February 1, 2020

Tracking Number: 375053
Authorization Number: 11678

REGISTERED MAIL

MOUNT POLLEY MINING CORPORATION
SUITE 200
580 HORNBY ST
VANCOUVER, BC
V6C 3B6

Dear Permittee:

Enclosed is Amended Permit 11678 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the permit. An annual fee will be determined according to the Permit Fees Regulation.

This permit does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the permittee. This permit is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the permittee to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties and comply with other applicable legislation that may be in force.

In the event that a reportable spill occurs, or there is an imminent risk of one occurring, the responsible person must ensure that it is reported in accordance with the Spill Reporting Regulation. Additional information on spill reporting requirements is available at gov.bc.ca/reportaspill

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Administration of this permit will be carried out by staff from the Environmental Protection Division's Regional Operations Branch. Plans, data and reports pertinent to the permit are to be submitted by email or electronic transfer to the Director, designated Officer, or as further instructed.

Ministry of Environment and Climate Change Strategy
Environmental Protection Division
Suite 400 – 640 Borland Street
Williams Lake BC V2G 4T1
Mining Operations
Telephone: (250) 398-4530
Facsimile: (250) 398-4214

For more information about how the Ministry will assesses compliance with your permit please refer to gov.bc.ca/environmentalcompliance.

For more information about how to make changes to your permit and to access waste discharge amendment forms and guidance, please refer to gov.bc.ca/wastedischarge-authorizations.

Yours truly,

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY

PERMIT

11678

Under the Provisions of the Environmental Management Act

MOUNT POLLEY MINING CORPORATION

SUITE 200
580 HORNBY ST
VANCOUVER, BC
V6C 3B6

is authorized to discharge effluent to land and surface water from a copper-gold mine and mill complex located near Likely, British Columbia, subject to the requirements listed below.

Contravention of any of these requirements is a violation of the *Environmental Management Act* and may lead to prosecution.

This Authorization supersedes and replaces all previous versions of Permit 11678 issued under Section 14 of the Environmental Management Act.

1. AUTHORIZED DISCHARGES

1.1 Discharges to Tailings Storage Facility

This section applies to the discharge of effluent from a Copper-Gold Mine and Ore Concentrator to the tailings storage facility. The site reference number for this discharge is E225309.

1.1.1 The monthly average rate of discharge of tailings slurry is 55,500 cubic metres per day.

1.1.2 The authorized discharge period is continuous.

1.1.3 The characteristics of the discharge must be typical of concentrator tailings from the milling of ore or metal contaminated soil, mill site runoff, rock disposal site runoff, open pit water, and septic tank effluent from a copper-gold mine and mill complex.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

1.1.4 The authorized Works are the following; a septic tank, tailings discharge line, open pits, tailings storage facility, water treatment and discharge system, seepage collection and recycle system, surface water collection works, tailings supernatant recycle systems; sediment pond(s) and related appurtenances approximately located as shown on the attached Site Plan A.

1.1.5 The location of the facilities from which the discharge originates is within Mineral Leases No. 345731, No. 410495, No. 524068, No. 573346, No. 933970, and No. 933989 as well as Mineral Claims No. CB16 204475, No. PM5 206540, No. POL2 411010, No. 514039, and No. 514044, Cariboo Mining Division, Cariboo Land District.

1.1.6 The location of the point of discharge (tailings storage facility) is on Mineral Claim No. 514039, Cariboo Mining Division, Cariboo Land District.

1.2 Mine Site Runoff and Seepage

This section applies to the discharge of treated effluent from the site runoff and seepage water collection and management systems to Quesnel Lake as sampled at the Treatment Plant Outlet (HAD-03). The site reference for this discharge is E304230.

1.2.1 The authorized annual average rate of discharge is 29,000 m^3/day.

1.2.2 The maximum rate of discharge is 52,000 m^3/day.

1.2.3 The discharge period is authorized until December 31, 2022.

1.2.4 The characteristics of the discharge at the treatment plant outlet must be equivalent to or less than the values specified below in column 2 of Table 1 below.

1.2.5 The Annual Discharge Plan required under section 2.6 must show how the concentrations of the parameters meet the objectives for the "Edge of Quesnel Lake Initial Dilution Zone (IDZ)" in Quesnel Lake as specified below in Table 1 below.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

Table 1

Parameter	**Treatment Plant Outlet** (1)	**Edge of Quesnel Lake IDZ** (1)(2)(3)
Rainbow Trout 96hrLC50	50 % Mortality in 100% effluent	-
Daphnia Magna 48hrLC50	50 % Mortality in 100% effluent	-
pH	< 9.5 and >6.0 pH units	-
Total Suspended Solids	30 mg/L, and 15 mg/L Monthly Average	-
Total Sulfate	1,100 mg/L	218 mg/L
Total Ammonia (as N)	1.3 mg/L	0.18 mg/l as N
Total Nitrate (as N)	34.0 mg/L	3.0 mg/l as N
Total Nitrite (as N)	0.78 mg/L	0.02 mg/L as N
Total Phosphorus	90.0 µg/L	10.0 µg/L
Fluoride	17.0 mg/L	1.0 mg/L
Total Arsenic	28 µg/L	5.0 µg/L
Total Chromium	4 µg/L	1 µg/L
Total Copper	33 µg/L	2.2 µg/L (30-day rolling average)
Total Iron	1.0 mg/L	1.0 mg/L
Dissolved Iron	0.35 mg/L	0.35 mg/L
Total Manganese	3.4 mg/L	0.84 mg/L
Total Molybdenum	0.36 mg/L	0.05 mg/L
Total Silver	0.24 µg/L	0.05 µg/L
Total Selenium	75 µg/L	2 µg/L
Total Zinc	59 µg/L	7.5 µg/L
Dissolved Aluminum	0.75 mg/L	0.05 mg/L

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

Dissolved Cadmium	0.34 µg/L	0.13 µg/L

(1) All values are maximum values from grab samples unless otherwise specified.

(2) Only applies while discharging directly to Quesnel Lake.

