SD 03

Groundwater Contingency Plan Revision 1.2

Groundwater Contingency Plan - Proposed Plan Updates (July 2021)

Note: This Plan is under active review with NSECC; additional changes that are identified based on this review will be integrated to the next update of the Plan.

REPORT SECTION	UPDATE	RATIONALE
1.0 Introduction and Background	Minor updates to describe this revision.	
1.1 Objective and Scope	Minor updates regarding the objectives of this revision.	
1.2 Location and Description	N/A	General description of location is sufficient.
1.3 Groundwater Issue Identification	Update to include modifications to the Approved Project	
2.0 Mitigative Action Plan	N/A	No change required to heading.
2.1 General Statement	N/A	Text is general. No need for updates due to proposed modifications to the Approved Project.
2.2 Interactions Between the Open Pit and Moose River	Update to acknowledge in-pit tailings disposal.	
2.3 Interactions with Flooded Mine Workings	Update to acknowledge in-pit tailings disposal and changes to pit dewatering.	
2.4 Tailings Seepage	Update to acknowledge potential seepage of tailings from the in-pit disposal.	
2.5 Interactions with Water Wells	N/A	No need for updates due to proposed modifications to the Approved Project.
3.0 Groundwater Contingency Plan	N/A	No change required to heading.
3.1 Groundwater Contingency Assessment Framework	N/A	No need for updates due to proposed modifications to the Approved Project.
3.2 Key Tailings Seepage Indicator Parameters	Update list of monitoring wells and key indicator parameters as applicable due to proposed modifications to the Approved Project.	
3.3 Action Levels and Triggers	Action levels will be revisited to determine if any changes required due to changes in operations (e.g., in-pit tailings disposal).	
3.4 Increased Surveillance	N/A	Text is general. No need for updates due to proposed modifications to the Approved Project.
3.5 Adaptive Management Actions	Adaptive management plans for the TMF and Open Pit will be revisited to determine if changes required due to Project.	
3.6 Plan Management	Most of this section will not required updates due to the Project. Additional events may be added in Section 3.6.3 Notification.	General text does not require updates due to the Project. Additional events may be added in Section 3.6.3 Notification.

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REPORT SECTION	UPDATE	RATIONALE
4.0 Closure	Update to closure to reflect authorship/review of Plan modifications.	
5.0 References	Update as required.	
Appendix A - Figures	Update figures to show changes to site layout and monitoring well locations.	
Appendix B - Tables	Update as required if discharge criteria and indicators change.	

Touquoy Gold Project Groundwater Contingency Plan Revision 1.2

Touquoy Gold Project, Moose River, NS

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1.0 INTRODUCTION AND BACKGROUND

At the request of Atlantic Gold Corporation (Atlantic Gold) on behalf of its subsidiary, Atlantic Mining NS Corp. (AMNS), Stantec Consulting Ltd. (Stantec) has prepared the following revision to the Groundwater Contingency Plan (GCP) for the Touquoy Mine Site.

This plan was originally developed by Jacques Whitford (now Stantec) in 2008 and was revised in April of 2017 to include specific action levels for groundwater quantity and quality based on baseline groundwater chemistry and level data collected from March through December 2016. The Plan was submitted as Revision 1.0 to Nova Scotia Environment (NSE) on April 30, 2017, and comments were received back on May 3, 2018.

The comments provided by NSE were incorporated into Revision 1.1 of the GCP, as well as the increased understanding of site operations and management obtained as the mine has operated. As part of this revision, site monitoring data has been used to further refine the action levels defined within this document, and the associated contingency actions have been further refined. Revision 1.2 (this document) provides updated action level triggers relative to Revision 1.1.

The GCP is presented by Atlantic Gold to address potential groundwater effects associated with the Touquoy Gold Mine in Moose River, Nova Scotia, including the effects of operating the Open Pit Mine (OPM), and the Tailings Management Facility (TMF). The design of the TMF is intended to limit the effect from seepage on the adjacent surface water environment from either the TMF or the Polishing Pond. The acquisition of properties with domestic water supply wells in the former community of Moose River by Atlantic Gold effectively mitigates the issue of predicted impacts on domestic water supply wells.

This contingency plan identifies potential issues, describes mitigative measures incorporated into the mine development, and proposes contingency actions in the unlikely event of a persistent impact on groundwater resources.

1.1 OBJECTIVES AND SCOPE

The original GCP was submitted in response to Nova Scotia Environment (NSE) Condition 4.1 of the Touquoy Gold Mine Environmental Assessment Approval, February 1, 2008. This version of the GCP (Revision 1.2) was prepared in response to and in accordance with the current Industrial Approval (2012-084244-A02), Condition 8 c) i). The objective of the GCP is to define procedures to be taken in the event that an adverse effect on groundwater is detected through the Groundwater Monitoring Plan completed in accordance with the Industrial Approval Condition 8b).

The NSE Contingency Planning Guidelines (NSE 2016) define a contingency plan as "a plan respecting the prevention of, preparedness for, response to and recovery from an unauthorized release of a substance which has caused, is causing or may cause an adverse effect". The

objective of the GCP is to identify, assess the environmental significance of, and as appropriate, respond to, a groundwater release from the TMF or OPM. In addition, this GCP also addresses potential effects both on the local groundwater systems due to operation of the Touquoy Gold Mine (e.g., local water level lowering or seepage releases from the TMF), and from the local groundwater system on the OPM (e.g., seepage inflows). This Plan will be reviewed and revised on an annual basis, with the updated plan being provided to NSE for comment.

1.2 LOCATION AND DESCRIPTION

The Touquoy Gold Mine is located at the community of Moose River Gold Mines, about 60 kilometres (km) northeast of Halifax, Nova Scotia (Figure 1, Appendix A). The mine site encompasses 176 hectares (ha) within the Moose River watershed which has a catchment area 41 square kilometres (km^2) (CRA 2005). This area was actively mined between 1877 and 1936, yielding an estimated 26,000 ounces of gold from 150,000 tonnes of rock and fill. Numerous underground workings are present throughout the region and the Touquoy production Touquoypit is present on the property.

The bedrock-controlled topography is undulating to rolling, with local land forms dominated by northeast to southwest trending glacial drumlin hills with intervening wetlands or watercourses. The site is drained by the Moose River and its tributaries from north to south. Local ground surface elevations range from 102 to 145 metres (m) based on the CGVD2013 vertical datum.

The local geology consists of 4 m to more than 10 m (on drumlin hills) of silt-sand glacial till overburden with isolated zones of sandy till and clay materials. This overburden is underlain by fractured metagreywacke and argillite bedrock. Hydraulic conductivity (K) estimates for the bedrock around the TMF ranged from 6.8×10^{-6} metres per second (m/s) to 1.1×10^{-8} m/s based on the results of packer tests and 2.1×10^{-5} m/s to 3.9×10^{-9} m/s for slug tests, respectively (Stantec 2016a). Relatively low K values for the deeper bedrock results in low drilled well yields and limits the potential for seepage either into the OPM or from the TMF.

At ultimate development, the Touquoy Mine will consist of a 37.6 ha open pit extending to a maximum depth of 120 m in the gold-bearing argillite bedrock, a 94 ha tailings management facility, a 10.5 ha polishing pond, a 43.8 ha waste rock storage area, and a 13.8 ha mill site (Figure 2, Appendix A).

1.3 GROUNDWATER ISSUES IDENTIFICATION

The following potential issues were identified with respect to the effects of mine operations on the groundwater resources:

1.3.1 Site Geology

The Touquoy Mine is located in the Meguma Group Goldenville Formation. This formation is closely related to historical and current gold production and exploration operations. This formation is also known to be high in natural concentrations of arsenopyrite which is found

associated with gold deposits in Nova Scotia. As a result, natural concentrations of arsenic in groundwater in this formation have been found to naturally exceed Nova Scotia Tier 1 Guidelines for arsenic.

1.3.2 Historical Tailings

Due to the nature of historical mining within the Site area, the extent of historical tailings has been poorly defined prior to the development of the Touquoy site by the Atlantic Gold. This is a result of the age of the deposition of these historical tailings (approximately 100 years old) and is inherent to the nature of tailings deposition by stamp mills themselves, which was very dependent on now unknown piping routes and local topography.

In 2007, Atlantic Gold submitted a Historic Tailings Management Plan to Nova Scotia Environment (NSE) for the Moose River Gold Mine Project (Inspec-Sol 2007). The Historic Tailings Management Plan identified six historical mining stamp mills that operated between 1882 and 1925 in the area of Touquoy open pit. Two of these historical stamp mills (Moose River Gold Mines Stamp Mill and G&K Mining Stamp Mill) were found to be located within the Touquoy Gold Project property limit near the open pit.

In 2016, Atlantic Gold completed a sampling program to delineate historical tailings areas at the Moose River Gold Mine and G&K Gold Co. sites (Atlantic Gold 2016) to address comments from NSE made in response to the Industrial Approval Application As part of this delineation program, 126 soil samples were submitted for laboratory analysis of metals (including mercury). This study found historical tailings present with elevated levels of arsenic and mercury, and presented a preliminary delineation of the historical tailings.

To build upon this work and delineate the historical tailings at the Moose River Gold Mine and G&K Gold Co. sites, Atlantic Gold commissioned a Phase 1 Environmental Site Assessment (ESA) (Stantec 2017a), which was followed by Phase 2 ESA with additional study (Stantec 2017b, 2018a, 2018b). Elevated concentrations of arsenic and mercury have been found within the historical tailings analyzed. Due to the wide distribution of historical tailings in the area, and the length of time the tailings have been in place, they have the potential to have a negative impact on groundwater resources.

1.3.3 Tailings Management Facility

The main potential impact to groundwater from the TMF is the seepage of tailings pore water containing elevated levels of arsenic and copper. This seepage could occur either horizontally, through the earth dams into overburden and shallow fractured bedrock, or vertically, through the bottom of the TMF, into deeper fractured bedrock pathways. The seepage driving force is created by the elevation difference between fluids within the TMF, controlled by the elevation of the tailings pond, and the elevation of the groundwater table outside of the TMF. The main seepage pathway is expected to be horizontal flow through the dams, or shallow soils and bedrock. The design includes measures to collect shallow seepage and return it to the TMF for treatment.

Tailings Characterization

A physical characterization of the tailings by Stantec (2018) indicates that the tailings materials are comprised of fine grained ground rock materials derived from the argillite <5 % greywacke ore zone. About 47% of the tailings volume will be voids occupied by entrapped water. The average dry density of the tailings is approximately 1.54 tonnes per cubic metre (t/m^3) (Stantec 2018). Ore processing employs mechanical extraction of gold by centrifugal concentration, cyanidation in the carbon-in-leach circuit, and subsequent detoxification with an SO_2/air process.

The physical and chemical characteristics of the tailings solids are best reflected by the master metallurgical composite, which is an amalgam of the various ore composites representing different portions of the ore body. Acid consumption tests, humidity cell tests and supernatant leach tests on the ore and waste rock have concluded that the marginal ore and waste rock is not acid generating (Golder 2007a). Chemically, the tailings solids have low sulphide (0.5%) and base metal concentrations (50-100 ppm) and relatively high arsenic concentrations (mean 500 ppm). The tailings contain elevated concentrations of arsenic, chromium, copper, manganese, and molybdenum, as is typical of rocks in the region, but have nominal acid rock drainage potential due to high neutralizing potential from carbonate minerals. The tailings also potentially contain a variety of other constituents (i.e., aluminum, lead, selenium, iron, zinc, silver, and mercury). The solution species associated with process waters include cyanide, nitrate, and ammonia. These other metals and compounds are generally in concentrations which present no acute hazard to life forms. The main element of concern is arsenic that occurs in the host rock in concentrations ranging from 160 to 15,000 parts per million (ppm).

Based on 45-day aging tests (Golder 2007a), the pore water was predicted to be a mildly alkaline (pH 7.9), hard (580 mg/L), sodium-sulphate water type. This pore water was characterized by elevated concentrations of ammonia nitrogen (17.6 mg/L), sodium (681 mg/L), sulphate (1,400 mg/L, originating from the liberation of sulphur in the mill associated with oxidation of sulphide minerals; dissolution of soluble sulphur-bearing minerals; and the addition of SO_4 through ferric sulphate treatment), and total arsenic (0.47 mg/L). Ammonia in pore water is harmless while entrapped, and preferentially forms ammonium at neutral pH. All metals of concern (i.e., arsenic, nickel, copper, lead, and zinc), occur at concentrations allowable for discharge under the federal Metal and Diamond Mine Effluent Regulations (MDMER). Arsenic is the main contaminant of concern at Touquoy (Golder 2007b). At closure, the current remediation options include capping the tailings with clayey overburden and flooding to maintain a stable, anoxic environment that inhibits the oxidation of sulfide minerals, including arsenopyrite which represents the dominant host for arsenic. Anoxic conditions will encourage the remobilization of arsenic associated with iron oxides that will be generated in the mill and as part of ferric sulphate treatment.

Updated Mine Effluent Water Quality

The predicted mine effluent water quality was updated in 2016 based on metallurgical testing by Base Metallurgical Laboratories (Base Met Labs 2016) to evaluate the addition of a ferric

sulphate precipitation circuit in the mill prior to releasing the tailings to the TMF. The results from this analysis were used by Stantec (2016b) as the basis for evaluating groundwater seepage from the foundation of the TMF to the receiving environment, as shown on Table B-1, Appendix B. The total ammonia concentration was not reported by Base Met Labs, therefore it was assumed that the ammonia, nitrate and chloride concentrations in the groundwater seepage would be the same as the polishing pond seepage.

1.3.4 Open Pit Mining Operations

Potential groundwater interactions at the OPM include:

1. seepage into the pit through water-bearing fractures intersecting the pit walls;
2. gradual lowering of the static water table in bedrock surrounding the OPM, due to progressive mine dewatering;
3. drainage of flooded abandoned mine workings intersected by the OPM; and
4. possible interaction with surface water (i.e., Moose River), either through vertical seepage or through the existing abandoned mine workings.

No effects on domestic water supply wells are anticipated. The nearest domestic water supply wells are over 3 km from the mine site, and are located outside the area of influence or up-gradient of the Touquoy Gold Mine.

1.3.5 General Site Operations

Potential groundwater effects at the processing plant or elsewhere throughout the mine property are similar to those that would be expected to any other industrial facility. Possible effects from site operations may include:

- Changes in water chemistry in down-gradient wells due to recharge of runoff from the site;
- accidental release of petroleum hydrocarbon or mill processing chemicals into groundwater and its potential impacts on adjacent streams and wetlands; and
- low grade acidic rock drainage due to the exposure of sulphide-bearing material (e.g., ore stockpiles, waste rock storage area or excavated bedrock areas), resulting in impacts to groundwater, and adjacent surface waters and wetlands.

No domestic supply wells are present down-gradient in potential area of influence of mine operations. All runoff and spills with the potential to impact groundwater will be immediately cleaned up as part of the Emergency Response Plan. Drainage control will be provided throughout the mine site, with all runoff directed to the TMF for treatment or recycling.

2.0 MITIGATIVE ACTION PLAN

2.1 GENERAL STATEMENT

Several natural mitigative factors will serve to limit the scope and severity of any potential groundwater interactions with the mine operation. These factors include:

1. the relatively low hydraulic conductivity of the underlying bedrock aquifer, which limits both infiltration and exfiltration of seepages into or out of mine facilities;
2. the absence of any domestic water well users hydraulically downgradient of the mine;
3. ownership by the mine of all properties with water supply wells within the zone of groundwater influence of the mine;
4. seepage interception and recycling back to TMF;
5. treatment in the mill will reduce levels of soluble arsenic reporting to the TMF; and
6. downstream treatment that will reduce levels of soluble arsenic reporting to the Polishing Pond.

2.2 INTERACTIONS BETWEEN THE OPEN PIT AND MOOSE RIVER

The potential interactions between the OPM and Moose River were evaluated using a groundwater flow model (Stantec 2015) based on data collected by others (Peter Clifton 2007, Peter O'Bryan & Associates Ltd. 2007, Golder 2007a, CRA 2007b). The average annual groundwater seepage into the OPM is estimated to be 360 litres per minute (L/min) at the ultimate pit extents prior to closure (Stantec 2015). This seepage rate is about 7% of the estimated 5220 L/min that could occur from a single 25 millimetre (mm) rainfall event. The pit sump can easily accommodate any projected groundwater seepage inflow through the bedrock.

