

PROVINCE OF BRITISH COLUMBIA
MINISTRY OF ENERGY AND MINES

PERMIT

APPROVING WORK SYSTEM AND RECLAMATION PROGRAM

(Issued pursuant to Section 10 of the *Mines Act* R.S.B.C. 1996, c. 293)

Permit: **M-200**

Mine No. 1101163

Issued to: **Mount Polley Mining Corporation
P.O. Box 12
Likely, British Columbia
V0L 1N0**

for work located at the:

Mount Polley Mine

This permit contains the following sub-sections:

Issue Date

Permit

August 3, 1995

Approving Work System

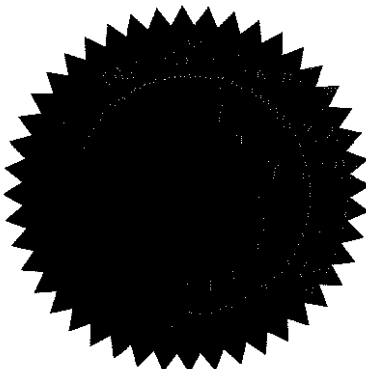
July 11, 1997

Amended Reclamation Permit, Approval to
Construct Open Pits and Waste Dumps and
Traffic Control Plan

Amendments

As listed on pages 2 and 3.

Amended at Victoria, British Columbia this 17th day of December in the year 2014.



for D Howe
Al Hoffman, P.Eng.
Chief Inspector of Mines

Amendments

June 13, 1996	Name Change
September 23, 1996	Approval to Construct Tailings Storage Facility to Elevation 934m
July 11, 1997	Amended Reclamation Permit, Approval to Construct Open Pits and Waste Dumps, and Traffic Control Plan
April 7, 1998	Approval to Construct Tailings Storage Facility to Elevation 940 metres
June 13, 2000	Approval to Construct Tailings Storage Facility to Elevation 944 metres
August 2, 2000	Approving Tailings Storage Facility and Amended Metal Leaching and Acid Rock Drainage Conditions
May 30, 2001	Approval to Construct Tailings Storage Facility to Elevation 945 metres
February 16, 2004	Approving Milling of Ore and Tailings Deposition from the International Wayside Bulk Sample
November 1, 2004	Approving Mining and Reclamation Program for the Northeast Zone and Approving Mine Restart
May 25, 2005	Approving Tailings Storage Facility Stage 4 Construction
August 2, 2005	Approving Haulage Road Construction from Northeast Zone to TSF
November 24, 2005	Approving Mining of Southeast Zone
August 2, 2006	Approving Change of Name and Deletion of Requirement to Monitor Blasting
August 2, 2006	Approving Tailings Storage Facility Stage 5 Construction
March 29, 2007	Approving Northeast Zone Dump Extension
March 29, 2007	Approving Copper Oxide Test Heap Leach Facility
August 31, 2007	Approving Boundary Road
December 5, 2007	Approving Wight Pit High Wall Rehabilitation
February 19, 2008	Permit Approving Tailings Storage Facility Stage 6 Construction
March 6, 2008	Approving Transfer of Road Use, Maintenance and Reclamation Obligations
July 8, 2009	Permit Approving the Pond Zone
August 15, 2011	Approving Mining of the C2 and Boundary zone pits
June 29, 2012	Approving Tailings Storage Facility Stage 8 Construction
October 15, 2012	Approving Tailings Storage Facility Stage 8A Construction
March 25, 2013	Approving Boundary Zone Underground
April 22, 2013	Approving Processing of 15000 Tonnes of Ore from Dome Mountain
July 25, 2013	Approving Northwest PAG Dump Expansion and South Haul Road

August 9, 2013	Approving Tailings Storage Facility Stage 9 Construction
March 17, 2014	Approving Cariboo Phase 4 Expansion
March 27, 2014	Approving Change to Reclamation Security Schedule
June 24, 2014	Approving Waste Rock and Tailings Comingling Research Project
December 17, 2014	Approving TSF Breach Repair Design for 2015 Freshet