(3) The "Edge of Quesnel Lake IDZ" is a point located 100m from the Quesnel Lake outfall, represented by site QUL-58 mid and/or near bottom samples, or alternative location approved by the Director.

1.2.6 The Permittee must implement the response steps set out in the approved trigger response plan under section 2.6 (5) without delay if either:

(a) The effluent monitoring at the outlet of the treatment plant indicates that trigger levels set out in the approved trigger response plan are reached for any parameter set out in Table 1 above; or,

(b) An objective set for the Edge of Quesnel Lake IDZ in Table 1 above is exceeded, or is predicted to be exceeded, as determined in accordance with procedures in the approved trigger response plan.

Where the Permittee must cease discharging, the discharge may resume only in accordance with the approved trigger response plan. The requirement to implement the trigger response plan does not authorize an exceedance of the maximum values specified in section 1.2.4 for the characteristics of the discharge at the outlet of the treatment plant.

1.2.7 The discharge is authorized from the Authorized Works, which are the settling pond(s), tailings storage facility, mine contact water collection system, the Veolia Actiflo treatment system, flow control valve(s), continuous flow meter, pipeline and outfall system and associated appurtenances as generally shown in the attached Site Plans.

1.2.8 The location of the facilities from which the discharge originates is the same as in section 1.1.5 above.

1.2.9 The location of the discharge is the Quesnel Lake outfall at a point within Mineral Claim No. 501479 when discharging to Quesnel Lake.

1.3. Springer Pit Discharge to Ground

This section applies to the discharge of seepage water from Springer Pit to Ground. The site reference for this discharge is E307887.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

1.3.1. The Permittee must maintain Springer Pit water levels at less than 1025 meters above sea level (masl) to limit seepage towards Bootjack Lake.

1.3.2. The characteristics of the discharge are typical site runoff and seepage water.

1.3.3. The authorized works are Springer Pit, and its associated water management works and related appurtenances.

1.3.4. The location of the facilities from which the discharge originates and the point of discharge are as shown in the attached Site Plan A.

2. GENERAL REQUIREMENTS

2.1. Maintenance of Works and Emergency Procedures

2.1.1. The authorized works must be inspected regularly and maintained in good working order. In the event of an emergency or condition beyond the control of the Permittee which prevents effective operation of the authorized works or leads to an unauthorized discharge, the Permittee must take appropriate remedial action and notify the Director immediately. The Director may require the Permittee to reduce or suspend operations to protect the environment until the authorized works have been restored, and/or corrective steps taken to prevent unauthorized discharges.

2.1.2. All ponds, ditching, and other runoff or seepage collection and diversion works must be inspected at least twice per year, once in the spring after freshet and once in the fall before freeze-up. Records of these inspections must be maintained and made available for inspection by an Officer immediately upon request.

2.1.3. The authorized works must be complete and in operation while discharging.

2.2. Bypasses

Any bypass of the authorized works is prohibited unless prior approval of the Director is obtained and confirmed in writing.

2.3. Process Modifications

The Director must be notified prior to implementing changes to any process that may adversely affect the quality and/or quantity of the authorized discharges. Despite notification under this section, permitted levels must not be exceeded.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

2.4. Surface Runoff and Mine Drainage Control

2.4.1. Unless required for operational purposes, surface runoff from undisturbed areas and groundwater pumped from up gradient of pits or other undisturbed areas, must be diverted so that it does not flow to the tailings impoundment, or to the mine and mill areas.

2.4.2. Seepage and runoff from the open pits, rock disposal sites, and from down gradient of the tailings storage facility must be collected and conveyed to treatment works, the tailings storage facility, mill or open pits.

2.4.3. Inactive open pits may be used for storage of mine water, tailings storage facility supernatant or mill site runoff, provided records of volumes transferred to any pit are maintained and reported quarterly.

2.4.4. Recycling of on-site water and evaporation enhancing techniques must be practiced.

2.4.5. Surface water control works must be provided for all areas disturbed by roads, open pits, rock disposal/storage sites, the mill site and ore storage sites. The surface water control works must convey all flows up to a 1 in 10 year 24-hour storm event and must withstand all flows up to a 1 in 200 year 24-hour storm event, without significant damage.

2.4.6. The tailings storage facility must provide adequate storage, beach width and freeboard as required by Mines Act Permit M-200. All other effluent storage ponds, seepage ponds, and surface runoff ponds must provide at least 0.5 meters of freeboard.

2.4.7 Freeboard is defined as the difference in elevation between the contained liquid level and the top of the berm structure at its lowest point. The lowest point does not include a spillway where a discharge is authorized or where the supernatant over flows to a downstream collection pond that is part of the authorized works.

2.4.8. The Permittee must maintain and implement an Erosion and Sediment Control Plan developed by a qualified professional that will prevent sedimentation of watercourses during construction and operation of any mine structures or facilities. The Director may specify and require implementation of additional measures to prevent sedimentation of watercourses caused by construction or operational activity at the site.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

2.5. Environmental Emergency Response Plan

2.5.1. The Permittee must maintain and implement an up to date Environmental Emergency Response Plan by January 31st of each year. The Environmental Emergency Response Plan must include all of the following:

(a) adequate procedures for responding to all probable environmental emergencies, including spills,

(b) permit exceedances associated with the Mount Polley Mine operations and mine site area,

(c) procedures for the suspension of the effluent discharge to Quesnel Lake.

(d) A notification protocol for immediate advising the Soda Creek Indian Band, the Williams Lake Indian Band, the Cariboo Regional District, and the community of Likely of significant emergency events, and permit exceedances at the mine site.

2.5.2. The Permittee must ensure mine personnel are trained on the contents of the Emergency Response Plan and is reviewed annually.