Much of the predicted groundwater inflow to the OPM is through the shallow bedrock (Stantec 2015). The mine design includes a perimeter set-back berm to divert overland flows.

During the mine development period, there is a small potential for fracturing of the bedrock between the OPM and the river that is located in proximity of the final pit walls (within the limit as per the original Industrial Approval application supporting documents in 2012). Use of wall control blasting practices will limit the propagation of fractures beyond the final pit limits. This is anticipated to reduce potential increases in permeability due to blasting that could raise the rate of inflow to the pit.

A program of groundwater level and hydraulic conductivity monitoring planned as part of the contingency plan is underway. Six pairs of monitoring wells, each pair consisting of a shallow and deep well, were strategically located around the pit wall, including between the pit wall and Moose River (see wells prefixed with OPM- on Figure 3, Appendix A). The shallow wells are intended to provide monitoring of the more permeable uppermost 10 m of fractured rock; the

deep wells will monitor the composite pressure in all bedrock fractures encountered by each well.

Each well was subjected to a short hydraulic response test at the time of construction. This test will be used as a baseline, for comparison to similar tests done on an approximate one to two year interval. Such testing should detect any increases in bulk bedrock hydraulic conductivity between the mine and the river. The OPM wells are equipped with automated pressure transducer data loggers that will provide a continuous record of water levels between the OPM and the river, as mining progresses as per Industrial Approval Condition 8b)iii).

2.3 INTERACTIONS WITH FLOODED MINE WORKINGS

Atlantic Gold plans to dewater the existing flooded underground mine workings as mining progresses at the OPM. Contingencies and mitigations are summarized as follows:

- As mining progresses, intercepted mine workings will be allowed to drain freely to the pit sump area
- Drained water will be directed to the TMF for treatment and recycling
- In the event that a sealed mine stope is encountered adjacent to the OPM, water pressures behind the seal will be monitored with boreholes, and if warranted, the workings will be drained under controlled conditions
- In the event that drainage from an intersected working continues unabated, or yields persistent volumes of water suggesting a hydraulic connection with a surface source, measures will be taken to locate the source, and if necessary:
  - divert the source water away from the underground workings
  - seal the affecting mine stope or adit with a permanent seal
  - provide additional pumping capacity to handle the seasonally variable inflow
- In the event of a "sudden" inrush of water from the flooded workings, the health & safety program would be initiated, warnings would be issued to pit workers, increased temporary pumping initiated, and monitoring carried out until the flow rate dissipates

2.4 TAILINGS SEEPAGE

The potential for seepage from the TMF to receiving surface waters was evaluated by Stantec (2016b). A maximum seepage rate of 118 cubic metres per day (m^3/day) was conservatively estimated to seep into the groundwater and could discharge to Watercourse #4. Similarly, a maximum seepage rate of 751 m^3/day was conservatively estimated to seep into the groundwater and could discharge to Scraggy Lake. This maximum seepage was calculated based upon the assumption that there were no mitigation measures in place to limit seepage. The seepage mitigation measures in place are detailed below, and have been found to be effective in limiting seepage. Based on the current understanding within the mine area of bulk bedrock hydraulic conductivity, operational practices are designed to reduce the risk of seepage release, by uniform development of the tailings beach and collection of seepage through the dam by purpose-built ditches. A robust groundwater monitoring system is in place to detect seepage migration from the TMF.

Measures and mitigations included in the TMF design to prevent seepage releases and contaminant loadings include:

- The perimeter dams include a low permeability clay-core (K <1×10^{-8} m/s) to reduce lateral seepage through the dams.
- A grout curtain into the bedrock beneath the TMF was originally proposed, but could not be installed due to constructability challenges. Stantec modified the design of the TMF to include an upstream clay blanket to reduce groundwater seepage from the TMF.
- The relatively low permeability tailings (initial K approximately 1×10^{-6} m/s) will be deposited against the tailings dams to provide additional barrier.
- Consolidation of the tailings at the base of the TMF will decrease the permeability of the tailings as additional tailings are deposited, further reducing the seepage from the TMF.
- The pond level within the TMF will be managed to minimize the hydraulic head within the tailings that could promote vertical and horizontal seepage.
- Seepage through the dam and shallow groundwater flow system will be intercepted by collection ditches and pumped back into the tailings basin.
- Groundwater monitoring well nest pairs (shallow and deep) were drilled at 18 locations along the east, west and south sides of the TMF and polishing pond, at the lowest bedrock elevations that would be expected to be the most likely seepage release pathways (Figure 3, Appendix A).
- A monitoring program is in place, consisting of regular inspection and sampling of seepage collection ditches, and quarterly monitoring of shallow and deep groundwater to detect the on-set of any seepage occurrences.
- Treatment measures to reduce soluble arsenic concentrations in TMF and Polishing Pond surface waters which may impact seepage.

2.5 INTERACTION WITH WATER WELLS

No water supply wells are located in an area of influence downgradient of the mine; consequently, no users are expected to be affected by this mine site. All residents of Moose River have been relocated. The nearest permanent residence using domestic well water is over 3 km north (upgradient) of the mine site.

No water wells remaining within the project site will be used to provide potable water. Two existing drilled domestic wells located along Moose River Road are included in monitoring.

It is acknowledged properties adjacent to the current Touquoy project site, while not currently being used as a source of potable water are considered by NSE a potential resource of potable water and treated as such. It should be noted that due to the presence of historical tailings and the chemical composition of the underlying bedrock, the suitability of groundwater as a potable drinking water source in the area of the Touquoy mine varies, and the goal of this GCP and the associated management plans is to prevent impacts from mine activities on groundwater resources only.

3.0 GROUNDWATER CONTINGENCY PLAN

3.1 GROUNDWATER CONTINGENCY ASSESSMENT FRAMEWORK

For an effective GCP, a defined pathway for understanding how changes in groundwater quality will be addressed is required. The objective of this GCP is to identify, assess the environmental significance of, and as appropriate, respond to, a groundwater release from the TMF or OPM through an adaptive management process.

The assessment of groundwater data collected for this site will be conducted under a framework which includes various decision points and feedback loops. This framework was developed in conjunction with AMNS and Intrinsik Environmental Services Inc. The framework provides a systematic approach to data evaluation which includes quality control and quality assurance (QA/QC) of collected data, assessment relative to baseline, feedback loops as needed for confirmatory sampling, and varying levels of response, depending upon the measured values. This type of approach confirms that the data under evaluation are of acceptable quality, and that the evaluation considers changes relative to baseline, and identifies whether an observed change is mine related. In addition, through the comparison of the data to the triggers, provides response actions that are commensurate with the potential level of concern.

Figure 5 (Appendix A) provides a schematic of the framework. Important aspects of the framework are as follows:

- Groundwater monitoring data is collected at the specified intervals, and feed into the framework at the QA/QC stage.
- Standardized QA/QC is conducted. If QA/QC checks identify an issue with the sample, or if an anomalously high result is identified, a re-sampling event will occur within two weeks of receipt of the sample results at the well in question.
- **Is there an increasing trend?**
  A Mann Kendall trend analysis is completed to determine if there is change relative to baseline If no increasing trend is identified, monitoring will continue at the regular interval. Otherwise the assessment continues.
- **Is the trend mine-related?**
  A mine-related change can be identified through examining other key parameters measured in groundwater which are indicators for mine releases, such as electrical conductivity, sodium and chloride, which would be considered indicators of mine seepage. By cross-referencing specific mine-related indicators, as well as the parameter of interest, in addition to examining other wells in the vicinity of the exceedance, an indication of mine-related linkages will be evident. If no mine-related association is identified, monitoring will continue on the regular schedule. If mine-related change is indicated by this evaluation, comparison of the data for the parameter in question against the stipulated framework trigger/benchmark will occur.
- **Is there an action plan already in place?**
  If an adaptive management plan is already in place due to a trigger level exceedance in the past, the data will be reviewed against the plan to confirm if the exceedance requires

additional actions. Should no plan be in place, a comparison of the data to the Tier 1 and 2 action level triggers is completed.

- **Comparison to Triggers:**
  Comparison of the elevated parameter to the trigger for that indicator parameter will result in differing responses, depending upon the outcomes of the comparison. If the data exceed the relevant trigger (either trend or criteria-based), adaptive management action plan (i.e., investigation or mitigation) will be developed and implemented. Should no trigger be exceeded, increased surveillance as noted in Section 3.4 is recommended.

The intent of the framework is to provide a systematic approach to data evaluation, and the identification of actions which are commensurate with the degree of risk potentially associated with the occurrence. Elevated data which could speak to a higher degree of risk to the environment would have more significant response actions, whereas more minor changes in the data would still be appropriately followed and monitored and acted upon. The goal with this approach is to provide an "early warning" system.

Details of the various types of responses under each of the action levels are provided within Section 3.4.

3.2 KEY TAILINGS SEEPAGE INDICATOR PARAMETERS

Preliminary tailings seepage indicators for this GCP were initially defined as those parameters from the Mine Discharge Water Quality evaluation (Table B-1, Appendix B) that exceed any one of the following guidelines:

- Metal and Diamond Mining Effluent Regulations (Government of Canada 2002, amended in 2018)
- Canadian Council of Ministers of the Environment (CCME 2007) Canadian Water Quality Guidelines, freshwater
- Nova Scotia Tier 2 Pathway Specific Standards (NSE 2013), groundwater discharging to fresh surface water (0-10 m and >10 m). Note that the >10 m value is equal to 10 times the 0-10 m value

The primary objective of screening the discharge parameters with these guidelines is to have indicators of operation-related effluent impacts on the groundwater system that can be used in conjunction with an action level (see Section 3.3) to trigger the GCP and protect aquatic receptors.

There are several parameters that are useful as indicator parameters for potential TMF seepage, which are listed below:

- Sulphate
- Sodium
- Chloride

Sulphate is included in this list because of the magnitude of the predicted concentrations. Sodium and chloride were also added to the list because the mill process will use sodium

cyanide (NaCN), therefore sodium may serve as an ideal tracer as it is not involved in redox-related process like sulphate; and chloride is often elevated in gold-mill discharges and may also serve as a conservative tracer.

This preliminary list can be further refined by focusing on parameters with the following criteria that will help to identify changes in groundwater quality, that may be attributable to mining operations, and that are more detectable and evident, and include those that:

1. can be directly attributed to mining or materials processing activities, and not solely due to the local geology
2. have elevated Project-related source concentrations relative to mean baseline groundwater chemistry and applicable guideline values
3. behave relatively conservatively in groundwater, and will thus be transported faster, arrive at higher concentrations, and act as a tracer of seepage

In revision 1.0 of the GCP, baseline groundwater chemistry collected between March and December 2016 was analyzed to calculate mean concentrations for the preliminary tailing seepage indicator parameters at monitoring wells surrounding the TMF and mill. The mill is included because reclaim water from the TMF is routed between the mill and the TMF, and because of the presence of a perimeter ditch around the Run of Mine Pad (Figure 4, Appendix A).

NSE provided comments about the GCP revision 1.0 in 2018. NSE noted issues with the existing trigger and baseline data provided in the GCP. The original baseline data presented in the GCP revision 1.0 were developed from the complete baseline record available at the time it was prepared (i.e., data collected between June 1, 2016 and March 21, 2017). This consisted of a set of up to four discrete quarterly samples collected over a single year. Although the action level triggers developed in GCP revision 1.0 were developed using statistically sound approaches, the limited size of the baseline data set limits the magnitude of the climatic, seasonal, and naturally-driven variations in groundwater quality that could be measured. This limitation impairs the ability to correctly identify whether a trend in groundwater quality may be mine related or due to natural variation.

Monitoring data collected between June 2017 and December 2017 have been incorporated into the baseline data set. The results of this revised baseline analysis are displayed in Appendix B, Table B-1. This analysis includes three additional discrete samples per monitoring well, from the pre-operation but post-construction period of the Touquoy Mine development.

A new well pair has been installed at TMW-9A/B, however, as the well has been installed after the baseline period had been complete, no baseline statistics are available for this well pair.

The final list of monitoring wells included in this analysis includes 32 nested pairs located around the mill, waste rock, open pit and TMF, including:

Mill wells: PLM-1A/B, PLM-2A/B, PLM-3A/B, PLM-4A/B, PLM-5A/B

Waste Rock wells: WRW-1A/B, WRW-2A/B, WRW-3A/B, WRW-4A/B, WRW-5A/B

Tailings Management Facility wells: TMW-1A/B, TMW-2A/B, TMW-3A/B, TMW-4A/B, TMW-5A/B, TMW-6A/B, TWM-7A/B, TMW-8A/B, TWM-10A/B, TMW-11A/B, TMW-12A/B, TMW-13A/B, TMW-14A/B, TMW-15A/B, TMW-16A/B

Open Pit Mine Wells: OPM-1A/B, OPM-2A/B, OPM-3A/B, OPM-4A/B, OPM-5A/B, OPM-6A/B, OPM-7A/B

The well pairs include a shallow well screened within the overburden and/or shallow bedrock (labelled A) and a deeper well screened within the bedrock (labelled B).

Based on analyses of the groundwater seepage from mine sources, background concentrations at the site, and discussions and feedback from NSE, the following key indicator parameters have been identified for inclusion in the GCP revision 1.2:

- Arsenic
- Cobalt
- Copper
- Total ammonia
- Mercury
- Sulphate
- Weak Acid Dissociable (WAD) Cyanide

In addition to the key tailings indicator parameters defined above, the following general indicator parameters may also be used as TMF seepage indicators, which, on their own, do not trigger any GCP action:

- Electrical conductivity (measure of the sum of dissolved constituents, which may be elevated in the TMF seepage)
- Sodium
- Chloride

This list (both key and general indicator parameters for tailings seepage) serves as the starting point for evaluating groundwater monitoring data during mine operation. Future groundwater chemistry data should be reviewed to determine if these parameters are still suitable and identify if others should be included as indicators of tailings seepage or other site activities.

3.3 ACTION LEVELS AND TRIGGERS

Action levels are concentration values for the key indicator parameters for tailings seepage that would initiate specific adaptive management actions depending on the severity of the action level triggered. The purpose of establishing multiple action levels is to identify potential groundwater issues as soon as possible through routine screening, and to identify the appropriate action level to address the impacts to groundwater resources.

Three action levels are including in this GCP (increased surveillance, Tier 1 and Tier 2), with specific actions provided for major infrastructure as appropriate. The following sections describe the three action levels, the rationale for their selection, and the specific action levels defined on a well by well basis for the key indicator parameters. The specific action levels for each well are listed in Appendix B, Table B-3. These are the initial triggers, and further development and analysis of these triggers will be completed on an ongoing basis as part of the adaptive management approach. Any modifications to triggers will be provided to NSE for approval with the justification for the requested change.

The wells surrounding the OPM will have the Mann-Kendall trend analysis trigger for increased surveillance identified in Section 3.3.1, but criteria-based triggers (Tier 1 and 2) have not been set for this group of wells. This is for the following reasons:

- Impacts from historical tailings have altered the natural baseline in the area such that it is elevated and highly variable, making it difficult to obtain a statistically reliable trigger for each well.
- The OPM is acting as a groundwater sink for the OPM wells, and as such groundwater is collected and treated through the OPM water management system, minimizing the possibility of contaminant migration offsite.

As such, it has been determined that careful surveillance and trend analysis is the most effective way to assess the groundwater within this area.

3.3.1 Increased Surveillance Action Levels

The identification of increasing key groundwater indicator parameters concentrations prior to guideline exceedance is a primary component of this GCP. The surveillance action level is meant to identify potential issues before they have a significant impact. The mitigations and responses for this level are described within section 3.4.

To provide early notification of potential issues regarding groundwater seepage, the surveillance action level will be triggered when key indicator parameters indicate a statistically significant upwards trend. This will be accomplished by ongoing trend analysis using the Mann-Kendall test (Mann 1945, Kendall 1970, Walker and Harrison 2013). The Mann-Kendall test has been applied to the long-term monitoring of groundwater in many locations and has been found to be a simple effective way to measure whether an indicator parameter is rising or falling. The test can be applied to as few as four points.