PROVINCE OF BRITISH COLUMBIA
MINISTRY OF ENERGY AND MINES

PERMIT AMENDMENT

**APPROVING TSF BREACH REPAIR AND PERIMETER EMBANKMENT
BUTTRESS DESIGN FOR 2015 FRESHET**

Permit: **M-200**

Mine No: **1101163**

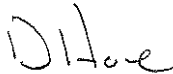
Issued to: **Mount Polley Mining Corporation
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for work located at the:

Mount Polley Mine

Amended at Victoria, British Columbia this 17th day of December in the year 2014.

for



Al Hoffman, P.Eng.
Chief Inspector of Mines

PREAMBLE

A report titled "2015 Freshet Embankment Design" (Application), prepared by Golder Associates, and dated November 28, 2014 was submitted to the Chief Inspector of Mines (Chief Inspector) on November 28, 2014. The Ministry of Energy and Mines is amending the conditions of Permit M-200 in accordance with Section 10(7) of the *Mines Act*.

Information supporting the above referenced permit application and required by the Chief Inspector was also filed with the Chief Inspector and forms part of the application as follows:

- Memo "Site Water Management", prepared by Mount Polley Mining Corporation, dated December 10, 2014.
- Memo "Materials (PAG) Management", prepared by Mount Polley Mining Corporation, dated December 10, 2014.

The Application was referred to the Cariboo Mine Development Review Committee (CMDRC) on November 29, 2014 in accordance with Part 10.3.1 of the Health, Safety and Reclamation Code for Mines in British Columbia (Code). Two in-person meetings of the CMDRC were held to review and discuss the application: a preliminary discussion on November 5, 2014 at the mine site, and a detailed discussion of the application on December 5, 2014 in Williams Lake. There have also been focused geotechnical discussions regarding the proposed design between Mount Polley Mining Corporation and their design engineer (Golder Associates), the Technical Engineering Advisor for the Williams Lake Indian Band and Xat'sull First Nation and the Ministry of Energy and Mines. These meetings occurred on November 28, 2014 and December 3 2014. The Ministry of Energy and Mines and the Technical Engineering Advisor to the First Nations were provided with full access to the data used to inform the design on a confidential basis.

This permit contains the requirements of the Ministry of Energy and Mines. It is also compatible to the extent possible, with the requirements of other provincial ministries. Nothing in this permit limits the authority of other provincial ministries to set other conditions, or to act independently, under their respective permits and legislation.

Decisions made pursuant to this permit by staff of the Ministry of Energy and Mines will be made following consultation with the Williams Lake Indian Band, Xat'sull First Nation (Soda Creek Indian Band), other provincial ministries and federal departments and agencies, as appropriate, within reasonable timeframes. Where these decisions relate to the following activities, staff of the Ministry of Energy and Mines will consult with the Williams Lake Indian Band and Xat'sull First Nation:

- Use of the Tailings Storage Facility beyond the 2015 Spring Freshet
- Implementation of an Independent Engineering Review Board for Tailings Storage Facility
- Re-starting of mining operations, either short- or long-term
- Ongoing adaptive management planning
- Mine site water management, monitoring and treatment
- Mine site reclamation and closure planning

Pursuant to Section 9 of the *Mines Act*, the CMDRC will serve as the ongoing advisory committee to the Chief Inspector. The Committee Chair is appointed by the Chief Inspector pursuant to Section 9 of the *Mines Act*. Terms of Reference and Operating Procedures for the CMDRC are established by the chair in consultation with the Committee members. The Committee will include representatives from the Ministry of Energy and Mines, Ministry of Environment, Ministry of Forests, Lands, and Natural Resources Operations, Williams Lake Indian Band, Xat'sull First Nation, local government, the Community of Likely, and other government agencies. The Permittee and other agencies will be invited to participate as appropriate. The committee chair will be responsible for maintaining an up-to-date contact list for committee members and providing this to the Permittee as required.

