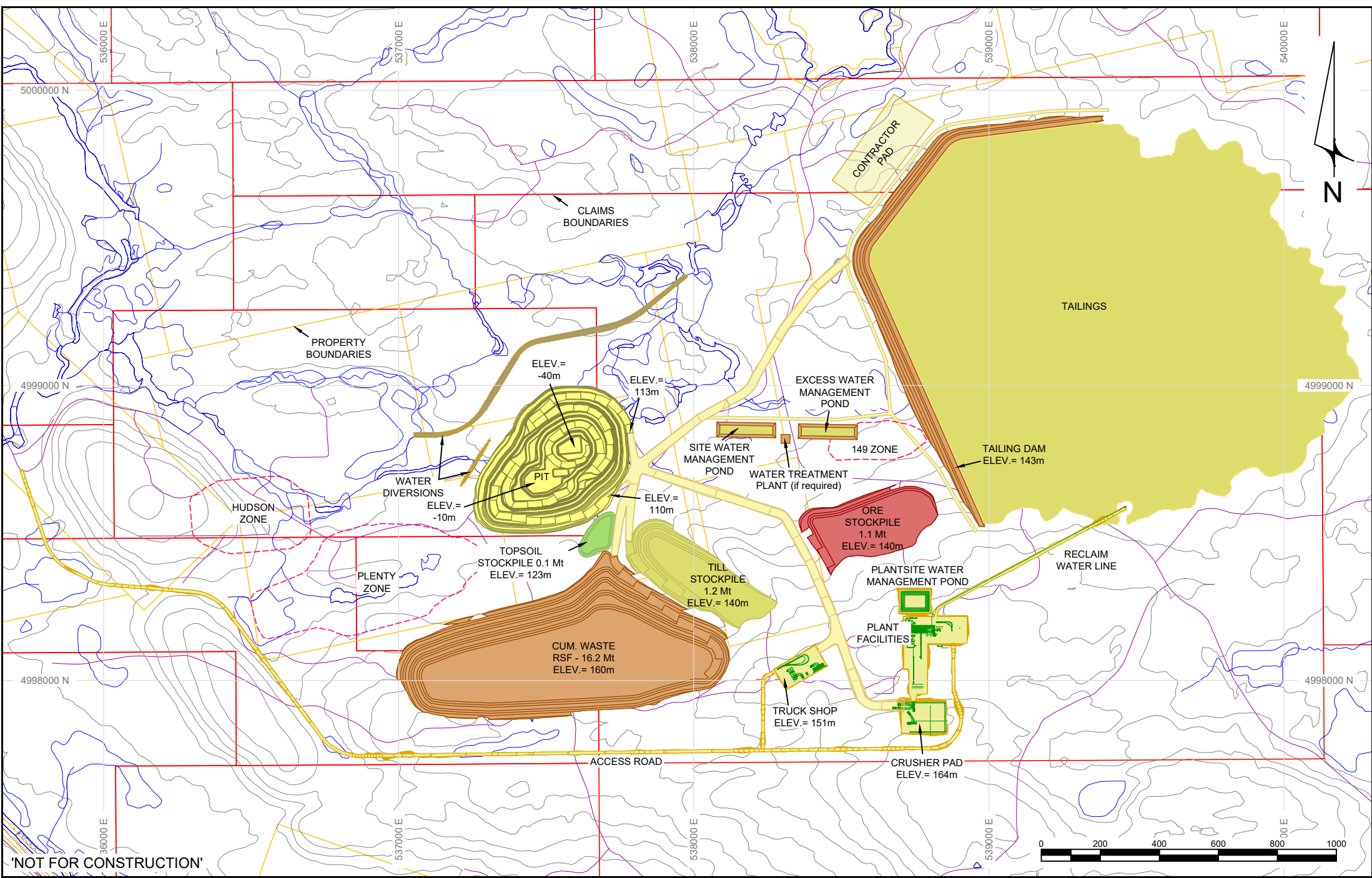
1:175,000 Scale when printed @ 11" x 17"

Drawn By: LP Date: 2018-05-16



McCallum Environmental Ltd.





'NOT FOR CONSTRUCTION'

ATLANTIC GOLD CORP. - PREFEASIBILITY STUDY END OF PERIOD - YEAR 5 - FIFTEEN MILE STREAM GOLD			
DATE:	2018/05/03	APPROVED BY:	MS
DRAWN BY:	DH	FILE:	FMS Y5 (180503)
		PROJECT:	AGC_FMS_2017



LEGEND			
	PROPOSED PITS		EXISTING ROADS
	NEW WASTE RSF		SITE INFRASTRUCTURE
	PREVIOUS WASTE RSF		WATERCOURSE
	TAILINGS INFRASTRUCTURE		TOPOGRAPHY
	TAILINGS		HUDSON ZONE
	WATER DIVERSION		149 ZONE
	HAUL ROAD		PROPERTY BOUNDARY
	MINE FACILITIES PAD		MINERAL CLAIMS
	ORE STOCKPILES		
	TOPSOIL STOCKPILE		
	TILL STOCKPILE		

CONTOURS AT 5m INTERVALS