For this application, the Mann-Kendall test will be applied to the last 10 monitoring events. Using the methodology cited by Walker and Harrison (1970), the Mann-Kendall test statistic (S) and the coefficient of variation will be calculated and applied using the 90% confidence level chart. If a positive increasing trend is identified, the surveillance action level will be triggered. The actions for this level are described within Section 3.4.

3.3.2 Tier 1 Action Levels

Tier 1 Actions are mitigations that while effective, are the first actions to be implemented if the surveillance action identifies that further efforts are needed, or if the key indicator parameters for Tier 1 action levels are exceeded (Appendix B, Table B-3).

The generic concentration definition of the Tier 1 action level is a key tailings seepage indicator parameter concentration that increases more than the 75% percentile level from the statistically analyzed baseline data for each indicator parameters in each identified monitoring well, or half the lowest applicable water quality guideline. The percentile level action is used over guideline when the natural background concentrations exceed the lowest applicable guideline. In the event that half the lowest applicable water quality guideline is less than the reported laboratory detection limit for an analyzed parameter, the Tier 1 action level is adjusted to be the average of the detection limit and the guideline value.

The actions for this level are described within Section 3.4.

3.3.3 Tier 2 Action Levels

Tier 2 Actions are mitigations that while effective, are the first actions to be implemented if the surveillance and Tier 1 actions identify that further efforts are needed, or if the indicator parameters for Tier 2 action levels are exceeded (Appendix B, Table B-3).

The generic concentration definition of the Tier 2 action level is a key indicator parameter concentration for tailings seepage increases more than the 95% percentile level from the statistically analyzed baseline data for each indicator parameters in each identified monitoring well, or the lowest applicable water quality guideline. The percentile level action is used over guideline when the natural background concentrations exceed the lowest applicable guideline.

The actions for this level are described within Section 3.4.

3.3.4 Other Triggers

An increasing trend in the additional seepage indicator parameters (i.e., electrical conductivity, sodium, and chloride) may also be evaluated, but do not trigger the GCP on their own. Parameter trends should be evaluated using the Mann-Kendall Trend test as described in Section 3.3.1. The identification of an increasing trend will trigger surveillance actions, which informs further adaptive management options.

In addition, if routine inspection of the dam perimeter indicates significant discoloration of the nearby wetland or streams, the plan may also be implemented, depending upon further assessment of the cause for the discoloration. The most common type of "staining" would be associated with dissolved ferrous iron in seepage being oxidized in aerobic surface waters to ferric oxides, producing red precipitates.

3.3.5 Open Pit Mine Action Levels

The area surrounding the open pit mine is currently under the direct influence of the pit itself, which is acting as a groundwater sink for the area. As the water surrounding the open pit is draining into the open pit and being actively managed, deleterious groundwater quality around the open pit is expected to seep to the open pit, and not to the receiving environment.

Although the open pit acts as a groundwater sink and prevents the offsite migration of potential groundwater seepage in the area, it is important to understand if groundwater seepage concentrations are increasing as this could indicate higher than predicted concentrations in effluent, or potentially a poorly quantified seepage pathway. Identification of potential issues is an important part of the GCP to prevent unintended impacts to groundwater resources.

Equally, as the open pit is acting as a groundwater sink for water in the area, it is important to ensure that the hydraulic gradients remain in a regime where the open pit is a sink for the area.

Taking the above factors into consideration at the OPM, the GCP would be implemented in the event of one of the following criteria:

1. A decline in water levels greater than the annual range at monitoring wells located between Moose River and the OPM
2. Sudden seepage rate increases at the walls of the OPM
3. Sudden uncontrolled inflow from the flooded abandoned mine workings
4. Persistent decline of the water table
5. Parameter trend analysis indicates a statistically significant increasing trend over the relevant time period. The methodology used is outlined in section 3.3.1

3.4 INCREASED SURVEILLANCE

The following measures are to be implemented when trend analysis (as outlined in Section 3.2) identifies that a statistically significant increasing trend has been observed in a key parameter for groundwater quality. The goal of increased surveillance is to obtain more information about potential seepage, identify the source of the trend if possible, and generally provide increased attention, information and awareness of potentially seepage before an issue worsens. Surveillance actions will include:

- Notification of site environmental superintendent, including the following information:
  - Location of identified well where the trend was found
  - Background concentration and descriptive statistical information about the well
  - Historical well monitoring data
- A physical inspection of the identified well and the upgradient area from the well
- Review of groundwater well data from the preceding three sample locations surrounding the infrastructure where the trend was identified (e.g., TMF, OPM, Waste Rock), including seepage and/or discharge from identified infrastructure

If a seepage and/or groundwater issue is identified, either via analysis of data or physical inspection, the site environmental department shall move to a low response/mitigation action level and address the issue.

3.5 ADAPTIVE MANAGEMENT ACTIONS

As per the framework outlined in Section 3.1, the adaptive management actions specified by this plan are tied to the identified action levels. The action levels are directly related to whether a particular groundwater trend is identified, or if a groundwater trigger is being approached, is equal to, or is exceeded the action levels. As such, the specific actions outlined below are categorized into escalating "increased surveillance", "Tier 1" and "Tier 2" adaptive management actions, which correspond to the actions outlined below. One or more of these actions may be appropriate for each action level and should be evaluated by site staff prior to implementation.

Regardless of the trigger exceeded (whether a trend-based surveillance trigger or a criteria-based Tier 1 or Tier 2 action level) the adaptive management actions and investigation shall take risk to human health and the environment into consideration, and an action plan will be identified. Figure 4 (Appendix A) displays the Touquoy lease boundaries, which are important for understanding the potential impacts to the environment offsite. Wells at/or near the boundaries or sensitive areas (such as Watercourse #4) will be evaluated by a qualified professional, and appropriate mitigations for the potential risk will be implemented, regardless of the action triggered. For example, if a key parameter has triggered the surveillance action level near a sensitive area, additional action from Tier 1 or Tier 2 may be warranted, depending on the assessed risk.

Specific actions are presented below for the tailings management facility and the open pit mine, while more general actions are given for surveillance. No actions are presented for interactions with drinking water supply wells as no potable wells are located near the mine, as noted in Section 2.5.

3.5.1 Tailings Management Facility

The following adaptive management actions are proposed to address groundwater issues found during monitoring and inspection that may be caused seepage management associated with the TMF. Following implementation of any adaptive management action, a tailored monitoring program will be conducted to evaluate performance of the contingency measure.

3.5.1.1 Tier 1 Adaptive Management Actions

One or more of these options can be selected as a Tier 1 adaptive management action. This list is not presented with any recommended priority implied.

- Groundwater quality values in perimeter wells around the TMF that exceed water quality action levels will be addressed through an investigative program. Key aspects of the investigation will include:
  - Source of exceedance: confirm that the source relates to the TMF or Polishing Pond, and not to contamination or lab error. A second sample will be collected immediately following confirmation of the action level exceedance to confirm the findings of the first sample.
  - Lateral and vertical extent of contamination: assess whether the exceedance event is isolated to one well or several wells, and whether the exceedance is limited to one or both of the shallow and deep wells at any location.
  - Contaminant pathway: based on the well interval(s) showing the exceedance and on core logs for the well installations, define the geologic properties and hydrostratigraphic unit(s) of the seepage pathway.
  - Parameter(s) of concern: assess whether the exceedance event is limited to one or several parameters.
  - Previous data: assess whether exceedance event represents a spurious value or is it consistent with previous trends.
  - Magnitude of exceedance above the action level: assess whether the exceedance represents a minor or significant deviation from the action level.
  - Loading: based on parameter concentration and estimates of groundwater velocity and cross-sectional area of plume, estimate the loading to receiving watercourses.
- If the Polishing Pond or TMF have been identified as the source of concern, the water treatment systems may be evaluated and modified if required. This could include modifications to the treatment systems in the mill (SO_2-Air and ferric sulphate) and/or the ferric sulphate treatment system that treats water from the TMF pond and discharges to the Polishing Pond.
- Persistent seepage flows detected in the seepage collection ditches that cannot be adequately captured by existing sump stations, will be addressed by the installation of larger seepage collection pumps, where necessary, to direct the collected water back into the TMF.
- Based on the information derived from the primary and/or secondary investigations, the potential relevance of the exceedance event to aquatic receptors in Watercourse #4 and Scraggy Lake may be evaluated through a qualitative risk evaluation. At this time, more rigorous monitoring may be recommended for critical zones identified for Watercourse #4 or Scraggy Lake (e.g., increased sampling frequency, increased number of sample locations, additional parameters, etc.).

3.5.1.2 Tier 2 Adaptive Management Actions

One or more of these options can be selected as a Tier 2 adaptive management action, and can be combined with any Tier 1 action, as appropriate. This list is not presented with any recommended priority implied.

- If mitigation is deemed necessary, options designed to reduce the seepage flow reporting to receiving watercourses could include:
  - Modifications to the existing ditch system to increase seepage collection efficiency (e.g., modification of ditch geometry, alignment, or construction materials)
  - Installation of one or multiple groundwater pump-back wells that could serve as a hydraulic barrier (i.e., collection of plume waters and pump back to TMF)

  - Installation of a barrier wall that could include sheet pile, grout curtain or localized grouting of bedrock
- For some parameters and flow paths, passive treatment options may offer a viable alternative to other contingency measures. These could include permeable reactive barriers or other forms of seepage interception systems designed to passively treat groundwater plumes *in situ*.
- Based on consideration to the primary investigation described above, secondary evaluation measures may be proposed to better define the source, extent and/or pathway of the contaminant plume. This may include:
  - Installation of additional monitoring wells to better constrain the seepage pathway (nature of conductive unit and vertical/lateral extent of the plume).
  - Hydraulic testing and discrete interval sampling to better determine whether the seepage plume is isolated to discrete fracture zones, or distributed over a wider area.
- Numerical modelling to better quantify the contaminant flux to local watercourses.

3.5.2 Open Pit Mine

In the unlikely event that there is a sudden uncontrolled inflow of groundwater into the OPM, a significant change in seasonal water levels, or a change in water quality or borehole permeability, the following contingency measures may be implemented after initial health and safety actions are undertaken if required:

3.5.2.1 Tier 1 Adaptive Management Actions

One or more of these options can be selected as a Tier 1 adaptive management action. This list is not presented with any recommended priority implied.

- Increase monitoring frequency to weekly sampling at the OPM wells for major ion chemistry and indicators of groundwater-surface water interactions (e.g., decreasing electrical conductivity, pH, hardness, TDS, etc.)
- Review stream flow data in Moose River, comparing flow rates upstream and downstream of the OPM, to confirm if any significant loss is occurring
- Increase sump discharge and monitoring within the OPM

3.5.2.2 Tier 2 Adaptive Management Actions

One or more of these options can be selected as a Tier 2 adaptive management action, and can be combined with any Tier 1 action, as appropriate. This list is not presented with any recommended priority implied.

- Conduct more detailed hydraulic testing of affected well(s) and compare results with baseline testing
- If unacceptable inflows persist, implement a drilling program and bedrock grouting, to eliminate/reduce the seepage
- Provide suitable drainage diversion and sufficient pumping capability to deal with sudden inflows of water stored in an intercepted mine working, or a sudden in-rush of water stored in a major fracture zone
- Control the water levels in the mine workings directly by pumping from existing mine workings, if accessible

3.6 PLAN MANAGEMENT

3.6.1 Roles and Responsibilities

It will be the ultimate responsibility of the AMNS Manager of Environmental and Permitting to identify and implement the GCP in a timely manner. Should an issue with groundwater impacts arise, the General Manager will assess the event, and if necessary, implement any associated responses in association with key personnel of the Touquoy Gold Mine. The Manager of Environmental and Permitting will retain a qualified hydrogeological professional to investigate the cause of the event, and to recommend remedial actions.

Designated mine environmental staff will implement a more frequent groundwater and surface water monitoring strategy until the issue has been resolved. With respect to the OPM, groundwater inflow issues would be a part of the Health and Safety Plan. With respect to the TMF, groundwater issues would be a part of the overall Environmental Protection Plan.

The roles and responsibilities of the various mine personnel for the TMF and the OPM and the environmental, health and safety plans are as defined by the Mine General Manager.

3.6.2 Resources Available

The groundwater monitoring wells were installed, and the monitoring plan was initiated by qualified hydrogeological professionals prior to construction commencing in June 2016. Touquoy Gold Mine environmental personnel are responsible for the implementation of the groundwater monitoring program, and are trained in the procedures and protocols required for the groundwater monitoring plan.

Other available resources include heavy equipment for modifications to surface drainage features, excavation and dam reconstruction; high capacity pumping systems, for the OPM to deal with major rain events and inflows from the flooded workings; hydrogeology consultants; geotechnical consultants; and local well drillers to investigate any anomalous groundwater events.

3.6.3 Notification

Upon the identification of a seepage event at the TMF, a significant water level change at the OPM, or an accidental release of deleterious materials within the plant site, the Mine Manager will be immediately notified. The Mine Manager will then notify NSE respecting the nature of the occurrence and actions presently underway to investigate and/or remediate the situation.

Seepage releases from the TMF are expected to be minor, and if detected, to be extremely slow and of limited extent. Response to such releases will involve an investigation by a qualified hydrogeological consultant. The hydrogeological consultant will identify the seepage source, aid in assessment of the risks (concurrent with any needed geotechnical or ecological

assessments), and if warranted, recommend and be involved in remedial actions. Emergency Response contacts may include, but are not limited to:

- Manger of Environment and Permitting and applicable staff
- Local civil contractors
- Local hydrogeological consultant
- Local geotechnical consultant
- Local well drillers

3.6.4 Reporting

It is unlikely that a major groundwater inflow event into the OPM or significant seepage event, from the TMF via groundwater pathways, will occur. However, should such an event occur, Atlantic Gold will submit to NSE, a summary report of all site investigations, risk assessments and details of remedial actions. At a minimum, such reports will include:

- Date and time of event
- Cause of the event
- Extent and significance of the TMF seepage release or OPM interactions
- Observed effects on the environment or adjacent properties, based on the results of latest monitoring
- Description of responses undertaken and mitigation methods used
- Identification of personnel or sub-contractors involved in the response
- Results of any risk assessments or analysis undertaken
- Status of response
- Measures taken to manage or prevent re-occurrence of similar events

3.6.5 Staff Training

Existing environmental staff at the Touquoy Gold Mine were trained by a hydrogeological consultant in groundwater monitoring and interpretation techniques need to properly implement and maintain the quarterly monitoring program. In the case of the OPM, mine staff are responsible for monitoring of bedrock water levels. Emergency responses for unstable pit walls, sudden water in-rushes from flooded abandoned workings, or other groundwater-related events will be included as part of the overall Health and Safety Plan.

3.6.6 Update of Plan

During annual review of groundwater and surface water monitoring data, the GCP will be reviewed by a qualified professional. If updates are required, the GCP will be revised accordingly and submitted to NSE. This plan is adaptive and will be modified based on the increased understanding of the site groundwater regime and knowledge of site operations. Any changes to environmental monitoring will be reflected in the monitoring program.

3.6.7 Community and Mi'kmaq Engagement

Atlantic Gold, through the Community Liaison Committee (CLC) and other engagement mechanisms, will share applicable and relevant information concerning groundwater management, as appropriate and in a timely manner, with area residents and other stakeholders, as well as the Mi'kmaq of Nova Scotia. As discussed elsewhere, there are expected to be no permanent groundwater users within the area directly influenced by mine operations, however, consideration will also be given to the impact of groundwater conditions on seasonal activities in the surrounding area.

4.0 CLOSURE

This report may not be used by any other person or entity without the express written consent of Stantec Consulting Ltd. or Atlantic Gold Corporation.

With the exception of the various provincial and federal government agencies and departments, any use that a third party, makes of this report or any reliance on decisions made based on it, are the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions taken, based on this report.

The information contained in this report is based upon work undertaken by trained professional and technical staff, in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Conclusions and recommendations presented in this report should not be construed as legal advice.

The conclusions presented in this report represent the best technical judgment of Stantec Consulting Ltd., and are based on review of the information provided to Stantec Consulting Ltd. by Atlantic Gold Corporation. The conclusions were based on the site conditions observed by Stantec Consulting Ltd. at the time the work was performed. Stantec Consulting Ltd. cannot warrant against undiscovered environmental liabilities.