This permit contains conditions that reference the Expert Review Panel. These are in reference to the independent engineering investigation and inquiry, authorized under the Mount Polley Investigation and Inquiry Regulation, into the cause of the tailings dam breach at Mount Polley. A report of their findings will be shared with the provincial government and the Williams Lake Indian Band and Xat'sull First Nation on January 31, 2015, and will then be made public.

The mine is located in the asserted traditional territory of the Williams Lake Indian Band and Xat'sull First Nation. Representatives of the Williams Lake Indian Band and Xat'sull First Nation participated in of the CMDRC meetings and discussions of the application. Written documentation of involvement in the technical review, in the form of a memo from Kuipers and Associates LLC, dated December 8, 2014, was received by the Ministry on December 11, 2014.

CONDITIONS

The Chief Inspector hereby amends the conditions of Permit M-200 as follows:

A. General

1. Compliance with *Mines Act* and Code

All work shall be in compliance with all sections and parts of the *Mines Act* and Health, Safety and Reclamation Code for Mines in British Columbia (Code) and the owner, agent

or manager (herein called the Permittee) shall obey all orders issued by the Chief Inspector or his delegate.

2. Departure from Approval

The Permittee shall notify the Chief Inspector and the district Inspector of Mines in writing of any intention to depart from either the plan of the work system or the program for the protection and reclamation of the surface of the land and watercourses to any substantial degree, and shall not proceed to implement the proposed changes without the written authorization of the Chief Inspector.

3. Limitations of Approval

- (a) This permit does not allow for restart of mill operation.
- (b) This permit amendment applies to the construction and operation of the Tailings Storage Facility (TSF) embankment repair for management of the 2015 Freshet, and the construction of the Perimeter Embankment Rockfill Buttress.
- (c) Operation of the TSF for water management is restricted to one year from the date of permitting, which is the design life of the embankment repair structure. A permit amendment is required prior to the 2016 Freshet to address requirements for longer term use.

4. Permit

This permit is not transferrable or assignable.

5. Independent Engineering Review Panel

- (a) An independent engineering review panel (IERP) shall be established by the Permittee to provide expert technical guidance related to all aspects of the design, construction, operation and closure planning for the TSF.
- (b) The IERP shall be comprised of at least three (3) qualified experts, acceptable to the Chief Inspector, and shall meet at least annually. The minimum objectives of the IERP are to confirm that the design and operation of the TSF is consistent with industry standards of best practice, to identify areas where risk reduction measures may be required and to provide advice that may add value to the safe operation, closure and long term maintenance of the tailings facility.
- (c) A report prepared by the IERP shall be submitted to the Chief Inspector within one (1) month of completion of the review meeting.

- (d) The first meeting of the IERP shall involve a technical review of the design of the 2015 Freshet Embankment and associated upgrades to the TSF. This meeting shall be held prior to March 15, 2015.

6. Sharing of Reports

Unless otherwise requested, the Permittee shall provide the Williams Lake Indian Band, Xat'sull First Nation, Cariboo Regional District, and the Community of Likely with all reports and plans that are required to be submitted to the Chief Inspector under this Permit.

B. Health and Safety

1. Crusher Ventilation

- (a) The Permittee shall ensure employees are not exposed to unacceptable levels of respirable-sized dust or silica in the crusher building.
- (b) The Permittee shall ensure that workers entering or working in the crusher building are provided with appropriate respiratory protection, and have been instructed in its use and maintenance, the reasons for it and equipment limitations.
- (c) The Permittee shall ensure that every employee required to wear respiratory protection is fit tested by a certified fit tester. Records of fit testing shall be maintained on site and available for review by an inspector on request.
- (d) The Permittee shall submit a written plan for addressing deficiencies in the crusher ventilation system to the Chief Inspector within 60 days of receipt of this permit amendment. The plan shall include the following:
- an assessment of the capacity of the current ventilation system for appropriately controlling workplace contaminants and/or a design plan for a suitable ventilation system to be implemented in the crusher. The assessment and design shall be prepared and signed by a Certified Industrial Hygienist or Professional Engineer with experience in ventilation system design.
 - a plan and schedule for implementation of required modifications or upgrades
 - a maintenance plan for the ventilation system
 - a monitoring and reporting plan for worker exposures to occupational health hazards such as particulate matter and silica prepared by a Certified Industrial Hygienist or Registered Occupational Hygienist
 - a summary of estimated costs associated with completion of the work

