

APPROVAL

Province of Nova Scotia Environment Act, S.N.S. 1994-95, c.1 s.1

APPROVAL HOLDER: ATLANTIC MINING NS INC.

SITE PID: 00437368, 00437699, 00437707, 00485193, 00485219,
00486134, 00514695, 00568006, 00642777, 00642793,
00642819, 00642892, 00642926, 00642934, 00642942,
00642959, 00642967, 00642975, 00642983, 00642991,
00643007, 00643015, 00643023, 00643031, 00643049,
00643056, 00643064, 00643080, 00643098, 00643106,
00643114, 00643122, 00643130, 00643148, 00643155,
00643163, 00643171, 00643189, 00643197, 00643205,
00643213, 00643221, 00643239, 00643247, 00643254,
40307092, 40319543, 40338972, 40350050, 40350076,
40449589, 40449597, 40500647, 40503468, 40524217,
40524225, 40524233, 40524241, 40535254, 40627218,
40627226, 40657363, 40747818, 41274606, 41280892,
41317108, 41334640, 41340621, 41346073, 41455510

APPROVAL NO: 2012-084244-14

EXPIRY DATE: March 28, 2024

Pursuant to Part V of the Environment Act, S.N.S. 1994-95, c.1 s.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Industrial - Minerals - Mineral Processing Plant

A handwritten signature in black ink, appearing to read 'Kevin G Garroway', is centered on the page.

Administrator: Kevin G Garroway

Effective Date: August 9, 2022

The Minister's powers and responsibilities under the Act with respect to this Approval have been delegated to the Administrator named above. Therefore, any information or notifications required to be provided to the Minister under this Approval can be provided to the Administrator unless otherwise advised in writing.

TERMS AND CONDITIONS OF APPROVAL

Nova Scotia Department of Environment and Climate Change

Approval Holder: ATLANTIC MINING NS INC.

Project: Touquoy Gold Mine (see attached sheet for remaining PIDs), Touquoy Gold Project

Site:

PID	Civic #	Street Name	Street Type	Community	County
00437368					
00437699					
00437707					
00485193					
00485219					
00486134					
00514695					
00568006					
00642777					
00642793					
00642819					
00642892					
00642926	6752	MOOSELAND	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
00642934					
00642942	6740	MOOSELAND	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
00642959					
00642967					
00642975					
00642983					
00642991	6686	MOOSE RIVER	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
00643007					
00643015	6749	MOOSELAND	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
00643023	6743	MOOSELAND	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
00643031					
00643049					
00643056					
00643064					
00643080					

00643098
00643106
00643114
00643122
00643130
00643148
00643155
00643163
00643171
00643189
00643197
00643205
00643213
00643221
00643239
00643247
00643254
40307092
40319543
40338972

40350050	6719	MOOSELAND	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
40350076	6705	MOOSELAND	RD.	MOOSE RIVER GOLD MINES	HALIFAX COUNTY
40350076				MOOSE RIVER GOLD MINES	HALIFAX COUNTY
40449589					
40449597					
40500647					
40503468					
40524217				MOOSE RIVER GOLD MINES	HALIFAX COUNTY
40524225					
40524233					
40524241					
40535254					
40627218					
40627226				MOOSE RIVER GOLD MINES	HALIFAX COUNTY
40657363				MOOSE RIVER GOLD MINES	HALIFAX COUNTY
40747818	288	BILLYBELL	WAY	MOOSELAND	HALIFAX COUNTY

41274606		MOOSE RIVER GOLD MINES	HALIFAX COUNTY
41280892			
41317108		MOOSE RIVER GOLD MINES	HALIFAX COUNTY
41334640			
41340621			
41346073			
41455510	131	MOOSE RIVER GOLD MINES RD.	HALIFAX COUNTY

Approval No: 2012-084244-14

File No: 92100-30-BED-2012-084244

Reference Documents

- Application submitted June 29, 2022 and attachments.
- E-mail from Karlis Jansons, Independent Tailings Review Board, dated November 2, 2017. RE: Proposed Blasting in the Impoundment at Atlantic Gold.
- Application submitted November 12, 2021 and supporting documentation.
- Industrial Approval Amendment Application and supporting documents. Submitted by Atlantic Mining NS Corp. (AMNS) Signed by James Millard, Manager of Environment and Permitting on February 2, 2018.
- Memo prepared by Paul Deering, Engineer of Record, Stantec Consulting Ltd. dated May 29, 2018, RE: Operational Preparedness and Response Plan for Upset Water levels in Tailings Pond Water Level within IDF Zone and No Emergency Spillway Scenario, Touquoy Gold Project, Halifax County, NS.
- E-mail from Jim Millard, AMNS on May 4, 2018, RE: Response to NSE Letter April 24, Amendment Application – Industrial Approval 2012-084244 Blasting in the TMF with the following attachments:
 - o Letter prepared by James Millard, AMNS dated May 4, 2018. RE: Response to NSE Letter of April 24, 2018, Amendment Application – Industrial Approval 2012-084244, Blasting within the TMF – Touquoy Gold Mine – Moose River, NS.
 - o Letter prepared by Paul Deering, Engineer of Record, Stantec Consulting Ltd. RE: Response to NSE Letter of April 24, 2018, Amendment Application – Industrial Approval #2012-084244-04, Proposed Quarry in TMF – Touquoy Gold Mine – Moose

River, NS.

- Industrial Approval Amendment Application and supporting documents. Submitted by Atlantic Mining NS Corp. (AMNS) Signed by James Millard, Manager of Environment and Permitting on February 27, 2018.

- E-mail from Danielle Finlayson-Bourque, AMNS on March 16, 2018 RE: AMNS – Touquoy – Amendment Application – Proposed Quarry in the TMF with the following attachments:

- o Letter prepared by Danielle Finlayson-Bourque, AMNS dated March 16, 2018. RE: Blasting within the TMF Impoundment Area, 6749 Moose River Rd, RR2 Middle Musquodoboit, NS Industrial Approval 2012-084244.

- o Letter prepared by Paul Deering, Engineer of Record, Stantec Consulting Ltd. RE: Response to NSE Letter of February 27, 2018, Amendment Application – Industrial Approval #2012-084244-04, Proposed Quarry in TMF – Touquoy Gold Mine – Moose River, NS.

- o Memo prepared by Jonathan Keizer, Hydrogeologist, Stantec Consulting Ltd. RE: Groundwater Monitoring Requirements for TMF quarry development. Response to NSE Letter of February 27, 2018, Amendment Application – Industrial Approval #2012-084244-04, Proposed Quarry in TMF – Touquoy Gold Mine – Moose River, NS.

- E-mail from Rachel Bower, Inspector Specialist, Nova Scotia Environment on May 15, 2018. RE: Response to NSE Letter April 24, Amendment Application – Industrial Approval 2012-084244, Blasting in the TMF.

- E-mail from Melissa Nicholson, AMNS on November 4, 2020, RE: Monitoring locations for Wetland 34 and/or Wetland 35.

- E-mail from Jim Millard, AMNS on June 15, 2018, RE: Monitoring, Evaluation and Response Plan Quarry Development within TMF with the following attachments:

- o Monitoring, Evaluation and Response Plan Quarry Development within TMF Touquoy Gold Project, Halifax County, NS, dated June 15, 2018, prepared by Stantec Consulting Ltd.

- Application submitted December 19, 2019 and attachments.

1. Definitions

- a. "Act" means Environment Act, Chapter 1, s.1 of the Acts of 1994-95, and includes, unless the context otherwise requires, all regulations made pursuant to the Act.
- b. "Active Area" means the area required to construct, operate and reclaim the Facility and includes the open pit (surface) mine, mineral processing facility and associated works.
- c. "Administrator" means a person appointed by the Minister to be responsible for processing applications respecting activities designated under the Activities Designation Regulations, and includes an acting administrator.
- d. "Approval" means an approval issued pursuant to this Act with respect to an activity.
- e. "Associated Works" means any building, machinery, equipment, device, tank, system, stockpile, or other related infrastructure.
- f. "Department" means the Central Region, Bedford Office, of Nova Scotia Environment located at the following address:

Nova Scotia Environment
Inspection, Compliance, and Enforcement Division
Central Region, Bedford Office,
Suite 115, 30 Damascus Road,
Bedford, Nova Scotia, B4A 0C1.

Phone:(902) 424-7773

Fax:(902) 424-0597

- g. "Disturbed Area" means any area on the Site that has been stripped of vegetation and is susceptible to erosion.
- h. "Dormancy" means periods of cessation of mining and mineral processing.
- i. "Engineer of Record" means the professional engineer that has overarching responsibility for assuring that a tailings storage facility or dam is designed, built, operated and/or closed/decommissioned with appropriate concerns for safety, water management and environmental impact and meets the applicable regulations, statutes, guidelines, codes and standards.
- j. "Extension" means an increase in size, volume or other physical dimensions of an activity such that the increase may cause an adverse effect if not properly mitigated.
- k. "Facility" means the open pit (surface) gold mine, mineral processing facility and associated works constructed on Site for the production of gold.
- l. "Historic Tailings" means mine tailings deposited by operations that predate the Facility and are identified and documented, as such, by an independent experienced consultant.

- m. "Minister" means the Minister of Environment, and may include any person appointed as a designate of the Minister.
- n. "Modification" means a change to an activity that may cause an adverse effect if not properly mitigated and includes, but is not limited to, the expansion of the same process, addition of product lines and replacement of equipment with different technology other than that presently in use.
- o. "NSE" means Nova Scotia Environment.
- p. "Operation" means
 - i) For the purpose of the open pit mine (OPM wells), operation will only be considered as commenced when historic tailings are disturbed or material is extracted for the purpose of placement in the waste rock stockpile or as ore in the processing plant.
 - ii) For the purpose of the processing plant (PLM wells), operation will only be considered as commenced when ore is placed in the processing plant.
 - iii) For the purpose of the tailings management facility (TMF), including the proposed containment cell for historic tailings (TMW wells and 2 domestic wells), operation will only be considered as commenced when tailings or sludge are placed in the TMF or containment cell.
 - iv) For the purpose of the waste rock storage area (WRW wells), operation will only be considered as commenced when material is placed in the waste rock stockpile area.
- q. "Production" means the development, mining, processing, concentration and smelting to produce elemental gold from gold ore.
- r. "Province" means the responsible regulatory Department(s) within the government of Nova Scotia.
- s. "Reclamation or Rehabilitation" means restorative work performed or to be performed in accordance with the approved reclamation plan and/or as directed by the Department.
- t. "Site" means the lands where an activity or proposed activity will take place and includes the area within the property boundaries of the lots identified with PID#' s listed in this approval.
- u. "Standard" means a standard, policy, code, guideline, protocol or other rule in relation to a designated activity that, by reason of its establishment or adoption by regulation or as a condition of an approval or certificate of qualification, becomes a mandatory requirement for participation in that designated activity.
- v. "Structure" includes, but is not limited to, a private home, a cottage, an apartment building, a school, a church, a commercial building or a treatment

facility associated with the treatment of municipal sewage, industrial or landfill effluent, an industrial building, infrastructure or construction, a hospital, and a nursing home, etc.

- w. "Tailings Management Facility (TMF)" means all infrastructure required to be constructed and operated for the purpose of management of mine tailings, historic tailings and associated wastewater over the life cycle of the Facility.
- x. "Watercourse" means
 - (i) the bed, banks and shore of every river, stream, lake, creek, pond, spring, lagoon or other natural body of water, and the water therein, within the jurisdiction of the Province, whether it contains water or not, and
 - (ii) all groundwater;
- y. "Wetland" means lands commonly referred to as marshes, swamps, fens, bogs, and shallow water areas that are saturated with water long enough to promote wetland aquatic processes and which are indicated by poorly drained soil, vegetation and various kinds of activities which are adapted to a wet environment.

2. Scope

- a. This Approval (the "Approval") relates to the Approval Holder and their application for Industrial Approval dated November 25, 2016 and supporting reference documents, including those listed in Appendix I attached, to construct, operate and reclaim the Facility, situated at or near 6749 Moose River Rd., Moose River Gold Mines, Halifax Regional Municipality (the "Site") and all subsequent Amendment Applications.
- b. The scope of the Approval shall be limited to surface mining by open pit methods for the extraction of gold ore and the mineral processing of gold ore for the production of elemental gold.
- c. The scope of Approval includes recommendations in the Supporting Reference Documents of the Application which apply to the construction, operation and reclamation of the TMF with the following features:
 - i) an upstream clay till blanket for the purpose of seepage control.
 - ii) an upstream clay till core in the dam for the purpose of seepage control.
 - iii) a quarry for the extraction of construction aggregate for the Facility.
- d. The Approval Holder shall not process historic tailings for the purpose of gold recovery without the approval of the Department.
- e. The Approval Holder shall not remove tailings, waste rock, slag or historic tailings from the Site without prior approval of the Department.

- f. The Facility shall not exceed the disturbed areas outlined as 'Disturbed Areas (2020)' and 'PERMITTED CLAY BORROW LIMITS' shown in Figure 1, unless written approval is granted by the Department.
- g. This Approval provides for the operation of the Facility at the existing Site only. Any change in location requires further Approval from the Department.
- h. The Approval Holder shall maintain a minimum separation distance of 30 metres between the Facility and outer property boundaries of the Site unless otherwise varied by the Department.
- i. Waste Rock Storage Area stockpiles shall not exceed 170 masl as per recommendations Golder Associates Ltd. Report date April 8, 2020 submitted with the Pit Expansion Amendment Application dated May 7, 2020. Changes to the elevation of the stockpiles shall require written approval of the Department.

3. General

- a. The Approval Holder shall construct, operate and reclaim its' Facility in accordance with the following provisions:
 - i) Environment Act S.N.S. 1994-1995, c.1, s.1 as amended from time to time;
 - ii) Regulations, pursuant to the above Act, as amended from time to time;
 - iii) Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank Systems, 1997 Edition as amended from time to time,
 - iv) The Nova Scotia Environment Contingency Planning Guidelines, May 10, 2016 as amended from time to time, and
 - v) Any standard adopted by the Department, as amended from time to time.
- b. No authority is granted by this Approval to enable the Approval Holder to construct or operate the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur.
- c. If there is a discrepancy in the reference documents or between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval and the most recent Application reference submission of clarification from the Approval Holder shall apply.
- d. Any request for renewal or extension of this Approval is to be made in writing, to the Department, at least ninety (90) days prior to the Approval expiry.
- e. The Minister may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 of the Act.
- f. This Approval is not transferable without the consent of the Minister.

- g. i) If the Minister determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister may cancel or suspend the Approval pursuant to subsections 58A(1) and 58A(2) of the Act, until such time as the Minister is satisfied that all terms and conditions have been met.

ii) If the Minister cancels or suspends this Approval, the Approval Holder remains subject to the penalty provisions of the Act and regulations.
- h. The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including, but not limited to, process changes or waste disposal practices which are not granted under this Approval. An amendment to this Approval may be required before implementing any change.
- i. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations. Written approval from the Minister may be required before implementing any change.
- j. Pursuant to Section 60 of the Act, the Approval Holder shall submit to the Minister any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.
- k. The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- l. The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.
- m. Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.
- n. Unless written authorization is received otherwise from the Minister, all samples required by this Approval shall be analysed by a laboratory that meets the requirements of the Department's "Policy on Acceptable Certification of Laboratories" as amended from time to time.
- o. The Approval Holder shall ensure that this Approval, or a copy, is kept on the Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.
- p. Upon any changes to the Registry of Joint Stock Companies information, the Approval Holder shall provide a copy of the complete information to the Department within 15 days.

4. Particulate Emissions (Dust)

- a. Particulate emissions shall not contribute to an ambient concentration of total suspended particulate matter that exceed the following limits (in micrograms per cubic metre of air) at or beyond the Site property boundaries:

Annual Geometric Mean 70 µg/m³

Daily Average (24 hr.) 120 µg/m³

- b. The use of used oil as a dust suppressant is strictly prohibited. The generation of dust from the Site shall be suppressed as required.

- c. i) The Approval Holder shall establish six ambient air monitoring stations for the total suspended particulate. Stations are situated as identified in drawing Dwg. 1, located in Appendix A attached, entitled "Particulate Emission Monitoring Locations, Nova Scotia Industrial Approval, Touquoy Mine Tailings Management Facility, Halifax County, Nova Scotia, Atlantic Mining NS Corp., prepared by Stantec, February 15, 2017".

ii) These stations shall be monitored annually throughout construction, operation and reclamation, during July - August, including periods of Facility dormancy.

iii) Suspended particulate matter shall be measured by the EPA standard; EPA/625/R-96/010a; Sampling of Ambient Air for Total Suspended Particulate Matter (SPM) and PM₁₀ Using High Volume (HV) Sampler.

iv) Revised and/or additional dust monitoring and reporting shall be conducted at the request of the Department.

v) Results of particulate emission monitoring shall be submitted with the annual report, required in Condition 12 unless otherwise requested by the Department.

- d. i) The Approval Holder shall implement their plan to control fugitive dust emissions from the Facility during all periods of Facility development, operation and reclamation including periods of post reclamation and dormancy.

ii) The plan for dust control shall be implemented to the satisfaction of the Department.

5. Sound Levels

- a. Sound levels measured at stations situated at or beyond the Site property boundaries shall not exceed the following equivalent sound levels (Leq):

Leq 65 dBA 0700-1900 hours (Days)

60 dBA 1900-2300 hours (Evenings)

55 dBA 2300-0700 hours (Nights)

- b. Monitoring of sound levels shall be conducted at the request of the Department. The location of the monitoring station(s) for sound will be established by a qualified person retained by the Approval Holder and submitted to the

Department for approval and may include point(s) to and beyond the property boundary of the Site.

- c. Where it is the opinion of the Department that the Approval Holder has exceeded limits established in Condition 5(a), the Approval Holder will be required to implement a corrective action plan which may include additional noise monitoring. The Approval Holder shall implement immediate corrective actions to mitigate noise if so directed by the Department.
- d. Noise monitoring shall be conducted in accordance with the Department's Guideline for Environmental Noise Measurement and Assessment or future revisions to this Guideline. Noise measurements shall be integrated on the A weighted scale based on a minimum of two hours of continuous sampling during each of the periods of the day as identified in Condition 5(a).
- e. Revised and/or additional noise monitoring and reporting shall be conducted at the request of the Department. The location of the revised and/or additional noise monitoring station(s) will be established by the Department in consultation with the CLC and may include point(s) beyond the property boundary of the Site.