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

Revision 1.2 of this report was prepared by Morgan Schauerte, and reviewed by Jonathan Keizer, M.Sc.E., P.Eng. and Robert MacLeod, M.Sc., P.Geo. This report was also reviewed and approved by Atlantic Gold Corporation.

We trust that the above meets your requirements at this time. Please contact the undersigned at (506) 452-7000, if there are any questions.

Stantec Consulting Limited

Originally Signed by

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Senior Hydrogeologist
Associate
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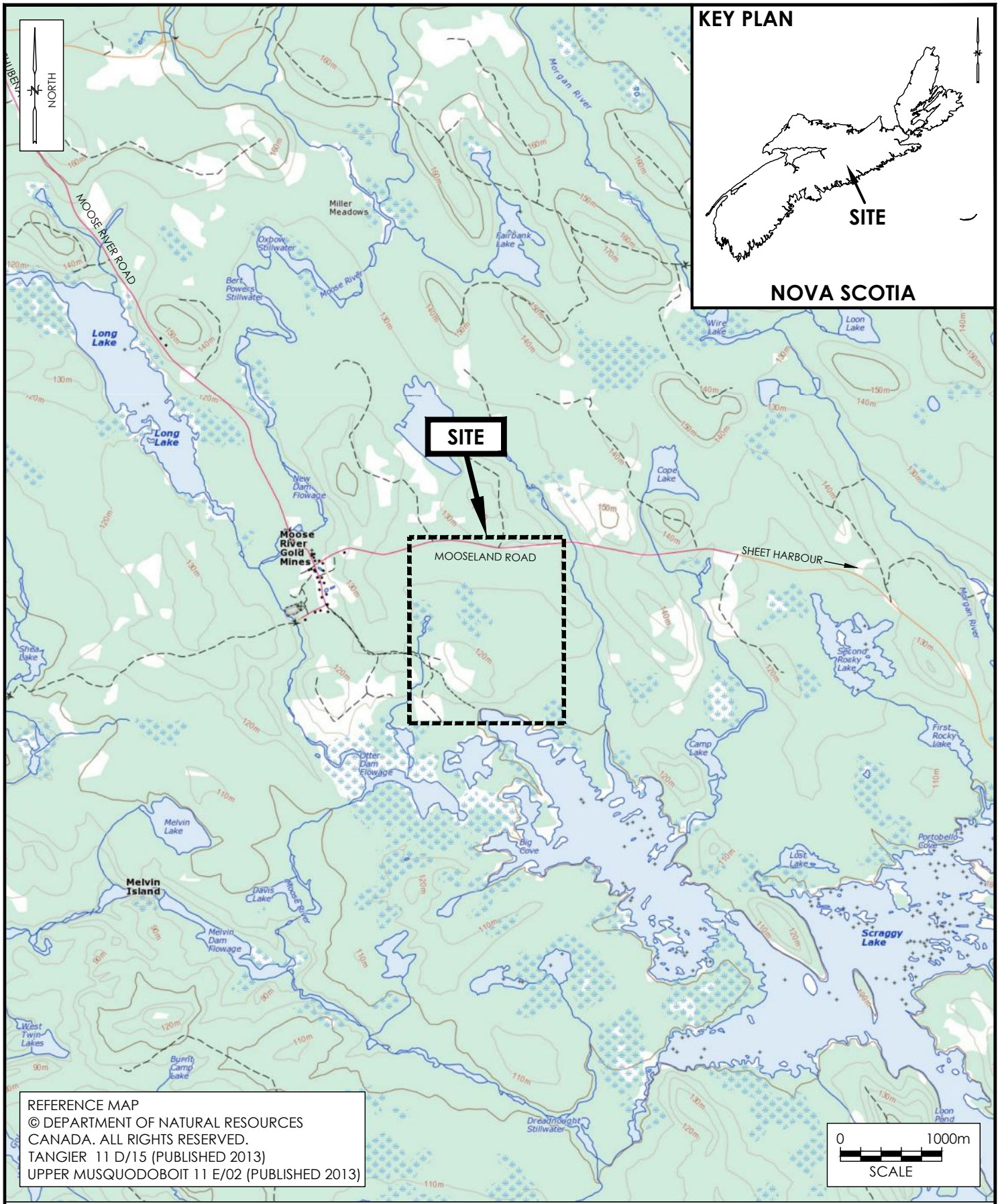
APPENDIX A
FIGURES



REFERENCE MAP
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TANGIER 11 D/15 (PUBLISHED 2013)
UPPER MUSQUODOBOIT 11 E/02 (PUBLISHED 2013)

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SITE LOCATION PLAN

GROUNDWATER CONTINGENCY PLAN
TOUQUOY GOLD PROJECT
HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC GOLD CORPORATION

Job No.:	121619250
Scale:	1 : 50,000
Date:	2017 04 27
Dwn. By:	JL
App'd By:	JK

Fig. No.: 1

Stantec

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LEGEND

- CONTOUR, 1m (LIDAR 2010)
- ROAD
- MINE INFRASTRUCTURE AREA
- TMF INFRASTRUCTURE
- WATERCOURSE
- WATERBODY
- WETLAND
- FACILITY DRAINAGE AREA
- DRAINAGE BOUNDARIES
- FLOW DIRECTION

GRID NORTH

SQUARE LAKE

MOOSE RIVER ROAD

LONG LAKE

MOOSE RIVER

① **MILL SITE**
INFRASTRUCTURE AREA = 13.8 ha

④ **WASTE ROCK AREA**
DRAINAGE AREA = 55.1 ha
INFRASTRUCTURE AREA = 43.8 ha

FISH RIVER

CULVERT

MOOSELAND ROAD

SEEPAGE COLLECTION SEDIMENT POND

③ **OPEN PIT**
DRAINAGE AREA = 40.7 ha
INFRASTRUCTURE AREA = 37.6 ha

SEEPAGE COLLECTION SEDIMENT POND

② **TAILINGS POND**
DRAINAGE AREA = 94.0 ha
POND AREA = 22.3 ha

SEEPAGE COLLECTION SEDIMENT POND

UNNAMED TRIBUTARY TO MOOSE RIVER

⑤ **POLISHING POND**
DRAINAGE AREA = 16.9 ha
POND AREA = 10.5 ha

CONSTRUCTED WETLAND

MOOSE RIVER

SCRAGGY LAKE

0 500m
SCALE

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Reference:

1. CONESTOGA-ROVERS & ASSOCIATES; PROJECT No. 820933-E; DRAWING No. 02; DATE: AUGUST 2013.
2. GOLDER & ASSOCIATES: PROJECT No. 06-1118-041C; FIGURE No. 2; DATE: MAY, 2015.

MINE DRAINAGE BOUNDARIES

GROUNDWATER CONTINGENCY PLAN
TOUQUOY GOLD PROJECT
HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC GOLD CORPORATION

Job No.:	121619250
Scale:	1 : 12,500
Date:	2018 11 01
Dwn. By:	JL
App'd By:	MS

Fig. No.: 2

Stantec

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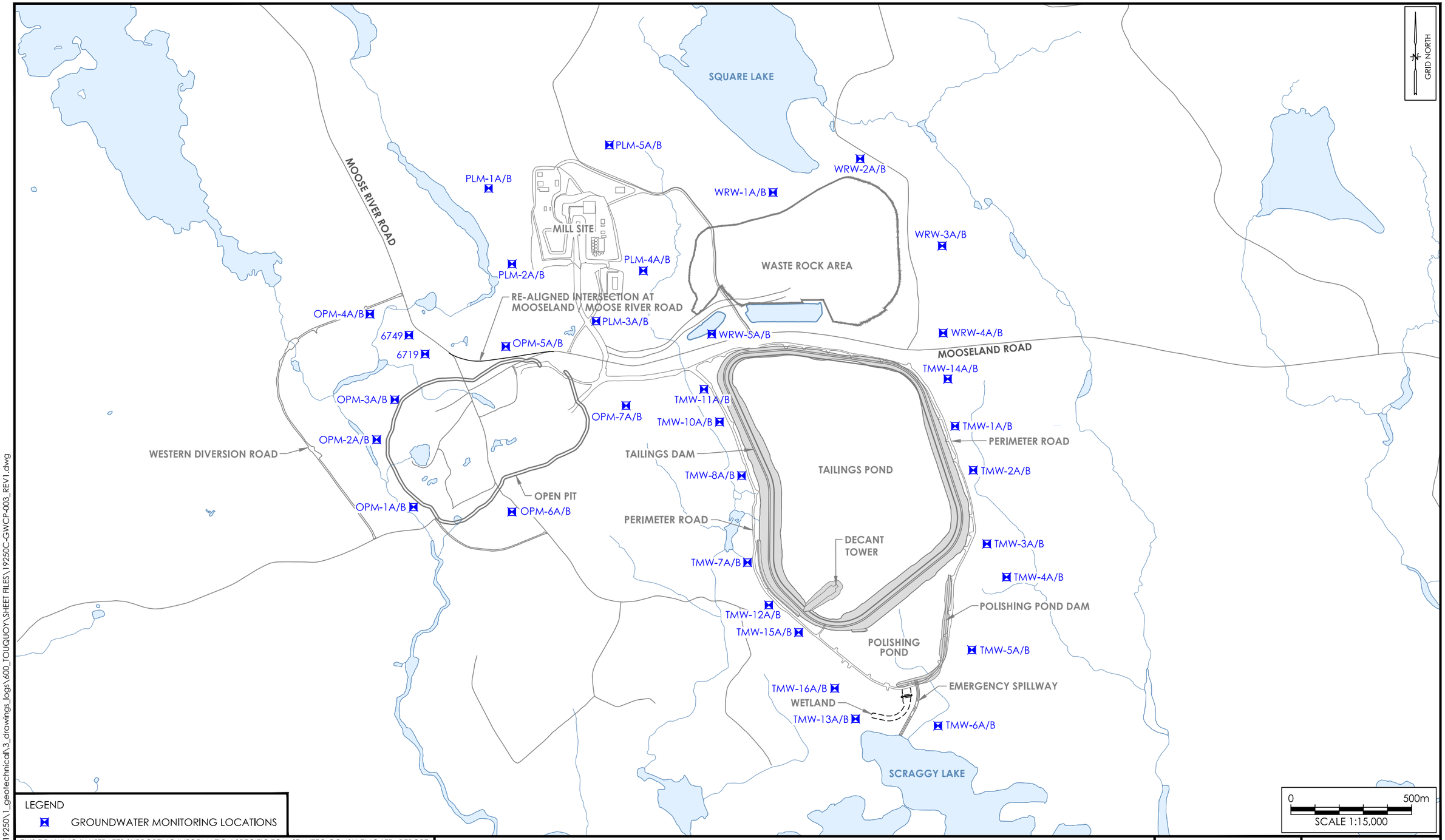

LEGEND

GROUNDWATER MONITORING LOCATIONS

Reference:

PROVINCIAL BASE DATA REPRODUCED AND DISTRIBUTED WITH THE PERMISSION OF SERVICE NOVA SCOTIA & MUNICIPAL RELATIONS (SNSMR, 2006) AS PER THE TERMS OF USE OUTLINED IN THE UNRESTRICTED DATA USE LICENSE AGREEMENT FOR GEOGRAPHIC DATA.

GROUNDWATER MONITORING LOCATIONS

GROUNDWATER CONTINGENCY PLAN
TOUQUOY GOLD PROJECT
HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC GOLD CORPORATION

Job No.:	121619250
Scale:	1 : 15,000
Date:	2018 11 01
Dwn. By:	JL
App'd By:	MS

Fig. No.: 3

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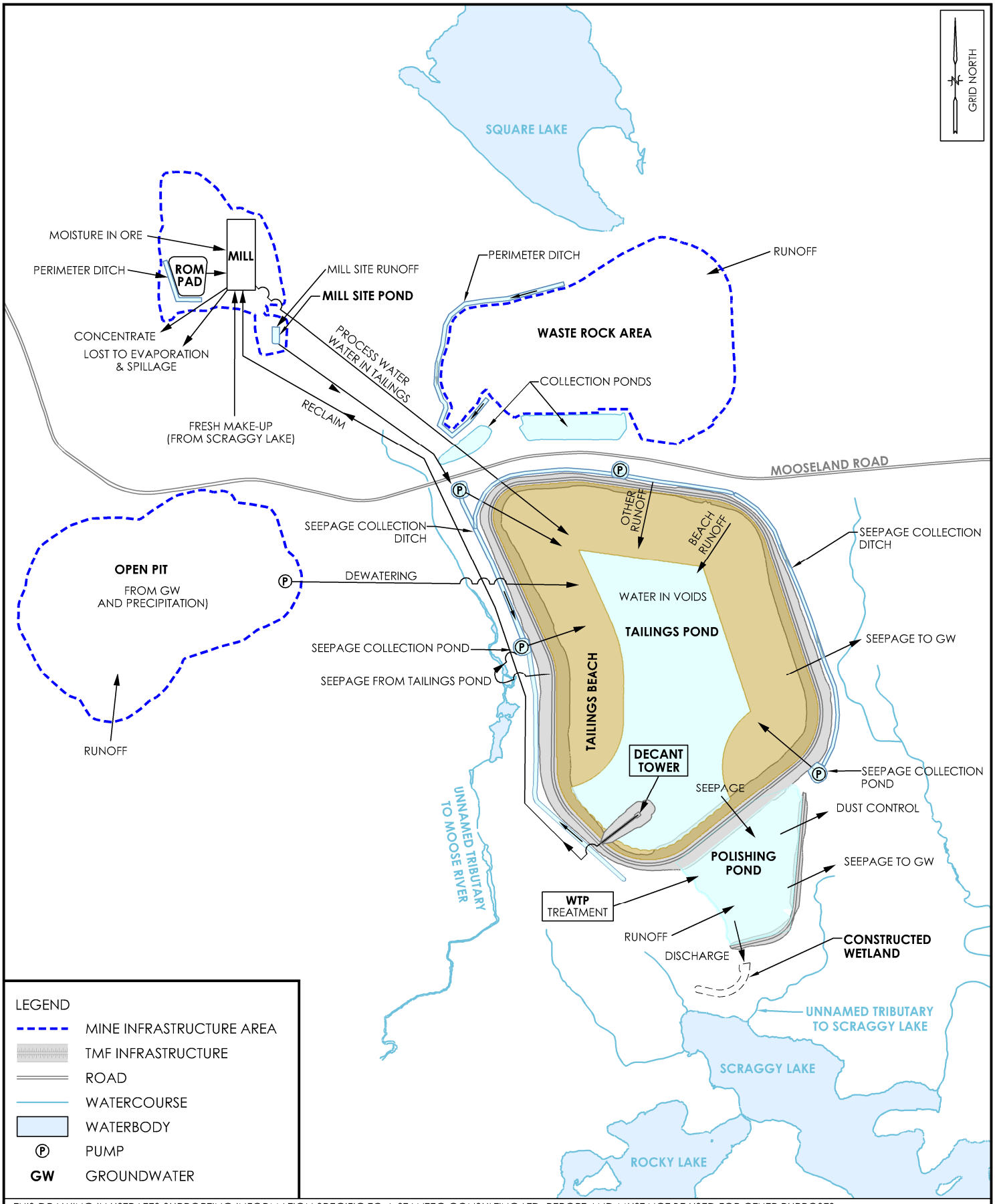

MINE PROCESS FLOW DIAGRAM

GROUNDWATER CONTINGENCY PLAN
TOUQUOY GOLD PROJECT
HALIFAX COUNTY, NOVA SCOTIA

Client:	ATLANTIC GOLD CORPORATION
Job No.:	121619250
Scale:	N.T.S.
Date:	2018 11 01
Dwn. By:	JL
App'd By:	MS
Fig. No.:	4