C. Geotechnical

1. Designs for TSF Breach Repair and Perimeter Embankment Rockfill Buttress

- (a) The final designs of the TSF Breach Repair for 2015 Freshet and Perimeter Embankment Rockfill Buttress shall meet the criteria specified in the Canadian Dam Association (CDA) Guidelines for a dam classified as Significant failure consequence.
- (b) The final design of the TSF Breach Repair for 2015 Freshet shall ensure available storage capacity of the calculated 1 in 200 year freshet (rain, snowmelt and surplus mine contact water) with a minimum 1 m freeboard and end-of-construction stability factor of safety of 1.5.
- (c) The final design of the Perimeter Embankment Rockfill Buttress shall ensure an end-of-construction stability factor of safety of 1.5.
- (d) Confirmation or modifications to the designs shall be based on an ongoing evaluation of available geotechnical data including the results of field and laboratory testing being completed as part of the dam breach forensic investigation and additional drilling to be completed along the toe of the perimeter embankment. Updates to this design information shall be submitted as follows:
 - By December 19, 2014 a memorandum including updated stability analyses and embankment dam design based on undrained shear strength and effective shear strength parameters for the foundation soils, including results of sensitivity analyses for the peak and residual strength of the glaciolacustrine unit. Shear strength parameters shall be selected based on one standard deviation below the mean values of the data set. The memorandum shall include an assessment of pore pressure increase during construction loading and an associated monitoring procedure.
 - By February 28, 2015 a memo addressing the Expert Review Panel findings, expected to be released at the end of January, with respect to requirements to update the TSF Breach Repair design.
 - An update to the design of the TSF Breach Repair based on additional information in the final report of the Expert Review Panel by March 31, 2015.
 - An update to the design of the Perimeter Embankment Rockfill Buttress based on results of additional site investigation by April 30, 2015.

- (e) The Permittee shall submit an Adaptive Management Plan, to be prepared by the Engineer of Record on behalf of the Permittee, to the Chief Inspector by January 31, 2015. At a minimum this plan shall include the following:
 - identification of risks related to construction and operation of the TSF Breach Repair and Perimeter Embankment Buttress;
 - identification of design considerations taken to address the risks;
 - identification of contingencies options and mitigation measures that are practicable to implement to address the risks;
 - identification of actions to be taken if the required 1 m freeboard cannot be maintained;
 - definition of thresholds, triggers and recommended dates for implementation of each contingency or mitigation measure.
- (f) The designs shall follow an adaptive management plan that considers all geotechnical data as it becomes available and details the action that will be taken to ensure that the TSF Breach Repair and Perimeter Embankment Buttress are constructed to meet the required minimum factor of safety.

2. Construction

- (a) The Permittee shall ensure that full-time engineering supervision is maintained by the Engineer of Record during construction.
- (b) The Permittee shall submit a copy of the construction specifications and QA/QC to the Chief Inspector prior to initial embankment construction.
- (c) The Cutter Soil Mixing (CSM) cut-off wall shall extend at least 1 m into undisturbed, competent till foundation.
- (d) A detailed contingency plan shall be prepared and included as part of the adaptive management plan required by condition C.1.(f) in the event that construction of the CSM cut-off wall is delayed beyond April 1, 2015.

3. Operation

- (a) The Permittee shall ensure that the TSF, including the TSF Breach Repair, is operated and monitored in accordance with the Operation, Maintenance and Surveillance (OMS) manual.
- (b) The OMS manual for the TSF shall be updated and submitted to the Chief Inspector at least 30 days prior to commissioning of the TSF Breach Repair.
- (c) The TSF Breach Repair shall be operated with a minimum freeboard of 1 m.