6. Air Emissions

- a. The Approval Holder shall ensure that emissions from the facility do not contribute to an exceedance of the maximum permissible ground level concentrations specified in Schedule "A" of the Air Quality Regulations.
- b. The Approval Holder shall operate the Facility so that air emissions do not result in an exceedance of the ground level concentrations at or beyond the Site boundary listed in Table 1, Appendix B.
- c. Stack Emissions for Particulate Collection Systems, Electrowinning, Carbon Regenerator and Gold Furnace
 - i) The Approval Holder shall meet the air emissions criteria specified in Table 2, Appendix B.
- d. The Approval Holder shall be required to comply with additional ambient air or stack limits established by the Department.
- e. Stack testing shall be conducted and results submitted as directed by the Department to confirm compliance with the limits in Condition 6.
- f. Air Emission Source Program
 - i) The Approval Holder shall prepare a program to conduct source monitoring to verify the dispersion modeling estimates for the parameters of mercury, total suspended particulate, hydrogen cyanide, ammonia, and metals, including arsenic and lead.
 - ii) The program shall be submitted 30 days prior to commencement of operation and implemented in a time frame acceptable to the Department.

iii) The implementation of the program shall be conducted and subsequent analysis shall be performed by a consultant with experience in source testing and ambient air testing and modelling.

iv) Detailed pre-test methods including the test procedures, name of the company performing the work and their previous experience must be submitted to the Department not less than eight weeks prior to the testing, if such testing is required or planned.

v) The results of the program as described in Condition 6(f) of this Approval shall be based upon the operating condition scenario for which the highest concentration of contaminant at ground level would result.

vi) The results of the program shall be submitted to the Department for review and approval.

vii) If results from the program described in Condition 6(f) of this approval demonstrate that the Approval Holder is or may be contributing to an exceedance of the maximum permissible ground level concentrations specified in Table 1, limits in Table 2, Appendix B or Schedule "A" of the Air Quality Regulations, the Approval Holder may be required to conduct additional ambient monitoring or field measurement. The Approval Holder may also be required to prepare and submit, to the Department, an emission reduction plan to prevent non-compliance.

viii) If required, the Approval Holder shall implement the emission reduction plan in a time frame acceptable to the Department to achieve compliance.

g. Air Emission Control Operation and Maintenance

i) Air emissions from the particulate collection systems, electrowinning circuit, gold furnace and carbon regeneration kiln shall be directed to the emission control systems when these units are in operation.

ii) The Approval Holder shall prepare and submit, to the Department, an operation and maintenance manual for the control of air emissions from all emission control equipment including scrubbers, baghouses, demisters, dust collectors, etc.

iii) The manual shall be prepared and submitted prior to commencement of operation of the process units.

iv) The Approval Holder shall maintain records of the inspections on the emission control systems for a period of not less than two years and make them available to the Department upon request.

v) The Approval Holder shall conduct annual inspections of each emission control system to ensure it is in proper operating condition. This shall

include, but not be limited to, an examination of the instrumentation, seals and connections on ductwork and the condition of all vent lines. The Approval Holder shall maintain a record of these inspections on the Site for a period of not less than two years and make them available to the Department upon request.

7. Surface Water

- a. The Site shall be developed and maintained to prevent siltation of the surface water which is discharged from the Site into the nearest watercourse. Additional controls shall be implemented if site runoff exceeds the discharge limits contained in Section 15.
- b. No authority is granted by this Approval to enable the Approval Holder to discharge surface water onto adjoining lands without the authorization of the affected landowner(s). It is the responsibility of the Approval Holder to ensure authorizations are current and valid.
- c. The Approval Holder shall establish and maintain thirty (30) surface water monitoring stations as identified in attached drawing (Appendix C) "IA Surface Water Monitoring Locations 2022" dated July 11, 2022. The stations are described as follows:

SW-1 Moose River - Upstream of Open Pit Mine and Downstream of Processing Facility.

SW-2 Moose River - Downstream of Facility and Upstream of Bridge.

SW-3 Unnamed Tributary (Watercourse #4) to Moose River Downstream of Facility.

SW-11 Moose River - Upstream at Facility Boundary

SW-12 Outlet from Square Lake

SW-13 Outlet from Scraggy Lake at Dam

SW-14 Final (MDMER) Facility Liquid Effluent - Outlet from the Polishing Pond.

SW-15 End of unnamed Tributary to Scraggy Lake south of the Polishing Pond

SW-16 Seepage Collection Point East of Tailings

SW-17 Seepage Collection Point West of Tailings

SW-18 Fish River North of Pughole and Upstream of Bridge

SW-19 Unnamed Tributary to Moose River Upstream of Tailings Management Facility, Downstream of Processing Facility and Waste Rock Storage Area.

SW-20 East of the TMF on an unnamed Tributary to Scraggy Lake

SW-21 Scraggy Lake near the final effluent outfall into the lake

SW-22 Seepage Collection Point North of Tailings

SW-23 Upstream of the Mineral Processing plant on Watercourse #4, an unnamed Tributary to Moose River.

SW-24 Unnamed Tributary (Watercourse #4) to Moose River Downstream of Facility and SW-3.

SW-25 Unnamed Tributary (Watercourse #4) to Moose River Downstream of Facility and SW-3.

SW-26 Northeast of Clay Borrow Waste Rock Storage Stockpile

SW-27 Southeast of Clay Borrow Waste Rock Storage Stockpile

SW-28 Southwest of Clay Borrow Waste Rock Storage Stockpile

SW-DW Tailings Pond water

Stations along Watercourse #4:

WC4+400W

WC4+1200W

WC4+1600W

SW-15P Polishing Pond Seepage Collection Pond.

As identified in Figure No. 1 of the Memo titled "Review and Follow Up Actions for noted GW/SW Monitoring Exceedances at SW-15, Touquoy Mine, NS" dated June 13, 2022, prepared by Stantec:

SW-15A Seepage from the Polishing Pond dam toe (until the Polishing Pond Seepage Collection Pond ditch is installed).

SW-15B Seepage along the tributary flowing from the Polishing Pond dam toe seepage #1.

SW-15C Seepage along the tributary flowing from the Polishing Pond dam toe seepage #2.

Additional surface water stations as specified in the Certificate of Variance

issued November 8, 2021, for a temporary increase in the height of the Waste Rock Storage Area to 190 masl.

The Approval Holder shall provide updated mapping showing the location of all surface water stations by no later than July 15, 2022.

All stations listed in 7. ae) to 7. ag) of this Approval.

d. The Approval Holder Shall:

- i. Conduct surface water quality monitoring during the various stages of the Facility construction, operation and reclamation in accordance with Table 3, Appendix D, for the parameters specified in Appendix G, subject to condition 7(e).
 - (a) All data used to determine natural background (baseline) water quality ranges shall exclude any data collected when construction was occurring upstream from the monitoring station and data which are invalidated because correct sampling procedures were not followed.
- ii. Conduct monitoring at environmentally significant areas for total suspended solids as specified in the Application and identified on Drawing No. 7.2 Stantec dated November 25, 2016 and implement mitigative measures as specified in the Atlantic Gold, Touquoy Mine Project, Environmental Effects Monitoring Plan (EEM) for various phases of the Facility.
- iii. Report surface water monitoring results in a watercourse downstream of site activities based on comparison with:
 - (a) The surface water criteria identified in Column C, Table 6 'Site Water Monitoring Criteria' in Appendix K, for surface water monitoring stations; or
 - (b) For parameters that are shown to have natural background exceedances in surface water reference stations, if a surface water monitoring station result also exceeds the relevant surface water criteria identified in Column C, Table 6 'Site Water Monitoring Criteria' in Appendix K, then the Approval holder shall retain an independent and experienced qualified professional to conduct a statistical trend comparative analysis, using all validated monitoring data for the surface water monitoring station as well as applicable reference surface water stations, to assess whether or not there is an increasing trend due to Site activities. The results shall be considered an exceedance of criteria if there is an increasing trend.
 - (c) Notwithstanding the predicted potential concentrations of parameters from surface water quality modeling submitted in application documents, the Approval Holder shall ensure the following surface water quality compliance limits are not exceeded in a watercourse

downstream of site activities, as determined using the compliance stations denoted in Appendix D.

1) The surface water criteria identified in Column C, Table 6, 'Site Water Monitoring Criteria' in Appendix K, for surface water monitoring stations; or

2) For parameters that are shown to have natural background exceedances in surface water reference stations, if a surface water monitoring station result also exceeds the relevant surface water criteria identified in Column C, Table 6 'Site Water Monitoring Criteria' in Appendix K, then the Approval holder shall retain an independent and experienced qualified professional to conduct a statistical trend and comparative analysis, using all monitoring data for the surface water monitoring station as well as applicable reference surface water stations, to assess whether or not there is an increasing trend due to Site activities. The compliance limit in this case is 'no increasing trend'.

3) WAD cyanide shall be a compliance parameter and compared with the compliance criterion for free cyanide in Appendix K for surface water quality unless free cyanide analysis has been completed and compared to the Appendix K criterion.

- iv. In addition to the water quality compliance limits specified in Appendix K, the Approval Holder shall also comply with the sulphate limits in Table 7 of Appendix L for watercourses surrounding, and downstream or downgradient from the Waste Rock Storage Area (including around the TMF), other than at SW-14, SW-16, SW-17, SW-21, and SW-22.
- v. In the event that surface water results for monthly monitoring are received from the testing laboratory by the Approval Holder that show that the applicable sulphate limit for the reported hardness has been exceeded, the Approval Holder shall undertake the following:
 - (a) Report the exceedance to the Department within 3 days;
 - (b) Within 3 days, commence additional monitoring at each surface water monitoring station where the exceedance occurred, as well as the closest upstream and closest downstream surface water stations, in accordance with the following requirements:
 - 1.) minimum of an additional 5 samples shall be collected over a 30-day period, a maximum of 7 days between individual sampling events, and;
 - 2.) Analysis of these samples for general chemistry and metals.
 - (c) At the end of the 30-day period and within 30 days of obtaining the last sample, the Approval Holder shall determine if the 30-day mean

for sulphate exceeds the applicable criteria and shall forward all results and an analysis with recommendations for the protection of aquatic life, prepared by a qualified aquatic toxicologist, to the Department for review.

- (d) If the 30-day average at any surface water station exceeds the applicable criteria, the Approval Holder shall continue monitoring such that 5 samples are collected over 30 days at the station where the exceedance occurred, as well as at the closest upstream and downstream surface water monitoring stations.

- 1.) The Approval Holder shall continue to send results and an analysis with recommendations for the protection of aquatic life, prepared by a qualified aquatic toxicologist, to the Department within 30 days of each prior 30-day monitoring period, until the 30-day mean is below criteria.

- 2.) The Approval Holder shall resume the monthly monitoring schedule unless these higher frequency sampling requirements are again triggered by an exceedance.

- vi. Notwithstanding the requirements of Section 7.d) of this Approval, the Approval Holder shall also upgrade environmental control measures if surface water monitoring indicates adverse environmental effects are attributable to activities at the Facility, at the discretion and direction of the Department. Environmental control measures shall be upgraded in a manner and time frame acceptable to the Department.

- (a) The Approval Holder shall take all mitigative and remedial measures required to restore surface water quality in the event of non-compliance with the specified water quality compliance criteria in this Approval.

- e. i) The Approval Holder shall conduct monthly surface water quality monitoring at all monitoring stations designated by the MDMER, unless specified otherwise in this Approval.

- ii) Monitoring shall be conducted during construction and for one year following commencement of all operations for parameters specified in the MDMER.

- iii) Thereafter, the frequency of monitoring shall be, at minimum, as specified in Table 3, Appendix D, unless specified otherwise in this Approval.

- f. i) The Approval Holder shall develop a stage - discharge curve for the flow in Moose River surface water monitoring stations SW-11 and SW-2 for the period of June 1 to September 30, to establish the relationship between the water level on the staff gauge and the rate of flow.

- ii) Accepted stream gauging standards such as ISO 748 shall be used in developing the stage discharge curve for both monitoring stations.

iii) A minimum of four measurements shall be made of depth and flow in Moose River at both locations in 2017. At least one measurement shall be made in the period between August 15 and September 3 during a low stage in Moose River.

iv) Flow measurement equipment which is sufficiently sensitive to measure flows in the range of 0.002 cubic metres per second shall be used to determine flows. The capability of flow measurement instrumentation shall be documented in all required reporting for establishment of the stage discharge curve.

v) The staff gauge at both locations shall be recalibrated annually by a person qualified and experienced in low flow hydrology.

vi) In relation to the stage discharge curve, the Approval Holder shall submit a report to NSE by October 31, 2017. The report shall be prepared by a person trained and experienced in low flow hydrology and shall include the following information, as a minimum:

- The stage-discharge curve for both locations, plotted at a scale which clearly shows the low flow end of the curve,
- A best-fit equation describing the low flow stage-discharge relationship,
- A description of the development of the stage discharge curve,
- A description of the location chosen for the monitoring stations.

vii) The Approval Holder shall provide additional information regarding the stage discharge curve and staff gauge at the request of NSE.

g. i) The Approval Holder shall install and maintain two permanent staff gauges for recording surface water flow measurements in Moose River, upstream and downstream of the open pit mine, at an appropriate location near SW11 and SW2.

ii) Water measurements shall be recorded at least daily, to estimate flow through an established stage-discharge curve relationship, beginning no later than July 15, 2017 through September 30, 2017 and from June 1st through September 30th every year after.

iii) Surface water flow data may be measured and recorded using a combination of staff gauge readings and automated data loggers.

iv) If measurements are recorded using data loggers, on at least a bi-weekly basis, the data shall be downloaded, reviewed, and compared to the staff gauge to ensure accuracy of the data loggers. During this data review, the Approval Holder shall compare upstream and downstream flow rates in order to identify potential impacts on Moose River.

- v) The Approval Holder shall notify NSE immediately if significant deviation from baseline or upstream flow is observed in Moose River.
- vi) Data loggers shall be calibrated on at least an annual basis.
- vii) The permanent monitoring stations shall be established no later than July 14, 2017.
- viii) Site selection for placement of the permanent monitoring stations shall be completed by or under the direct supervision of a qualified person trained and experienced in low flow hydrology.
- ix) The staff gauge shall be located such that it will be submerged if there is any flow in the watercourse.
- h. The Department reserves the right to require modifications including, but not limited to, monitoring locations, monitoring frequency and contaminants of concern for surface water. The Approval Holder shall conduct additional monitoring at the direction of the Department.
- i. Revisions to the surface water monitoring program proposed by the Approval Holder shall require prior written approval of the Department.
- j. The Approval Holder shall be required to change environmental control measures if surface water monitoring indicates adverse environmental effects are or may be occurring and are attributable to activities at the Facility.
- k. The Approval Holder shall be required to implement contingency measures to maintain flow in the Moose River or its tributaries if so directed by the Department.
- l. The Approval Holder shall implement the approved Copper Sulphate Management Plan and review it on an annual basis for improvements or revisions. The Plan revisions shall meet the approval of the Department.
- m. The Approval Holder shall retain a 30 metre undeveloped buffer on all adjacent watercourses and wetlands unless specific approval has been given to alter the watercourse/wetland. The Approval Holder shall obtain written authorization from the Department to encroach within these limits unless for the purpose of installing Groundwater Monitoring Wells and in adherence to the following:
- Trail establishment includes vegetation removal only and does not include activities such as grubbing, infilling, grading, or shaping.
 - Trail size shall not exceed the limits required for drill rig access.
 - Vegetation clearing shall not be conducted within the breeding bird window (April 15 to September 30) unless breeding bird surveys and nest sweeps are conducted by a qualified biologist.
 - Wetland boundaries shall be flagged prior to tree clearing. No clearing is to occur within the wetland boundaries.
 - All erosion and sediment control measures shall be installed prior to

commencement of well drilling when drilling near sensitive environmental receptors.

- Waste rock shall not be used to cover the surface of the trail, be used for re-sloping of berms, or for the construction of ramps unless all drainage from it will be collected, contained, and directed for treatment.

- The Approval holder shall identify, report, and avoid any Species at Risk (SAR) when selected well locations.

- n. No later than ninety (90) days prior to commencing construction, the Approval Holder shall submit an application for water withdrawal for all sources from which water is proposed to be withdrawn for the processing facility water supply (startup and makeup once recycling commences). The application shall specify the full anticipated daily maximum and average withdrawal volume and expected duration for startup and makeup water requirements for each water body that is proposed as water withdrawal source. The application shall meet all submission requirements of the NSE "Guide to Surface Water Withdrawal Approvals 2016" or future revisions.
- o. The Approval Holder shall obtain a water approval prior to alteration of the mini-pit and notify the Department at least thirty (30) days prior to the planned removal of fish from the mini-pit.
- p. i) The Approval Holder shall submit, to the Department, a report on surface water quality, to be included with the annual report, no later than April 30 of each year, based on the data from the previous calendar year.

ii) The Approval Holder shall provide additional reporting or modify annual reporting content and/or format if so directed by the Department.

SW-15 Investigation and Mitigation

- q. The Approval Holder shall install a flow totalizer on the pump in the Polishing Pond Seepage Collection Pond, or a weir in the Polishing Pond Seepage Collection ditch, to measure the seepage flow. The flow of seepage shall be recorded daily and provided to the Department as part of the Annual Report.
- r. The Approval Holder shall complete and record weekly inspections of the Polishing Pond seepage at chainage 0+150 for indicators of dam safety (cloudiness, fines migration etc.), noting observations of seepage flow conditions relative to water level in the polishing pond and discharge flow. A summary of the inspections shall be provided by the Engineer-of-Record to the Department as part of the Annual Report.
- s. The Approval Holder shall complete and record weekly inspections of the Polishing Pond emergency spillway east toe berm to assess for any additional signs of seepage/runoff towards SW-15. If additional seepage is observed, the Approval Holder shall report this immediately to the Department. A summary of the inspections shall be provided to the Department as part of the Annual Report.

- t. The Approval Holder shall conduct a fish community survey, in consultation with Department of Fisheries and Oceans (DFO), of the watercourse between SW-15 and SW-15A to assess if fish species are present and at what locations. The assessment shall be submitted to the Department by August 30, 2022.
- u. The Approval Holder shall investigate the source of water quality exceedances at SW-15, including the increase in arsenic levels, to identify other project related sources not identified in Memo titled "Review and Follow Up Actions for noted GW/SW Monitoring Exceedances at SW-15, Touquoy Mine, NS." dated June 13, 2022. A summary of the results of the investigation shall be submitted to the Department by November 30, 2022.
- v. The Approval Holder shall collect and analyze the waste rock used to construct the Polishing Pond, Engineered Wetland and the Emergency Spillway. Samples shall be analyzed for acid base accounting, total sulphur and percent sulphide.
 - i. The sampling plan shall be submitted to the Department by July 29, 2022, and shall be prepared by a qualified professional. The plan shall include collection of samples along the Polishing Pond embankment and drilled boreholes through the downstream rockfill. Additional sampling may be required by the Department.
 - ii. The results of the analysis shall be compared to the historical water quality results from SW-15 and evaluated as to whether there is a relationship between waste rock used in construction and impacts at SW-15. A summary of the results and evaluation shall be submitted to the Department by December 31, 2022.
- w. The Approval Holder shall complete an assessment of potential acute and chronic toxicity to aquatic life at monitoring station SW-15 for all water quality parameters from the 2021 water quality monitoring dataset that may exceed or are exceeding the Approval compliance criteria (Appendix K). The assessment shall be submitted to the Department by September 30, 2022.
- x. By July 18, 2022, the Approval Holder shall retain the services of a qualified geochemist to report on the expected release of arsenic (As) from NPAG mine waste rock which has been or is proposed for use in construction of mine infrastructure and the expected arsenic loading per tonne of waste rock used in construction.
 - i. By September 30, 2022, the Approval shall retain the services of a qualified environmental toxicologist to review the geochemist's report on arsenic leachate from mine waste rock used in construction (NPAG) and provide a report to the Department discussing the short and long term environmental impacts and suitability of continued use of mine waste rock for construction of mine infrastructure in any location where surface water runoff will not be captured and sent to the TMF for treatment
 - ii. By December 31, 2022, the Approval Holder shall provide to the Department the reports from the qualified geochemist and environmental toxicologist on the environmental impacts and suitability for continued use

of mine waste rock for construction of mine infrastructure construction in any location where surface water runoff will not be captured and sent to the TMF for treatment.

- iii. The Approval Holder shall comply with any subsequent written direction from the Department regarding the use of mine waste rock for construction of mine infrastructure, including remedial or reclamation measures to correct impacts related to use of waste rock for mine infrastructure, where surface water runoff will not be captured and treated.
- y. The Approval Holder shall implement mitigation measures to address exceedances for SW-15 to the satisfaction of the Department and in the timeline that may be established by the Department.