2.6. Annual Discharge Plan

2.6.1. The Permittee must maintain and implement an Annual Discharge Plan approved by the Director for the discharge authorised in section 1.2 above. The plan must include the following:

(a) An outline of the expected volume, timing, and duration of effluent released to Quesnel Lake;

(b) Consideration and account of hydrology and snowpack information, mine water balance information, Polley Lake discharge control, and background water quality information;

(c) Demonstrate how the objectives, set out in column 3 of Table 1 above, will be met at the Edge of Quesnel Lake IDZ in Quesnel Lake;

(d) A maximum turbidity target(s), as measured at the outlet of the treatment plant, which requires immediate reporting to the Director should the turbidity target(s) be exceeded for longer than one hour in duration;

(e) A trigger response plan for treatment system shutdown(s), and/or for suspension or reduction of discharge, and for the resumption of the discharge, if the effluent discharge limits at the outlet of the

treatment plant cannot be met, or if an objective for the Edge of Quesnel Lake IDZ in Quesnel Lake cannot be met;

(f) Identification of the sources of mine water and the percent of each source in the total effluent discharge for each day;

(g) Demonstrate how the discharge will be managed to minimize suspended solids deposition into Quesnel Lake; and,

(h) Identification of equipment, including calibration and maintenance schedules related to continuous measurements of flow, turbidity, specific conductance and temperature.

2.6.2 The Annual Discharge Plan must be reviewed at least once each year, and any necessary updates to the plan must be submitted to the Director for approval at least 30 days prior to adoption.

2.7. Nitrogen Management Plan

The Permittee must maintain and implement a Nitrogen Management Plan developed by a Qualified Professional. The plan must describe measures that prevent the loss of nitrogen species into the environment arising from the use of explosives and handling of waste rock. Any update to the plan must be provided to the Director within 30 days of implementation.

2.8. Water Treatment and Discharge Program

The Permittee must undertake a program to develop passive and semi-passive water treatment options necessary for distributed discharges across the mine site without the use of the Quesnel Lake outfall and to reduce the contaminant levels during and after mine operation. The water treatment and discharge program must include all mine site water treatment works and source control optimization activities which includes the following:

2.8.1. Best Achievable Technology (BAT) Assessment

(a) The Permittee must undertake a BAT assessment when developing treatment technologies for consideration in the water treatment and discharge program.

(b) The Permittee must undertake a BAT assessment when developing bench and pilot scale testing of potential alternative treatment technologies to inform the 2022 Water Management Plan required by Section 2.10.

(c) The Permittee must submit to the Director for approval by January 31st of each year a study plan that details bench and pilot scale testing and other BAT assessment planned for the year. The BAT assessments must be implemented without delay.

2.8.2. Water Treatment Plant Optimization

The Permittee must operate the Veolia Actiflo Water Treatment Plant (WTP) to remove contaminants present in the mine site contact water to meet the discharge requirements of Section 1.2.4.

(a) "Numeric Performance Metric" (NPM) means a measurable value that quantifies the outcome or result of water treatment and the ability of the treatment to remove specified chemical constituent. It forms the basis for a numeric comparison of untreated water, to water that has been treated by the treatment system.

(b) The Permittee must optimize and operate the treatment plant in a manner to target achievement of any prescribed NPM. The stated NPM target value represents operation that achieves average effluent quality that is at or below any specified NPM. Assessment of the attainment of NPM values must be included in the optimization update progress report. If the effluent quality does not achieve an NPM value specified by the Director, the Permittee must identify the reason and propose and implement without delay response actions to achieve the target value including treatment plant optimization and/or source control and/or water management improvements.

The following NPM is established:

Total copper 12 ug/L

(c) Based on the progress reports and any other relevant information available, the Director may amend or specify additional NPM that are suitable for evaluating the effectiveness of removal of parameters of potential concern by the WTP.

2.8.3. Source Control Optimization

The Permittee must undertake ongoing maintenance and surveillance of on-site water management systems and activities undertaken to increase source control of any potential contaminants of concern.

(a) The Permittee must undertake source control optimization yearly.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

(b) The Permittee must undertake an analysis of the treatment plant effluent to determine selenium species present and at a minimum determine the typical proportion of total selenium that is selenate, selenite, and organoselenium. Based on these results the Director may require additional analysis for selenium speciation of mine source waters.

2.8.4. Review of Discharge Alternatives

The Permittee must review discharge alternatives for direct discharge of treated mine water on and around the mine site including consideration of physical (geomorphological and hydrological), chemical, and biological characteristics of potential receiving environments. The Permittee must ensure the proposed discharge locations have the capacity to receive the additional discharges of treated water and meet applicable environmental benchmarks.

2.9. Water Management Progress Reporting

The Permittee must report on all aspects of Section 2.8 every 6 months, beginning June 30, 2020 and continuing until such time as the Director deems the reporting no longer required. The reporting is to include, but is not limited to, the results of all BAT assessments, bench and pilot testing of treatment systems, optimization studies, discussion of proposed discharge locations that have the capacity to receive the treated water and changes from the previous progress reports and any other studies related to the Water Treatment and Discharge Program outlined in section 2.8. The reporting out must include documentation that the testing and piloting programs are relevant for all the different types of mine influenced water on site and for the 2022 Water Management Plan needs.

2.10. The 2022 Water Management Plan

The Permittee must submit a revised water management plan (the "2022 Water Management Plan") and an implementation schedule to the Director for approval prior to December 1st, 2020, outlining the water management and treatment options informed by the requirements in Section 2.8 and the most recent Reclamation and Closure Plan for the site. The 2022 Water Management Plan must address water discharge plans from December 31, 2022 onward.

The 2022 Water Management Plan must meet all of the following requirements:

(a) Provide for the full treatment and/or management of 1 in 10 wet year flows, including the associated freshet flows for all mine influenced water sources on site that do not meet Water Quality Guidelines, once the works are fully complete, without requiring the use of the Quesnel Lake outfall.

(b) Include all the essential information necessary for review and support of the final design, assessing its expected performance and the impacts of the discharge(s) on the receiving environment.

(c) A review of discharge alternatives including assessment of physical (geomorphological and hydrological), chemical and biological assessment of potential receiving environments for direct discharge of treated water on and around the mine site. The Permittee must ensure the proposed discharge locations have the capacity to receive the additional discharges of treated water.