- (d) An Emergency Preparedness and Response Plan (EPRP), incorporating the results of a dam breach analysis and inundation study, shall be prepared and submitted to the Chief Inspector prior to completion of TSF Breach Repair construction.
- (e) The findings of the dam breach analysis and inundation study shall be used to re-assess the consequence classification of the TSF. This shall be provided to the Chief Inspector as part of the information required by permit condition A.3.(c).
- (f) Seepage collected from the seepage collection pond at the toe of the 2015 Freshet Embankment shall be pumped back to the TSF or otherwise contained to the mine site.
- (g) No unauthorized discharge of water from the TSF shall occur.
- (h) The EPRP shall be tested consistent with the *Canadian Dam Association, Canadian Dam Safety Guidelines 2007 (revised 2013)*. Testing shall be completed by June 30, 2015.

4. Monitoring

- (a) A water level system shall be maintained to monitor water level/freeboard within the TSF.
- (b) A Mine Site Water Monitoring Program specific to water balance monitoring requirements shall be submitted to the Chief Inspector as a component of the Mine Site Water Management Plan required in condition D.2.(a) by January 30, 2015. This program shall be prepared with input from the Engineer of Record, and shall include the following components:
 - snowcourses at different elevations across the property,
 - water level monitoring within the TSF,
 - water level monitoring in collection ponds associated with the TSF,
 - water level monitoring of the Springer pit,
 - measurement of mine water flows into and out of the TSF, and
 - clear linkage to the Adaptive Management Plan and associated contingencies required by condition C.1.(e).
- (c) Instrumentation, consisting of vibrating wire piezometers, slope inclinometers, shape acceleration array and survey monuments shall be installed in the embankment dam to monitor piezometric levels, foundation movement, and dam fill settlement. Location of instrumentation, instrument reading frequency, trigger levels and actions for various levels of response shall be included in the

OMS manual. Records of monitoring shall be kept up to date at the mine and made be available to inspectors upon request.

5. Reporting

- (a) The Permittee shall submit bi-weekly construction progress reports to the Chief Inspector, and Senior Health and Safety Inspector. These reports shall include a summary of: construction progress, a schedule update, challenges, and implementation of any contingency measures.
- (b) By April 1, 2015, the Permittee shall submit a letter from the Engineer of Record stating that the TSF Breach Repair has been constructed in accordance with the design.
- (c) The Permittee shall submit an as-built report and construction drawings to the Chief Inspector within three (3) months of completion of construction.
- (d) An annual dam safety inspection shall be completed by a qualified professional geotechnical engineer and a copy of the inspection report shall be submitted to the Chief Inspector within three (3) months of the inspection. The annual dam inspection report shall be prepared in accordance with the Ministry of Energy and Mines *Guidelines for Annual Dam Safety Inspection Reports*.
- (e) The Permittee shall take immediate steps to carry out remedial action recommended in the annual dam safety inspection report. Any recommendations with respect to health and safety or geotechnical stability are to be followed unless a suitable alternative course of action is approved in writing by the professional undertaking the review, or by a third party Professional Engineer. A report detailing how and when each of the recommendations for remedial action will be addressed shall be provided to the Chief Inspector with the annual dam safety inspection and the permittee shall provide written notice to the Chief Inspector when each remedial action has been completed.
- (f) A summary of the EPRP test required under condition C.3.(h), including any gaps identified and lessons learned from the test shall be submitted to the Chief Inspector within one month of completion of the testing.
- (g) A dam safety review (DSR) shall be completed in accordance with the *Canadian Dam Association, Canadian Dam Safety Guidelines 2007 (revised 2013)* and *APEGBC Professional Practice Guidelines for Legislated Dam Safety Reviews in BC*. The next DSR shall be completed by December 2016.

6. Reclamation and Closure of the TSF

- (a) The Permittee shall submit an updated plan for reclamation and closure of the TSF prior to September 30, 2015, or in support of any application for restart of operations involving the TSF. This shall include a conceptual spillway design and associated cost estimates.
- (b) The Permittee shall submit a detailed design for reclamation and closure of the TSF, and the closure spillway, at least six (6) months prior to final closure.