Ammonia Treatment in the Effluent Treatment Plant

- z. The Approval Holder shall notify the Department at least 24-hours in advance of initial commissioning of the ammonia treatment system.
- aa. The Approval Holder shall conduct weekly sampling at surface water monitoring stations SW-14, SW-15, and SW-21 for eight (8) weeks after starting the ammonia treatment system. SW-14 can be excluded from sampling, only if the valve to the Engineered Wetland is closed.
 - i. The Approval Holder shall retain an independent qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) to complete a trend analysis with the additional monitoring identified in 7.aa) and provide an interpretation of whether after starting the ammonia treatment system there is evidence of changes in the parameters to be monitored for in Appendix G, and assess results relative to water quality compliance criteria in Appendix K of this Approval. This shall be submitted to the Department in a Technical Memorandum within twelve (12) weeks after starting the ammonia treatment system.
- ab. The Approval Holder shall conduct bi-weekly acute lethality tests at surface water monitoring station SW-14 for eight (8) weeks after starting the ammonia treatment system.
- ac. The Approval Holder shall retain an independent qualified environmental toxicologist to assess the additional monitoring identified in 7.ab) and submit a Technical Memorandum within sixteen (16) weeks after starting the ammonia treatment system to:
 - Evaluate if there is acute toxicity remaining in the effluent after ammonia treatment;
 - Discuss if additional parameters identified in the Ammonia Treatment Amendment Application are responsible for acute toxicity of effluent, requiring treatment; and
 - Evaluate the risk to aquatic life of elevated sulphate and sodium in effluent discharge and at surface water monitoring stations downstream (including SW-15 and SW-21) arising from the ammonia treatment.

TMF Raise

- ad. By no later than November 30, 2022, the Approval Holder shall:
- i. Map the surface water flow in the wetland south of the TMF and along the ATV trail between the TMF Overburden Stockpile and Scraggy Lake shall be mapped using GPS. Mapping of surface water monitoring stations shall be updated with this information.
 - ii. Submit the results of the wetland delineation(s) immediately southwest and/or south of the TMF Overburden Stockpile (between the stockpile and any flowing watercourses or locations of channelized flowing water). Delineation of wetland(s) shall be completed by a certified wetland specialist recognized by the Department. The surface elevation of the saturated zone in the wetland(s) shall be determined by a qualified surveyor and attached to the delineation report.
 - iii. Mapping of the flow pathway and wetland shall be presented on surface water and monitoring station mapping for the site in all reporting thereafter.
- ae. By no later than November 30, 2022, the Approval Holder shall establish a permanent surface water monitoring station in the surface water flow down the ATV trail to Scraggy Lake.

The station shall be located within 25 metres of the following UTM co-ordinates: 506094E, 4979909 N (NAD83, zone 20N), unless an alternative location has been accepted in writing by the Department.

The station shall be labelled SW-29, unless otherwise labeled by the Approval Holder.

- i. The final co-ordinates of the station and a photographic record of the selected location shall be provided to the Department by December 1, 2022.
 - ii. The station shall be added to the regular monthly surface water quality monitoring program starting November 2022 and shall be sampled any time that it is flowing. If it is not flowing, that information shall be recorded and the location of any flow closer to Scraggy Lake shall be recorded.
 - iii. Results for the first 6 months of sampling shall be provided to the Department within 30 days of the result being received from the lab.
- af. By no later than November 30, 2022, the Approval Holder shall provide ground-truthed mapping of the un-numbered watercourse shown on Stantec maps such as, Figure 1 of Appendix H report titled "Tailings Management Facility Groundwater Investigation Report" dated May 12, 2022, appended to the report titled "2021 Annual Report – Surface Water and Groundwater Monitoring" dated May 31, 2022, located southwest of the TMF overburden stockpile. Mapping shall be completed from its source area (starting at the estimated upstream

location at UTM co-ordinates 505823 E, 4979978 N (NAD83, zone 20N), approximately 130 metres southwest of the TMF between Watercourse #4 and the TMF), downstream to a point sufficient to confirm its location and which lake it flows to, relative to existing Stantec mapping.

- i. By no later than November 30, 2022, the Approval Holder shall establish a surface water monitoring station on the specified watercourse, within 100 metres of 505823 E, 4979978 N (NAD83, zone 20N) and shall provide the final UTM co-ordinates of the station to the Department by no later than December 15, 2022.

The station shall be labelled SW-30, unless otherwise labeled by the Approval Holder.

- ii. The station shall be added to the regular monthly surface water quality monitoring program starting December 2022.
- iii. Results for the first 6 months of sampling shall be provided to the Department within 30 days of the result being received from the lab.

- ag. By no later than November 30, 2022, the Approval Holder shall establish an additional surface water monitoring station on Watercourse #13 within 50 metres of the following UTM co-ordinates: 506688E, 4980832 N (NAD 83, zone 20T).

The station shall be labelled SW-31, unless otherwise labeled by the Approval Holder.

- i. The station shall be added to the regular monthly surface water quality monitoring program starting December 2022.
- ii. Results for the first 6 months of sampling shall be provided to the Department within 30 days of the result being received from the lab.

- ah. By no later than November 30, 2022, the Approval Holder shall provide a report prepared by a qualified person licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS), which meets the following requirements:

- i. Provide a summary of the date ranges used in the 2021 Annual Report, and submissions in support of the 2022 TMF Raise Application, for baseline conditions at each surface water station and a comparison of the date ranges when mine construction was occurring upstream within the station's watershed, including mine roads.
- ii. Remove data from the baseline dataset which have dates overlapping the start of upstream mine road and facility construction within the station's watershed.
- iii. Re-evaluate the baseline ranges and determine upper 95th percentile baseline values for each parameter at each surface water station established prior to construction.

- iv. If the dataset is too small, reference pre-development data collected in support of the Environmental Assessment Approval from 2008.
- ai. By no later than January 30, 2023, the Approval Holder shall provide an addendum to the Minnow report titled "Surface Water Quality Predictions for the Proposed TMF Expansion, Touquoy Gold Mine" dated May 17, 2022, submitted with the TMF raise application. The addendum shall meet the following requirements:
 - i. Provide predictions for worst case conditions when the primary flow in the watercourse is baseflow from groundwater, considering flow statistics for the period between mid-August and September 7.
 - ii. Clarify how the surface water modelling addresses the potential difference between seepage model predictions and actual seepage rates which are reported to be 'within an order of magnitude' based on monitoring of seepage collection ditching.
 - (a) Evaluate the seepage model output ranges based on the potential for higher seepage rates going under the TMF ditching if the seepage estimates are an order of magnitude higher than modelled.
 - iii. Provide sensitivity analysis to determine which inputs are the most important in determining model outputs and identify if additional data for some parameters would significantly reduce uncertainties in the model.
 - iv. Provide an uncertainty analysis, based on uncertainties in input values propagated through the model to show the potential range of surface water quality.
 - v. Revise the comparison of results to baseline conditions based on revised surface water baseline data as required by this Approval.
- aj. By no later than December 30, 2022, the Approval Holder shall provide a report prepared by a qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) which meets the following requirements:
 - i. Evaluate the reasons for increasing concentrations of parameters (such as arsenic) in excess of Approval compliance limits, as well as other associated increasing parameters, at SW-20, with the objective of identifying a source.
 - ii. Identify any additional investigation required and timelines to complete investigation and determine mitigative measures which are required to prevent further increases in concentrations of parameters to concentrations above Approval compliance limits at SW-20.
- ak. The Approval Holder shall provide updated mapping showing the location of all surface water stations by no later than January 30, 2023.

8. Groundwater

a. The Approval Shall:

- i. Establish and maintain forty (40) groundwater monitoring stations at the locations as identified in the following drawing; "Groundwater Monitoring Locations" dated May 11, 2021 (Appendix E attached), as well as the additional stations required to be installed within this Approval and other stations referenced in Appendix F. The two additional domestic water wells situated at the museum and office shall be included in the program until decommissioned, unless otherwise authorized by the Department in writing.
- ii. Add an additional monitoring well, identified as TMW-9A/B on Figure SK-44 dated June 15, 2018 prepared by Stantec, shall be installed and situated in shallow fractured bedrock along strike of slates to the southwest of the quarry. The installation shall be subject to conditions 8(a)(iv), (v), (vi) and (vii) and be installed and monitored prior to the first quarry blast.
- iii. Install monitoring wells, referenced in Figure 3, entitled "Proposed Groundwater Monitoring Locations, Touquoy Gold Project, DDV Gold Ltd., Moose River Gold Mines, Nova Scotia" prepared by Conestoga Rovers & Associates dated August 30, 2013, shall be installed no less than 275 days prior to commencement of operation.
- iv. Ensure monitoring well drilling and installation shall be overseen by a qualified hydrogeologist experienced in monitoring well installation and licensed to practice in Nova Scotia by the Association of Professional Geoscientists of Nova Scotia (APGNS) or the Association of Professional Engineers of Nova Scotia (APENS).
- v. Ensure monitoring well pairs shall consist of at least one monitoring well installed to intercept the water table and one monitoring well installed in shallow fractured bedrock.
- vi. Ensure that the elevation of the top of well casing shall be surveyed relative to an appropriate fixed reference point at the Site which is also referenced to mine water levels.
- vii. Within 30 days of completion of monitoring well installation, a borehole log showing well construction shall be provided to the Department.
- viii. The additional monitoring wells, identified as SSP-1, SSP-2, and SSP-3 on the figure attached to an email from B. Booth, Atlantic Gold Corporation, to C. Hynes, NS Environment, dated February 19, 2020, entitled 'Re: Proposed Scraggy Stockpile Wells', shall be installed within 30 days of the issuance of this Amended Approval 2012-084244-06. Borehole logs showing well construction details shall be provided to the Department within 45 days of issuance of this Approval.

- (a) The additional monitoring wells shall be developed within 45 days and sampled within 60 days of issuance of this Approval. Results of initial sampling shall be provided to the Department within 75 days of issuance of this Approval.
- ix. All stations listed in 8.q) to 8.r) of this Approval.
- b. Groundwater Monitoring:
 - i. The Approval Holder shall complete groundwater quality monitoring for the stations, referenced in condition 8(a)(i), during the various stages of Facility development including pre-construction, construction, operation, reclamation and post-reclamation in accordance with Table 4, Appendix F, for the parameters specified in Appendix G.
 - (a) The Approval Holder shall complete bi-monthly (every 2 months) groundwater quality monitoring at WRW-6A/B, WRW-7A/B, WRW-8A/B, WRW-9A/B, WRW-10A/B, WRW-11A/B and WRW-12A/B for the parameters specified in Appendix G.
 - (b) The Approval Holder shall retain an independent qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientist Nova Scotia (GNS) to complete an interpretation of the monitoring results discussed in 8.b.i.(a) and shall be submitted to the Department by October 30 of each year, until otherwise directed by the Department. The report shall include a summary of the effectiveness of the WRSA ditch upgrade and shall include recommendations for any additional mitigation measures.
 - 1) The first submission shall cover the period from January-June 2022 and shall be submitted by October 30, 2022.
 - 2) Subsequent submissions shall cover the period of July-June and shall be submitted by October 30 annually.
 - ii. All groundwater monitoring stations shall be monitored for static water level on at least a monthly basis, unless otherwise directed by NSE or specified within the terms and conditions of Approval.
 - iii. Data loggers:
 - (a) Shall be maintained in groundwater monitoring stations OPM 1A/B, OPM 2A/B, OPM 3A/B, OPM 5A/B, OPM 6A/B, and OPM 7A/B with readings recorded on an hourly basis, as a minimum.
 - (b) Results shall be downloaded and reviewed by a trained independent consultant on a monthly basis, as a minimum, in order to identify impacts on the water levels associated with the open pit mine.
 - (c) Shall be calibrated on at least an annual basis.

- iv. Water level measurements and water quality samples shall be collected by qualified personnel in a consistent manner in accordance with accepted best practises for groundwater monitoring.
- v. Results from all sampling of monitoring wells shall be compared to both 'Monitoring Wells' columns (Columns A and B) of Table 6 'Site Water Monitoring Criteria' in Appendix K.
- vi. For the wells identified in Table 4 of Appendix F as compliance wells, the Approval Holder shall maintain compliance at all times with the following:
 - (a) For monitoring wells <10 metres from a watercourse (including wetland and water body which may flow to a watercourse): all criteria specified in Column A in Table 6 'Site Water Monitoring Criteria' in Appendix K, unless baseline exceeds the criterion for the parameter.
 - (b) For monitoring wells 10 metres or greater from a watercourse (including wetland and water body which may flow to a watercourse): all criteria specified in Column B in Table 6 'Site Water Monitoring Criteria' in Appendix K, unless baseline exceeds the criterion for the parameter.
 - (c) If a baseline monitoring period is available for the well, and baseline exceeds the criterion for the parameter, the following compliance level shall apply:
 - 1) If the 95th percentile parameter baseline value exceeds the criterion for the parameter, a statistical trend analysis (e.g., Mann-Kendall), using all validated monitoring data for that parameter in the monitoring well, shall be used to assess whether there is an increasing trend due to Site activities. The compliance limit in this case is 'no increasing trend'.
 - (d) If a monitoring well does not have a baseline monitoring period, or does not have validated baseline data for that parameter as accepted by NSE, and the monitoring result exceeds the criterion for that parameter, the following compliance shall apply:
 - 1) A statistical trend analysis (e.g., Mann-Kendall) shall be used to assess whether there is an increasing trend due to Site activities. The compliance limit in this case is 'no increasing trend'.
- vii. If a non-compliant result occurs pursuant to Condition 8.b.vi) above, the Approval Holder shall:
 - (a) Report the non-compliance and the result to the Department in writing within 28 days of receipt of lab results; and
 - (b) Retain an independent qualified and experienced professional to:
 - 1) Within 3 months of a non-compliant result, delineate the lateral

and vertical extent of groundwater which is out of compliance with the limits set in Appendix K, Table 6: "Site Water Monitoring Criteria"; this shall be done through installation of properly constructed groundwater monitoring wells until either:

i) Wells are in place downgradient along the projected centerline and at the lateral and vertical boundaries of the impacted groundwater plume, which demonstrate that groundwater at and downgradient of them is consistently in compliance with all limits; or

ii) Groundwater impacts to surface water are confirmed; and

iii) A program for monitoring surface water has commenced which is likely to detect any impacts related to discharge of a groundwater plume, and is demonstrating that surface water is consistently in compliance with the surface water criteria of this Approval, to the satisfaction of the Department; and

iv) A program for monitoring sediment has commenced which is likely to detect any impacts to sediment related to discharge of a groundwater plume, to the satisfaction of the Department; and

2) Provide the Department with a Corrective Action Plan that will prevent the on-going release of impacted water and remediate any impacted groundwater, surface water or sediment that has the potential to continue to migrate or which may cause an adverse effect. The Plan shall include an estimated schedule for execution starting no later than 3 months following the first non-compliance; and

3) Revise the Corrective Action Plan as per any direction provided by the Department and in the time required by the Department; and

4) Execute the Corrective Action Plan; and

5) Upon completion of the Corrective Action Plan, provide a report prepared by the independent qualified and experienced professional, documenting the details of the non-compliance, all actions taken in response to the non-compliance, analytical results confirming compliant conditions upon completion of remediation activities and any on-going remedial, release prevention and monitoring measures required at the site in response to the non-compliance.

viii. For the wells identified in Table 4 in Appendix F as compliance wells: if the well is 10 metres or greater from a watercourse (including wetland or water body that may flow to a watercourse) and the monitoring results for any parameter do not exceed the comparator in Column B, but have exceeded any of the comparators in Column A, in Table 6 'Site Water Monitoring

Criteria' in Appendix K, then the Approval Holder shall take the following actions:

- (a) Within 90 days of obtaining any monitoring result which exceeds the comparator:
 - 1) Retain the services of a qualified environmental professional working under the direct supervision of a hydrogeologist to:
 - Inspect the well and confirm integrity or repair or replace the well in the existing location as required prior to the next required monitoring event to ensure representative groundwater monitoring results; and
 - Conduct a statistical trend analysis (e.g., Mann-Kendall), using all validated monitoring data for that parameter in the monitoring well, to assess whether there is an increasing trend due to Site activities; and
 - If results show an increasing trend, install an additional monitoring well directly downgradient, between the impacted well and the watercourse (including wetland or water body which flows to a watercourse); and
 - Within 30 days of installation of any new well(s) as described above, add the new well to the groundwater monitoring program for the duration of this Approval. All requirements of this Approval shall subsequently apply to the new well, including the Conditions defining compliance requirements for groundwater; and
 - Continue monitoring of all wells including those which have had an additional well installed downgradient from them.
 - (b) Within 120 days of obtaining results which exceed the comparator and show an increasing trend, provide to the Department written notification pursuant to the requirements of this Approval; and a copy of the Well Log for any new or replacement well, to the Department.
- ix. Notwithstanding the requirements of Conditions 8.b)v, vi , vii and viii, the Approval Holder shall also upgrade environmental control measures if groundwater monitoring indicates adverse environmental effects are attributable to activities at the Facility, at the discretion and direction of the Department. Environmental control measures shall be upgraded in a manner and time frame acceptable to the Department.
- x. The Approval Holder shall comply with the limits for groundwater quality specified in Appendix K for all groundwater surrounding, and downstream or downgradient from the Waste Rock Storage Area (including around the TMF). In addition, in the event of exceedances of the compliance limits specified in Appendix K for the new stations specified in the Certificate of

Variance issued November 8, 2021, for a temporary increase in the height of the Waste Rock Storage Area to 190 masl, the Approval Holder shall comply with Sections 8(b)v through ix of this Approval as applied to the new stations.

- xi. In addition to the water quality compliance limits specified in Appendix K, the Approval Holder shall also comply with the following limits for groundwater:
 - a) Groundwater within 10 metres of a watercourse: Sulphate shall not exceed the limits for surface water.
 - b) Groundwater: Sulphate shall not exceed 500 mg/L.
- c.
 - i) The Approval Holder shall submit an updated Groundwater Contingency Plan that addresses the Departments comments sent in May 2017. The plan shall be submitted for approval on or before October 1, 2018. The revised plan shall include the establishment of actual Action Levels for key groundwater and surface water parameters which trigger the activation of the Contingency Plan. The plan shall include a comparison of the Action Level with appropriate Nova Scotia, Environmental Quality Standards (EQS) and CCME Water Quality Guidelines for the Protection of Aquatic Life (Freshwater).
 - ii) The Approval Holder shall clearly establish and identify the baseline monitoring results and Action Levels for groundwater and surface water monitoring stations. These results shall be used for the purpose of comparison with ongoing monitoring results and be included with the annual report starting April 30, 2017.
 - iii) The Approval Holder shall implement the approved Groundwater Contingency Plan at the direction of the Department.
 - iv) The Approval Holder shall ensure that any replacement water supplied for potable water use, to address the plan, shall meet the quantity and quality requirements of Health Canada drinking water, health and aesthetics objectives and be supplied in accordance with provincial regulations and guidelines.
- d.
 - i) The Approval Holder shall submit, to the Department, a report on groundwater monitoring, with the annual report, no later than April 30 of each year based on the data from the previous calendar year.
 - ii) Results of groundwater monitoring shall be submitted to the Department upon request.
- e.
 - i) The Approval Holder shall undertake a review of the monitoring well logs for the groundwater monitoring wells surrounding the TMF, in comparison to anticipated seepage depths, groundwater elevation, and hydraulic conductivity of the bedrock to ensure that monitoring well screens are appropriately placed to capture seepage from the TMF. The review shall be undertaken by a

Professional Hydrogeologist licensed to practice in Nova Scotia by APENS or APGNS.

- ii) Results and recommendations associated with condition 8(e)(i) shall be submitted to the Department on or before April 30, 2017.
- f. The Approval Holder shall install additional monitoring wells at the request, and in a time frame, acceptable to NSE.
- g. The Approval Holder shall be required to prepare and implement a plan to mitigate unacceptable seepage from the TMF and/or groundwater impacts at the direction of the Department.
- h. Revisions to the groundwater monitoring program, proposed by the Approval Holder, shall require written approval of the Department.
- i. By no later than October 30, 2022, the Approval Holder shall submit to the Department, for review and acceptance, a proposed site-specific limit for any parameters listed that exceed the 95th percentile of the baseline data and are interpreted to be background.

