

YUKON WATER BOARD

Pursuant to the *Waters Act* and *Waters Regulation*, the Yukon Water Board hereby grants a Type B water licence for a quartz mining undertaking to:

Hudson Bay Mining and Smelting Co. Ltd.
P.O. Box 1500
Flin Flon, Manitoba R8A 1N9

LICENCE NUMBER: QZ08-083
LICENCE TYPE: B **UNDERTAKING:** QUARTZ MINING
LOCATION: Sekie Creek #2
MAP CO-ORDINATES: Latitude: 63° 06' N Longitude: 130° 05' W
PURPOSE: To deposit a waste for a quartz mining undertaking.
EFFECTIVE DATE: The effective date of this Licence shall be the date on which the signature of the Chairperson of the Yukon Water Board is affixed.
EXPIRY DATE: December 31, 2012

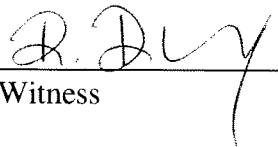
This Licence shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and the *Waters Regulation* made thereunder.

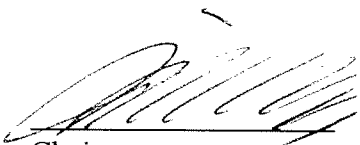
This licence shall be deemed to be amendment 4 of licence number QZ99-046.

Dated this 9 day of

Approved by:

April, 2009.


Witness


Chairperson
YUKON WATER BOARD

PART A - DEFINITIONS

“Act” means *Waters Act* and any amendments thereto.

“Application” means Water Use Applications QZ99-046, QZ04-068, QZ07-077, QZ08-080, and QZ08-083 including any additional submissions and/or revisions submitted to the Yukon Water Board by the Licensee, up to the date of the Board’s decision.

“Board” means the Yukon Water Board.

“Inspector” means any person designated as an Inspector under the Act.

“Natural Boundary” means the visible high water mark of any lake, river, stream or other body of water where the presence and action of water is so common and usual and so long continued as to mark upon the soil of the bed of the lake, river, stream or other body of water a character distinct from that of the banks thereof, both in respect to vegetation and in respect to the nature of the soil itself. In addition, the best estimates of the edge of dormant or old side channels and marsh areas are considered to be Natural Boundaries.

“Regulation” means the *Waters Regulation* made under the Act.

“Waste” means any substance as defined in the Act.

“Watercourse” means any stream, lake, pond, river, creek, spring, ravine or swamp whether ordinarily containing water or not.

“Wetted Perimeter” means the horizontal extent of the present water level while the work is taking place.

PART B - GENERAL CONDITIONS

Representations, Warranties and Undertakings

1. In this licence, the Board has relied on the representations, warranties and undertakings provided by the applicant in the material filed in the Application.
2. Where there is a discrepancy between the Application and this licence, the conditions of this licence shall prevail.

Other Laws

3. No condition of this licence limits the application of any other federal, territorial, first nation or municipal legislation.

Correspondence

4. Where any direction, notice, order or report under this licence is required to be in writing, it shall be given:

- a) To the Licensee, if delivered, faxed or mailed by registered mail to the following address:

Hudson Bay Mining and Smelting Co. Ltd.
P.O. Box 1500
Flin Flon, Manitoba R8A 1N9
Fax: (204) 687-2173

and shall be deemed to have been given to the Licensee on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

- b) To the Board, if delivered, faxed or mailed by registered mail to the following address:

Yukon Water Board
Suite 106, 419 Range Road
Whitehorse, YT Y1A 3V1
Fax: (867) 456-3890

and shall be deemed to have been given to the Board on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

- c) The Board or the Licensee may, by notice in writing, change its address for delivery.

Non-Compliance

5. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, subject to the Act, cancel the licence.

Other Uses

6. If, subsequent to the issuing of this licence, the Licensee uses water and/or deposits Waste in one or more ways not authorized in this licence, and the combined effect of those uses and/or deposits of Wastes, as determined by an Inspector:

- a) has no potential for significant adverse environmental effects; and
b) does not interfere with existing rights of other water users or Waste depositors; and
c) satisfies the criteria set out in column 2 of Schedule 7 of the Regulation,

no amendment to this licence will be required for that use of water and/or deposit of Waste.