(d) Detailed bench scale, and pilot scale results for all the proposed works. Performance assurances from vendors for active treatment systems may also be considered in lieu of pilot scale tests.

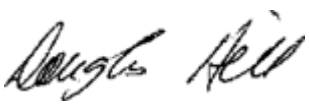
(e) Discussion and documentation of the ability and/or design criteria necessary, for the works to treat all contaminants known to be above all relevant BC Water Quality Criteria at the edge of the IDZ to levels below appropriate water quality guidelines where possible.

(f) Discussion of how all the bench and pilot system findings, and/or other performance assurances have been incorporated into the final design of the individual components and/or the system as a whole to assure discharge standards and/or B.C. Water Quality Criteria at the edge of any IDZ is met.

(g) A siting map and implementation plan for commissioning of all works necessary for full scale operations. Siting must also allow for potential future mining operations or ongoing mining operations to take place.

(h) An updated and refined water balance and water quality model acceptable to the Director, with appropriate sensitivity analyses for both onsite and receiving waters, which predicts the impacts to the receiving environment. The water quality model must use updated site monitoring data to demonstrate how well the model is calibrated to observed site conditions.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)



Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

(i) The plan must be prepared by a Qualified Professional.

(j) The Permittee must implement the approved 2022 Water Management Plan according to the approved implementation schedule.

(k) Any updates to the 2022 Water Management Plan or the implementation schedule must be approved by the Director prior to their implementation.

2.11. Communication Plan

The Permittee must maintain and implement the Communication Plan dated March 20, 2016. The Communication Plan must demonstrate the sharing of environmental data with the Soda Creek Indian Band, the Williams Lake Indian Band, the Cariboo Regional District, and the Community of Likely. Any changes to the communication plan must be discussed with the Public Liaison Committee and submitted to the Director prior to adoption.

2.12. Public Liaison Committee

2.12.1. The Permittee must maintain a Public Liaison Committee (PLC), in accordance with the approved Terms of Reference dated November 21, 2018. The Permittee must submit any Terms of Reference updates to the Director for approval 30 days prior to adopting them.

2.12.2. The Committee must meet at least quarterly to share and receive information about mine activities and the results of monitoring programs with interested members of the public, the Soda Creek Indian Band, the Williams Lake Indian Band, and regulating agencies.

2.13. Posting of Security

The Permittee must maintain a Reclamation Security as required by *Mines Act* Permit M-200.

2.14. Metal Contaminated Soil Milling

Tailings from the processing of metal contaminated soils in the mill from off mine site sources may be discharged to the tailings storage facility subject to all the following:

(a) The soils must be contaminated only with metals.
(b) The Permittee must notify the Director 14 days prior to receiving these materials at the mine site and provide results of chemical analysis of the material at the time of notification.
(c) Records of the volumes processed must be maintained and reported as part

of the annual reporting requirements.

2.15. Qualified Professionals

All documents submitted to the Director must be signed by the author and where specifically required by this permit, authored and signed by a Qualified Professional.

A “Qualified Professional" means an applied scientist or technologist specializing in an applied science or technology applicable to the duty or function, including, if applicable and without limiting this, agrology, biology, chemistry, engineering, geology or hydrogeology and who:

(a) is registered with the appropriate professional organization, is acting under that organization's code of ethics and is subject to disciplinary action by that organization; and,

(b) through suitable education, experience, accreditation and/or knowledge, may be reasonably relied on to provide advice within their area of expertise.

3. MONITORING REQUIREMENTS

3.1. Springer-Cariboo Pit Hydrogeology Work Plan and Assessment

3.1.1. The Permittee must submit a summary, when requested by and to the satisfaction of the Director, all hydrogeological work that has been completed downgradient of the Springer Pit and Cariboo Pit relevant to the Springer Pit filling and drawdown. The summary must describe all monitoring, modelling, and drilling investigations, and must provide recommendations by a Qualified Professional for additional hydrogeological investigations required to manage water in the pits during any future refilling and for mine closure. Recommendations must consider ongoing collection of water quality and geology data as the mine advances, review of the groundwater monitoring network, and hydrogeological model refinements, as appropriate.

3.1.2. Based on the review of the summary, the Director may require additional hydrogeological investigation and assessment of the hydrogeology along the seepage path from the Springer-Cariboo Pit to Bootjack Lake. Any additional monitoring recommended in the summary of hydrogeological work or required by the Director must be incorporated into updates of the Comprehensive Environmental Monitoring Plan.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

3.1.3. The recommendations of the summary of hydrogeological work required above, and all ongoing hydrogeological data collected must be re-assessed as part of the annual reporting requirements under section 4.2 of this permit. This includes an annual update to the characterization of the groundwater system in the area between the pit and the lake, refinements and updates to the seepage model near the pit and reporting on the groundwater monitoring network near the pit.

3.1.4. In addition, updated results and interpretations of the Springer-Cariboo Pit Hydrogeology Assessment, including an updated calibration and verification of the seepage model near the pit, must be prepared by a Qualified Professional and must be submitted to the Director prior to any planned refilling of Springer Pit above 1025 masl.

3.2. Comprehensive Environmental Monitoring Plan

3.2.1. The Permittee must continue to develop, submit and implement an ongoing Comprehensive Environmental Monitoring Plan (CEMP) to evaluate the effects of mining-related activities on the physical, chemical, and biological characteristics of Hazeltine Creek, Edney Creek, Bootjack Lake, Morehead Creek, Polley Lake, Quesnel Lake, Quesnel River, and associated riparian and upland areas.

3.2.2. An updated CEMP must be submitted to the Director for approval by March 31, 2020 and every three years thereafter.

3.2.3. The Permittee must undertake monitoring in accordance with the approved CEMP immediately following its approval.

3.2.4 The CEMP must meet all the following requirements:

(a) Consolidate and integrate all of the monitoring programs that are being conducted in the vicinity of the mine site and include, at minimum, surface water (quality and quantity), groundwater (characterization and interactions with surface water), sediments, soils, periphyton, phytoplankton, benthic invertebrates, zooplankton, fish, floodplain and upland vegetation, and wildlife.