TMF Raise

- j. By no later than November 30, 2022, the Approval Holder shall have a qualified and experienced hydrogeologist licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) review and submit a re-evaluation to the Department of groundwater equipotential mapping from the 2021 Annual Report, Figures 3.15 to 3.18.
 - i. The report shall re-evaluate the Figures' connections of groundwater equipotential lines across Watercourse #4 and wetlands between the Scraggy Lake Overburden Stockpile and the west / southwest TMF area, particularly including those where groundwater head is depicted as increasing along Watercourse #4 to the south, opposite to surface water flow. Interpreted as closed 'low' equipotential contours around TMW-7A and TMW-7B shall be re-evaluated with respect to topographical elevations, hydraulic head in the TMF, water table elevations in the wetland and Watercourse #4 and the measured groundwater elevations in the wells; and surface water flow directions (to the south).
 - ii. Equipotential lines shall be re-interpreted as required in order to provide a credible depiction of likely groundwater flow directions.
- k. By no later than November 30, 2022, the Approval Holder shall have a qualified and experienced hydrogeologist licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) review and submit a report to the Department which re-evaluates the description that wells TMW-14A/B and TMW -1A/B are 'upgradient' as reported by Stantec on page 20 of Appendix H report titled "Tailings Management Facility Groundwater Investigation Report" dated May 12, 2022 appended to the report titled "2021 Annual Report – Surface Water and Groundwater Monitoring" dated May 31,

2022. The re-evaluation shall consider the head of water in the TMF with respect to the interpretation of potential TMF seepage flow directions, potential for radial flow away from the TMF, topography, surface water flow directions, and shallow groundwater flow directions between the TMF and the monitoring wells and watercourses on the east side of the TMF. The re-evaluation shall consider potential for migrating TMF seepage in shallow till or fractured bedrock underlying the TMF seepage ditches, and groundwater discharging to Watercourse #14 or Watercourse #4. The re-evaluation shall include revision to the interpretation of water quality results in the TMF investigation analysis based on re-consideration of the head of TMF wastewater in addition to groundwater elevations in monitoring wells.

- I. By no later than October 30, 2022, the Approval Holder shall provide to the Department:
 - i. Any requests for amendment to address stated concerns about challenges with the achievability of Conditions 8.b) of this Approval, shall include a detailed justification from a qualified Hydrogeologist licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) as to why these are not achievable, and shall propose alternatives, with timelines, that will result in delineation and correction of groundwater impacts caused by the Facility in excess of Approval compliance criteria.
 - ii. A detailed description of the hydrogeological investigation which has been reported by AMNS to be underway to investigate the increasing impacts to groundwater quality in the vicinity of TMW-15A/B.

Rationale for the selection of well location (for TMW-17A/B and TMW-18A/B) and screen placement in these wells.

Details of the hydrogeological information being collected.

Details of how the new information will be integrated with existing sources of information relevant to water quality and flows in the area of the TMF overburden stockpile

- (a) The investigation shall include:

Consideration of all information about surface water and groundwater quality, water table, and surface water elevations and measured hydraulic conductivity of all subsurface units, including data gathered for geotechnical purposes, and

Data from piezometers within and in bedrock below the TMF dam and southwest dam drumlin, all water and seepage quality and water level monitoring results to date for the TMF, groundwater monitoring and surface water quality monitoring, and results from all reported water quality incidents including December 2020 flows of discoloured

water acutely toxic to fish in the area south of the overburden stockpile, along the ATV trail to Scraggy Lake.

- iii. Details of how the information being collected, all available existing information, and groundwater modelling planned will be used to evaluate:
 - the sources of existing impacts and
 - the probability of, and expected timing, that groundwater quality and surface water quality outside the footprint of the TMF dam will further exceed compliance limits set within the Approval without mitigative measures and corrective actions.

Details of how the planned work will lead to the achievement of compliance with all requirements of the IA in groundwater outside the TMF dam, including returning to compliance with the requirement for submission of a Corrective Action plan for existing exceedances of Column B compliance limits as required by this Approval in Section 8b, with timelines.

- iv. Identification of corrective actions and mitigative measures to be implemented for all impacts to water quality at TMW-15A/B and downgradient, and details of the proposed timelines for completion of the work, for review and acceptance by the Department.
 - (a) Mitigation and corrective action plans shall be undertaken if impacts are related to geochemical changes (such as redox condition changes) arising from the presence of the TMF and/or the overburden stockpile, and/or are related to waste rock used in construction and/or if they are related to seepage of tailings pore water from the TMF; and
 - (b) The Approval Holder shall revise the timelines and mitigation and action plans if so, directed by the Department.
- v. Reporting on design, calibration and results of a groundwater model that predicts the earliest date when tailings pore water seepage from the TMF may arrive in groundwater outside the TMF in concentrations exceeding Approval compliance criteria.
- m. By no later than December 30, 2022, the Approval Holder shall provide a report prepared by a qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) that includes the following:
 - i. A detailed description of available site-specific mitigative measures to protect groundwater (and surface water) quality outside the TMF, which are feasible given the site geology and hydrogeology, and which can be put in place prior to seepage impacts in excess of groundwater compliance criteria arriving outside the footprint of the TMF dam.
 - ii. Information on any additional data collection which will be required to design and implement these measures.

- iii. A timeline for when mitigative measures are expected to be implemented (based on groundwater model predictions) and how long it will take to do so.
 - iv. A timeline for further monitoring which will be required to evaluate the effectiveness of implemented mitigation measures.
 - v. Estimated costing for design, implementation, and monitoring elements of this mitigation plan.
 - vi. Indication of how costing for potential future water quality mitigation measures can be included in reclamation bonding estimates going forward.
- n. By no later than November 30, 2022, the Approval Holder shall make an application for any wetland alterations or additional authorizations related to separation distances specified in the Approval which may be necessary to install additional groundwater monitoring stations required by this Approval.
- o. By no later than March 30, 2023, the Approval Holder shall install a shallow monitoring well, screened as shallowly as possible at or close to intercepting the water table, for the purpose of water quality sampling and water level monitoring within or immediately adjacent to the wetland, between the TMF overburden stockpile and the surface water flow down the ATV trail to Scraggy Lake, within 25 metres of the following UTM co-ordinates:

506118 E, 4979930 N (NAD83, zone 20N) (to be labelled TMW-19A)

The equipment used for installation of the monitoring wells shall avoid permanent disturbance of the natural environment for the purpose of access.

Tree removal shall be the minimum required for access.

The work shall be conducted by a tracked vehicle in fully frozen conditions and no road construction or rutting is permitted.

The well log, results of the initial sampling following well development, and a detailed map showing the well location relative to the TMF overburden stockpile, wetlands, watercourses and flowing surface water shall be provided to the Department within 30 days of well installation.

The well shall thereafter be added to the regular quarterly groundwater monitoring program.

- p. By no later than January 30, 2023, the Approval Holder shall install additional monitoring well pairs within no more than 25 metres of each of the following locations:

505732 E, 4980753 N (between TMW-7A/B and TMW-8A/B; to be labelled TMW-20A/B)

505834 E, 4980166 N (to be labelled TMW-21A/B)

505911 E, 4980073 N (to be labelled TMW-22 A/B)

506003 E, 4980005 N (to be labelled TMW-23A/B)

- q. All required well pairs shall be constructed in compliance with Conditions 8.a.iv,v,vi) and vii) of this Approval.
- i. Any deviations from Condition 8.a.v shall be supported by information prepared by the Hydrogeologist with a description of the hydrostratigraphy encountered and the reasons that monitoring well screen placements do not meet this condition.
- r. The Approval Holder shall complete slug tests in the newly installed wells around Waste Rock Storage Area (WMW-6A/B, WRW-8A/B, WRW-9A/B, WRW-10A/B, WRW-11A/B and WRW-12A/B) and the TMF (TMW-17A/B and TMW-18A/B) to obtain additional hydraulic conductivity data for this area. An interpretation of these results and report shall be prepared by an independent qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) and shall be submitted to the Department by October 30, 2022, as recommended in the 2021 Annual Report – Surface Water and Groundwater Monitoring dated May 31, 2022.
- s. The Approval Holder shall retain an independent qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) to:
- Characterize the seepage water from observed dam seepage locations, seepage collection ponds, tailings pond and polishing pond, and
 - Compare the results of the tailings water chemistry to the groundwater quality from the TMW wells.
- The report shall be submitted to the Department by November 30, 2022.
- t. The Approval Holder shall retain an independent qualified professional licensed to practice in Nova Scotia by Engineers Nova Scotia (ENS) or Geoscientists Nova Scotia (GNS) to conduct detailed analytical calculations on groundwater flow/transport in the vicinity of TMW-12A/B, TMW-5A/B, TMW-16A/B and TMW-17A/B to further investigate the localized groundwater high at that location and the potential downgradient effects, by November 15, 2022.
- u. The Approval Holder shall submit quarterly comparisons, unless otherwise directed by the Department, of the tailings water quality to the geochemical results at the five wells located in the southwest corner of the TMF (TMW-12A/B, TMW-15A/B, TMW-16A/B, TMW-17A/B and TMW-18A/B). The first quarterly report is due to the Department by November 30, 2022.
- i. The first quarterly report is due to the Department by November 30, 2022, and shall cover the period of Q1 to Q3 2022.

- ii. Subsequent reports shall cover quarterly periods and be delivered quarterly starting February 28, 2023.
- v. The Approval Holder shall provide updated mapping showing the location of all surface water stations by no later than February 28, 2023.

9. Spills or Releases

- a. Spills or releases shall be reported in accordance with the Act and the Environmental Emergency Regulations.
- b. Spills or releases shall be cleaned up in accordance with the Act and the Contaminated Sites Regulations.

10. Construction

- a. Erosion and sedimentation control devices shall be installed prior to construction at the Site and shall remain in place and be maintained until disturbed areas are stabilized.
- b.
 - i) The Approval Holder shall follow the “Erosion and Sediment Control Plan – Update, Touquoy Gold Project, Moose River Gold Mines, Nova Scotia” dated June 30, 2020 prepared by Stantec Consulting Limited, as amended from time to time. Any revisions to the above referenced plan, shall be submitted to the Department for review.
 - ii) The Approval Holder shall follow the “ATLANTIC GOLD CORPORATION Rain Event Monitoring Protocol AGC – PRO – ENV 006” prepared by AMNS, dated June 30, 2020, as amended from time to time. Any revisions to the above referenced protocol, shall be submitted to the Department for review.
 - iii) An Annual Monitoring Report documenting all sediment and erosion control efforts as well as rain monitoring activities is to be submitted to the Department on or before April 30 of each year, with the first report due by April 30, 2021. These reports shall include details on any advice or direction provided by Independent Professionals required by Condition 10.c) of the Approval.
- c. The Approval Holder shall retain the services of an independent professional engineer to inspect, design, report and/or advise on the status of soil erosion and sedimentation controls during construction and, if so directed, during other phases of operation and reclamation.
- d. All proposed TMF dams shall be constructed with a low permeability core, consisting of compacted clay till having a hydraulic conductivity no greater than 1×10^{-6} cm/sec.
- e. The TMF shall be constructed in accordance with the Stantec Technical Specifications October 7, 2016 and Stantec Quality Management Plan dated November 25, 2016 or as revised and reported to the Department. The construction shall include a seepage control blanket with tailings beach along the upstream main tailings pond dam separating the polishing pond.

- f. i) No less than thirty (30) days prior to construction of each component identified below, the Approval Holder shall provide copies of the final construction design engineering drawings stamped by a professional engineer licensed to practice in the Province of Nova Scotia:
- Soil Erosion and Sedimentation Control Plan (continuous during 5 construction phases, including the final construction and post reclamation stages)
 - Secondary Containment for Dangerous Goods Handling,
 - Containment Cell(s) for Historic Tailings,
 - Effluent Treatment Plant,
 - Mill Wastewater Treatment for Arsenic Reduction
 - Inco SO₂/air process for Cyanide Destruction,
 - Air Emission Control Systems for particulate collection and on the Gold Furnace, Carbon Regeneration Kiln and Electrowinning Circuit,
- ii) The Approval Holder shall be required to revise the construction design drawings if so directed by the Department.
- iii) The Approval Holder shall obtain written certification by a professional engineer that all construction or installation has been conducted in accordance with the terms and conditions of this Approval and has met the minimum requirements of all drawings and specifications for the components listed in 10.f.i).
- iv) A copy of this certification must be provided to the Department six (6) weeks prior to the operation or use of the component or 6 weeks following completion of installation, whichever comes first.
- v) The certification must confirm that all as-built drawings and any other relevant documentation have been provided to the Approval Holder by the engineer.
- g. Erosion control materials shall be comprised of clean, non-erodible, non-ore bearing, non-watercourse derived and non-toxic materials. Any rock used for construction which lies outside the TMF drainage catchment shall be tested for acid rock drainage and metal leaching potential. Records of such testing shall be held for inspection by the Department for the life of the project.
- h. All work operations shall be conducted in a manner to protect the watercourses/wetlands and groundwater from siltation and disturbance to the adjacent and downstream areas. Silted water is not to be released directly into a watercourse/wetland.

- i. i) Separate watercourse/wetland alteration Approval(s) shall be obtained by the Approval Holder from the Department prior to causing alteration or disturbance of the watercourse/wetland.
 - ii) No less than ninety (90) days prior to wetland alteration the Approval Holder shall submit for review and approval a Wetland Protection Plan which has been developed in consultation with Nova Scotia Department of Natural Resources Wildlife Division.
 - iii) As part of the application, under the Environment Act, for approval to alter a wetland, the industrial Approval Holder shall submit, a wetland compensation plan for wetlands situated within the footprint of the TMF and the engineered wetlands treatment system.
 - iv) The compensation plans shall be submitted for review and approval at least ninety (90) days prior to the wetland alteration. The time frame for implementation of the approved plans shall be acceptable to the Department and Nova Scotia Department of Natural Resources.
- j. Any overland flow which has the potential to enter the construction area is to be diverted away from the construction site, into vegetated areas a minimum of 30 metres from any watercourse and/or wetland, where it will not enter a watercourse/wetland.
- k. All excavated material shall be placed in a location where it will not adversely impact a watercourse/wetland.
- l. The Approval Holder shall ensure that topsoil / organic material resulting from construction remains segregated and stabilized for reclamation use at the Facility and Site reclamation.

Clay Borrow Waste Rock Storage

- m. The Clay Borrow Non-Acid Generating (NAG) Waste Rock Stockpile and ditching footprint shall be limited to the area southwest of the line between the Golder testpits TP21-05 and TP21-06 on Figure 1 titled "Investigation Location Plan" from the Golder Report titled "Touquoy Mine Temporary Clay Cut Waste Rock Stockpile" dated August 31, 2021, unless the Approval Holder receives written authorization from the Department for any additional authorized footprint.
 - i. Prior to any request to increase of the footprint of the Clay Borrow Waste Rock Stockpile to areas east and northeast of the line between the Golder testpits TP21-05 and TP21-06, the Approval Holder shall submit additional characterization and design information demonstrating that the area underlying the waste rock and the surface water collection ditching has, or will be constructed to have, a hydraulic conductivity (permeability) of less than 1×10^{-6} cm/s, to the satisfaction of the Department.
 - ii. The Approval Holder shall comply with any additional requirements of the Department with respect to any expansion of the footprint of the Clay

Borrow Waste Rock Stockpile into the areas east and northeast of the line between the Golder test pits TP21-05 and TP21-06.

- n. The Clay Borrow Waste Rock Stockpile water collection ditch shall be:
 - i. Constructed as per the DesignPoint Engineering & Surveying submission dated December 9, 2021, titled "Moose River Gold Mine: Clay Cut Ditch Design Methodology" and subsequent design updated submission dated June 17, 2022, titled "Design Memo - Clay Cut Borrow Waste Rock Stockpile Water Collection Ditch - Moose River, NS" that includes surface water infrastructure sized for a 1:100 year storm event.
 - ii. Constructed with continuous positive drainage such that there are no low points/ponds along its length in which water can collect or infiltrate.
 - iii. Constructed under the supervision and certified by a Geotechnical Engineer licensed to practice in Nova Scotia.
 - iv. The proposed collection ditch and foundation of the stockpile shall be constructed with a low permeability core, consisting of compacted clay till having a hydraulic conductivity no greater than 1×10^{-6} cm/sec.
- o. The Approval Holder shall submit written certification by a professional engineer that all construction of the Clay Borrow Waste Rock Stockpile water collection ditch and foundation has met the minimum requirements of all drawings and specifications, including any additional requirements established by the Department within this Approval, six (6) weeks following completion.
- p. No later than January 5, 2022, the Approval Holder shall submit a figure that includes GPS locations for additional monitoring wells and stations around the perimeter of the Clay Borrow Waste Rock Stockpile. The locations of the additional monitoring wells and stations must be deemed acceptable by the Department prior to installation.
- q. Prior to placement of any waste rock within the Clay Borrow Waste Rock Stockpile, the Approval Holder shall install, develop, and sample additional monitoring wells at the locations identified in Term and Condition 10.p).
- r. Wells shall comply with all requirements of Terms and Conditions in Section 8 of this Approval.
- s. No later than 15 days after initial storage of waste rock in the Clay Borrow Area, the Approval Holder shall submit figures and data that includes station labels, borehole logs, static groundwater level data, GPS locations for additional monitoring wells and surface water monitoring stations around the perimeter of the Clay Borrow Waste Rock Stockpile. The locations of the additional monitoring wells and surface water monitoring stations must be deemed acceptable by the Department prior to installation.
- t. After initial sampling, the new wells shall be added to the regular groundwater monitoring and reporting program under this Approval.

- u. After initial sampling, the new surface water stations shall be added to the regular surface water monitoring and reporting program under this Approval.
- v. The Clay Borrow Waste Rock Stockpile shall not be stored for a period longer than one (1) year after initial placement of waste rock. Storage beyond one (1) year will require written authorization by the Department.
 - i. The Approval Holder shall notify the Department at least 24-hours in advance of placing waste rock in the Clay Borrow Area.
- w. The Approval Holder shall implement all the recommendations listed in the Golder report titled "Touquoy Mine Temporary Clay Cut Waste Rock Stockpile" dated August 31, 2021:
 - i. The maximum height of the Waste Stockpile shall not exceed 32 m and shall have a global constant slope of 1.33H:1V (ie. 37 degrees).
 - ii. All intermediate slopes shall be protected by a safety toe berm made of waste material having a height equivalent to 2/3 of the maximum wheel diameter.
 - iii. Prior to storage of waste rock and only after authorization from the Department to store additional waste rock to the northeast of the line between Golder testpits TP21-05 and TP21-06, the anthropogenic rockfill located in the North-Northeast area of the Clay Borrow shall be removed from a zone under the Waste Rock Stockpile, approximately 25 m wide measured from the toe of the proposed stockpile.
 - iv. Placement of rock shall be completed as per 'Section 10.3 Waste Rock Placement' of the report.
 - v. The Approval Holder shall adapt the site observation and inspection program currently in use for the existing WRSA to the proposed Clay Borrow Waste Stockpile.
 - vi. Survey monuments shall be installed during the construction phase. Waste rock shall not be stockpiled until the Approval Holder has submitted proof of installation of the survey monuments, prior to placement of waste rock.
- x. To maintain the continuous positive drainage, the Approval Holder shall immediately remove any runout material from the Clay Borrow Waste Rock Stockpile which has entered the collection ditch.

TMF Raise

- y. The TMF Raise shall be constructed as per the technical memorandum and attachments titled "Tailings Dam Raise 2022 – IFC Design Drawings, Touquoy Gold Mine" prepared by Stantec and dated June 29, 2022, or otherwise approved by the Department.