Spills and Unauthorized Discharges

7. The Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244, and implement the Spill Contingency Plan should a spill or an unauthorized discharge occur. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.
8. All personnel shall be trained in procedures to be followed and the equipment to be used in the containment of a spill.
9. The spill contingency plan shall be posted on site for the duration of the works.

Hazardous Materials Storage

10. A complete inventory of chemicals, fuels, oils, lubricants and other hazardous materials, and their locations, shall be maintained by the Licensee and provided to the Inspector upon request.

Annual Reports

11. The Licensee shall submit annual reports to the Board. The initial report shall cover the period from January 1 to December 31 of each year and shall be submitted to the Board on or before April 1 of the following year.
12. Annual reports shall include the information required by this licence and by the Regulation, including, but not necessarily limited to:
 - a) summaries of all data generated as a result of the monitoring requirements of this licence, including analysis and interpretation by a qualified individual or firm and a discussion of any variances from baseline conditions or from previous years' data; and
 - b) a report on all activities carried out during the preceding year as part of the study of contaminant loadings in Sekie Creek #2 and the South MacMillan River; and
 - c) results of sediment and benthic invertebrate monitoring; and
 - d) a summary of activities carried out under the Adaptive Management Plan; and
 - e) details pertaining to the development of the final closure plan; and
 - f) details of those actions taken to implement the sludge and water management contingency plan; and
 - g) details of the monitoring activities carried out for the cover on the waste rock dump; and
 - h) details of those actions taken to implement the erosion and sediment control plan.

Reports

13. All reports required to be submitted to the Board will be unbound and reproducible by standard photocopier, accompanied by one electronic copy on a CD/DVD.
14. The Licensee shall provide to the Board 5 additional copies of all reports. The additional copies may be either 5 bound paper copies or 5 electronic copies on individual CDs/DVDs.
15. Electronic copies shall be IBM compatible in one of the following formats: Word 97 - 2003, Excel 97 - 2003 workbooks, or Adobe pdf format.

Term of Licence

16. The term of this licence is for the period from the effective date to December 31, 2012.

PART C - OPERATING CONDITIONSWater Use and Waste Deposit

17. The Licensee is hereby authorized to:
 - a) deposit Waste in the form of discharge water from the existing mine adit to Sekie Creek #2 by constructing a lined channel; and
 - b) construct a concrete plug in the existing mine adit, and associated workings; and
 - c) construct a lined sludge containment pond; and
 - d) install a synthetic liner on the waste rock dump; and
 - e) obtain water up to a maximum of 120 cubic metres from the South MacMillan River for the purpose of mixing concrete,

as described in the Application, and subject to the conditions of this licence.

PART D - DESIGN AND CONSTRUCTIONDesign

18. The adit plug and associated structures, adit drainage channel and sludge holding pond shall be constructed in accordance with the design drawings which were sealed by a Professional Engineer licensed to practice in Yukon and submitted as part of the Application.
19. The Licensee shall submit as-built design drawings of the adit plug and associated structures, adit drainage channel and sludge holding pond, sealed by a Professional Engineer licensed to practice in the Yukon, to the Board within 60 days of completion of each structure.

20. Where site conditions require minor modifications to the designs submitted to the Board, the Licensee shall notify the Board, a minimum of 10 days in advance, of the details of the modifications or variations from final detailed design, specifications and quality assurance/quality control procedures previously submitted to the Board, provide a detailed construction schedule and the name and contact number(s) of the construction superintendent. The notice shall be in writing and must include an explanation of the reasons for the change and an assessment of the potential impact on the performance of the works. The notice shall be sealed by a Professional Engineer licensed to practice in Yukon.