(b) At a minimum address a three year time span.

(c) At a minimum include all sampling sites, frequency of sampling, variables to be analysed, method detection limits, sampling methods, sample analysis methods, and data analysis methods.

(d) The updated CEMP must be approved by the Director.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

3.2.5. The Permittee must provide all data and information collected under the CEMP to the Director, in electronic format, on a quarterly basis.

3.2.6. The Permittee must submit a three-year detailed monitoring program interpretive report to the Director by March 31, 2022, and every three years thereafter.

3.2.7. During the period of treated effluent discharge authorized by section 1.2 above, the Director may require expedited sampling, testing and reporting of treated effluent discharged during the spring freshet (March through July annually).

3.2.8. The Director may require revisions to the CEMP based on review of monitoring data and/or any other relevant information.

3.3. Effluent Toxicity Testing

Acute and chronic toxicity testing of discharges to Quesnel Lake authorized under section 1.2 of this permit must be conducted as follows:

Acute Bioassay	**Frequency**	**Source for Sample Collection**
96-hr LC50 Rainbow Trout	Monthly	HAD-03 - Effluent discharged to Quesnel Lake (E304230)
48-hr LC50 Daphnia magna	Monthly	HAD-03 - Effluent discharged to Quesnel Lake (E304230)
Chronic Bioassay	**Frequency**	**Source for Sample Collection**
7-day Ceriodaphnia dubia survival and reproduction, and 7-day ELS toxicity test with a salmonid fish and or other tests specified by the Director	Quarterly or as required by the approved CEMP	as specified in the approved CEMP when discharging direct to Quesnel Lake

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

3.4. Water Flow Measurement

3.4.1. The Permittee must provide and maintain suitable flow measuring devices and record staff gauge measurements, during open water, at surface water stations at W1B (Morehead Creek), W4A (North Dump Creek), W5 (Bootjack Creek) W12 (6K Creek), H1 (continuous, Upper Hazeltine Creek), H3 (Edney Creek), H4 (Polley Lake outlet) and H2 (continuous, Lower Hazeltine Creek), located approximately as shown on the attached Site Plan B, or at alternative monitoring stations satisfactory to the Director.

3.4.2. Springer Pit water level elevation shall be monitored and recorded on a monthly basis.

3.4.3. Staff gauge readings must be taken at the same time as stream flow measurements and/or water quality sampling are collected at the same or associated sites.

3.4.4. A stage discharge curve must be developed for all staff gauges.

3.4.5. All staff gauges and flow measuring devices must be checked and calibrated once per year, after June 15th but prior to August 31st of each calendar year.

3.5. Outfall and Pipeline Commissioning and Inspection

3.5.1. The Permittee must develop and implement a monthly visual inspection program for the pipeline from the Actiflo treatment plant to the outfall in Quesnel Lake. The monthly visual inspection program must include all of the following:

(a) The pipeline corridor must be visually inspected every month.

(b) Records of the monthly visual inspections must be made available for inspection by an Officer immediately upon request.

3.5.2. The Permittee must conduct a comprehensive annual inspection of the pipe line corridor by October 1st of each year.

3.5.3. The Permittee must conduct an underwater inspection of the diffusers every 5 years to ensure they remain in good working order.

3.5.4. An annual inspection report with recommended remedial actions must be prepared by a Qualified Professional and submitted to the Director within 60 days of completion of the comprehensive inspection.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

3.5.5. The pipeline and outfall must have all the following signage:

(a) A sign must be maintained along the alignment of the outfall facing Quesnel Lake above the high water mark.

(b) Signs must identify the nature of works.

(c) Signs must be posted along the effluent pipeline right-of-way at points of public access to identify the right-of-way.

(d) All signs must include emergency contact information.

3.6. Climate Monitoring

The Permittee must maintain meteorological stations and measure continuous daily precipitation; daily maximum, minimum and mean temperature; and daily evaporation calculation or suitable alternative as approved by the Director. Climate Monitoring sites are as shown in Site Plan C.

3.7. Sampling and Analytical Procedures

3.7.1. The Permittee must carry out sampling in accordance with the procedures described in the "British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013 Edition (Permittee)" or most recent edition, or by alternative procedures as authorized by the Director.

3.7.2. The Permittee must carry out analyses in accordance with procedures described in the "British Columbia Laboratory Manual (2015 Permittee Edition)", or the most recent edition or by alternative procedures as authorized by the Director.

Copies of the above manuals are available on the Ministry web page at https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/laboratory-standards-quality-assurance/bc-field-sampling-manual.

3.7.3. Bioassays must be conducted using the following methods:

(a) the "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout", Report EPS 1/RM/13 December 2000;

(b) the "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna", Reference Method EPS 1/RM/14 December 2000;

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

(c) the "Biological Test Method: Toxicity Tests Using Early Life Stages of Salmonid Fish (Rainbow Trout)", Report EPS 1/RM28, July 1998 - Embryo/Alevin;

(d) the "Biological Test Method: Test of Reproduction and Survival Using the Cladoceran Ceriodaphnia dubia", Report EPS l/RM/21, February 2007; or,

(e) by suitable alternative procedures as authorized by the Director.

3.8. Quality Assurance

3.8.1. The Permittee must maintain and implement a "Quality Assurance Manual" consistent with "British Columbia Field Sampling Manual for Continuous Monitoring plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples 2013 Edition (Permittee)", or most recent edition. The Permittee must ensure that all data submitted as a requirement of this permit is produced in accordance with the Quality Assurance Manual, that data is handled and reviewed in accordance with protocols established in the Manual and is accompanied by quality assurance data required by the Manual. The Permittee must provide the Director with any updates to this Manual within 30 days of adoption.