- i. The Approval Holder shall re-slope all overbuilt sections on the downstream slope to meet the design grade during the construction to raise the TMF.
- z. The Approval Holder shall notify the Department when the TMF raise construction is complete.
- aa. The Approval Holder shall submit, written certification by the Engineer-of-Record that the TMF raise has been constructed for its intended purpose and is in accordance with the design and specifications provided with the Amendment Application, or otherwise approved, within six (6) weeks of completing the construction to raise the TMF.
- ab. The Approval Holder shall not construct past October 18, 2022, unless written authorization is granted by the Department.

11. Blasting

- a.
 - i) The Approval Holder shall have a technical blast design prepared by a qualified person which ensures the ground vibration and air concussion limits in this Approval can be achieved.
 - ii) At the request of the Department, the Approval Holder shall submit a copy of the blast design.
 - iii) At the direction of the Department, the Approval Holder shall modify or cease blasting.
- b. The Approval Holder shall call the nearest weather office to assess the climatic conditions prior to conducting any blasting. No blasting will be permitted if a thermal inversion is anticipated at the time of the proposed blast.
- c. No blasting shall occur on Sunday or on a statutory holiday prescribed by the Province.
- d. The Approval Holder shall ensure that all blasts are monitored for air concussion and ground vibration as described in Table 5. The limits established in Table 5, Appendix H shall not be exceeded at structures located off Site.
- e. The monitoring stations for blasting shall be as indicated in Table 5, Appendix H.
- f. Additional monitoring stations for blasting may be specified as required by the Department. Any changes to the location of the stations shall be approved in writing by the Department.
- g.
 - i) A summary of results of monitoring shall be submitted to the Department, with the annual report, on or before April 30. Reporting frequencies shall be revised at the direction of the Department.
 - ii) Blast monitoring results shall also be made available to the Department within 48 hours of a specific request.

- iii) Non-compliant results shall be reported within 24 hours of the blast.
- h. The Approval Holder shall conduct pre-blast surveys for all structures situated beyond the Site boundary and within 800 metres of a proposed blast location at the Facility, which have not had pre-blast surveys conducted. The survey shall be conducted in accordance with the Department's 'Procedure For Conducting a Pre-Blast Survey' and the results of this survey sent to the Department prior to any blasting. The pre-blast survey shall include potable water quality analysis for all identified structures.

12. Reporting

- a. Any non-compliance with this Approval shall be reported immediately to the Department's Regional Office.
- b. The Approval Holder shall provide records, inspection results and/or reports required by terms and conditions of the Approval upon the request of the Department. These shall include, but not be limited, to those associated with the following:
 - Operating parameters for waste management and treatment systems,
 - Implementation of the OMS Manual requirements, including TMF operating parameters,
 - Groundwater, surface water, liquid effluent, blasting, air emissions, noise, particulate emission, acid rock generation, seepage or flow rates,
 - Implementation of the Technical Specifications requirements,
 - Implementation of the Quality Management Plan requirements,
 - Resulting from the duties of the Engineer of Record.
 - Operation and monitoring of the TMF Quarry, as described in the "Monitoring, Evaluation and response Plan for Quarry Development within the TMF".
 - Activation of the Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond.
 - All sediment and erosion control efforts conducted at the site and specifics on advice and direction provided by Independent Professionals as per Condition 10.c).
 - All monitoring and inspections from rain event monitoring activities conducted as per the ATLANTIC GOLD CORPORATION Rain Event Monitoring Protocol AGC – PRO – ENV 006.

- Waste Rock Storage Area annual inspection completed by an independent qualified geotechnical professional licensed to practice in Nova Scotia.
- c. An Annual Report shall be submitted to the Department by April 30 of each year. Two copies of the report, plus an electronic copy, shall be provided and include the following information associated with the previous calendar year:
- i) The Annual Report shall contain all required and requested monitoring results and/or reports. It shall contain an executive summary with a general description on the status of operations and environmental compliance, highlighting notable events. Any instance of non-compliance shall be identified and cross referenced in the executive summary.
 - ii) The Approval Holder shall maintain records for the surface water and groundwater monitoring program, including surface water flow data, data logger and staff gauge readings, monitoring well elevations, and groundwater and surface water quality, for the duration of the Approval. Records shall be made available to NSE immediately upon request.
- d. The Annual Report shall detail the results of the groundwater and surface water monitoring program. This section of the report shall be prepared, by or under the direction of, an independent qualified professional licensed to practice in Nova Scotia by APGNS or APENS and shall include, but is not limited to, the following details related to surface water and groundwater:
- i. Surface Water:
 - a summary of compliance criteria specified in this Approval;
 - a review of field methodologies, including sampling techniques;
 - a description of the surface water monitoring network and updated mapping showing all existing monitoring stations including those added within the year being reported on;
 - a review of the current surface water monitoring program and recommendations for modifications, as applicable;
 - current and historical surface water quality data in chronological tabular format; in comparison to relevant criteria and Contingency Plan Action Levels, with exceedances highlighted;
 - current and historic surface water flow data in chronological tabular format, including both electronic and staff gauge data;
 - a detailed interpretation of the surface water quality data including an analysis of spatial and temporal trends, graphical representation of relevant parameters;
 - a detailed interpretation of the surface water flow data including an analysis of spatial and temporal trends, a comparison of upstream and downstream flow rates, a graphical representation of trends in flow over the monitoring period at both downstream and upstream locations, and a comparison of electronic and staff gauge measurements;
 - updated stage discharge curve for both monitoring locations;
 - the identification of any adverse impacts to surface water resources (quality and quantity), including watercourses, wetlands, and aquatic life,

as a result of site activities and associated recommendations, as applicable;

- a comparison of actual seepage volumes into the seepage collection ditches with those estimated in the Application;
- a figure showing the wetlands and surface water monitoring stations; and
- laboratory certificates of analysis.

ii. Groundwater:

- a review of field methodologies, including sampling techniques;
- a description of the groundwater monitoring network and updated mapping showing all existing monitoring stations including those added within the year being reported on;
- a review of the current groundwater monitoring program and recommendations for modifications, as applicable;
- current and historic static water level data in chronological tabular format;
- current and historical groundwater quality data in tabular format, in comparison to relevant criteria and Contingency Plan Action Levels, with exceedances highlighted;
- a detailed interpretation of the groundwater quality data including an analysis of spatial and temporal trends, including graphical representation of relevant parameters, in relation to background and baseline data and relevant criteria;
- current and historical groundwater elevation data in chronological tabular format;
- a detailed interpretation of the groundwater elevation data including graphical representation and an analysis of trends including trends in vertical hydraulic gradients;
- the identification of any adverse impacts to groundwater (quality or quantity), third party properties, or human health, as a result of site activities and associated recommendations, as applicable;
- a figure showing the wetlands and groundwater monitoring wells monitoring stations; and
- laboratory certificates of analysis.

iii. Open Pit Mine Sump pH:

- graph of current and historic monitoring data;
- trend analysis on all data;
- discussion of the results; and
- associated recommendations.

iv. Waste Rock Storage Area Sumps*:

- graph of current and historic monitoring data;
- trend analysis on all data;
- discussion of the results; and
- associated recommendations.

* Please note: Each Waste Rock Storage Area Sump shall be presented and discussed separately.

13. Complaint Response

- a. The Approval Holder shall develop and maintain standard procedures to address complaints associated with the Facility which would include, but not be limited to;
 - i) Immediately investigate the cause of the complaint and undertake immediate and appropriate action, if necessary, to correct the problem.
 - ii) The Approval Holder shall record all complaints and document the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause and the agreement or action taken to correct a problem.
 - iii) The Approval Holder shall record all arbitration referrals, the proceedings of any referrals and the decisions rendered.
 - iv) Records referenced in Condition 13(a)(i,ii,iii) shall be forwarded to the Department on an annual basis with the annual report, required in Condition 12, as requested by the Department.
- b. The Approval Holder shall be required to establish and maintain a Community Liaison Committee (CLC) to facilitate communication between the Approval Holder and the local community. Terms of reference shall include, but not be limited to, environmental monitoring, dispute/complaint resolution, wetlands compensation plans, mine development, operations and reclamation plans.

14. Environmental Assessment Approval

- a. The Approval Holder shall comply with the terms and conditions of the Environmental Assessment Approval dated February 2008 for the open pit (surface) gold mine and mineral processing facility (Touquoy Gold Project) situated at or near 6749 Moose River Rd, Moose River Gold Mines, Halifax Regional Municipality (the "Site").
- b.
 - i) Within one year of the date of Approval Amendment, the Approval Holder shall complete a plan, acceptable to NSE, for procuring conservation land. The lands shall possess valued protected area attributes in the vicinity of the Site for statutory protection by the Province, consistent with Condition 2.1 of the Environmental Assessment Approval. If an acceptable plan has not been completed within this time, the Approval Holder shall post a financial security in the value of \$500,000 with the Province. The security shall be returned to the Approval Holder once an acceptable plan has been implemented.
 - ii) The form of security and any revision to the security or plans shall meet the approval of the Province.
- c. The Approval Holder shall submit a semi-annual update (April 30 and October 30) on the status of compliance with conditions of Environmental Assessment Approval for the first two years following Approval Amendment and, thereafter, at the request of the Department.

15. Liquid Effluent

- a. The Approval Holder shall:
- i. Direct all wastewater and surface runoff, associated with the Facility, to the TMF for treatment. The exception to the above shall include the overburden stockpile situated west of the polishing pond and any other areas granted approval for exemption by the Minister. Bypass discharge of the runoff from waste rock stockpile perimeter ditches required for short term emergency purposes shall only occur with the written permission of the Department.
 - ii. Submit a copy of the engineered design drawings of the surface water collection and pump station required to control drainage from the waste rock stockpile.
 - iii. Ensure cyanide laden wastewater from mineral processing shall be pre-treated using the Inco SO₂/air process for cyanide destruction prior to discharge into the TMF to achieve a minimum weekly average, weak acid dissociable (WAD) concentration of less than 1.0 mg/l, unless otherwise revised by NSE.
 - iv. Implement and maintain automated cyanide controls for cyanide addition and tailings detoxification in accordance with the details in the Application and reference documents, specifically the Atlantic Gold letter to the Department dated February 13, 2017.
 - v. Ensure TMF wastewater shall be treated in the effluent treatment plant and geotube filter system for arsenic removal prior to discharge. The exception being TMF wastewater required to be transferred while activating the Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond. The geotube system shall be operated and maintained in accordance with the manufacturers specifications.
 - (a) The effluent treatment plant shall include the ammonia treatment process, when needed, unless otherwise directed by the Department.
 - vi. Ensure the effluent treatment plant shall remain operational during the activation of the Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond.
 - vii. Ensure adequate structures, such as rockfill walls, are in place to physically retain filled geotubes on the drumlin during and after operation.
 - viii. Require written approval of the Minister to use alternate, or/add, wastewater treatment systems.
 - ix. Submit a final copy of the engineered design drawings of the surface water collection and pump station required to control drainage from the topsoil stockpile located south of the open pit prior to construction or by April 30,

2020 at the latest. The design drawing shall be acceptable to the Department.

- x. Submit a final copy of the engineered design drawings (issued for construction) of the Polishing Pond Seepage Collection System by August 12, 2022. The proposed collection system shall be constructed with a low permeability liner, consisting of compacted clay till having a hydraulic conductivity no greater than 1×10^{-6} cm/sec or equivalent geotextile, unless otherwise approved by the Department.
- xi. Upon acceptance of the engineered design drawings referenced in Term and Condition 15.a.x), construction shall be completed within six (6) weeks.
 - (a) The Polishing Pond Seepage Collection System shall not be constructed with waste rock sourced from the Touquoy Open Pit Mine, unless the material is demonstrated to not release leachate or runoff with any contaminants in excess of compliance criteria specified for surface water in Appendix K. The Approval Holder shall submit the planned source of the construction rock for approval by the Department. If material is sourced from outside of the Touquoy Open Pit Mine, the source shall be from a facility which already has an Approval from the Department.
 - 1) If waste rock is sourced from the Touquoy Open Pit (or waste rock storage) to construct the Polishing Pond Seepage Collection System, the Approval Holder shall retain a geochemist to report on the methodology and results to determine the suitability of waste rock use for construction to meet Condition 15.a.xi.(a), and submit the report to the Department for acceptance, prior to start of construction.
 - (b) A report on completion of the work confirming that the Polishing Pond Seepage Collection System is built as designed, certified by a third-party professional engineer licensed to practice in Nova Scotia, shall be submitted to the Department within two (2) weeks of completing construction.
 - (c) Upon completion of the Polishing Pond Seepage Collection System, the Approval Holder shall conduct six (6) monthly surface water quality monitoring events at SW-15, SW-15B and SW-15C. If parameters exceed the criteria in Appendix K of this Approval, the Approval Holder shall submit a remediation plan to address the exceedances. The monitoring results and remediation plan are due to the Department within eight (8) months of completing the Polishing Pond Seepage Collection System construction.
 - (d) Upon completion of the Polishing Pond Seepage Collection System, the Approval Holder shall conduct two (2) quarterly groundwater quality monitoring events at TMW-5A/B and TMW-6A/B. If

parameters exceed the criteria in Appendix K of this Approval, the Approval Holder shall submit a remediation plan to address the exceedances. The monitoring results and remediation plan are due to the Department within eight (8) months of completing the Polishing Pond Seepage Collection System construction.

- b.
 - i) Facility wastewater shall be directed through the main tailings pond, polishing pond and the engineered wetland treatment system for treatment prior to final effluent discharge to Scraggy Lake. Discharge through the emergency spillway(s) is only permitted when the water level in the tailings and/or polishing pond is above the respective pond's operating level. The Approval Holder shall not discharge tailings or process water into either pond when an emergency spillway is in use or the Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond is in activation.
 - ii) Alternate discharge locations shall otherwise require written authorization by the Minister.
- c.
 - i) The Approval Holder shall provide the Department with a copy of all liquid effluent reports, environmental effects monitoring reports and emergency reporting as required for submission to the federal government in accordance with the Metal and Diamond Mining Effluent Regulations (MDMER) pursuant to Fisheries Act. Reports shall be provided to the Department at the same frequency as required by the federal government.
 - ii) In addition to the water quality compliance limits established in the MDMER, the Approval Holder shall comply with a total residual chlorine limit of less than or equal to a quarterly average of 0.02 mg/L at SW-14.
 - iii) If directed by the Department, the Approval Holder shall comply with other effluent discharge limits outside the scope of the MDMER.
- d. The Site shall be developed and maintained to prevent surface water contaminants from being discharged into a watercourse, wetland, water resource, or beyond the property boundary, in excess of the following criteria:
 - i) Total Suspended Solids
Clear Flows (Normal Background Conditions):
 - 1) Maximum increase of 25 mg/l from background levels for any short term exposure (24 hour or less)
 - 2) Maximum average increase of 5 mg/l from background levels for longer term exposure (inputs lasting between 24 hours and 30 days)
 - High Flow (Spring Freshets and Storm Events):
 - 1) Maximum increase of 25 mg/l from background levels at any time when

background levels are between 25 mg/l and 250 mg/l

2) Shall not increase more than 10% over background levels when background is > 250 mg/l

ii) pH

1) Maximum 5 to 9 in grab sample

2) Maximum 6 to 9.5 as a Monthly Arithmetic Mean

iii) Petroleum Hydrocarbons

1) Nova Scotia Environment Tier 1 Environmental Quality Standards for Surface Water - Petroleum Hydrocarbons (PHC) Parameters.

Note: Results for the following stations shall be used to determine

Background concentrations: SW-11 and SW-12

Downstream concentrations: SW-2, SW-3, SW-15, SW-19, SW-20 and SW-21.

Reference Drawing titled "IA Surface Water Monitoring Locations 2022" dated July 11, 2022(Appendix C).

- e. The Approval Holder shall be required to undertake any mitigative action specified by the Department to comply with limits established in the MDMER or by the Department in accordance with Condition 15.
- f. The Approval Holder shall implement the recommendations from the "Scraggy Lake Overburden Stockpile Assessment" report prepared by Stantec Consulting Limited submitted to the Department on October 17, 2019.
 - i. At minimum, surface water runoff samples are to be collected from SLD-01 and SLD-04 and an appropriate reference site during a rainfall event where forecasted precipitation is 20mm or greater. Samples are also to be collected during any snowmelt events that result in seepage flows.
 - ii. All samples collected shall be analyzed for parameters listed in Appendix G.
 - iii. A follow-up report confirming the completion of the recommendations shall be provided to the Department by December 31, 2020. The report shall be prepared by an independent qualified professional licensed to practice in Nova Scotia by APGNS or APENS and shall include details on the activities that were carried, sample results and interpretation of these results, all other findings resulting from this recommended work, and any on-going work required to adequately assess the quality of the stockpile soils and associated seepage water/surface water runoff from these piles. Further monitoring may be required at the direction of the Department.

16. Engineer of Record

- a. The Approval Holder shall commit to retain the service of an Engineer of Record (EOR) to complete duties over the life cycle of the Facility as defined in the CDA Application of Dam Safety Guidelines to Mining Dams.
- b. The Approval Holder shall clearly identify the EOR and any future changes to the EOR. The Approval Holder shall ensure that a proper succession plan is in place to maintain continuity of responsibility and that all records, files and knowledge are transferred to the new EOR.
- c.
 - i) The EOR shall be involved with all aspects of the life cycle of mining dams on the Site. This shall include the phases of construction, operation, care and maintenance, reclamation and closure of the mining dams on the site.
 - ii) The scope of the EOR responsibilities shall include dam safety inspections (DSI) and dam safety reviews (DSR), as well as environmental impacts to ensure the design and on-going construction and operation meets the terms and conditions of Approval.
 - iii) The Approval Holder shall ensure that the EOR provides certification that the tailings dams and TMF have been designed and constructed for its intended purpose, in accordance with the design and specifications provided in the Application and supporting reference documents. This certification shall be submitted prior to a) initial tailings deposition and b) following each and every raise to the tailings dams.
- d. The Approval Holder shall conduct semi-annual dam safety inspections (DSI).
- e. The Approval Holder shall conduct at least two dam safety reviews (DSR) of the tailings and polishing pond dams during the life of the project. One of the DSR's shall be conducted after final reclamation and prior to abandonment. The dam safety reviews shall be in accordance with the Canadian Dam Association Dam Safety Review, Technical Bulletin 2016 as amended from time to time.
- f. A copy of the results, conclusions and recommendations of the DSI and DSR reports shall be provided to the Department with the annual report required in Condition 12.

17. Tailings Management

- a. The Approval Holder shall adhere to the Atlantic Gold, Best Applicable Practises for Tailings Management document dated November 25, 2016, as a minimum, and if updated shall be approved by the Department. An integral part of the adherence involves the Canadian Dam Associations, Dam Safety Guidelines 2016 and the Mining Association of Canada document entitled, "Developing of an Operations, Maintenance and Surveillance Manual for Tailings and Water Management Facilities"
- b.
 - i) The TMF and associated works shall be designed, constructed, operated and maintained in accordance with the report on "Operation Maintenance and

Surveillance Manual, Tailings Management Facility, prepared by Stantec dated April 5, 2016" and subsequent updates.