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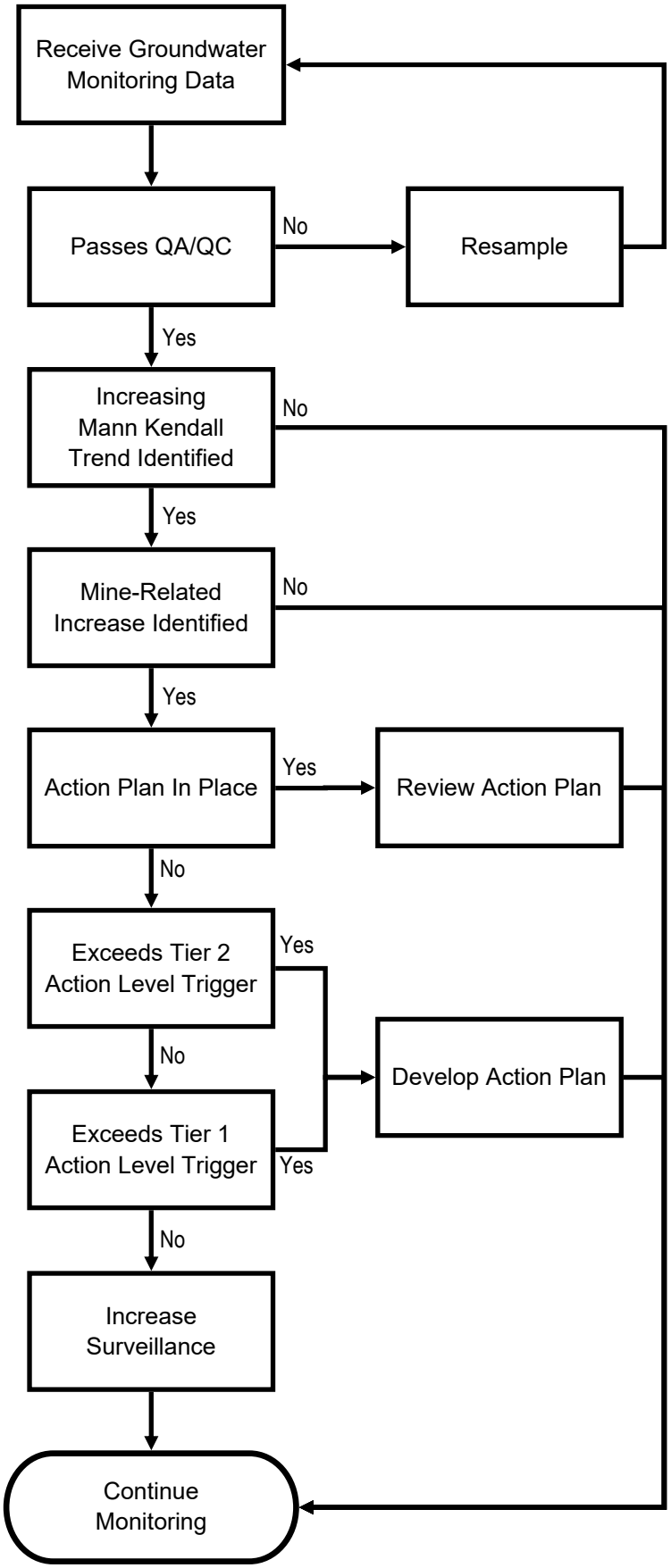

GROUNDWATER CONTINGENCY ASSESSMENT FRAMEWORK
GROUNDWATER CONTINGENCY PLAN
TOUQUOY GOLD PROJECT
HALIFAX COUNTY, NOVA SCOTIA

Client: ATLANTIC GOLD CORPORATION

Job No.:	121619250
Scale:	N.T.S.
Date:	2019-01-14
Dwn. By:	JK
App'd By:	JPK

Fig. No.: 5

Stantec

APPENDIX B
TABLES

TABLE B-1 **ESTIMATED SEEPAGE QUALITY (2016) AND APPLICABLE GUIDELINES AND DISCHARGE CRITERIA**
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	Federal		Provincial		Groundwater Seepage Mean Concentration (µg/L)
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)	
Silver (Ag)	-	0.25	0.1	1	0.413
Aluminum (Al)	-	5-100	5	50	677
Arsenic (As)	1,000	5	5	50	57.1
Calcium (Ca)	-	-	-	-	124000
Cadmium (Cd)	-	0.09	0.01	0.1	0.0052
Chloride (Cl)	-	120,000	1,500,000	15,000,000	24000
Cobalt (Co)	-	-	10	100	137
Chromium (Cr)	-	8.9	-	-	1
Copper (Cu)	600	2-4	2	20	10.2
Iron (Fe)	-	300	300	3,000	2110
Potassium (K)	-	-	-	-	46600
Magnesium (Mg)	-	-	-	-	3480
Manganese (Mn)	-	-	820	8,200	24.4
Sodium (Na)	-	-	-	-	258000
Total Ammonia as N (NH_4+NH_3)[8]	-	17	-	-	17100
Nickel (Ni)	1,000	-	25	250	0.59
Nitrate as N (NO_3)	-	13,000	-	-	120
Lead (Pb)	400	1-7	1	10	7.2
Phosphorous (P)	-	4-100	-	-	174
Antimony (Sb)	-	-	20	200	12.8
Selenium (Se)	-	1	1	10	1.91
Sulfate (SO_4)	-	-	-	-	533000
Uranium (U)	-	15	300	3,000	6.53
Zinc (Zn)	1,000	7.0	30	300	47.1
Total Cyanide (CN_{Total})	2,000	-	5	50	3400
WAD Cyanide (CN_{WAD})	-	5 (for free CN)	-	-	<50
Mercury (Hg)	-	0.026	0.026	0.26	

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
3. Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water
4. Guideline is equal to CCME CWQG Freshwater
5. <# = parameter concentration below laboratory's reportable detection limit
6. **Bold and Shaded** = parameter concentration exceeds one or more of the applicable standards
7. **Bold** = detection limit exceeds applicable standard
8. Calculated by multiplying the un-inonized ammonia/L guideline by 14.0067/17.35052

TABLE B-2 **AVERAGE OF BASELINE GROUNDWATER CHEMISTRY AT TMF AND MILL**
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	Federal		Provincial		RDL (µg/L)	Geomean Baseline Concentration (µg/L)											
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)		OPM-1A	OPM-1B	OPM-2A	OPM-2B	OPM-3A	OPM-3B	OPM-4A	OPM-4B	OPM-5A	OPM-5B	OPM-6A	OPM-6B
Distance to Surface Water (m)						>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Silver (Ag)	-	0.25	1	15	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum (Al)	-	100	5	50	5	5.3	6.7	29.3	6.2	6.1	27.5	109	28.0	15.0	19.2	<5	9.2
Arsenic (As)	1,000	5	5	50	1	5,787	3,614	17.6	45.0	<1	6.7	2.0	3.7	4.0	5.9	9.4	16.6
Calcium (Ca)	-	-	-	-	100	7,408	7,408	7,408	7,408	7,408	7,408	7,408	7,408	7,408	7,408	7,408	7,408
Cadmium (Cd)	-	0.09	0.01	0.1	0.01	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Chloride (Cl)	-	120,000	1,500,000	15,000,000	1,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Cobalt (Co)	-	-	10	100	0.4	6.82	<0.4	1.91	<0.4	<0.4	<0.4	5.59	1.65	0.77	<0.4	1.07	1.52
Chromium (Cr)	-	8.9	-	-	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (Cu)	600	2-4	2	20	2	<2	<2	4.2	<2	<2	<2	4.2	<2	<2	<2	<2	<2
Iron (Fe)	-	300	300	3,000	50	3,016	711	<50	<50	<50	<50	860	1,366	980	855	71.6	102
Potassium (K)	-	-	-	-	100	215	<52	215	215	215	215	215	215	215	215	215	215
Magnesium (Mg)	-	-	-	-	100	1,538	<54	1,538	1,538	1,538	1,538	1,538	1,538	1,538	1,538	1,538	1,538
Manganese (Mn)	-	-	820	8,200	2	202	<56	202	202	202	202	202	202	202	202	202	202
Sodium (Na)	-	-	-	-	100	13,450	<58	13,450	13,450	13,450	13,450	13,450	13,450	13,450	13,450	13,450	13,450
Total Ammonia as N (NH_4+NH_3)[7]	-	16	-	-	50	155	84.7	<50	<50	<50	<50	<50	64.2	<50	<50	<50	<50
Nickel (Ni)	1,000	-	25	250	2	2	2	2	2	2	2	2	2	2	2	2	2
Nitrate as N (NO_3)	-	13,000	-	-	50	59	59	59	59	59	59	59	59	59	59	59	59
Lead (Pb)	400	1-7	1	10	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.923	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury (Hg)	-	0.026	0.026	0.260	0.013	0.221	<0.013	0.015	<0.013	<0.013	<0.013	0.023	<0.013	<0.013	<0.013	<0.013	0.018
Dissolved Phosphorus (P)	-	4-100	-	-	10	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Antimony (Sb)	-	-	20	200	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium (Se)	-	1	1	10	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfate (SO_4)	-	-	-	-	2,000	12,341	11,693	7,358	9,272	8,713	19,465	4,958	4,187	4,870	3,313	7,226	8,614
Uranium (U)	-	15	300	3,000	0.1	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Zinc (Zn)	1,000	30	30	300	5	6.5	<5	14.7	<5	<5	<5	23.4	7.9	<5	<5	<5	<5
Total Cyanide (CN_{Total})	2,000	-	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
WAD Cyanide (CN_{WAD})	-	5 (Free CN)	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
3. Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water
4. Guideline is equal to CCME CWQG Freshwater
5. Calculated by multiplying the un-inonized ammonia/L guideline by 14.0067/17.35052
6. " -" = no guideline available, or no data collected
7. Baseline mean calculated with 0.5 x reportable detection limit (RDL)

TABLE B-2 **AVERAGE OF BASELINE GROUNDWATER CHEMISTRY AT TMF AND MILL**
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	Federal		Provincial		RDL (µg/L)	Geomean Baseline Concentration (µg/L)											
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)		OPM-7A	OPM-7B	PLM-1A	PLM-1B	PLM-2A	PLM-2B	PLM-3A	PLM-3B	PLM-4A	PLM-4B	PLM-5A	PLM-5B
Distance to Surface Water (m)						>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Silver (Ag)	-	0.25	1	15	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum (Al)	-	100	5	50	5	25.5	8.6	11.7	9.1	12.5	19.5	9.5	15.2	17.5	22.7	9.9	11.1
Arsenic (As)	1,000	5	5	50	1	<1	2.7	<1	2.1	4.2	<1	<1	<1	<1	11.4	2.5	31.9
Calcium (Ca)	-	-	-	-	100	7,408	7,408	7,408	24,000	16,700	21,825	16,667	24,000	24,000	24,667	24,333	20,333
Cadmium (Cd)	-	0.09	0.01	0.1	0.01	0.013	0.013	0.013	<0.01	0.013	0.007	0.029	0.008	0.044	<0.01	0.013	<0.01
Chloride (Cl)	-	120,000	1,500,000	15,000,000	1,000	4,000	4,000	4,000	4,375	4,300	4,025	5,133	5,067	20,800	14,600	3,667	3,967
Cobalt (Co)	-	-	10	100	0.4	1.26	0.88	<0.4	<0.4	1.75	1.23	<0.4	<0.4	1.75	<0.4	<0.4	<0.4
Chromium (Cr)	-	8.9	-	-	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (Cu)	600	2-4	2	20	2	<2	<2	<2	<2	2.2	<2	<2	<2	3.1	<2	<2	<2
Iron (Fe)	-	300	300	3,000	50	<50	<50	<50	<50	<50	101	<50	<50	<50	<50	<50	52.8
Potassium (K)	-	-	-	-	100	215	215	215	780	560	585	627	827	787	1,767	857	1,367
Magnesium (Mg)	-	-	-	-	100	1,538	1,538	1,538	4,575	1,573	1,800	3,400	4,200	4,600	5,100	5,033	7,000
Manganese (Mn)	-	-	820	8,200	2	202	202	202	19	108	62	327	419	1,133	162	380	230
Sodium (Na)	-	-	-	-	100	13,450	13,450	13,450	8,750	7,450	6,300	4,800	13,533	9,800	20,667	16,333	34,667
Total Ammonia as N (NH_4+NH_3)[7]	-	16	-	-	50	<50	71.9	58.0	<50	<50	<50	<50	<50	<50	<50	<50	72.0
Nickel (Ni)	1,000	-	25	250	2	2	2	2	<2	1	<2	4	2	5	3	2	<2
Nitrate as N (NO_3)	-	13,000	-	-	50	59	59	59	60	131	64	261	160	113	37	49	44
Lead (Pb)	400	1-7	1	10	0.5	<0.5	<0.5	0.058	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury (Hg)	-	0.026	0.026	0.260	0.013	<0.013	<0.013	0.030	<0.013	<0.013	<0.013	0.022	<0.013	0.028	<0.013	0.018	<0.013
Dissolved Phosphorus (P)	-	4-100	-	-	10	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Antimony (Sb)	-	-	20	200	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.2	<1	<1
Selenium (Se)	-	1	1	10	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfate (SO_4)	-	-	-	-	2,000	2,782	5,881	3,220	8,378	5,593	6,213	4,000	8,104	13,647	14,770	26,210	34,203
Uranium (U)	-	15	300	3,000	0.1	0.21	0.21	0.21	2.75	1.93	4.88	0.22	1.92	0.30	3.97	0.88	1.30
Zinc (Zn)	1,000	30	30	300	5	<5	<5	<5	<5	<5	<5	<5	<5	5.2	<5	<5	<5
Total Cyanide (CN_{Total})	2,000	-	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
WAD Cyanide (CN_{WAD})	-	5 (Free CN)	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
3. Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water
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6. " -" = no guideline available, or no data collected
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Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	Federal		Provincial		RDL (µg/L)	Geomean Baseline Concentration (µg/L)											
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)		TMW-1A	TMW-1B	TMW-2A	TMW-2B	TMW-3A	TMW-3B	TMW-4A	TMW-4B	TMW-5A	TMW-5B	TMW-6A	TMW-6B
Distance to Surface Water (m)						>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Silver (Ag)	-	0.25	1	15	0.1	<0.1	<0.1	<0.1	<0.1	0.63	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum (Al)	-	100	5	50	5	10.7	9.7	38.0	21.3	30.0	21.3	22.5	23.4	26.8	13.1	54.9	10.6
Arsenic (As)	1,000	5	5	50	1	<1	2.2	<1	3.7	<1	17.7	<1	<1	<1	5.6	<1	<1
Calcium (Ca)	-	-	-	-	100	3,833	8,967	1,553	3,733	3,633	23,667	3,900	8,067	4,200	10,967	3,967	3,967
Cadmium (Cd)	-	0.09	0.01	0.1	0.01	0.013	<0.01	0.017	<0.01	0.017	0.007	0.072	0.064	0.017	0.007	0.098	0.098
Chloride (Cl)	-	120,000	1,500,000	15,000,000	1,000	2,733	2,767	3,600	4,567	3,800	5,667	4,933	5,233	2,433	2,900	5,133	5,133
Cobalt (Co)	-	-	10	100	0.4	<0.4	<0.4	<0.4	<0.4	1.39	<0.4	3.41	1.03	1.31	<0.4	7.4	<0.4
Chromium (Cr)	-	8.9	-	-	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (Cu)	600	2-4	2	20	2	<2	<2	<2	<2	44.0	<2	19.3	<2	3.2	<2	31.5	<2
Iron (Fe)	-	300	300	3,000	50	<50	<50	<50	<50	41.7	<50	<50	153	87.3	<50	58.8	<50
Potassium (K)	-	-	-	-	100	443	503	687	1,467	1,267	2,833	1,070	1,833	1,170	2,000	1,187	1,233
Magnesium (Mg)	-	-	-	-	100	477	957	690	203	850	2,867	763	1,007	690	1,333	710	827
Manganese (Mn)	-	-	820	8,200	2	71	8	77	9	363	420	360	198	121	87	237	94
Sodium (Na)	-	-	-	-	100	2,000	2,533	2,900	32,667	3,000	10,667	3,567	4,700	2,700	3,967	5,800	3,600
Total Ammonia as N (NH_4+NH_3)[7]	-	16	-	-	50	<50	<50	<50	<50	<50	<50	<50	<50	53.4	<50	<50	<50
Nickel (Ni)	1,000	-	25	250	2	2	<2	3	<2	7	<2	33	6	11	2	41	<2
Nitrate as N (NO_3)	-	13,000	-	-	50	36	<50	36	<50	58	<50	80	71	<50	<50	71	38
Lead (Pb)	400	1-7	1	10	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.34	1.89	<0.5
Mercury (Hg)	-	0.026	0.026	0.260	0.013	<0.013	<0.013	<0.013	0.046	0.022	<0.013	<0.013	<0.013	0.017	<0.013	0.015	<0.013
Dissolved Phosphorus (P)	-	4-100	-	-	10	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Antimony (Sb)	-	-	20	200	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium (Se)	-	1	1	10	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfate (SO_4)	-	-	-	-	2,000	1,126	1,976	3,255	5,316	1,112	5,469	2,703	2,984	5,893	6,179	3,568	4,597
Uranium (U)	-	15	300	3,000	0.1	<0.1	0.26	<0.1	3.00	<0.1	1.70	<0.1	<0.1	<0.1	0.25	0.11	0.37
Zinc (Zn)	1,000	30	30	300	5	<5	<5	<5	<5	<5	<5	48.6	8.9	11.2	<5	65.1	<5
Total Cyanide (CN_{Total})	2,000	-	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
WAD Cyanide (CN_{WAD})	-	5 (Free CN)	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
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7. Baseline mean calculated with 0.5 x reportable detection limit (RDL)