3.8.2. Analysis of samples for parameters designated under the Environmental Data Quality Assurance Regulation must be at a laboratory registered for the designated parameter under the Regulation. In addition, the Permittee must participate in quality assurance audits as required by the Regulation.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

4. REPORTING

4.1. Routine Reporting

4.1.1. In each month that discharge occurs as authorized by section 1.2 above, the Permittee must submit a monthly report, suitably tabulated and formatted, to the Director summarizing:

(a) the volume of treated effluent discharged,

(b) a summary of continuous Turbidity readings of the treated effluent discharged, and

(c) the most recently available water quality results for the effluent discharged, including toxicity.

4.1.2. Each monthly report must be submitted within seven days of the end of previous month via email to EnvAuthorizationsReporting@gov.bc.ca. Each monthly report must also contain and present all data submitted in the previous 2 monthly reports in a manner that would identify potential trends.

4.1.3. Each monthly report must also be provided to the Williams Lake Indian Band and Xatsull First Nation and be made available to the Public Liaison Committee within 7 calendar days of the submission to the Ministry.

4.1.4. The Permittee must cause each data submission required by this Authorization to include a statement outlining the number of exceedances of permitted discharges that occurred during the reporting period, the dates of each such exceedance, an explanation as to the cause of the exceedances, and a description of the measures taken by the Permittee to rectify the cause of each such exceedance. If no exceedances occurred over the reporting period, the required statement may instead indicate that no exceedance of permitted discharges occurred during the reporting period.

4.1.5. The Permittee must submit all data required to be submitted under this section by email to the Ministry's Routine Environmental Reporting Submission Mailbox (RERSM) at envauthorizationsreporting@gov.bc.ca or as otherwise instructed by the Director. For guidelines on how to properly name the files and email subject lines or for more information visit the Ministry website: https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/data-and-report-submissions/routine-environmental-reporting-submission-mailbox.

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

4.1.6. The Director may require modification to the monitoring program based on the evaluation of the monthly and annual reports and on any other information that pertains to the operations and or discharges.

4.1.7. The Permittee must upload monitoring data associated with this permit to the Ministry's Environmental Monitoring System (EMS) database, within 45 days of the end of the three month period in which the data is collected.

4.2. Annual Report

4.2.1. The Permittee must also submit by March 31st of each year, a comprehensive annual report of all monitoring via email to the above email address, in a format suitable for public release. The annual report must include:

(a) all monitoring sample results required under the permit,

(b) an evaluation of quality assurance, including collection, sampling, and data handling protocols,

(c) an evaluation of the treatment plant operation and control,

(d) an evaluation of the impacts of the mining operation on the receiving environment from the previous year,

(e) a summary of any non-compliance with the permit and other incidents that may have led to impacts to the receiving environment,

(f) updates of the water balance, and a calibration assessment of the water balance and water quality models,

(g) assessment of the outfall dispersion and dispersion modelling for the Quesnel Lake discharge,

(h) an update to any modeling relating to the Springer Pit groundwater seepage and its impacts on Bootjack Lake as described in section 3.1,

(i) a progress update with respect to the 2022 Water Management Plan,

(j) a review and update of the assessment of acid rock drainage (ARD) potential and water quality impacts from mine waste management,

(k) a comparison of monitoring data with water quality guidelines, predictions and targets,

(l) an update on the progress of reclamation and any updates to the reclamation plan that impact on site water quality,

(m) an evaluation of the effectiveness of the Surface Runoff and Mine Drainage Control programs,

(n) a summary of the Public Liaison Committee meetings, including any issues and concerns presented,

(o) an evaluation of the Outfall and Pipeline Inspection program; and,

(p) trend analysis (graphs) of water monitoring data at each site for the past 5 years.

4.2.2. Monitoring data and the analysis of that data, as it will be presented in the annual report, must be reviewed by a third party Qualified Professional.

4.2.3. A groundwater monitoring program review, including but not limited to sampling, well locations, site water balance, interpretation of data trends and possible environmental impacts, and suitable recommendations, must be completed for the entire mine site at least every three years, with the next review required by March 31, 2022.

4.2.4. A copy of the annual report must be provided to the Williams Lake Indian Band and Xatsull First Nation within 30 days of the report being submitted to the Director.

4.3. Non-compliance Reporting

4.3.1. The Permittee must immediately notify the Director or designate of any noncompliance with the requirements of this Permit and take appropriate remedial action. Written confirmation of all non-compliance events, including available test results is required within 24 hours of the original notification unless otherwise directed by the Director.

4.3.2. Both the initial notice and the confirmation must also be emailed to EnvironmentalCompliance@gov.bc.ca.

4.3.3. Within 30 days of any non-compliant event, the Permittee must submit a follow-up report to the Director and the above mailbox that includes, but is not necessarily limited to the following:

(a) all relevant test results related to the non-compliance instance(s),

(b) an explanation of the most probable cause(s) of the noncompliance(s); and,

(c) remedial actions taken and planned to prevent similar noncompliance(s).

Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

4.4 **Reporting of Toxicity Failure**

4.4.1. The Permittee must immediately notify the Director of any toxicity failure according to the Non-Compliance Reporting requirements in Section 4.3. For the purpose of this section, a sample is considered to have failed the specific toxicity test if:

(a) 96-hr LC50 Rainbow Trout: Using 100% effluent concentration, more than 50% of the fish die within a 96 hour test period,

(b) 48-hr LC50 Daphnia magna: Using 100% effluent concentration, more than 50% of the organisms die within a 48 hour test period,

(c) 7-day Ceriodaphnia dubia reproduction: The water is determined to cause greater than 25% inhibition of survival and reproduction; or,