D. Protection of Land and Watercourses

1. Metal Leaching (ML) and Acid Rock Drainage (ARD)

(a) General

- i. All materials with the potential to generate ML/ARD shall be placed in a manner that minimizes the production and release of metals and contaminants to levels that assure protection of environmental quality.
- ii. No changes shall be made to the criteria for ML/ARD definition, waste handling procedures, mitigation strategies, or materials monitoring program without the approval of the Chief Inspector.
- iii. No changes may be made to the sampling and analytical parameters outlined in the ML/ARD Material Monitoring, Characterization and Management Program, dated February 2005 and the Mount Polley ABA Sampling Procedure, revision date March 4 2013 without the written permission of the Chief Inspector.

(b) Construction Materials

Only non-Potentially Acid Rock Drainage Generating (non-PAG) materials shall be used for construction of the Embankment Repair and Perimeter Buttress.

(c) Monitoring

- i. Geochemical characterization and monitoring of materials used for construction of the TSF Breach Repair and the Perimeter Embankment Buttress shall be in accordance with the approved ML/ARD monitoring program.

- ii. Weekly field grab samples of all materials used in construction of the TSF Breach Repair and Perimeter Embankment Buttress shall be analyzed to confirm that only non-PAG materials are being used.

2. Mine Site Water Management

- (a) The Permittee shall provide an updated Water Management Plan for the mine site, including a review of the design and operation of the ditch, pipe and pumping system and its ongoing maintenance requirements to ensure that there is sufficient capacity in the water management system to convey designed peak flows to specified locations without overflow or unauthorized discharge to the receiving environment. This plan shall be submitted in writing to the Chief Inspector by January 30, 2015.
- (b) The Permittee shall provide a site-wide Water Management Contingency Plan that identifies areas of risk to water management capacity and associated management options that will be available to the site. This plan shall include identification of action thresholds, trigger dates, associated contingency options, and relative priority of each contingency that is identified. This plan shall be submitted in writing to the Chief Inspector by February 13, 2015.
- (c) The plans required to be submitted in D.2.(a) and D.2.(b) may be combined and submitted as one report.
- (d) The plans required to be submitted in D.2.(a) and D.2.(b) shall be promptly updated to reflect any significant changes to the site or its conditions and resubmitted to the Chief Inspector.
- (e) An updated hydrogeological assessment of the Springer Pit shall be completed to assess connectivity of water contained in the Springer Pit to local groundwater. This work shall be completed by a registered professional with experience in completing such assessments. The assessment shall be submitted by February 28, 2015.
- (f) The Permittee shall provide an updated long-term Water Management Plan that addresses site-wide water management and water treatment requirements. This plan shall be provided by September 30, 2015 or in support of any application for restart of operations.

E. Reclamation and Closure Program

1. Five Year Mine Plan and Reclamation Plan

On or before September 30, 2015, and every five (5) years thereafter, the Permittee shall submit an updated site-wide Reclamation and Closure Plan, providing:

- the current status of the mine plan and reclamation obligations,
- a compilation and interpretation of all monitoring including ML/ARD prediction, water quality and quantity,
- closure and maintenance activities,
- any changes to the reclamation program that affect long-term mitigation,
- reclamation research program,
- contingency plans,
- schedule for completion of reclamation works, and
- a breakdown of outstanding liabilities and associated costs.

2. Closure Plan or Temporary Closure Plan

In the event that the mine does not restart operations, or as directed by the Chief Inspector, the Permittee shall submit a site-wide Closure Plan describing:

- closure objectives and criteria for each mine component,
- provide the current status of the mine plan and reclamation obligations,
- a compilation and interpretation of all monitoring including ML/ARD prediction, water quality and quantity,
- closure and maintenance activities,
- any changes to the reclamation program that affect long-term mitigation,
- reclamation research and monitoring program,
- contingency plans,
- schedule for completion of reclamation works, and
- a breakdown of outstanding liabilities and associated costs.

All other terms and conditions remain.