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Parameter	Federal		Provincial		RDL (µg/L)	Geomean Baseline Concentration (µg/L)									
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)		TMW-7A	TMW-7B	TMW-8A	TMW-8B	TMW-10A	TMW-10B	TMW-11A	TMW-11B	TMW-12A	TMW-12B
Distance to Surface Water (m)						>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Silver (Ag)	-	0.25	1	15	0.1	<0.1	<0.1	<0.1	0.145	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum (Al)	-	100	5	50	5	84.1	29.3	41.8	87.5	26.2	24.2	37.3	33.8	5.1	8.2
Arsenic (As)	1,000	5	5	50	1	5.7	3.9	1.3	1.3	<1	2.4	<1	14.2	<1	2.8
Calcium (Ca)	-	-	-	-	100	9,067	15,667	3,800	8,133	7,333	18,333	3,633	23,333	15,033	30,667
Cadmium (Cd)	-	0.09	0.01	0.1	0.01	<0.01	<0.01	0.019	0.007	<0.01	<0.01	0.027	<0.01	0.026	<0.01
Chloride (Cl)	-	120,000	1,500,000	15,000,000	1,000	3,333	5,300	4,767	6,100	4,967	12,300	4,267	8,833	3,700	7,900
Cobalt (Co)	-	-	10	100	0.4	0.73	1.25	1.2	1.43	<0.4	<0.4	1.7	<0.4	0.49	<0.4
Chromium (Cr)	-	8.9	-	-	1	<1	<1	<1	0.8	<1	<1	<1	<1	<1	<1
Copper (Cu)	600	2-4	2	20	2	<2	<2	<2	2.5	<2	<2	4.2	<2	<2	<2
Iron (Fe)	-	300	300	3,000	50	1,586	1,388	<50	233	<50	<50	<50	<50	<50	<50
Potassium (K)	-	-	-	-	100	1,013	2,323	1,017	2,867	510	1,433	313	1,013	613	1,400
Magnesium (Mg)	-	-	-	-	100	1,090	1,833	977	1,617	923	1,667	950	2,700	2,667	4,467
Manganese (Mn)	-	-	820	8,200	2	150	507	152	477	32	23	64	80	527	303
Sodium (Na)	-	-	-	-	100	3,133	6,700	5,067	8,567	4,333	18,400	2,867	25,667	4,433	27,000
Total Ammonia as N (NH_4+NH_3)[7]	-	16	-	-	50	0.3	114	<50	50.6	<50	<50	<50	<50	<50	73.0
Nickel (Ni)	1,000	-	25	250	2	<2	<2	4	3	1	<2	5	<2	7	<2
Nitrate as N (NO_3)	-	13,000	-	-	50	<50	<50	<50	<50	538	550	1458	<50	<50	36
Lead (Pb)	400	1-7	1	10	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury (Hg)	-	0.026	0.026	0.260	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.018	<0.013	0.023	<0.013
Dissolved Phosphorus (P)	-	4-100	-	-	10	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Antimony (Sb)	-	-	20	200	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium (Se)	-	1	1	10	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfate (SO_4)	-	-	-	-	2,000	4,126	3,308	1,842	1,778	3,185	8,975	8,767	13,723	4,686	28,152
Uranium (U)	-	15	300	3,000	0.1	0.18	0.26	0.08	0.17	<0.1	2.77	<0.1	6.63	0.44	5.53
Zinc (Zn)	1,000	30	30	300	5	5.7	<5	<5	4.0	<5	<5	8.1	<5	<5	<5
Total Cyanide (CN_{Total})	2,000	-	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
WAD Cyanide (CN_{WAD})	-	5 (Free CN)	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
3. Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water
4. Guideline is equal to CCME CWQG Freshwater
5. Calculated by multiplying the un-inonized ammonia/L guideline by 14.0067/17.35052
6. " -" = no guideline available, or no data collected
7. Baseline mean calculated with 0.5 x reportable detection limit (RDL)

TABLE B-2 **AVERAGE OF BASELINE GROUNDWATER CHEMISTRY AT TMF AND MILL**
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	Federal		Provincial		RDL (µg/L)	Geomean Baseline Concentration (µg/L)							
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)		TMW-13A	TMW-13B	TMW-14A	TMW-14B	TMW-15A	TMW-15B	TMW-16A	TMW-16B
Distance to Surface Water (m)						<10	<10	>10	>10	>10	>10	<10	<10
Silver (Ag)	-	0.25	1	15	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum (Al)	-	100	5	50	5	27.7	10.4	47.0	29.4	9.7	26.8	6.6	5.4
Arsenic (As)	1,000	5	5	50	1	<1	1.7	<1	8.1	<1	2.9	1.0	7.0
Calcium (Ca)	-	-	-	-	100	5,200	25,667	19,000	30,000	22,333	28,000	20,333	29,667
Cadmium (Cd)	-	0.09	0.01	0.1	0.01	0.033	<0.01	0.060	<0.01	0.017	<0.01	0.007	<0.01
Chloride (Cl)	-	120,000	1,500,000	15,000,000	1,000	4,133	6,500	31,333	4,333	4,133	9,567	5,033	4,267
Cobalt (Co)	-	-	10	100	0.4	1.4	<0.4	0.95	<0.4	<0.4	<0.4	0.71	<0.4
Chromium (Cr)	-	8.9	-	-	1	<1	<1	<1	<1	<1	<1	<1	<1
Copper (Cu)	600	2-4	2	20	2	<2	<2	<2	<2	<2	<2	<2	<2
Iron (Fe)	-	300	300	3,000	50	<50	<50	58.3	<50	<50	52.0	114	91.7
Potassium (K)	-	-	-	-	100	253	<52	593	1,667	710	2,067	1,023	860
Magnesium (Mg)	-	-	-	-	100	1,240	<54	4,333	6,467	4,367	3,467	3,133	5,333
Manganese (Mn)	-	-	820	8,200	2	350	<56	1,330	109	310	483	687	297
Sodium (Na)	-	-	-	-	100	3,233	<58	10,600	18,000	6,433	31,000	4,767	13,667
Total Ammonia as N (NH_4+NH_3)[7]	-	16	-	-	50	<50	<50	<50	69.0	<50	75.0	<50	63.1
Nickel (Ni)	1,000	-	25	250	2	5	1	6	<2	4	1	8	1
Nitrate as N (NO_3)	-	13,000	-	-	50	350	<50	148	<50	<50	60	48	783
Lead (Pb)	400	1-7	1	10	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury (Hg)	-	0.026	0.026	0.260	0.013	0.015	<0.013	0.017	<0.013	<0.013	<0.013	0.024	<0.013
Dissolved Phosphorus (P)	-	4-100	-	-	10	<100	<100	<100	<100	<100	<100	<100	<100
Antimony (Sb)	-	-	20	200	1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium (Se)	-	1	1	10	1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfate (SO_4)	-	-	-	-	2,000	2,459	8,663	4,290	27,815	4,937	26,956	3,375	14,520
Uranium (U)	-	15	300	3,000	0.1	<0.1	3.20	<0.1	0.97	1.22	3.87	0.22	1.50
Zinc (Zn)	1,000	30	30	300	5	<5	<5	<5	<5	<5	<5	<5	<5
Total Cyanide (CN_{Total})	2,000	-	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3
WAD Cyanide (CN_{WAD})	-	5 (Free CN)	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
3. Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water
4. Guideline is equal to CCME CWQG Freshwater
5. Calculated by multiplying the un-inonized ammonia/L guideline by 14.0067/17.35052
6. " -" = no guideline available, or no data collected
7. Baseline mean calculated with 0.5 x reportable detection limit (RDL)

TABLE B-2 **AVERAGE OF BASELINE GROUNDWATER CHEMISTRY AT TMF AND MILL**
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	Federal		Provincial		RDL (µg/L)	Geomean Baseline Concentration (µg/L)									
	MDMER (µg/L)	CCME CWQG Freshwater (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (0-10 m) (µg/L)	NS Tier 2 PSS Discharge to Fresh Water (>10 m) (µg/L)		WRW-1A	WRW-1B	WRW-2A	WRW-2B	WRW-3A	WRW-3B	WRW-4A	WRW-4B	WRW-5A	WRW-5B
Distance to Surface Water (m)						>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Silver (Ag)	-	0.25	1	15	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aluminum (Al)	-	100	5	50	5	10.9	14.0	6.1	8.1	29.4	5.1	21.6	8.2	11.1	25.7
Arsenic (As)	1,000	5	5	50	1	<1	1.7	3.7	2.1	3.7	4.4	<1	5.1	<1	33.2
Calcium (Ca)	-	-	-	-	100	8,133	8,133	8,133	8,133	8,133	8,133	8,133	8,133	2,900	19,667
Cadmium (Cd)	-	0.09	0.01	0.1	0.01	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.017	<0.01
Chloride (Cl)	-	120,000	1,500,000	15,000,000	1,000	6,100	6,100	6,100	6,100	6,100	6,100	6,100	6,100	3,333	3,733
Cobalt (Co)	-	-	10	100	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	1.86	<0.4	<0.4	<0.4
Chromium (Cr)	-	8.9	-	-	1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Copper (Cu)	600	2-4	2	20	2	<2	<2	<2	<2	<2	<2	3.4	<2	3.8	<2
Iron (Fe)	-	300	300	3,000	50	<50	<50	<50	<50	121	67.0	<50	<50	<50	<50
Potassium (K)	-	-	-	-	100	2,867	2,867	2,867	2,867	2,867	2,867	220	220	220	400
Magnesium (Mg)	-	-	-	-	100	1,617	1,617	1,617	1,617	1,617	1,617	753	753	753	3,900
Manganese (Mn)	-	-	820	8,200	2	477	477	477	477	477	477	46	46	46	39
Sodium (Na)	-	-	-	-	100	8,567	8,567	8,567	8,567	8,567	8,567	2,300	2,300	2,300	13,500
Total Ammonia as N (NH_4+NH_3)[7]	-	16	-	-	50	<50	64.3	<50	78.4	99.2	87.1	<50	<50	<50	<50
Nickel (Ni)	1,000	-	25	250	2	3	3	3	3	3	3	3	3	11	<2
Nitrate as N (NO_3)	-	13,000	-	-	50	<50	<50	<50	<50	<50	<50	<50	<50	39	<50
Lead (Pb)	400	1-7	1	10	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury (Hg)	-	0.026	0.026	0.260	0.013	<0.013	<0.013	<0.013	<0.013	0.022	<0.013	0.044	<0.013	<0.013	<0.013
Dissolved Phosphorus (P)	-	4-100	-	-	10	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Antimony (Sb)	-	-	20	200	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Selenium (Se)	-	1	1	10	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfate (SO_4)	-	-	-	-	2,000	3,436	6,089	6,969	15,835	11,914	29,176	5,994	34,335	3,121	20,438
Uranium (U)	-	15	300	3,000	0.1	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	<0.1	2.47
Zinc (Zn)	1,000	30	30	300	5	<5	<5	<5	<5	<5	<5	14.9	<5	7.8	<5
Total Cyanide (CN_{Total})	2,000	-	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
WAD Cyanide (CN_{WAD})	-	5 (Free CN)	-	-	3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

Notes:

1. MDMER = Metal and Diamond Mining Effluent Regulations (SOR/2002-222), Schedule 4, grab sample
2. CCME CWQG = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
3. Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water
4. Guideline is equal to CCME CWQG Freshwater
5. Calculated by multiplying the un-inonized ammonia/L guideline by 14.0067/17.35052
6. " -" = no guideline available, or no data collected
7. Baseline mean calculated with 0.5 x reportable detection limit (RDL)

TABLE B-3

GROUNDWATER ACTION LEVELS FOR KEY TAILINGS SEEPAGE INDICATOR PARAMETERS
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	OPM-1A	OPM-1B	OPM-2A	OPM-2B	OPM-3A	OPM-3B	OPM-4A	OPM-4B	OPM-5A	OPM-5B	OPM-6A	OPM-6B
Distance to Surface Water (m)	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Arsenic (µg/L)												
Geomean of Baseline	5,790	3,610	17.6	45.0	<1	6.7	2.0	3.7	4.0	5.9	9.4	16.6
Log Standard Deviations	1.18	1.08	2.52	1.22	1.54	1.24	2.31	1.45	1.38	1.78	2.91	1.96
Relevant Guideline Value	50	50	50	50	50	50	50	50	50	50	50	50
Reportable Detection Limit (RDL)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt (µg/L)												
Geomean of Baseline	6.8	<0.4	1.9	<0.4	<0.4	<0.4	5.6	1.7	0.77	<0.4	1.1	1.5
Log Standard Deviations	1.18	---	1.51	1.92	1.36	1.24	1.39	1.46	1.40	1.52	2.80	1.63
Relevant Guideline Value	100	100	100	100	100	100	100	100	100	100	100	100
Reportable Detection Limit (RDL)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper (µg/L)												
Geomean of Baseline	<2	<2	4.20	<2	<2	<2	4.20	<2	<2	<2	<2	<2
Log Standard Deviations	---	---	4.06	1.50	1.44	2.26	3.44	2.37	1.59	2.05	1.69	2.22
Relevant Guideline Value	20	20	20	20	20	20	20	20	20	20	20	20
Reportable Detection Limit (RDL)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Ammonia (mg/L as N)												
Geomean of Baseline	0.155	0.085	<0.05	<0.05	<0.05	<0.05	<0.05	0.064	<0.05	<0.05	<0.05	<0.05
Log Standard Deviations	1.50	1.60	1.81	1.63	---	1.98	1.65	2.01	1.76	2.02	1.72	1.91
Relevant Guideline Value (using an approximate conservative groundwater temperature of 10°C and pH of 9)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Reportable Detection Limit (RDL)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Mercury (µg/L)												
Geomean of Baseline	0.221	<0.013	0.015	<0.013	<0.013	<0.013	0.023	<0.013	<0.013	<0.013	<0.013	0.018
Log Standard Deviations	4.950	1.204	2.383	1.795	---	2.101	1.994	1.653	1.610	2.619	2.111	3.486
Relevant Guideline Value	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Reportable Detection Limit (RDL)	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate (mg/L)												
Geomean of Baseline	12.3	11.7	7.36	9.27	8.71	19.5	4.96	4.19	4.87	3.31	7.23	8.61
Log Standard Deviations	1.15	1.07	1.43	1.45	1.36	1.32	1.33	1.47	1.43	2.02	1.29	1.19
Relevant Guideline Value (using an approximate conservative site water hardness of ~ 31-76 mg/L)	218	218	218	218	218	218	218	218	218	218	218	218
Reportable Detection Limit (RDL)	---	---	---	---	---	---	---	---	---	---	---	---
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WAD Cyanide (CN_{WAD}) (mg/L)												
Geomean of Baseline	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Log Standard Deviations	---	---	1.519	---	---	---	---	---	---	---	---	---
Relevant Guideline Value	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Reportable Detection Limit (RDL)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Tier 1 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tier 2 Action Level and Basis	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sodium (µg/L)												
Geomean of Baseline	6,950	13,300	8,860	10,600	3,660	10,500	8,660	25,500	3,610	3,650	5,480	6,510
Log Standard Deviations	1.07	1.10	1.42	1.54	1.33	1.35	1.28	2.10	1.60	1.98	1.22	1.17
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	100	100	100	100	100	100	100	100	100	100	100	100
75th percentile	7,400	14,000	10,900	15,000	4,100	12,300	10,000	44,000	4,230	4,000	6,300	7,250
95th percentile	7,540	15,000	14,500	16,000	5,960	16,300	12,500	70,000	7,670	12,100	6,980	7,670
Chloride (mg/L)												
Geomean of Baseline	7.35	11.2	9.41	10.0	3.61	3.99	12.7	33.2	4.35	4.25	4.10	4.16
Log Standard Deviations	1.25	1.09	1.29	1.25	1.28	1.41	1.38	2.47	1.89	2.10	1.19	1.07
Relevant Guideline Value	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1	1	1
75th percentile	8.40	11.0	11.3	11.5	3.90	4.20	16.0	70.0	5.70	4.20	4.60	4.40
95th percentile	9.12	13.0	13.9	13.0	5.41	7.26	18.5	125	12.0	16.1	5.22	4.47
Conductivity (µS/cm)												
Geomean of Baseline	209	281	176	232	76	169	81	234	114	123	170	216
Log Standard Deviations	1.07	1.04	1.42	1.14	1.26	1.11	1.38	1.85	1.50	1.38	1.26	1.14
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1	1	1
75th percentile	210	288	225	253	94	170	98	340	135	125	195	240
95th percentile	230	297	255	270	105	202	120	510	210	210	231	257