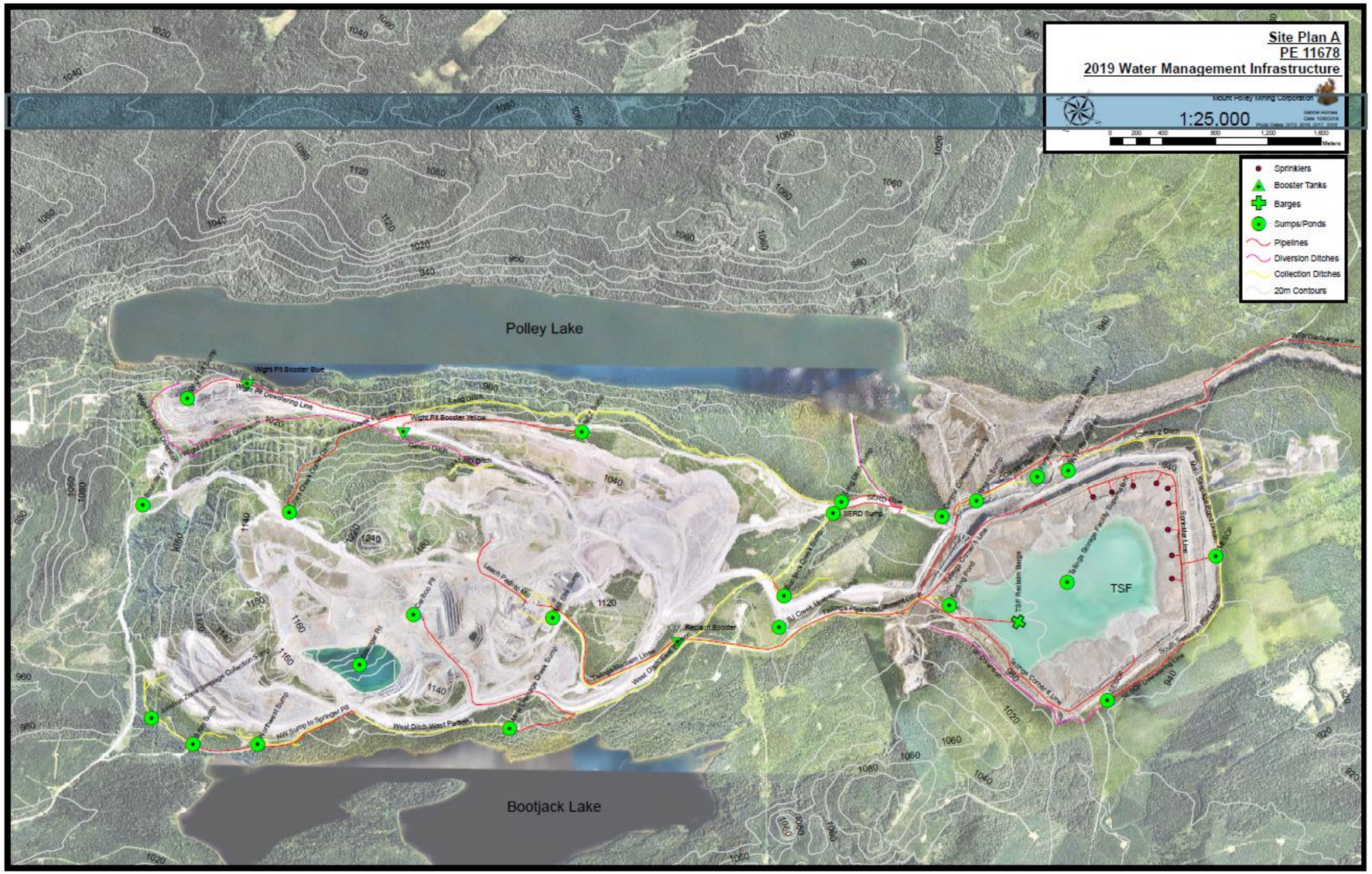
(d) 7-day ELS toxicity test with a salmonid fish: The water is determined to cause greater than 25% non-viable embryos.

4.4.2. The Permittee must investigate each toxicity failure to determine the cause(s). Reasonable efforts must be made to obtain preliminary and in progress results from the analytical laboratory during the toxicity testing. The Permittee must make immediate arrangements to retest in the event of potential and confirmed failures. The Director may require additional toxicity testing based on the evaluation of results from toxicity testing and the causes of failure.

4.5. **Other Documents**

All documents to be submitted to the Director must be sent as a separate document and named according to the name listed in this permit.