Water Pumps

21. The Licensee shall provide barriers consisting of fish guards, screens, coverings or nets on all water intakes as follows:
- a) Screens or nets shall have a minimum of 3.5 openings per centimetre and openings no greater than 3.2 millimetres along any given side.
 - b) If a punch plate or similar material is used, openings shall be no greater than 3.2 millimetres in length or width.
 - c) There shall be no less than 929 square centimetres of open screen for every 205 litres per minute being withdrawn.
 - d) The barriers shall be monitored and maintained to ensure that they function effectively at all times when water is being withdrawn.
 - e) The barriers shall be designed and installed in such a manner that the screen is submerged and a uniform flow distribution is maintained through the total screen area.
 - f) Water shall not be withdrawn when the barrier is removed for renewal, repair or inspection.
 - g) The Licensee shall cease pumping or decanting and take remedial action if there is alteration to the bed or bank of the water channel.

PART D – EFFLUENT QUALITY STANDARDS

22. After September 30, 2011, a grab sample of any Waste discharged at Station W5, and any other point of entry of a Waste discharge into receiving waters, shall meet the following effluent quality standards:

Parameter	Concentration
Arsenic (dissolved)	1.0 mg/L
Copper (total)	1.4 mg/L
Lead (total)	0.4 mg/L
Nickel (total)	2.1 mg/L
Zinc (total)	12.6 mg/L

PART E – MONITORING AND SURVEILLANCE

23. The Licensee shall collect and analyze a minimum of 3 samples from the sludge that is stored in the sludge containment pond. The samples shall be collected at various points in time to provide representative samples of the stored sludge. Analysis of these samples to include acid-base accounting, total metals and shake flask extraction.
24. Prior to installation of the adit plug and flooding of the underground workings, the Licensee shall collect and analyze a minimum of 3 samples from sludge that is located in the underground workings that will be flooded. Analysis of these samples to include acid-base accounting, total metals and shake flask extraction.
25. Prior to installation of the adit plug and flooding of the underground workings, the Licensee shall collect and analyze a minimum of 1 sample of flood water from the underground workings that are flooded at the time of collection.
26. The Licensee shall conduct surface water monitoring activities at the following locations:

Station	Location	Description	Easting (UTM Zone 9 NAD83)	Northing (UTM Zone 9 NAD83)
W2	Tom Creek	First upstream tributary from the mine adit, approximately 200 m from the confluence with Sekie Creek #2	441,463	7,003,964
W3	Sekie Creek #2 upstream of site	Approximately 500 m upstream of the mine adit of the exploration camp and small waterfall on Sekie Creek #2	441,765	7,003,914
W3B	Sekie Creek #2 upstream of W3	Approximately 300 m to 500 m upstream of W3 and the mining-	441,949	7,003,773

Station	Location	Description	Easting (UTM Zone 9 NAD83)	Northing (UTM Zone 9 NAD83)
	and mining disturbances	related disturbances on Sekie Creek #2		
W5	Adit discharge	Less than 10 m from the adit portal	441,645	7,004,218
W6	Sekie Creek #2 downstream of adit	Approximately 200 m downstream of the confluence of the adit discharge and Sekie Creek #2 and down gradient of the rock dump	441,541	7,004,314
W8	Sekie Creek #2 crossing	North Canol Road crossing of Sekie Creek #2	439,443	7,005,615
S2	Sekie Creek #2 upstream of Tributary T5	Sekie Creek #2 approximately 1.5 Km downstream of W6 and upstream of T5	440,337	7,005,106
T4	Tributary of Sekie Creek #2 downstream of W6	Tributary of Sekie Creek #2 approximately 200m downstream of W6 and upstream of road crossing	441,436	7,004,645
T5	Tributary of Sekie Creek #2 downstream of S2	Tributary of Sekie Creek #2 approximately 20m downstream of S2	440,325	7,005,073
W11	MacMillan River upstream of Sekie Creek #2.	Meander in river adjacent to airstrip approximately 800 m upstream of the mouth of Sekie Creek #2	439,279	7,006,052
W12	MacMillan River downstream of Sekie Creek #2.	Staight section of river adjacent to North Canol Road approximately 950 m downstream of the mouth of Sekie Creek #2 and 1.3 km upstream from Macintosh Creek	439,100	7,005,164
W13	MacMillan River #2 Crossing.	15 km downstream from the mouth of Sekie Creek #2	439,210	6,996,140

27. Within 60 days of the effective date of this licence, the Licensee shall submit to the Board the location, description and UTM coordinates, bore hole logs and the frequency of monitoring for wells described in Exhibit 1.2.1 of the Application as BH01-05, BH02-05, BH03-05 and BH04-05. The Licensee shall implement sampling and analyses of the groundwater based on this submission.