- ii) The OMS Manual shall be updated as per the most recent Canadian Dam Association and the Mining Association of Canada guidelines/documents. The OMS shall be delivered to the Department upon request.
 - iii) An updated Operation, Maintenance and Surveillance (OMS) Manual shall be submitted to the Department on or before September 1, 2018 to incorporate a monitoring and pumping system for surface water collection at the waste rock stockpile and the TMF seepage collection ditches.
- c.
- i) TMF pipelines, spillways, decants and seepage collection ditches and TMF water elevations shall be inspected and the inspections recorded on a daily basis and necessary action taken to prevent spillage of untreated tailings and/or wastewater beyond the TMF.
 - ii) A secondary tailings discharge point shall be established in the TMF in the event of breakage and/or blockage during discharge of the tailings line which is in use.
 - iii) The Approval Holder shall submit a design for secondary containment, leak detection and a leak response plan for the tailings pipeline. The design shall be submitted to the Department on or before March 31, 2017.
- d.
- The tailings and polishing pond water levels shall be maintained within the operating design levels, and design freeboard must be maintained at all times. The Approval Holder shall notify the Department when tailings and polishing pond water levels are less than a measured freeboard of 1 metre on these dams or when the Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond is activated or anticipated to be activated. A record shall be kept of all days when freeboard is less than 1 metre.
- e.
- The Approval Holder shall only dispose of tailings associated with the Facility in the designated TMF. This includes historic tailings and treatment sludge unless otherwise revised through compliance with terms and conditions of the Approval.
- f.
- i) The Approval Holder shall record the monthly volume of tailings, historic tailings and treatment sludge deposited in the TMF, and report the results to the Department on an annual basis with the annual report required in Condition 12. Reporting frequencies shall be revised at the direction of the Department.
 - ii) The Approval Holder shall record the effluent discharge, mine water, tailings water recycle, freshwater makeup, process water and potable water volumes utilized on a daily basis. A summary record shall be kept of the monthly total and average daily volumes and provided in the annual report required in Condition 12.
 - iii) Fresh makeup water and potable water withdrawal records shall be submitted

to the Department with reporting as required by water withdrawal approvals.

- iv) Records shall be made available to the Department upon request.
- g.
 - i) The Approval Holder shall ensure that the capacity of the TMF is maintained to retain the projected accumulation of mine tailings and runoff. The Approval Holder shall have the Engineer of Record conduct a semi-annual review of the capacity of the TMF.
 - ii) The review shall evaluate the capability of the TMF to retain the projected accumulation of mine tailings and runoff and confirm that the current stage of TMF development complies with the current Canadian Dam Association (CDA) design standards.
 - iii) A copy of the results of the review shall be forwarded to the Department with the annual report, required in Condition 12, unless otherwise directed by the Department. If the results indicate that the CDA standard is not being met, then the Approval Holder shall notify the Department and propose immediate actions to comply the above standard.
 - iv) The Approval Holder shall be required to complete revised engineering design and specifications prior to altering the TMF dams or discharge spillways. Any designs shall be submitted to the Department for approval prior to commencement of work.
 - v) All work identified in 17(g)(iv) shall be supervised and confirmed, in writing, by the Engineer of Record (EOR) prior to use.
- h. The Approval Holder shall be required to complete the staged construction of tailings dam raises on an annual basis and construction of the final tailings dam spillway, in accordance with the Application, including the technical specifications and drawings, unless otherwise directed in writing by the Department. This shall include the staged construction from commissioning to ultimate stage of construction.
- i. The Approval Holder shall be required to implement tailings, waste rock, overburden, topsoil and/or byproduct management plans, including TMF waste water treatment plans, based on the results of monitoring programs identified in this approval.
- j.
 - i) Seepage collected in the perimeter seepage collection ditches along the north, east and west dams shall be collected and directed back to the TMF, unless otherwise approved by NSE.
 - ii) The seepage collection system shall be excavated to bedrock or constructed in materials that have a permeability no greater than 1×10^{-6} cm/sec, unless otherwise approved by NSE.
 - iii) The Approval Holder shall measure the flow of seepage into the collection

ditches and provide this information with the annual report required in Condition 12.

- iv) The Approval Holder shall submit and implement a mitigative strategy to investigate and/or mitigate potential seepage from the TMF at the direction of the Department.
- k. The Approval Holder shall be required to install floating baffle curtains in the main tailings and/or polishing pond to increase the retention period if so directed by the Department.
- l. The slopes of all dams shall be protected against erosion, as required, with placement of riprap and/or appropriate vegetation.
- m.
 - i) The TMF and associated works shall also be operated and maintained in accordance with the Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond dated May 29, 2018 and the approved Monitoring, Evaluation and Response Plan for Quarry Development within TMF as amended from time to time.
 - ii) The Approval Holder shall revise the above referenced documents at the direction of the Department.
 - iii) Any revisions proposed by the Approval Holder, to the above referenced documents, shall be authorized by the EOR and submitted to the Department for approval prior to implementing the revision.

TMF Quarry

- n. The Approval Holder shall adhere to the “Monitoring, Evaluation and Response Plan Quarry Development within TMF” prepared by Stantec Consulting Limited dated June 15, 2018, as amended from time to time, describing all monitoring activities that will be undertaken before, during and after TMF Quarry aggregate extraction activities.
- o. The Monitoring, Evaluation and Response Plan for Quarry Development within TMF shall be submitted for final review and approval by the Department prior to any blasting for aggregate extraction.
- p. The Approval Holder shall provide the Department with written notice prior to initiating the first blast for aggregate extraction and prior to abandonment of the TMF Quarry.
- q. The Approval Holder shall have the Engineer of Record review and interpret the results of the monitoring program on a minimum weekly basis. The EOR shall be responsible to oversee a weekly review and interpretation of all monitoring programs associated with the operation of the TMF quarry and provide advice to the Approval Holder for additional monitoring or mitigation, if required. Weekly reports and recommendations of the EOR shall be submitted to the Department and documented for inspection by the Department. The Department shall be

informed on recommendations of the EOR prior to the Approval Holder implementing the recommendation.

- r. The Department shall be notified of any potential adverse environmental impacts and/or changes to the Plan resulting from the review and interpretation of results by the EOR.
- s. If ground vibration limits are exceeded at the TMF dam, clay blanket, and/or Historic Tailings Cell, inspections shall be conducted and recommendations made by the EOR prior to the next blast.
- t. Under the supervision and advice of the EOR, the Approval Holder shall install a clay seepage control blanket in areas identified for seepage control.
- u. The Approval Holder shall be required to cease development of the TMF quarry if so directed by the Department.

Spillway Cancellation

- v. i) The Approval Holder shall adhere to the Operational Preparedness and Response Plan for Upset Water Levels in Tailings Pond prepared by Stantec Consulting Limited subject to conditions of Approval, as amended from time to time.

ii) The Approval Holder shall provide the Department with an updated Operational Preparedness and Response Plan for Upset Water Levels in Tailings Pond that considers the April 2020 amendments to this Approval. The updated plan shall be submitted on or before July 31, 2020.
- w. All equipment and infrastructure required to carry out the Plan shall be in place and installed by October 1, 2018.
- x. The Approval Holder shall notify the Department prior to activation or deactivation of the Plan.
- y. During activation of Plan A,B and/or C, mechanical wastewater input areas into the tailings pond shall be inspected daily to prevent overtopping and/or failure of controls.
- z. Tailings wastewater shall be directed to the effluent treatment plant for treatment prior to and during the period which the plan is in activation.
- aa. Prior to and during the activation of Plan A the Approval Holder shall sample and analyse tailings wastewater at or near the pump outlet and discharge to Scraggy Lake twice per day, with each sample spaced a minimum of 8 hours apart. Water shall be analyzed for MDMER parameters, with the exception of toxicity and radium. Results shall be sent to the Department within 2 days of receipt.
- ab. The Approval Holder shall cease activation of Plan A and activate Plan B and/or C if wastewater quality indicates liquid discharge effluent to is expected to be non-compliant with the MDMER limits.

- ac. The Approval Holder shall be required to install staged spillways on the TMF if so directed by the Department.

TMF Raise

- ad. The Approval Holder shall provide the Department with an updated Operational Preparedness and Response Plan for Upset Water Levels in Tailings Pond that considers the TMF Raise by October 30, 2022.

18. Historical Tailings Management

- a.
 - i) Prior to disturbance of areas of the Site which are known to contain, and/or suspected to have Historic Tailings, the Approval Holder shall be required to fully delineate the location of the Historic Tailings in the Areas of Potential Environmental Concern (APEC).
 - ii) Areas of Potential Environmental Concern (APEC) for the delineation shall include all areas of the Site which are known or suspected to have deposits of historic gold mine tailings, as identified in the Historic Mine Tailings Management Plan, and which are planned for disturbance during the construction, operation or reclamation of the Facility.
- b. For the purpose of Historic Tailings delineation, the Approval Holder shall retain a Site Professional (as defined by the Contaminated Sites Regulations), to delineate all soil and groundwater impacts associated with the tailings using current CAN/CSA Phase I/II Environmental Site Assessment Standards. The results of the delineation activities shall be submitted to the Department in the form of a CAN/CSA Phase I/II ESA Report by September 30, 2017.
- c.
 - i) The Historic Mine Tailings Management Plan shall be revised to include the results of a technical study of the potential mobility of mercury into the receiving environment. The testing and results of the technical study shall be completed by a professional geochemist as described in correspondence from Lorax Environmental dated the January 25, 2017.
 - ii) Upon completion of delineation activities, the "Historic Mine Tailings Management Plan" shall also be revised to reflect the 2017 delineation activities and any changes to the proposed plans for the management of historical tailings. The Historic Mine Tailings Management Plan shall describe remediation plans for all historic tailings delineated as per item 18 a(ii).
- d.
 - i) The revised Historic Mine Tailings Management Plan shall be submitted to the Department for review and approval thirty (30) days prior to implementation. The revisions shall include designs and specifications, where required, by a professional engineer. Final disposal of the historic tailings shall be in the TMF unless otherwise approved by the Department.
 - ii) The Approval Holder shall retain a Site Professional to provide details of any proposed risk assessment approaches to address historic tailings on Site.

- e. Historic tailings deposited in the TMF prior to or during TMF quarry development shall be within an encapsulated cell constructed in accordance with Stantec Drawing 1925W-113, Rev 4, unless otherwise granted written authorization for temporary storage. The EOR shall confirm the historic cell construction complies with the design prior to deposition of historic tailings into the cell.

19. Acid Rock Drainage Contingency

- a. Drainage water pumped from the open pit (surface) mine and draining from the waste rock stockpiles shall be monitored weekly for pH. Records of this monitoring shall be maintained on the Site for inspection by the Department.
- b.
 - i) The Approval Holder shall collect and analyze samples of fresh waste rock from the open pit mine and tailings for at least every 100,000 tonnes of ore mined. Samples from the TMF quarry shall be collected and analyzed for at least every 20,000 tonnes of rock quarried. Sampling and analyses shall otherwise be conducted in accordance with the approved Blast Material Sampling procedure as updated from time to time. Samples shall be analyzed for acid base accounting, total sulphur and percent sulphide.
 - ii) A revised Blast Material Sampling Procedure that addresses the Departments comments sent in April 2017 shall be prepared by a professional geochemist. The revised Procedure shall be submitted to the Department for review by August 1, 2018. This Blast Material Sampling Procedure shall be reviewed and updated annually by a Professional Geochemist and a copy provided to the Department with the Annual Report.
 - iii) The B.C. Confirmation Test or alternate acceptable acid rock drainage kinetic testing shall be conducted on all samples which have an acid consuming to acid generating ratio of 3:1 or less.
- c. Should the results of testing indicate potentially acid generating conditions the Approval Holder shall notify the Department immediately and may be required to conduct additional monitoring/testing or implement a plan to monitor and mitigate potential acid mine drainage, if so directed by Department.
- d. A summary of the results of acid rock drainage testing shall be provided with the annual report required in Condition 12.

20. Dangerous Goods/Waste Dangerous Goods/Reagent Handling

- a. All floors in the storage and handling and mix tank areas shall be constructed of smooth impervious material with secondary containment or sloped to an impermeable enclosed drainage collection sump capable of holding a spill.
- b. Individual dangerous/waste dangerous goods or groups of compatible dangerous/waste dangerous goods shall have secondary containment to meet the specifications of Condition 20(g). Secondary containment shall be constructed such that potential spills of dangerous/waste dangerous goods do not come in contact with or pass under or near incompatible materials.

- c. An employee trained in the handling of dangerous/waste dangerous goods shall be present during all dangerous/waste dangerous goods handling operations.
- d. The storage, handling and mix tank areas of the Facility shall have no open floor drains.
- e. All storage racks, vehicles, ventilation ducts, containers and mix/storage tanks associated with flammable dangerous/waste dangerous goods shall be electrically grounded to prevent build up of static electric charges.
- f. All dangerous/waste dangerous goods that are accepted by the Facility shall be stored in drums, containers or tanks composed of materials which are compatible with the goods stored therein as specified by the manufacturer.
- g. All containers or tanks shall be completely surrounded by secondary containment sized to contain 110% of the volume of the largest tank or container in the specifically contained area or 100% of the volume of the largest tank or container plus 10% of the aggregate capacity of all other containers or tanks in the contained area, whichever is greater.
- h. All containers shall be stored upright and kept off the floor. All products and dangerous/waste dangerous goods shall be stored in accordance with manufacturers specifications.
- i. Sufficient aisle space shall be provided between dangerous/waste dangerous goods to allow the unobstructed movement of persons, transfer equipment, fire protection equipment, spill control equipment, and decontamination equipment to any part of the Facility.
- j. The Approval Holder shall ensure that all storage areas, containers and tanks, for dangerous/waste dangerous goods are labelled to clearly identify their contents.
- k. The Approval Holder shall maintain written acceptable standard operating procedures for the handling of dangerous goods. Such procedures shall be readily available to all employees and the Department.
- l. The Approval Holder shall be required to design and upgrade the storage of dangerous/waste dangerous goods to meet the approval of the Department if so directed.
- m. Storage of used oil shall be in accordance with Guidelines for the Storage of Used Oil, August 26, 2003 as amended from time to time.
- n.
 - i) The Approval Holder shall identify the proposed storage and disposal location for air emission control system wastes prior to commencement of operation.
 - ii) The Approval Holder shall be required to evaluate the characteristics of air emission control system wastes at the direction of the Department.

- iii) The disposal of air emission control system wastes shall be acceptable to the Department.
- o. Any proposal to dispose of solid waste in an approved municipal landfill shall meet the criteria established in the Nova Scotia Department of the Environment "Guidelines for Disposal of Contaminated Solids in Landfills (May 10, 2016) as amended from time to time.

21. Inventory

- a. The Approval Holder shall maintain an up-to-date inventory of dangerous goods and waste dangerous goods which are stored at the Facility. The inventory shall include the informational requirements of Section 11(2) of the Dangerous Goods Management Regulations.
- b. The inventory shall be made available to the Department for inspection upon request.

22. Insurance

- a. The Approval Holder shall maintain environmental impairment liability insurance in the minimum amount of ten million dollars (\$10,000,000). The insurance shall name Nova Scotia Environment as insured.
- b. The Approval Holder shall review the adequacy of insurance coverage on an annual basis and provide a status report to the Department with the annual report due April 30.
- c. The Approval Holder shall be required to review and/or amend the value of insurance coverage at the direction of the Department.
- d. The Approval Holder shall submit proof of insurance to the Department by June 30 of each year.

23. Contingency/Emergency Response Plan

- a. The Approval Holder shall maintain approved contingency/emergency response plans for the Facility. The contingency/emergency response plans shall be updated annually in accordance with the Department's Contingency Planning Guidelines dated May 10, 2016, as amended from time to time. The plans shall be made available to the Department upon request and include, but not be limited to:
 - i) general procedures for routine (equipment break-down, upset conditions, maintenance, etc.) or major emergencies within the Facility,
 - ii) plans for dealing with emergency issues including, but not limited to, fires, explosions, spills and releases including those associated with sodium cyanide and hydrogen cyanide release,
 - iii) malfunctions, risk of failure and actual failure of tailings/wastewater

management systems,

iv) actions to be taken in the event of known or suspected impacts to surface water and groundwater quality and/or quantity, and

v) contingency plans for replacement or mitigation, if necessary, of all water wells situated within 800 metres of the open pit during all stages of the Facility development.

vi) Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond.

- b. The Approval Holder shall ensure that the contingency/emergency response plans for the Facility are reviewed and updated on a yearly basis. The Approval Holder shall document what modifications were made to the plans and how the plans were communicated to their staff.
- c. Copies of the contingency/emergency response plans are to be maintained on Site at all times and made available for inspection by staff of the Department upon request.
- d. The contingency plan shall contain a Site layout drawing identifying the location of all Facility features and dangerous/waste dangerous goods. A copy of the Contingency plans shall be made available to the local fire Department(s) and police.
- e. The Approval Holder shall ensure that all personnel are trained to address environmental emergencies in a manner consistent with the Facility's approved contingency plan and that the necessary materials and equipment are available at all times for such purpose.
- f. The Approval Holder shall be required to implement the design, construction and implementation of the contingency plan in a time frame specified by the Department.

24. Reclamation & Financial Security

- a. i) The Approval Holder shall submit and maintain a financial reclamation security with the Province in an amount and form acceptable to the Department. The security shall also be provided and maintained in a time frame acceptable to the Province.

ii) The Approval Holder shall ensure that any security posted for rehabilitation/reclamation be kept valid for the term of the Approval.

iii) Additional financial security may be required by the Department to address potentially acid generating wastes, wastewater treatment requirements and/or other environmental issues that come to the attention of the Department or Province.

iv) Cost estimates for reclamation shall reflect the greatest level of reclamation required at any point prior to the completion of reclamation.

v) Reclamation security in the value of no less than \$10.4 million (M) shall be posted with the Province of Nova Scotia. The security shall be posted on or before the specified dates in accordance with the installment schedule specified below:

Prior to Construction (confirmed) \$3.6 M - April 15, 2016

Prior to Ore processing \$2.10 M - Dec.31, 2017

1 years after Start Ore Processing \$2.6 M – Dec. 31, 2018

2 years after Start Ore Processing \$2.1 M - Dec. 31, 2019

vi) The Approval Holder shall not commence construction and/or ore processing until written confirmation is received from the Province that satisfactory reclamation security has been posted.

vii) The Approval Holder shall provide two sets of legal survey drawings to the Department which depict the disturbance of the open pit, plant area, tailings treatment and containment areas, the tailings and stockpiles of waste, overburden and topsoil.

One set of drawings shall depict the current Site disturbance and the second set shall depict the anticipated Site disturbance for the upcoming 12 months of project development.

The drawing sets shall be prepared by a surveyor licensed to practise in the Province of Nova Scotia and submitted by January 30 of each year.

b. The Approval Holder shall:

- i. Submit an updated mine and reclamation plan on or before April 30, 2017, and every three years thereafter, unless a final plan is submitted in accordance with condition 24 b) iii). The revisions shall include an evaluation of the reclamation progress and recommendations from an experienced independent consultant. The revised reclamation plan shall examine the location options for long term physical and chemical stability of the wastewater effluent treatment plant sludge. The revised plans shall consider changes which have occurred due to the TMF quarry operation and status of the TMF spillways. Revisions shall include the costs associated with these changes and their impact to the security held by the Province.
- ii. The updated plan shall indicate the current status of the Facility development and Site reclamation. It shall also indicate the mine plan and progressive reclamation plans for the remaining mine life and include an estimate of the remaining reclamation cost.