Notes:

1. CCME FAL = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
2. NS Tier 2 >10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, >10 m
3. NS Tier 2 <10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, <10 m

(G) Action Level is based on relevant guideline
(P) Action Level is based on percentile

TABLE B-3

GROUNDWATER ACTION LEVELS FOR KEY TAILINGS SEEPAGE INDICATOR PARAMETERS
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	OPM-7A	OPM-7B	PLM-1A	PLM-1B	PLM-2A	PLM-2B	PLM-3A	PLM-3B	PLM-4A	PLM-4B	PLM-5A	PLM-5B
Distance to Surface Water (m)	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Arsenic (µg/L)												
Geomean of Baseline	<1	2.7	<1	2.1	4.2	37.3	<1	<1	<1	11.4	2.5	31.9
Log Standard Deviations	---	1.50	1.86	1.34	5.71	7.36	---	3.07	1.66	1.42	2.57	1.08
Relevant Guideline Value	50	50	50	50	50	50	50	50	50	50	50	50
Reportable Detection Limit (RDL)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tier 1 Action Level and Basis	N/A	N/A	25 (G)	25 (G)	25 (G)	198 (P)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	34 (P)
Tier 2 Action Level and Basis	N/A	N/A	50 (G)	50 (G)	145 (P)	227 (P)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Cobalt (µg/L)												
Geomean of Baseline	1.3	0.88	<0.4	<0.4	1.8	1.2	<0.4	<0.4	1.8	<0.4	<0.4	<0.4
Log Standard Deviations	1.93	2.13	2.09	---	2.57	5.45	2.14	1.48	1.64	1.37	1.66	---
Relevant Guideline Value	100	100	100	100	100	100	100	100	100	100	100	100
Reportable Detection Limit (RDL)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tier 1 Action Level and Basis	N/A	N/A	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Tier 2 Action Level and Basis	N/A	N/A	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)
Copper (µg/L)												
Geomean of Baseline	<2	<2	<2	<2	2.20	<2	<2	<2	3.10	<2	<2	<2
Log Standard Deviations	2.41	2.04	2.01	1.79	2.02	2.00	2.09	2.02	3.27	2.17	2.20	1.92
Relevant Guideline Value	20	20	20	20	20	20	20	20	20	20	20	20
Reportable Detection Limit (RDL)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tier 1 Action Level and Basis	N/A	N/A	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)
Tier 2 Action Level and Basis	N/A	N/A	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)
Total Ammonia (mg/L as N)												
Geomean of Baseline	<0.05	0.072	0.058	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.072
Log Standard Deviations	1.72	1.83	2.65	2.00	1.91	2.14	2.04	1.55	2.04	2.35	1.80	2.06
Relevant Guideline Value (using an approximate conservative groundwater temperature of 10°C and pH of 9)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Reportable Detection Limit (RDL)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Tier 1 Action Level and Basis	N/A	N/A	0.122 (P)	0.075 (P)	0.075 (P)	0.085 (P)	0.075 (P)	0.075 (P)	0.088 (P)	0.075 (P)	0.075 (P)	0.11 (P)
Tier 2 Action Level and Basis	N/A	N/A	0.223 (P)	0.127 (P)	0.107 (P)	0.13 (P)	0.129 (P)	0.1 (G)	0.105 (P)	0.181 (P)	0.1 (G)	0.163 (P)
Total Mercury (µg/L)												
Geomean of Baseline	<0.013	<0.013	0.030	<0.013	<0.013	<0.013	0.022	<0.013	0.028	<0.013	0.018	<0.013
Log Standard Deviations	1.637	2.770	3.921	---	2.292	2.161	4.437	1.470	6.611	1.470	3.068	1.917
Relevant Guideline Value	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Reportable Detection Limit (RDL)	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Tier 1 Action Level and Basis	N/A	N/A	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.179 (P)	0.13 (G)	0.13 (G)	0.13 (G)
Tier 2 Action Level and Basis	N/A	N/A	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.336 (P)	0.26 (G)	0.26 (G)	0.26 (G)
Sulfate (mg/L)												
Geomean of Baseline	2.78	5.88	3.22	8.38	5.59	6.21	4.00	8.10	13.6	14.8	26.2	34.2
Log Standard Deviations	1.19	1.42	1.37	1.46	1.49	1.45	1.38	1.23	1.56	1.38	1.23	1.06
Relevant Guideline Value (using an approximate conservative site water hardness of ~ 31-76 mg/L)	218	218	218	218	218	218	218	218	218	218	218	218
Reportable Detection Limit (RDL)	---	---	---	---	---	---	---	---	---	---	---	---
Tier 1 Action Level and Basis	N/A	N/A	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)
Tier 2 Action Level and Basis	N/A	N/A	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)
WAD Cyanide (CN_{WAD}) (mg/L)												
Geomean of Baseline	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Log Standard Deviations	---	---	---	---	---	---	---	---	---	---	---	---
Relevant Guideline Value	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Reportable Detection Limit (RDL)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Tier 1 Action Level and Basis	N/A	N/A	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)
Tier 2 Action Level and Basis	N/A	N/A	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)
Sodium (µg/L)												
Geomean of Baseline	3,920	9,470	5,900	7,120	5,830	4,840	4,590	8,350	6,610	13,500	19,100	34,500
Log Standard Deviations	1.39	1.26	2.19	1.34	1.40	1.38	1.06	1.66	1.58	1.53	1.26	1.04
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	100	100	100	100	100	100	100	100	100	100	100	100
75th percentile	5,180	9,950	6,330	9,280	5,580	5,100	4,750	10,100	6,550	16,000	19,500	35,000
95th percentile	5,750	13,000	26,300	9,500	10,500	8,430	4,870	19,000	14,600	26,700	27,000	36,300
Chloride (mg/L)												
Geomean of Baseline	6.54	6.57	3.97	4.04	4.76	4.29	5.79	6.00	11.1	4.47	3.80	4.10
Log Standard Deviations	1.75	1.48	1.11	1.16	1.24	1.17	1.19	1.20	2.05	2.56	1.08	1.13
Relevant Guideline Value	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1	1	1
75th percentile	10.4	8.63	4.13	4.33	5.60	4.43	6.60	7.00	10.5	3.65	4.00	4.38
95th percentile	11.8	11.3	4.59	4.92	6.42	5.45	6.70	7.17	36.9	27.1	4.17	4.67
Conductivity (µS/cm)												
Geomean of Baseline	49	120	83	162	110	129	92	162	166	235	236	294
Log Standard Deviations	1.46	1.18	1.46	1.18	1.27	1.48	1.50	1.26	1.53	1.10	1.15	1.03
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1	1	1
75th percentile	65	130	99	175	123	160	130	185	200	230	245	300
95th percentile	73	145	145	190	156	167	150	224	301	272	292	307

Notes:

1. CCME FAL = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
2. NS Tier 2 >10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, >10 m
3. NS Tier 2 <10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, <10 m

(G) Action Level is based on relevant guideline
(P) Action Level is based on percentile

TABLE B-3

GROUNDWATER ACTION LEVELS FOR KEY TAILINGS SEEPAGE INDICATOR PARAMETERS
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	TMW-1A	TMW-1B	TMW-2A	TMW-2B	TMW-3A	TMW-3B	TMW-4A	TMW-4B	TMW-5A	TMW-5B	TMW-6A	TMW-6B
Distance to Surface Water (m)	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Arsenic (µg/L)												
Geomean of Baseline	<1	2.2	<1	3.7	<1	17.7	<1	<1	<1	5.6	<1	<1
Log Standard Deviations	---	1.31	---	1.28	---	1.23	---	---	1.63	1.89	2.12	1.35
Relevant Guideline Value	50	50	50	50	50	50	50	50	50	50	50	50
Reportable Detection Limit (RDL)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tier 1 Action Level and Basis	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)
Tier 2 Action Level and Basis	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Cobalt (µg/L)												
Geomean of Baseline	<0.4	<0.4	<0.4	<0.4	1.39	<0.4	3.4	1.0	1.3	<0.4	7.4	<0.4
Log Standard Deviations	---	---	1.92	---	1.94	1.43	1.52	2.25	2.31	2.06	1.94	1.46
Relevant Guideline Value	100	100	100	100	100	100	100	100	100	100	100	100
Reportable Detection Limit (RDL)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tier 1 Action Level and Basis	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Tier 2 Action Level and Basis	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)
Copper (µg/L)												
Geomean of Baseline	<2	<2	<2	<2	44.00	<2	19.00	<2	3.20	<2	31.00	<2
Log Standard Deviations	2.13	2.91	2.53	2.36	4.12	2.21	2.10	1.39	2.47	1.99	2.93	1.51
Relevant Guideline Value	20	20	20	20	20	20	20	20	20	20	20	20
Reportable Detection Limit (RDL)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tier 1 Action Level and Basis	10 (G)	10 (G)	10 (G)	10 (G)	103 (P)	10 (G)	33.5 (P)	10 (G)	10 (G)	10 (G)	60 (P)	10 (G)
Tier 2 Action Level and Basis	20 (G)	20 (G)	20 (G)	20 (G)	155 (P)	20 (G)	40.1 (P)	20 (G)	20 (G)	20 (G)	83.2 (P)	20 (G)
Total Ammonia (mg/L as N)												
Geomean of Baseline	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.053	<0.05	<0.05	<0.05
Log Standard Deviations	1.75	1.61	1.61	1.87	1.71	1.88	1.69	1.71	2.10	1.68	1.72	1.73
Relevant Guideline Value (using an approximate conservative groundwater temperature of 10°C and pH of 9)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Reportable Detection Limit (RDL)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Tier 1 Action Level and Basis	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.098 (P)	0.075 (P)	0.075 (P)	0.075 (P)
Tier 2 Action Level and Basis	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.124 (P)	0.1 (G)	0.1 (G)	0.1 (G)
Total Mercury (µg/L)												
Geomean of Baseline	<0.013	<0.013	<0.013	0.046	0.022	<0.013	<0.013	<0.013	0.017	<0.013	0.015	<0.013
Log Standard Deviations	1.783	---	1.553	2.749	3.221	---	1.438	1.456	2.689	1.870	2.132	1.633
Relevant Guideline Value	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Reportable Detection Limit (RDL)	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Tier 1 Action Level and Basis	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)
Tier 2 Action Level and Basis	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)
Sulfate (mg/L)												
Geomean of Baseline	1.13	1.98	3.25	5.32	1.11	5.47	2.70	2.98	5.89	6.18	3.57	4.60
Log Standard Deviations	1.37	1.62	1.35	1.67	1.32	1.89	1.16	1.12	2.55	1.27	1.16	1.31
Relevant Guideline Value (using an approximate conservative site water hardness of ~ 31-76 mg/L)	218	218	218	218	218	218	218	218	218	218	218	218
Reportable Detection Limit (RDL)	---	---	---	---	---	---	---	---	---	---	---	---
Tier 1 Action Level and Basis	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)
Tier 2 Action Level and Basis	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)
WAD Cyanide (CN_{WAD}) (mg/L)												
Geomean of Baseline	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Log Standard Deviations	---	---	---	---	---	---	---	---	---	---	---	---
Relevant Guideline Value	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Reportable Detection Limit (RDL)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Tier 1 Action Level and Basis	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)
Tier 2 Action Level and Basis	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)
Sodium (µg/L)												
Geomean of Baseline	1,960	2,410	2,260	31,700	3,090	7,740	3,440	4,700	2,840	4,480	4,720	3,370
Log Standard Deviations	1.24	1.09	1.38	1.22	1.19	1.39	1.05	1.16	1.20	1.19	1.28	1.14
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	100	100	100	100	100	100	100	100	100	100	100	100
75th percentile	2,100	2,400	2,500	35,000	3,450	9,000	3,550	5,050	2,800	5,050	5,550	3,450
95th percentile	2,760	2,680	3,750	42,300	3,810	12,800	3,600	5,830	3,780	5,520	6,600	4,160
Chloride (mg/L)												
Geomean of Baseline	2.69	3.05	2.64	3.57	4.09	4.74	4.62	5.49	2.91	3.20	5.13	3.82
Log Standard Deviations	1.16	1.20	1.38	1.29	1.26	1.23	1.15	1.16	1.25	1.15	1.17	1.16
Relevant Guideline Value	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1	1	1
75th percentile	2.90	3.05	3.35	4.20	4.40	5.45	5.05	6.20	3.20	3.55	5.65	4.25
95th percentile	3.35	4.08	3.92	5.03	5.81	6.27	5.38	6.27	3.86	3.81	6.25	4.67
Conductivity (µS/cm)												
Geomean of Baseline	23	62	25	152	36	172	40	67	52	109	46	88
Log Standard Deviations	1.47	1.06	1.34	1.21	1.38	1.17	1.19	1.20	1.59	1.35	1.26	1.29
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1	1	1
75th percentile	27	64	27	170	47	185	45	66	52	145	51	105
95th percentile	42	66	40	194	51	221	49	90	114	150	66	124

Notes:

1. CCME FAL = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
2. NS Tier 2 >10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, >10 m
3. NS Tier 2 <10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, <10 m

(G) Action Level is based on relevant guideline
(P) Action Level is based on percentile