28. The following data shall be obtained at each monitoring station:

Field Measurements

- i) conductivity
- ii) pH
- iii) water temperature
- iv) rate of flow
- v) field notes
- vi) photographs

Laboratory Analysis

- i) Physical tests: pH conductivity, water temperature, Total Suspended Solids, and hardness.
- ii) Dissolved anions: alkalinity, acidity, and total sulphate.
- iii) Total and dissolved ICP metals: Including, but not necessarily limited to, Aluminum, Antimony, Arsenic, Barium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Nickel, Selenium, Silver, Thallium, and Zinc.

29. Frequency of Sampling:

- a) Sampling shall be carried out at each monitoring station in June, July, August and September of each year.
- b) Subject to safe access, sampling shall be carried out at each monitoring station in October and November of 2009.
- c) Weekly monitoring of water quality prior to adit discharge at stations W2, W3B, W5, W6, T4, S2, T5 and W8.
- d) During construction and for one year following the installation of the adit plug sampling shall be carried out at each monitoring station for ammonia, nitrate and nitrite.

30. All data collection and analyses shall be conducted in accordance with the current edition of Standard Methods for Examination of Water and Waste Water, prepared and published jointly by the American Water Works Association and the Water Pollution Control Federation.

Sediment and Benthic Invertebrate Monitoring

31. The Licensee shall carry out a sediment monitoring program and a benthic invertebrate monitoring program, with sampling and analysis conducted as described below at sampling stations W11, W12 and W13 for each program. The sampling shall occur prior to adit discharge and during the first week post adit plug installation in 2009 and once annually thereafter. The studies will be carried out by persons qualified to do so by education and/or experience. The results of the studies will be included in the next annual report.
- a) Sediment sampling shall be carried out as follows:
 - i) sediment samples shall be collected in replicates of three from the active channel, directly into high density plastic sample jars, using an aluminum or Teflon scoop.
 - ii) samples shall be dried and screened, using sieves at ASTM mesh numbers 10, 20, 40, 60, 100, 140 and 270 (ASTM-E11-61) and the fraction weights shall be recorded.
 - iii) a sub-sample composed of material passing through the 100 mesh number sieve shall be analyzed for metals by a 33 element ICP scan. Loss on ignition shall also be determined by heating the sample to 600 degrees C.
 - b) Benthic invertebrate sampling shall be carried out as follows:
 - i) three replicate samples shall be taken by a circular Hess sampler (0.0934 m²) or Waters and Knapp sampler (0.089 m²) equipped with a 250 µm mesh net.
 - ii) samples shall be preserved with 10% formalin solution, and identified to the lowest possible taxon (usually genus) and counted.
 - iii) stream information collected at the time of the benthos collection shall include velocity, depth, temperature, substrate conditions and riparian conditions.

PART F – PLANS

32. The Licensee shall submit a conceptual Adaptive Management Plan for the adit plug and associated workings at the Tom Property to the Board no later than May 31, 2009. The plan shall include at a minimum, but not necessarily limited to:
- a) the recommendations included in Exhibit 5.1 of the Water Use Register for QZ08-083 and which has been attached to this licence as Appendix A; and
 - b) details on identification and the sampling program proposed for groundwater seepage at the site, which shall include the base of the waste rock dump and the slopes influenced by flooding of the underground workings; and
 - c) details pertaining to the identification and sampling of water quality and discharge rates for artesian boreholes at the site; and

- d) a contingency for additional water quality sampling during the period from November 2009 to June 2010 in the event that actual water quality is worse than predicted; and
- e) a plan for the installation of survey monuments during 2009 to monitor slope stability on an annual basis, including written description of the location of the monuments and UTM co-ordinates; and
- f) a plan for the installation, maintenance and repair of a synthetic liner as a cover on the waste rock dump.

A summary of activities carried out under the plan shall be submitted to the Board as part of the annual report.