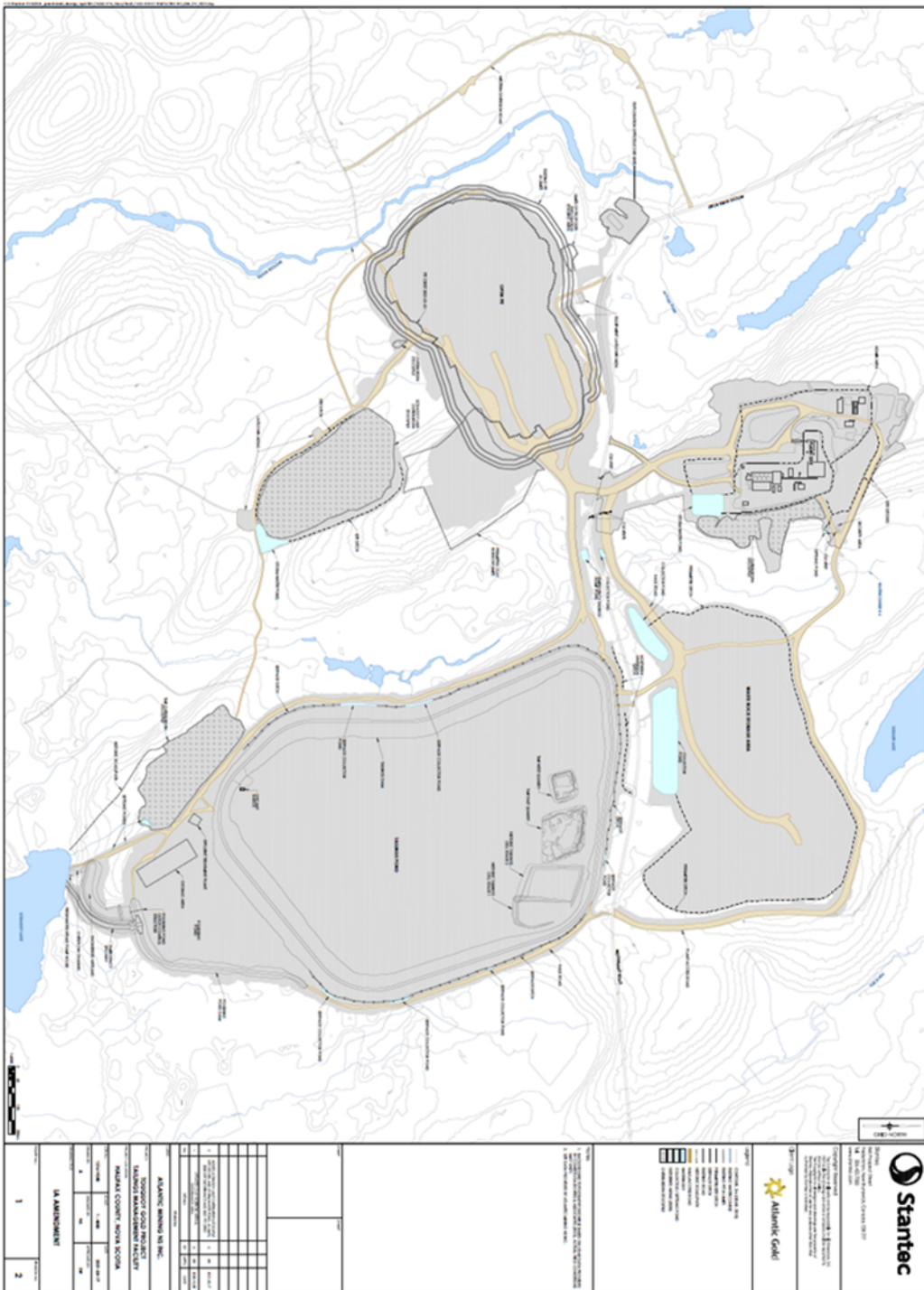
- iii. Submit a final mine and reclamation plan to the Department for approval by May 30, 2023, or within six months after the continuous unplanned suspension of production, unless granted an extension in writing by the Department. The plan shall address reclamation of the TMF, waste piles, mine, processing plant, ancillary equipment and associated works.
- iv. Submit a final Post Mining Environmental Management Plan within six months prior to the planned end of production or six months prior to the commencement of final reclamation, unless granted an extension in writing by the Department. The plan shall address ongoing monitoring, maintenance and response measures.
- v. Conduct geochemical studies on the tailings, under the direction of a qualified geochemist, to examine the potential solubility and mobility of arsenic under different reclamation scenarios. The results shall be used to develop a reclamation plan which limits arsenic mobility. The results shall be submitted with the updated and final reclamation plan and implemented in manner acceptable to the Department. The reclamation plan shall be developed in consultation with a qualified geochemist.
- vi. By no later than September 30, 2022, the Approval Holder shall provide a report prepared by a qualified Engineer licensed to practice in Nova Scotia by Engineers Nova Scotia which meets the following requirements:
 - (a) Evaluate the implications of centre spigotting of tailings in the TMF creating potential for a thinner dry cover, with respect to potential for future infiltration of precipitation and surface water runoff into the tailings below following reclamation.
 - (b) Evaluate whether a thinner dry cover may result in increased infiltration of surface water into the tailings following reclamation.
 - (c) Evaluate whether a thinner dry cover may result in an increased risk of tree root penetration into the tailings following reclamation
 - (d) Identify measures that can be taken within the reclamation plan to reduce any increased risks to the environment resulting from centre spigotting in the TMF following the 2022 TMF raise.
- vii. By no later than February 28, 2023, the Approval Holder shall submit an updated Reclamation Plan (and updated reclamation security) that includes the associated cost to reclaim the TMF raise.
 - (a) The updated reclamation security shall include the cost associated with restoring physical, chemical and biological quality of water regimes and shall include, but not limited to, associated cost for the following:
 - Additional sampling and analysis required to define the extent of the impacts;
 - Design of proposed mitigation measure(s);

- Implementation of remediation of contamination and treatment; and
 - Additional sampling to confirm effectiveness of the remediation.
- c. Post reclamation monitoring and reporting shall extend for a period of no less than three (3) years following completion of reclamation unless otherwise directed by the Department
 - d. If so directed, the Approval Holder shall be required to reclaim all or any portion of the Facility and Site to the satisfaction of the Department.
 - e. The final Site reclamation shall meet the approval of the Province after which the Approval Holder shall be released from their financial security obligations.

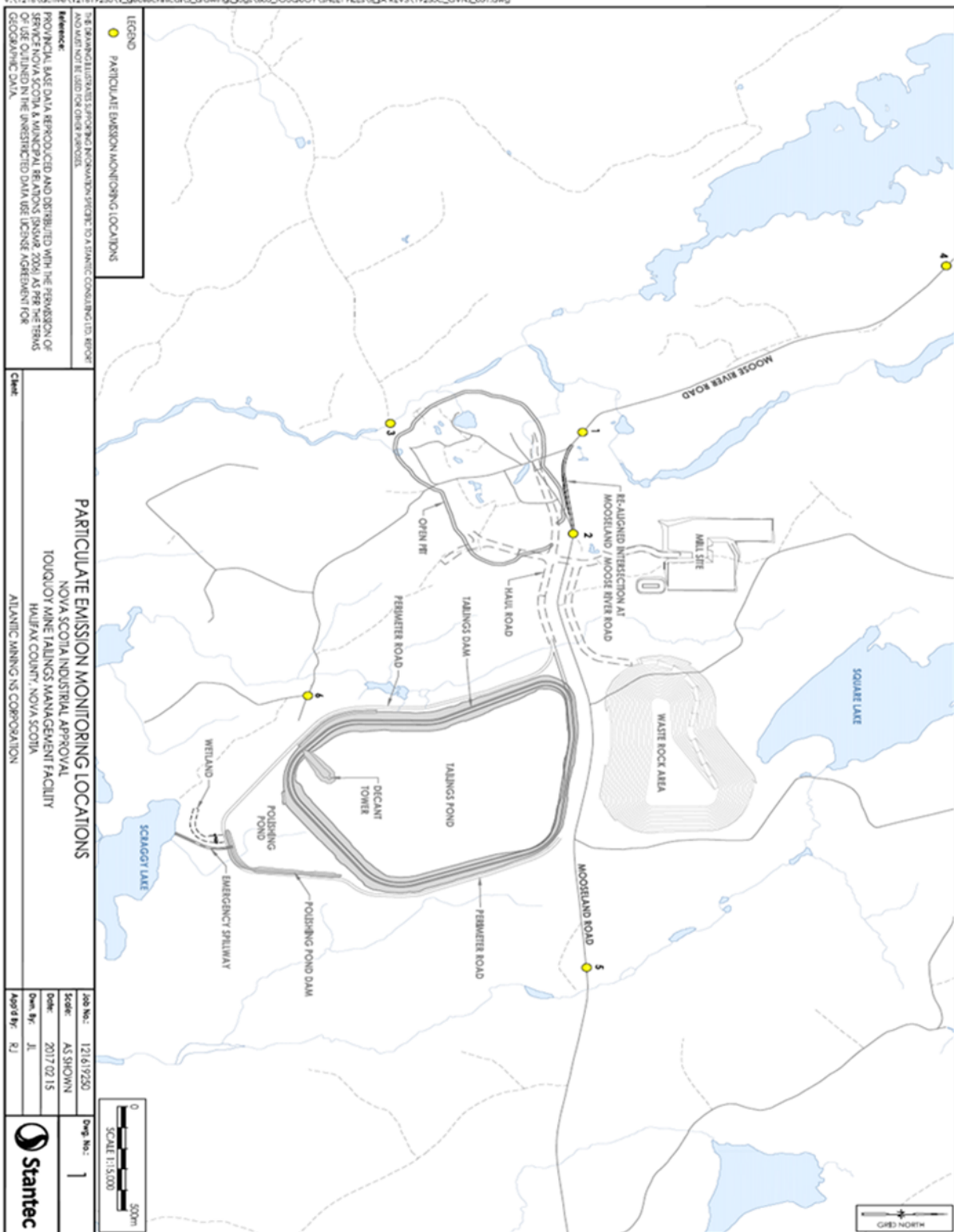
25. Community Liaison Committee

- a. The Approval Holder shall be required to establish and maintain a Community Liaison Committee (CLC) to facilitate communication between the Approval Holder and the local community. Terms of reference shall include, but not be limited to, environmental monitoring, dispute/complaint resolution, wetlands compensation plans, mine development, operations and reclamation plans.

FIGURE 1



APPENDIX A



APPENDIX B

Table 1: Air Emission Concentration Limits at Ground Level or Site Boundary.

Air Contaminant	CAS Number	Maximum Ground Level Concentration - [Half Hour Standard Concentration ($\mu\text{g}/\text{m}^3$)*]	Maximum Ground Level Concentration - [24 Hour Standard Concentration ($\mu\text{g}/\text{m}^3$)*]
Arsenic and Compounds	7440-38-2	1	0.3
Mercury-alkyl compounds	7439-97-6	1.5	0.5
Mercury	7439-97-6	5	2

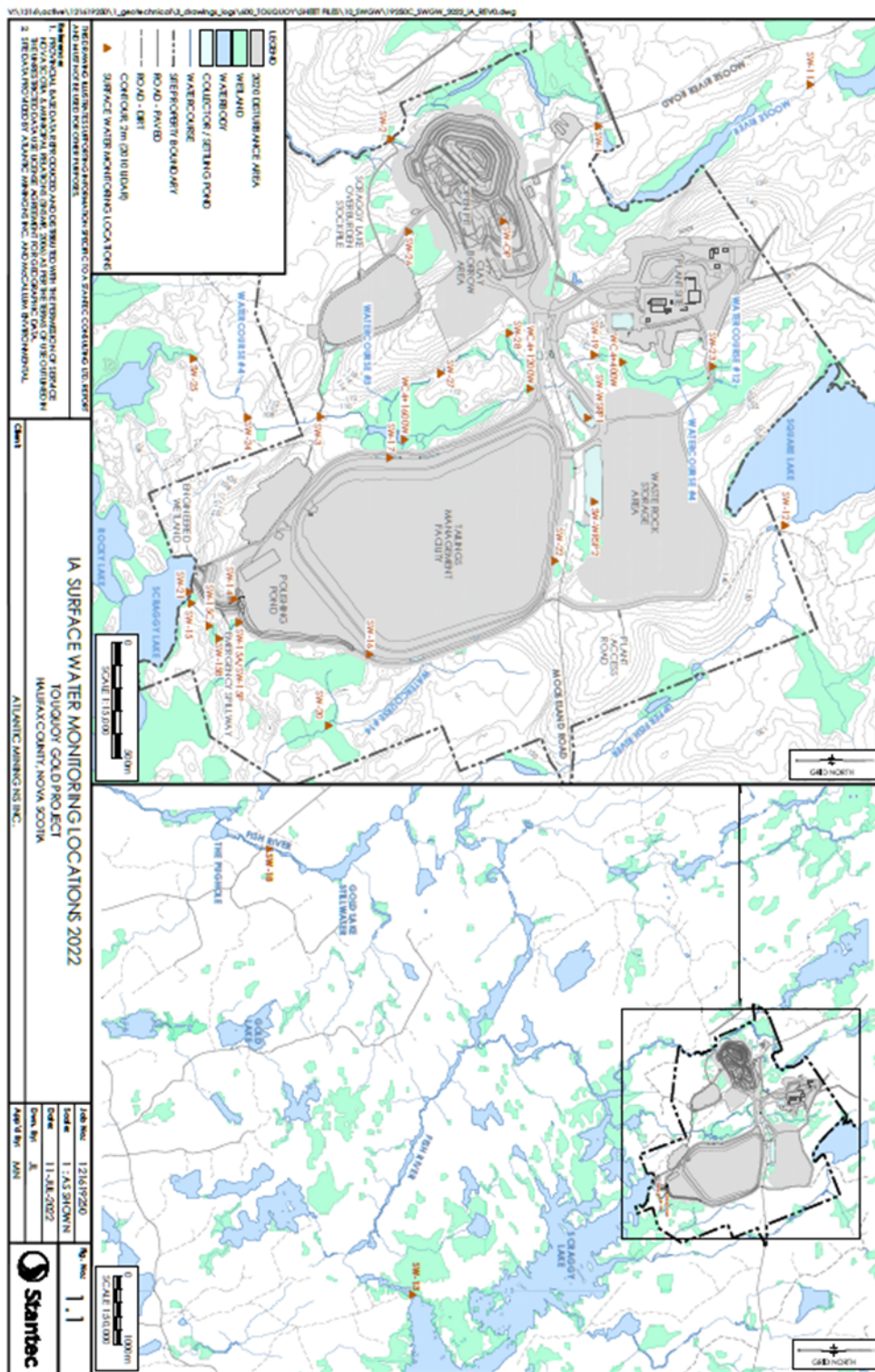
* Summary of Standards and Guidelines to support Ontario Regulation Reg. 419/05, Air Pollution-Local Air Quality, Standards Development Branch, Ontario Ministry of the Environment, April 2012.

Table 2: Stack Emissions Limits.

Source	Parameter	Stack Emission Limit	Method*
Furnace	Total Particulate Matter	20 mg/Rm3	EPS-1/RM/8 (as amended)
	Opacity	Maximum 10%	EPS-1-AP-75-2 (as amended)

* Correction for oxygen not required unless a combustion source is used.
Modification of Sampling Methods shall require prior approval of the Department.

APPENDIX C



APPENDIX D

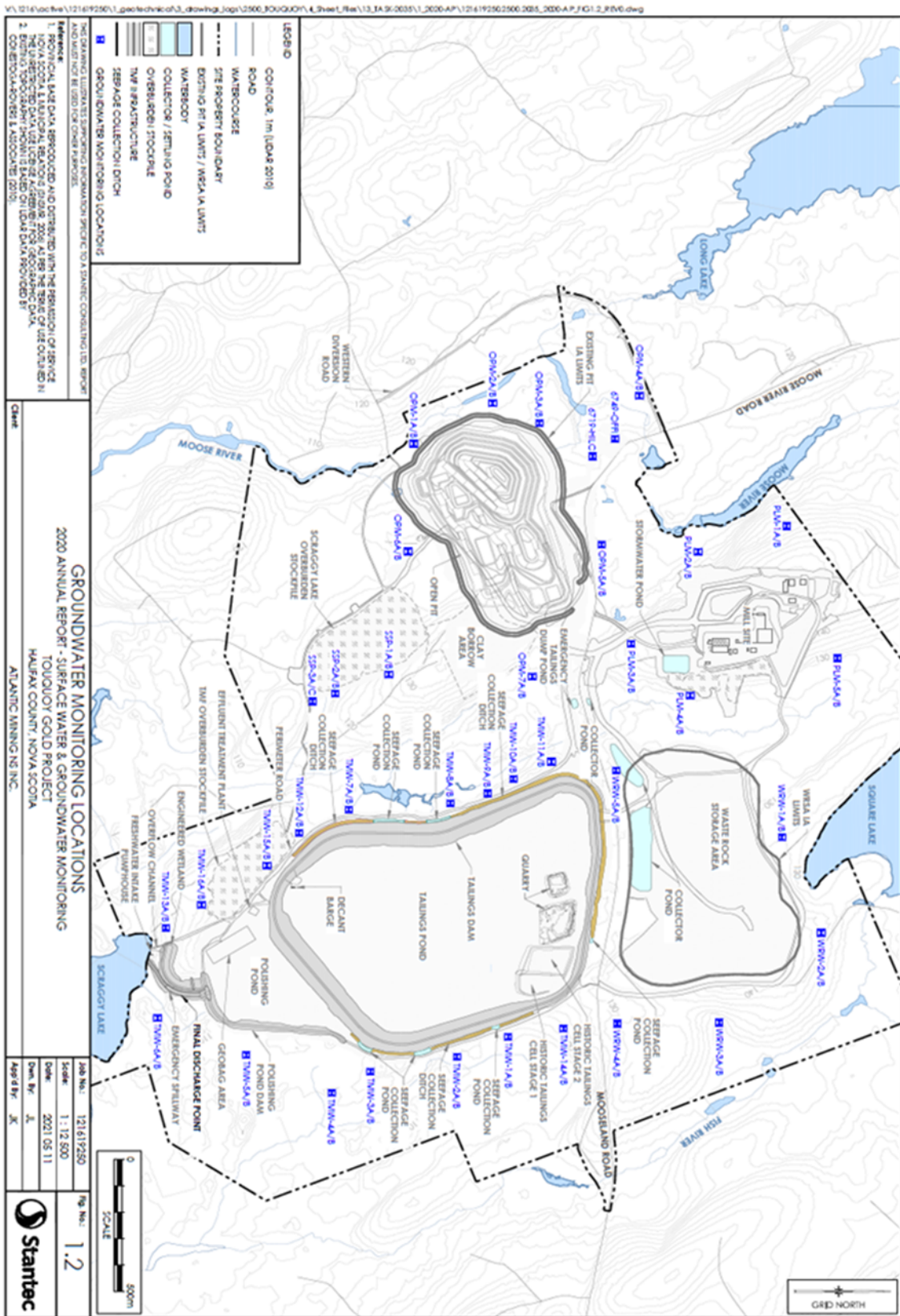
Table 3: Surface Water Monitoring Parameters and Frequency.
+Compliance stations

Monitoring Point	Parameter	Frequency
SW-1 SW-2 +SW-3 SW-11 SW-12 +SW-13 SW-14 +SW-15 SW-16 SW-17 +SW-18 +SW-19 +SW-20 SW-21 SW-22 SW-23 SW-24 SW-25 +SW-26 +SW-27 +SW-28 SW-DW +WC4+400W +WC4+1200W +WC4+1600W +SW-15P +SW-15A +SW-15B +SW-15C +Additional stations as required by this Approval other than SW-29	i) Water Quality Appendix G Parameters ii) Surface water flow rate at the permanent surface water monitoring stations near SW11 and SW2*	i) Monthly ii) Surface water flow rate - Daily **

* Note: Surface water measurements to estimate flow based on established stage- discharge curve at the permanent surface water monitoring stations near SW-11 and SW-2.

** Note: Daily surface water measurement to estimate flow based on established stage- discharge curve for the period of June to September.