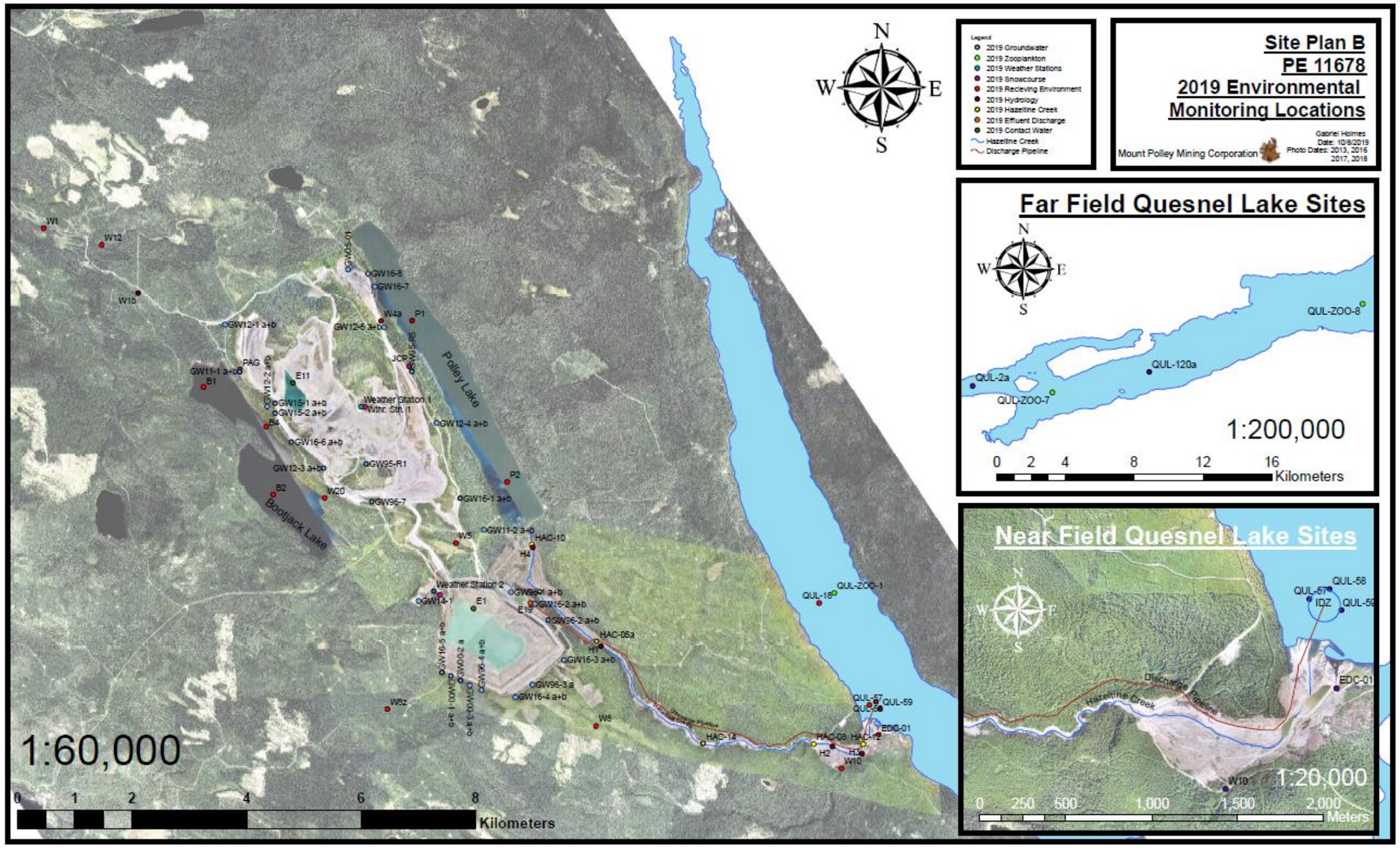
Site Plan A – Water Management Works



Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

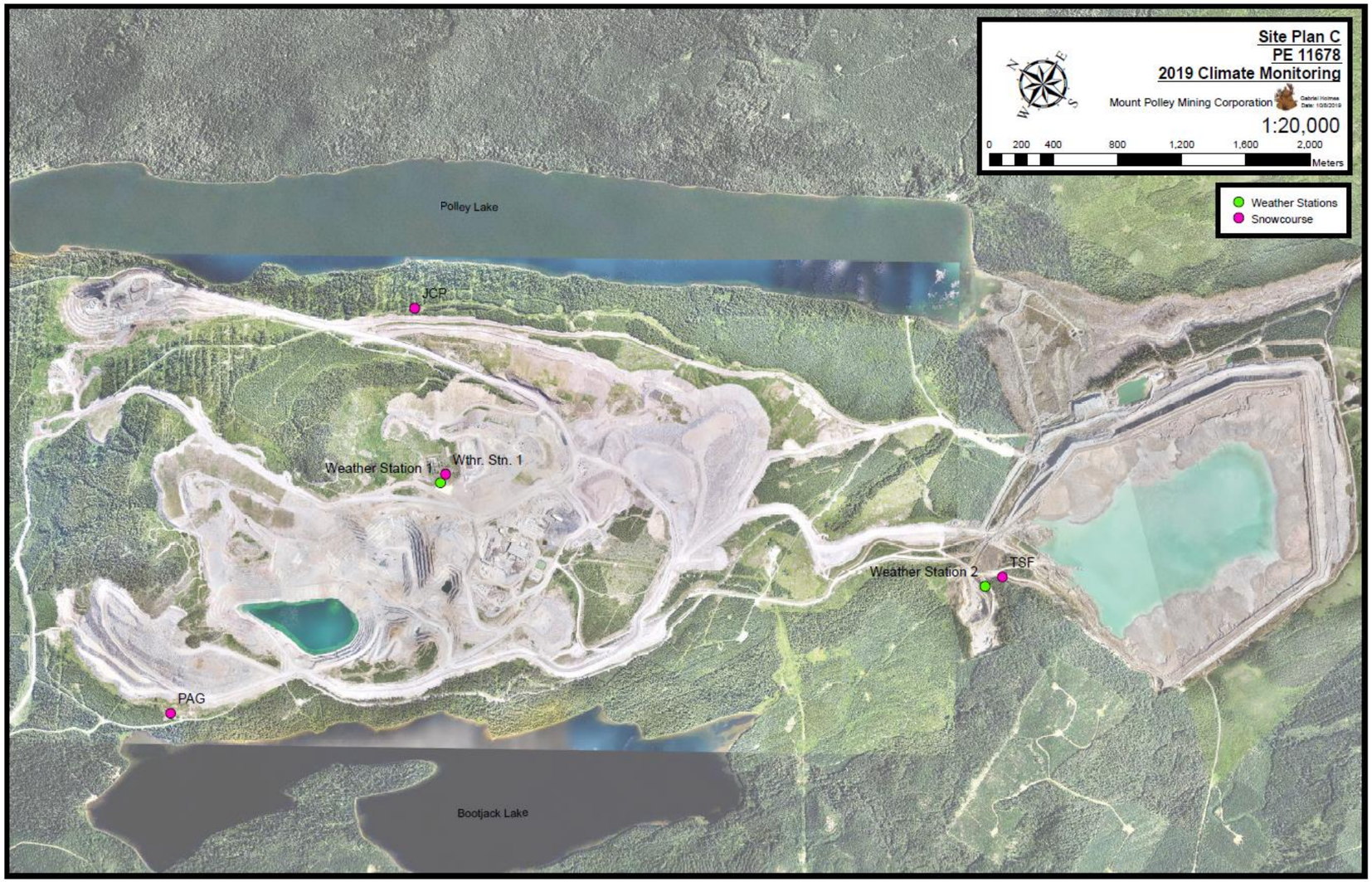
Site Plan B – Monitoring Sites



Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations

Site Plan C – Climate Monitoring Locations



Date issued: May 30, 1997
Date amended: February 1, 2020
(most recent)

Douglas J. Hill, P.Eng.
for Director, *Environmental Management Act*
Mining Operations