TABLE B-3

GROUNDWATER ACTION LEVELS FOR KEY TAILINGS SEEPAGE INDICATOR PARAMETERS
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	TMW-7A	TMW-7B	TMW-8A	TMW-8B	TMW-10A	TMW-10B	TMW-11A	TMW-11B	TMW-12A	TMW-12B
Distance to Surface Water (m)	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Arsenic (µg/L)										
Geomean of Baseline	5.7	3.9	1.3	1.3	<1	2.4	<1	14.2	<1	2.8
Log Standard Deviations	2.40	1.81	2.27	2.73	---	4.79	1.35	4.48	1.30	1.10
Relevant Guideline Value	50	50	50	50	50	50	50	50	50	50
Reportable Detection Limit (RDL)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tier 1 Action Level and Basis	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	30.5 (P)	25 (G)	25 (G)
Tier 2 Action Level and Basis	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Cobalt (µg/L)										
Geomean of Baseline	0.73	1.2	1.2	1.4	<0.4	<0.4	1.69	<0.4	0.49	<0.4
Log Standard Deviations	1.62	2.56	1.45	1.71	2.12	---	1.55	1.98	2.46	---
Relevant Guideline Value	100	100	100	100	100	100	100	100	100	100
Reportable Detection Limit (RDL)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tier 1 Action Level and Basis	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Tier 2 Action Level and Basis	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)
Copper (µg/L)										
Geomean of Baseline	<2	<2	<2	2.50	<2	<2	4.20	<2	<2	<2
Log Standard Deviations	1.48	---	1.50	2.05	1.61	---	2.02	2.00	2.36	---
Relevant Guideline Value	20	20	20	20	20	20	20	20	20	20
Reportable Detection Limit (RDL)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tier 1 Action Level and Basis	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)
Tier 2 Action Level and Basis	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)
Total Ammonia (mg/L as N)										
Geomean of Baseline	0.341	0.114	<0.05	0.051	<0.05	<0.05	<0.05	<0.05	<0.05	0.073
Log Standard Deviations	1.29	2.17	1.69	2.15	1.66	1.68	1.62	1.45	1.82	1.21
Relevant Guideline Value (using an approximate conservative groundwater temperature of 10°C and pH of 9)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Reportable Detection Limit (RDL)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Tier 1 Action Level and Basis	0.375 (P)	0.213 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.075 (P)	0.097 (P)
Tier 2 Action Level and Basis	0.514 (P)	0.227 (P)	0.1 (G)	0.156 (P)	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.1 (G)	0.11 (P)
Total Mercury (µg/L)										
Geomean of Baseline	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.018	<0.013	0.023	<0.013
Log Standard Deviations	2.000	---	2.242	2.658	1.723	1.872	2.368	1.664	3.442	1.858
Relevant Guideline Value	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Reportable Detection Limit (RDL)	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Tier 1 Action Level and Basis	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)
Tier 2 Action Level and Basis	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)
Sulfate (mg/L)										
Geomean of Baseline	4.13	3.31	1.84	1.78	3.18	8.98	8.77	13.7	4.69	28.2
Log Standard Deviations	2.16	2.31	1.86	2.27	2.10	1.87	2.61	1.70	2.20	1.12
Relevant Guideline Value (using an approximate conservative site water hardness of ~ 31-76 mg/L)	218	218	218	218	218	218	218	218	218	218
Reportable Detection Limit (RDL)	---	---	---	---	---	---	---	---	---	---
Tier 1 Action Level and Basis	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)
Tier 2 Action Level and Basis	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)
WAD Cyanide (CN_{WAD}) (mg/L)										
Geomean of Baseline	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Log Standard Deviations	---	---	---	---	---	---	---	---	---	---
Relevant Guideline Value	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Reportable Detection Limit (RDL)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Tier 1 Action Level and Basis	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)
Tier 2 Action Level and Basis	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)
Sodium (µg/L)										
Geomean of Baseline	2,790	4,090	3,790	4,840	4,400	10,300	3,070	12,400	4,120	24,900
Log Standard Deviations	1.22	1.58	1.50	1.73	1.15	2.07	1.16	2.21	1.30	1.09
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	100	100	100	100	100	100	100	100	100	100
75th percentile	2,750	3,980	3,950	5,850	4,700	16,500	3,400	23,500	4,800	26,000
95th percentile	3,850	9,370	7,430	11,900	5,490	32,200	3,540	29,400	5,570	28,400
Chloride (mg/L)										
Geomean of Baseline	3.67	4.20	4.55	4.36	5.39	7.47	4.51	5.93	4.04	5.22
Log Standard Deviations	1.19	1.47	1.26	1.46	1.14	1.65	1.20	1.49	1.24	1.54
Relevant Guideline Value	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1
75th percentile	3.95	5.03	5.10	4.15	5.65	8.10	5.25	7.25	4.20	5.85
95th percentile	4.56	7.76	6.43	8.26	6.33	18.2	5.44	10.9	5.69	10.4
Conductivity (µS/cm)										
Geomean of Baseline	74	105	44	60	80	152	65	182	93	304
Log Standard Deviations	1.14	1.34	1.32	1.55	1.29	1.29	1.66	1.47	1.59	1.05
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1
75th percentile	81	120	42	61	93	185	87	215	135	315
95th percentile	89	159	70	124	105	220	112	248	154	320

Notes:

1. CCME FAL = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
2. NS Tier 2 >10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, >10 m
3. NS Tier 2 <10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, <10 m

(G) Action Level is based on relevant guideline
(P) Action Level is based on percentile

TABLE B-3

GROUNDWATER ACTION LEVELS FOR KEY TAILINGS SEEPAGE INDICATOR PARAMETERS
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	TMW-13A	TMW-13B	TMW-14A	TMW-14B	TMW-15A	TMW-15B	TMW-16A	TMW-16B
Distance to Surface Water (m)	<10	<10	>10	>10	>10	>10	<10	<10
Arsenic (µg/L)								
Geomean of Baseline	<1	1.7	<1	8.1	<1	2.9	1.0	7.0
Log Standard Deviations	---	1.90	---	1.30	1.33	1.56	2.03	1.09
Relevant Guideline Value	5	5	50	50	50	50	5	5
Reportable Detection Limit (RDL)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tier 1 Action Level and Basis	2.5 (G)	2.5 (G)	25 (G)	25 (G)	25 (G)	25 (G)	2.5 (G)	7.4 (P)
Tier 2 Action Level and Basis	5 (G)	5 (G)	50 (G)	50 (G)	50 (G)	50 (G)	5 (G)	7.54 (P)
Cobalt (µg/L)								
Geomean of Baseline	<0.4	<0.4	0.95	<0.4	<0.4	<0.4	0.71	<0.4
Log Standard Deviations	2.86	---	2.33	---	2.21	1.65	1.99	---
Relevant Guideline Value	10	10	100	100	100	100	10	10
Reportable Detection Limit (RDL)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tier 1 Action Level and Basis	5 (G)	5 (G)	50 (G)	50 (G)	50 (G)	50 (G)	5 (G)	5 (G)
Tier 2 Action Level and Basis	10 (G)	10 (G)	100 (G)	100 (G)	100 (G)	100 (G)	10 (G)	10 (G)
Copper (µg/L)								
Geomean of Baseline	<2	<2	<2	<2	<2	<2	<2	<2
Log Standard Deviations	2.19	---	2.60	2.11	1.33	1.88	---	---
Relevant Guideline Value	2	2	20	20	20	20	2	2
Reportable Detection Limit (RDL)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tier 1 Action Level and Basis	2.5 (P)	2 (G)	10 (G)	10 (G)	10 (G)	10 (G)	2 (G)	2 (G)
Tier 2 Action Level and Basis	5.4 (P)	2 (G)	20 (G)	20 (G)	20 (G)	20 (G)	2 (G)	2 (G)
Total Ammonia (mg/L as N)								
Geomean of Baseline	<0.05	<0.05	<0.05	0.069	<0.05	0.075	<0.05	<0.05
Log Standard Deviations	1.85	1.93	1.77	1.66	1.48	1.30	1.59	1.75
Relevant Guideline Value (using an approximate conservative groundwater temperature of 10°C and pH of 9)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Reportable Detection Limit (RDL)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Tier 1 Action Level and Basis	0.075 (P)	0.083 (P)	0.075 (P)	0.091 (P)	0.075 (P)	0.082 (P)	0.075 (P)	0.075 (P)
Tier 2 Action Level and Basis	0.1 (G)	0.104 (P)	0.1 (G)	0.112 (P)	0.1 (G)	0.111 (P)	0.1 (G)	0.1 (G)
Total Mercury (µg/L)								
Geomean of Baseline	0.015	<0.013	0.017	<0.013	<0.013	<0.013	0.024	<0.013
Log Standard Deviations	4.254	1.877	3.668	---	1.787	3.602	3.813	---
Relevant Guideline Value	0.026	0.026	0.26	0.26	0.26	0.26	0.026	0.026
Reportable Detection Limit (RDL)	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Tier 1 Action Level and Basis	0.038 (P)	0.02 (P)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.072 (P)	0.02 (G)
Tier 2 Action Level and Basis	0.161 (P)	0.026 (P)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.131 (P)	0.026 (G)
Sulfate (mg/L)								
Geomean of Baseline	2.46	8.66	4.29	27.8	4.94	27.0	3.37	14.5
Log Standard Deviations	1.93	1.31	1.61	1.06	1.66	1.33	1.33	1.44
Relevant Guideline Value (using an approximate conservative site water hardness of ~ 31-76 mg/L)	218	218	218	218	218	218	218	218
Reportable Detection Limit (RDL)	---	---	---	---	---	---	---	---
Tier 1 Action Level and Basis	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)
Tier 2 Action Level and Basis	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)
WAD Cyanide (CN_{WAD}) (mg/L)								
Geomean of Baseline	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Log Standard Deviations	1.468	---	---	1.575	---	---	---	---
Relevant Guideline Value	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Reportable Detection Limit (RDL)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Tier 1 Action Level and Basis	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)
Tier 2 Action Level and Basis	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)
Sodium (µg/L)								
Geomean of Baseline	3,290	9,550	9,430	18,100	6,100	27,900	4,640	13,100
Log Standard Deviations	1.16	1.26	1.27	1.06	1.13	1.16	1.16	1.05
Relevant Guideline Value	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	100	100	100	100	100	100	100	100
75th percentile	3,650	9,050	11,000	18,500	6,300	31,000	5,250	13,500
95th percentile	3,770	14,000	12,000	19,700	7,130	33,500	5,440	14,000
Chloride (mg/L)								
Geomean of Baseline	4.41	4.73	29.6	4.11	3.71	6.36	4.71	4.24
Log Standard Deviations	1.16	1.46	1.27	1.11	1.16	1.59	1.14	1.07
Relevant Guideline Value	1,500	1,500	15,000	15,000	15,000	15,000	1,500	1,500
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1
75th percentile	4.25	4.35	34.0	4.15	3.88	7.73	4.70	4.30
95th percentile	5.63	9.02	38.5	4.83	4.50	12.5	5.78	4.58
Conductivity (µS/cm)								
Geomean of Baseline	50	211	161	271	105	294	110	237
Log Standard Deviations	1.63	1.09	1.24	1.04	1.72	1.09	1.56	1.02
Relevant Guideline Value	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1
75th percentile	66	215	180	275	165	310	160	240
95th percentile	98	241	218	287	203	318	167	240

Notes:

1. CCME FAL = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic* (1999; last updated 2012); Freshwater aquatic life
2. NS Tier 2 >10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulatic (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, >10 m
3. NS Tier 2 <10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulatic (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, <10 m

(G) Action Level is based on relevant guideline

(P) Action Level is based on percentile

TABLE B-3

GROUNDWATER ACTION LEVELS FOR KEY TAILINGS SEEPAGE INDICATOR PARAMETERS
Atlantic Gold Corporation
Touquoy Gold Project, Moose River, Nova Scotia
Stantec Consulting Ltd. Project No. 121619250

Parameter	WRW-1A	WRW-1B	WRW-2A	WRW-2B	WRW-3A	WRW-3B	WRW-4A	WRW-4B	WRW-5A	WRW-5B
Distance to Surface Water (m)	>10	>10	>10	>10	>10	>10	>10	>10	>10	>10
Arsenic (µg/L)										
Geomean of Baseline	<1	1.7	3.7	2.1	3.7	4.4	<1	5.1	<1	33.2
Log Standard Deviations	1.86	1.40	1.39	1.29	1.85	1.05	1.72	1.39	---	1.14
Relevant Guideline Value	50	50	50	50	50	50	50	50	50	50
Reportable Detection Limit (RDL)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Tier 1 Action Level and Basis	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	25 (G)	36.8 (P)
Tier 2 Action Level and Basis	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Cobalt (µg/L)										
Geomean of Baseline	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	1.9	<0.4	<0.4	<0.4
Log Standard Deviations	2.45	1.42	1.38	---	2.38	---	1.88	---	2.29	---
Relevant Guideline Value	100	100	100	100	100	100	100	100	100	100
Reportable Detection Limit (RDL)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Tier 1 Action Level and Basis	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)	50 (G)
Tier 2 Action Level and Basis	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)	100 (G)
Copper (µg/L)										
Geomean of Baseline	<2	<2	<2	<2	<2	<2	3.40	<2	3.80	<2
Log Standard Deviations	---	1.96	1.37	1.35	2.12	---	2.71	1.96	2.21	1.62
Relevant Guideline Value	20	20	20	20	20	20	20	20	20	20
Reportable Detection Limit (RDL)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tier 1 Action Level and Basis	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)	10 (G)
Tier 2 Action Level and Basis	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)	20 (G)
Total Ammonia (mg/L as N)										
Geomean of Baseline	<0.05	0.064	<0.05	0.078	0.099	0.087	<0.05	<0.05	<0.05	<0.05
Log Standard Deviations	2.02	2.14	1.54	1.33	1.81	1.33	2.16	1.79	---	2.13
Relevant Guideline Value (using an approximate conservative groundwater temperature of 10°C and pH of 9)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
Reportable Detection Limit (RDL)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Tier 1 Action Level and Basis	0.075 (P)	0.109 (P)	0.075 (P)	0.093 (P)	0.115 (P)	0.105 (P)	0.094 (P)	0.075 (P)	0.075 (P)	0.083 (P)
Tier 2 Action Level and Basis	0.121 (P)	0.162 (P)	0.1 (G)	0.105 (P)	0.256 (P)	0.117 (P)	0.121 (P)	0.1 (G)	0.1 (G)	0.128 (P)
Total Mercury (µg/L)										
Geomean of Baseline	<0.013	<0.013	<0.013	<0.013	0.022	<0.013	0.044	<0.013	<0.013	<0.013
Log Standard Deviations	2.012	1.372	1.694	---	2.040	1.664	4.961	1.948	2.024	---
Relevant Guideline Value	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Reportable Detection Limit (RDL)	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Tier 1 Action Level and Basis	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.13 (G)	0.185 (P)	0.13 (G)	0.13 (G)	0.13 (G)
Tier 2 Action Level and Basis	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.26 (G)	0.271 (P)	0.26 (G)	0.26 (G)	0.26 (G)
Sulfate (mg/L)										
Geomean of Baseline	3.44	6.09	6.97	15.8	11.9	29.2	5.99	34.3	3.12	20.4
Log Standard Deviations	1.46	2.39	1.20	1.06	1.72	1.09	1.74	1.14	1.71	1.09
Relevant Guideline Value (using an approximate conservative site water hardness of ~ 31-76 mg/L)	218	218	218	218	218	218	218	218	218	218
Reportable Detection Limit (RDL)	---	---	---	---	---	---	---	---	---	---
Tier 1 Action Level and Basis	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)	109 (G)
Tier 2 Action Level and Basis	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)	218 (G)
WAD Cyanide (CN_{WAD}) (mg/L)										
Geomean of Baseline	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Log Standard Deviations	---	---	---	---	---	---	---	---	---	---
Relevant Guideline Value	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Reportable Detection Limit (RDL)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Tier 1 Action Level and Basis	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)	0.004 (P)
Tier 2 Action Level and Basis	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)	0.005 (G)
Sodium (µg/L)										
Geomean of Baseline	5,990	8,500	6,390	15,700	11,000	26,000	4,440	25,200	2,280	10,000
Log Standard Deviations	1.32	1.44	1.05	1.09	1.33	1.00	1.31	1.09	1.09	1.57
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	100	100	100	100	100	100	100	100	100	100
75th percentile	5,950	8,300	6,500	16,500	13,000	26,000	5,350	26,500	2,450	10,800
95th percentile	9,530	16,000	6,780	17,700	13,700	26,000	5,940	27,000	2,500	20,000
Chloride (mg/L)										
Geomean of Baseline	3.59	3.77	3.63	4.20	4.58	4.27	3.73	4.39	3.49	3.60
Log Standard Deviations	1.23	1.18	1.10	1.09	1.19	1.16	1.11	1.14	1.07	1.15
Relevant Guideline Value	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1
75th percentile	4.00	4.20	3.70	4.30	5.15	4.60	4.00	4.50	3.60	3.58
95th percentile	4.35	4.51	4.22	4.75	5.82	4.60	4.17	5.40	3.74	4.43
Conductivity (µS/cm)										
Geomean of Baseline	242	247	220	268	135	287	76	315	32	187
Log Standard Deviations	1.11	1.31	1.05	1.03	1.37	1.03	1.85	1.04	1.66	1.04
Relevant Guideline Value	---	---	---	---	---	---	---	---	---	---
Reportable Detection Limit (RDL)	1	1	1	1	1	1	1	1	1	1
75th percentile	260	275	230	275	180	293	120	320	29	190
95th percentile	274	315	230	280	194	299	169	327	79	198

Notes:

1. CCME FAL = Canadian Council of Ministers of the Environment *Canadian Water Quality Guidelines for the Protection of Aquatic Life* (1999; last updated 2012); Freshwater aquatic life
2. NS Tier 2 >10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, >10 m
3. NS Tier 2 <10 m = Tier 2 PPS = Tier 2 Pathway Specific Standards for Groundwater. From Nova Scotia's Contaminated Site Regulations (July 2013) Notification of Contamination Protocal, Table 3; Discharge to Fresh Water, <10 m

(G) Action Level is based on relevant guideline
(P) Action Level is based on percentile