APPENDIX E



APPENDIX F

Table 4: Groundwater Monitoring Parameters and Frequency.
+Compliance wells

Monitoring Point	Parameter	Frequency
<p>Plant PLM-1A/B PLM-2A/B PLM-3A/B PLM-4A/B PLM-5A/B</p> <p>Open Pit OPM-1A/B OPM-2A/B OPM-3A/B OPM-4-A/B OPM-5A/B +OPM-6A/B +OPM-7A/B</p> <p>Waste Rock Storage Area +WRW-1A/B +WRW-2A/B +WRW3-A/B +WRW-4A/B +WRW-5A/B +WRW-6A/B +WRW-7A/B +WRW-8A/B +WRW-9A/B +WRW-10A/B +WRW-11A/B +WRW-12A/B</p> <p>TMF 2 Domestic Wells +TMW-1A/B +TMW-2A/B +TMW-3A/B +TMW-4A/B +TMW-5A/B +TMW-6A/B +TMW-7A/B +TMW-8A/B +TMW-9A/B +TMW-10A/B +TMW-11A/B +TMW-12A/B +TMW-13A/B +TMW-14A/B +TMW-15A/B +TMW-16A/B</p> <p>Scraggy Lake Stockpile +SSP-1A/B +SSP-2A/B +SSP-3A/C</p>	<p>i) and ii) Water Quality parameters in Appendix G.</p> <p>iii) Static Water Level.</p> <p>iv) Data logging of Groundwater Levels in wells associated with the open pit mine.</p>	<p>i) a minimum of four quarterly baseline water quality analyses prior to the start of operation of the processing plant (PLM), open pit/mine (OPM), waste rock storage area (WRW) and TMF, including the containment cell area and 2 domestic wells (TMW).</p> <p>ii) Quarterly, unless otherwise stated in the conditions of the Approval.</p> <p>iii) Static Water Levels Monthly, unless otherwise required by conditions of the Approval.</p> <p>iv) Data logging of wells, associated with the open pit mine, on an hourly basis as a minimum.</p>

Monitoring Point	Parameter	Frequency
<p>Other MW-15 (Wetland Monitoring)</p> <p>+ All wells installed as required by the Certificate of Variance issued November 8, 2021, to temporarily raise the height of the Waste Rock Storage Area</p> <p>+ All wells installed around Clay Borrow Area</p> <p>+ Additional wells required by this Approval.</p>		

APPENDIX G

GROUNDWATER and SURFACE WATER QUALITY PARAMETERS

Note: ** Groundwater only * Surface water only

Total Alkalinity	Copper
Dissolved chloride	Iron
Colour	Lead
Hardness	Manganese
Nitrate & nitrite	Molybdenum
Nitrite, Nitrogen	Nickel
Ammonia (Ammonia nitrogen)	Selenium
Total organic carbon	Silver
Total Phosphorus	Strontium
pH	Thallium
Reactive silica	Tin
Dissolved sulphate	Titanium
Turbidity	Uranium
Conductivity	Vanadium
Aluminum	Zinc
Antimony	Total Suspended Solids
Arsenic	Sodium
Barium	Potassium
Beryllium	Magnesium
Bismuth	Fluoride
Boron	Ion Balance
Cadmium	Mercury
Calcium	Sulphate
Chromium	Total Dissolved Solids**
Cobalt	Total Petroleum
Cyanate	
Chemical Oxygen Demand	
Total Cyanide	
Weak Acid Dissociable Cyanide	
Free Cyanide (CNF)	
Thiocyanates (SCN)	
Radium 226* (monitored and reported only at MDMER stations)	
Salinity*	
Hydrocarbons TPH & BTEX **	
Field Parameters: Temperature, pH, Electrical Conductivity, Dissolved Oxygen*	
Static Water Level (groundwater)**	
Additional Parameters as specified or requested by the Department.	

APPENDIX H

Table 5: Blasting Limits.

Parameters	Maximum	Monitoring Frequency	Monitoring Station
Concussion (Air Blast)	128 dBL	Every Blast	Within 7 m of the nearest structure not located on the Site.
Ground Vibration	0.5 in/sec (12.5 mm/s)	Every Blast	Below grade or less than 1 m above grade in any part of the structure not located on Site.
Ground Vibration	1.97 in/sec (50 mm/s)	Every Quarry Blast within the TMF	At the nearest location to the Tailings Dam or clay blanket and the nearest location to the Historic Tailings Management Cell.

APPENDIX I

Amendment Application Documents:

- Industrial Approval Amendment Application. Submitted by Atlantic Mining NS Corp. Signed by Chris Batalha, AMNS Director on November 22, 2016. Application included the following attachments:
 - o Industrial Approval Amendment. Report. Touquoy Gold Mine -Tailings Management Facility. Prepared by Stantec Consulting Ltd (Stantec). Fredericton, NB. Dated: November 25, 2016.
 - o Touquoy Mine, Tailings Management Facility Dam Design – Slope Stability Assessment. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: February 29, 2016.
 - o Technical Specifications. Prepared by Stantec Consulting Ltd. (Stantec). Dated: October 7, 2016.
 - o Touquoy Mine, Tailings Management Facility – Embankment Core Construction Alternatives. Memo. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: December 22, 2015.
 - o Touquoy Mine TMF – Upstream Clay Blanket – Seepage Analysis. Internal Memo. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: October 13, 2016.
 - o Touquoy Mine, Tailings Management Facility – Hydraulic Design Rev. 1.0. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: November 25, 2016
 - o Touquoy Mine Tailings Management Facility - Geotechnical/Hydrogeological Field Investigation. Factual Report. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: February 29, 2016.
 - o Touquoy Waste Rock Storage Facility – Geotechnical Investigation. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: March 2, 2016.
 - o Touquoy Mine Tailings Management Facility Dam Design - Seepage Assessment. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: August 26, 2016.
 - o Touquoy Mine Tailings Management Facility – Potential Clay Borrow Source Investigation. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: March 9, 2016.
 - o Assessment of Water Quality Downstream of Tailings Management Facility, Touquoy Gold Project. Prepared by Stantec Consulting Ltd. (Stantec). Fredericton, NB. Dated: November 25, 2016
 - o 15 Stamped Engineered Drawings dated October 13, 2016 (2 complete sets).
 - 19250W-101- General TMF Plan. Rev. 3
 - 19250W-102- Longitudinal Profile through Centerline of Tailings Dam. Rev. 2
 - 19250W-103- Seepage Collection System Plan View and Details. Rev. 2
 - 19250W-104- Seepage Collection System Longitudinal Profiles. Rev. 2
 - 19250W-105- Tailings Dam Ultimate Stage Sections. Rev. 2
 - 19250W-106-Tailings Dam Foundation Details. Rev. 2
 - 19250W-107- Tailings Dam Details. Rev. 2
 - 19250W-108-Tailings Dam Spillway Profiles, Sections and Details. Rev. 2
 - 19250W-109- Polishing Pond Dam Plan, Profile and Details. Rev. 2
 - 19250W-110- Polishing Pond Emergency Spillway Profile and Details. Rev. 2
 - 19250W-111- Decant Tower 1 for Stages Commissioning, 1&2. Rev. 2
 - 19250W-112- Decant Tower 2 for Stages 4 & Ultimate. Rev. 2
 - 19250W-113- Historic Tailings Disposal Cell. Rev. 2
 - 19250W-114- Constructed Wetland. Rev. 2
 - 19250W-115- Geotube Cells Plan View & Sections. Rev. 2

- Application for TMF Industrial Approval Amendment - #2012-084244. Touquoy Gold Mine and Mill, Moose River Gold Mines, HRM. Letter Report prepared by J. Gilchrist, Stantec Consulting Ltd., February 10, 2017. Letter Report includes the following attachments:
 - o Response to NSE 's Comments on Application for Industrial Approval Amendment - #2012-084244. Letter prepared by Stantec Consulting Limited. Dated: January 31, 2017.
 - Attachment A – Touquoy Gold Mine - Response to Comments on Industrial Approval Amendment (FINAL), Lorax Environmental, January 25, 2017.
 - Attachment B - Instrumentation Layout Drawing (#1) Dated: November 29, 2016; Longitudinal Profile Through Centerline of Tailings Dam Showing Instrumentation Locations Drawing (#2). Dated: November 29, 2016 and Instrumentation Typical Section Drawing (#3). Dated December 9, 2016.
 - o Discussion of Predicted Levels in Polishing Pond, Touquoy Gold Mine and Mill. Letter prepared by Stantec Consulting Limited. Dated February 7, 2017.
 - o Responses to DNR Comments on Application for Industrial Approval Amendment - #2012-084244. Letter prepared by Stantec Consulting Limited. Dated: February 10, 2017.
 - o Industrial Approval Amendment. Report. Touquoy Gold Mine -Tailings Management Facility. Prepared by Stantec Consulting Ltd (Stantec). Fredericton, NB. Dated: November 25, 2016. (Signed copy of the body of the report).
 - o Water Management Plan. Version 1.0. Touquoy Gold Mine Facility. Prepared by Stantec Consulting Ltd (Stantec). Fredericton, NB. Dated: February 9, 2017.
- Reliance Letter – Stantec Reports prepared for Atlantic Mining NS Corp Touquoy Gold Mine and Mill, Moose River Gold Mines, HRM. Letter prepared by Paul Deering, Stantec Consulting Limited. Dated February 10, 2017.
- Application for IA Amendment - #2012-084244. Touquoy Gold Mine and Mill, Moose River Gold Mines, HRM. Letter prepared by Janis Rod, Atlantic Mining NS Corp. in response to B. Matlock letter Feb 8, 2017. Letter dated February 13, 2017.; and
- AMNS – IA Amendment Application. Email prepared by Janis Rod, Atlantic Mining NS Corp. in response to R. Bower comments on Jan 31, 2017. E-mail dated: February 13, 2017.

Original Application Documents:

- Application dated November 26, 2012 and attachments.
- Industrial Approval Application and Supporting Documentation, Touquoy Gold Project, Moose River Gold Mines, NS, prepared for DDV Gold Limited by Conestoga Rovers and Associates, November 2012 Ref. No. 820933.
- Industrial Approval Application and Supporting Documentation (Appendices), Touquoy Gold Project, Moose River Gold Mines, NS, prepared for DDV Gold Limited by Conestoga-Rovers and Associates, November 2012 Ref. No. 820933(10).
- Preliminary Reclamation Plan, Touquoy Gold Project, Moose River Gold Mines NS, prepared by DDV Gold Limited, May 2011 Version 3.
- Industrial Approval Application Supporting Documentation (Appendix C, Soil Erosion and Sedimentation Plan) Touquoy Gold Project, Moose River Gold Mines, NS, prepared for DDV Gold Limited by Conestoga-Rovers and Associates, November 2012 Ref. No. 820933(10).

- Correspondence (e-mail with attachments) from DDV Gold Ltd. dated January 23, 2013 regarding Vesting Order (issued by Minister of Natural Resources dated June 12, 2012) and Compensation for PID 40627218 and 40627226.
- Correspondence (e-mail with attachments) from DDV Gold Ltd. dated January 23, 2013 regarding Vesting Order (issued by the Minister of Natural Resources dated June 12, 2012) and Compensation for PID 40524241 and 00643171.
- Letter from Nova Scotia Environment dated June 14, 2013 to Conestoga-Rovers & Associates regarding the application for Industrial Approval.
- Response to letter of June 14, 2013 Application for Approval, Reference No. 820933-E, Additional Supporting Documentation, Moose River Gold Mines, NS, prepared for DDV Gold Limited by Conestoga-Rovers and Associates, September 12, 2013.
- Environmental Assessment Registration Document for the Touquoy Gold Project, Moose River Gold Mines, prepared for DDV Gold Limited by Conestoga-Rovers & Associates dated March 2007 Ref. No. 820933(3).
- Environmental Assessment Focus Report for the Touquoy Gold Project, Moose River Gold Mines, prepared for DDV Gold Limited by Conestoga-Rovers & Associates dated November 2007 Ref. No. 820933(8).
- Environmental Assessment Approval, signed by the Minister of Environment, Approval Date February 2008, Touquoy Gold Project.

APPENDIX J

Fixed Submission Deadline Summary (for Reference Only)

- i) Semi-annual EA update in accordance with condition 14(c),
- ii) Land Procurement February 24, 2018 in accordance with condition 14(b),
- iii) Results of ambient particulate monitoring in accordance with condition 4(c)(v),
- iv) Stage Discharge Curve Report submitted October 31, 2017th condition 7(f)(vi)
- v) Surface water monitoring annual report in accordance with condition 7(p),
- vi) Results of DSI dam safety inspections and DSR dam safety reviews in accordance with condition 16(f),
- vii) Updated OMS Manual September 1, 2018 in accordance with condition 17(b)(iii),
- viii) Tailings Pipeline design March 31, 2017 in accordance with condition 17(c)(iii),
- ix) Tailings deposition volumes, water use and effluent discharge volumes in accordance with condition 17(f),
- x) Reports prepared by the Engineer of Record on the status of the capacity of the TMF in accordance with condition 17(g) related to the tailings deposition,
- xi) Seepage rate report in accordance with condition 17(j),
- xii) Historic Tailings delineation September 30, 2017 in accordance with condition 18(b),
- xiii) Revised Historic Tailings Management Plan in accordance with condition 18(d)
- xiv) Results of acid rock drainage testing in accordance with condition 19(d),
- xv) Updated Groundwater Contingency Plan submitted October 1, 2018 in accordance with condition 8(c),
- xvi) Groundwater monitoring with annual report in accordance with condition 8(d),
- xvii) Review report of groundwater monitoring wells, submitted April 30,2017, in accordance with condition 8(e),
- xviii) A summary of Blast monitoring in accordance with condition 11(g),
- xix) A statement on the status of compliance with Insurance in accordance with condition 22(b),
- xx) A list of complaints and the company response to each complaint; in accordance with condition 13,
- xxi) Reclamation security confirmation in accordance with condition 24(a)(vi),
- xxii) Survey Drawings to be submitted January 30,2018, January 30, 2019, January 30, 2020, in accordance with condition 24(a)(vii),
- xxiii) Updated reclamation plans confirmation April 30, 2017, April 30, 2020 in accordance with condition 24(b)(i).
- xxiv) Install and maintain two permanent staff gauges for recording surface water flow measurements in Moose River, upstream and downstream of the open pit mine, at an appropriate location near SW11 and SW2. The permanent monitoring stations shall be established on or before October 31, 2017, in accordance with condition 7(g).
- xxv) Annual Report due April 30 of each year, in accordance with condition 12(c).
- xxvi) A revised Blast Material Sampling procedure that addresses the Departments comments sent in April 2017 shall be submitted to the Department for review by August 1, 2018 (and updated annually) in accordance with condition 19(b)(iii).
- xxvii) Submit a revised Monitoring, Evaluation and Response Plan for Quarry Development within the TMF for final review and approval prior to blasting for aggregate extraction.
- xxviii) Submit a revised Operational Preparedness and Response Plan for Upset Water Levels in the Tailings Pond by August 1, 2018.

APPENDIX K

Table 6: Site Water Monitoring Criteria.

Parameter	Units	Monitoring Wells		Surface Water
		Column A: Monitoring Wells <10 m of a Watercourse	Column B: All Other Monitoring Wells >10 m of a Watercourse	Column C: Surface Water Monitoring Locations
Chloride (Cl-)	mg/L	120	250	120
Fluoride (F-)	mg/L	0.12	1.5	0.12
Nitrate (as N)	mg/L	10	10	13
Nitrite (N)	mg/L	0.06	1	0.06
Unionized Ammonia (as N)	mg/L	0.019	-	0.019
Sulphate	mg/L	Refer to Conditions 7.d.iv - 7.d.v	500	Refer to Conditions 7.d.iv - 7.d.v
Total Suspended Solids (TSS)	mg/L	-	-	Refer to Condition 15.d)
Aluminum (Al)	µg/L	5 (if pH is <6.5); 100 (if pH is ≥6.5)	-	5 (if pH is <6.5); 100 (if pH is ≥6.5)
Antimony (Sb)	µg/L	6	6	20
Arsenic (As)	µg/L	5	10	5
Barium (Ba)	µg/L	1000	2000	1000
Beryllium (Be)	µg/L	4	4	5.3
Boron (B)	µg/L	1200	5000	1200
Cadmium (Cd)	µg/L	0.04 (if Hardness is <17 mg/L); $10^{(0.83(\log(\text{hardness}) - 2.46))}$ (if Hardness is ≥17 mg/L to ≤280 mg/L); 0.37 (if Hardness is >280 mg/L)	7	0.04 (if Hardness is <17 mg/L); $10^{(0.83(\log(\text{hardness}) - 2.46))}$ (if Hardness is ≥17 mg/L to ≤280 mg/L); 0.37 (if Hardness is >280 mg/L)
Chromium (Cr Total)	µg/L	-	50	-
Chromium (CR VI)	µg/L	1	-	1
Cobalt (Co)	µg/L	10	10	10
Copper (Cu)	µg/L	2 (if Hardness is <82 mg/L); $0.2 * e^{(0.8545(\ln(\text{hardness}) - 1.465))}$ (if Hardness is ≥82 mg/L to ≤180 mg/L); 4 (if Hardness is >180 mg/L)	2000	2 (if Hardness is <82 mg/L); $0.2 * e^{(0.8545(\ln(\text{hardness}) - 1.465))}$ (if Hardness is ≥82 mg/L to ≤180 mg/L); 4 (if Hardness is >180 mg/L)
Cyanide (Cn Free)	µg/L	5	200	5
Iron (Fe)	µg/L	300	-	300
Lead (Pb)	µg/L	1 (if Hardness is ≤60 mg/L); $e^{(0.273(\ln(\text{hardness}) - 4.705))}$ (if Hardness is >60 mg/L to ≤180 mg/L); 7 (if Hardness is >180 mg/L)	5	1 (if Hardness is ≤60 mg/L); $e^{(0.273(\ln(\text{hardness}) - 4.705))}$ (if Hardness is >60 mg/L to ≤180 mg/L); 7 (if Hardness is >180 mg/L)
Manganese (Mn)	µg/L	120	120	820
Mercury (Hg Total)	(Hg) µg/L	0.026	1	0.026
Molybdenum (Mo)	µg/L	73	-	73
Nickel (Ni)	µg/L	25 (if Hardness is ≤60 mg/L); $e^{(0.76(\ln(\text{hardness}) - 1.06))}$ (if Hardness is >60 mg/L to ≤180 mg/L); 150 (if Hardness is >180 mg/L)	-	25 (if Hardness is ≤60 mg/L); $e^{(0.76(\ln(\text{hardness}) - 1.06))}$ (if Hardness is >60 mg/L to ≤180 mg/L); 150 (if Hardness is >180 mg/L)
Selenium (Se)	µg/L	1	50	1
Silver (Ag)	µg/L	0.25	-	0.25
Sodium (Na)	µg/L	200000	200000	-
Strontium (Sr)	µg/L	7000	7000	21000
Thallium (Tl)	µg/L	0.8	2	0.8
Tin (Sn)	µg/L	2400	2400	-
Uranium (U)	µg/L	15	20	15
Vanadium (V)	µg/L	6	6.2	6
Zinc (Zn)	µg/L	$\exp^{(0.947(\ln(\text{hardness mg/L}) - 0.815(\text{pH}) + 0.398(\ln(\text{DOC mg/L}) - 1)) + 4.625)}$ (if Hardness is 23.4 to 399 mg/L, pH is 6.5 to 8.13 & DOC is 0.3 to 22.9 mg/L)	5000	$\exp^{(0.947(\ln(\text{hardness mg/L}) - 0.815(\text{pH}) + 0.398(\ln(\text{DOC mg/L}) - 1)) + 4.625)}$ (if Hardness is 23.4 to 399 mg/L, pH is 6.5 to 8.13 & DOC is 0.3 to 22.9 mg/L)
Benzene	mg/L	0.005	0.005	2.1
Toluene	mg/L	0.002	0.024	0.77
Ethylbenzene	mg/L	0.0016	0.0016	0.32
Total Xylenes	mg/L	0.02	0.02	0.33
Modified TPH - Gasoline	mg/L	1.5	4.4	1.5
Modified TPH - Fuel Oil	mg/L	0.1	3.2	0.1
Modified TPH - Lube Oil	mg/L	0.1	7.8	0.1

APPENDIX L

Table 7: Sulphate Water Monitoring Criteria.

For Water Hardness	Dissolved Sulphate Limit (for 30 day Mean)
0 – 30 mg/L	128 mg/L
31-75 mg/L	218 mg/L
76-180 mg/L	309 mg/L
181-250 mg/L	429 mg/L
>250 mg/L	429 mg/L, unless the Department has accepted in writing an alternative site-specific limit proposed for the Approval Holder by a qualified aquatic toxicologist as required by the conditions of this Certificate of Variance.