33. The Licensee shall submit a final Adaptive Management Plan for the adit plug and associated workings at the Tom Property to the Board no later than November 30, 2009. The plan shall include at a minimum, but not necessarily be limited to:
- a) the requirements included in clause 32 of this licence; and
 - b) the recommendations included in Exhibit 5.1 of the Water Use Register for QZ08-083 and which has been attached to this licence as Appendix A of this licence.

A summary of activities carried out under the plan or any updates to the plan shall be submitted to the Board as part of the annual report.

34. The Licensee shall submit a final closure plan to the Board in the form of an application to amend licence QZ99-046. The application shall be submitted, a minimum of 6 months prior to the expiry of this licence and shall include, but is not necessarily limited to:
- a) details of any residual activities required to be carried out for final decommissioning and closure of this site, associated timelines and supporting rationale; and
 - b) details pertaining to the final remediation of boreholes at the site.

Details pertaining to the development of the plan shall be provided to the Board as part of the annual report.

35. The Licensee shall develop and submit a sludge and water management contingency plan to the Board within 60 days of the effective date of this licence. The contingency plan shall include, but not necessarily be limited to, details describing the management of any volume of sludge that results from the adit discharge and excess volumes of water that may be encountered and the capability of increasing facility dimensions. Details of those actions taken to implement this plan shall be included in the annual report.
36. The Licensee shall develop and submit to the Board, within 60 days of the effective date of this licence, a monitoring plan for the cover that is installed on the waste rock dump. The plan shall include, but not be limited to, details that describe how the Licensee will monitor

the size and effectiveness of the cover and assess the condition of the cover during the term of this licence. Details of all monitoring shall be included in the annual report.

37. The Licensee shall develop and submit to the Board, within 60 days of the effective date of this licence, a plan that details the erosion and sediment control best management practices that will be employed during construction, as well as, to address long term stabilization of the adit site and all associated structures. Details of all activities undertaken to implement the plan shall be included in the annual report.
 38. The Licensee shall implement the plans required by this section of the licence, unless directed otherwise by an Inspector.
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APPENDIX A

- A) The following elements shall form the basis of an Adaptive Management Plan specific to the discharge from the Tom Valley adit:

Assessment and Indicators

- Definition of problem and objective;
- Identify key indicators that are practical and measurable for each objective;
- Select indicators that will provide appropriate short and long term responses;
- Identify sensitivity of indicators to changes in parameters being measured;
- Identify uncertainties;
- Define frequency of indicator measurement;
- Identify who is responsible for collecting indicator data.

Actions and Implementation

- Outline the predicted effects of the actions;
- Actions must be linked to indicators;
- Evaluate possible alternative actions should predictions be exceeded;
- Describe the possible unknown or detrimental effects of the actions;
- Identify emergency responses to quick changes in indicators.

Monitoring

- Identify frequency and duration of monitoring once action is implemented;
- Identify additional indicators that may be measured once action implemented;
- Describe analytical methods, laboratories and expected result turnaround times;
- Identify any changes to monitoring schedule should outcomes vary greatly from predictions, or changes are made to actions;
- Identify monitoring frequency once actions are ceased.

Evaluation and Reporting

- Outline frequency of reporting data;
- Identify data that will be documented;
- Identify the timeframe for reporting data once it is received;
- Identify methods of distribution of data and to whom data will be reported;
- Describe how and when effectiveness of actions will be reported.

Adjustment to AMP

- Describe how modifications to possible future actions will be evaluated and documented;
- Reevaluate and document new predictions of performance;
- How often will AMP be reviewed and updated.

B) The following shall also be discussed in the AMP:

- Failure of bulkhead;
- Monitoring of pressure behind bulkhead;
- Monitoring changes in water quality and quantity from existing seeps and drillholes;
- Development of new seeps;
- Effectiveness of waste rock cover;
- Need to modify waste rock cover to maximize coverage;
- Damage to waste rock cover and maintaining its structural integrity;
- Insuring sludge remains physically and chemically stable;
- Possible need for treatment during initial filling and flushing of underground workings;
- Monitoring effects of avalanches and slides from steep slopes on mitigative works.