

REASONS FOR DECISION

WATER USE APPLICATION QZ06-073 AURCHEM EXPLORATION LTD. MT. VICTORIA REGION

The Yukon Water Board (“the board”) has concluded deliberations pertaining to Water Use Licence Application QZ06-073 for a Type B Licence for a quartz mining undertaking.

The purpose of the application is to conduct a pilot milling project in the Mt. Victoria Region that includes surface exploration, stockpiling waste rock and segregation of potentially acid generating rock, water use and deposit of waste.

Notice of this application was provided in accordance with the requirements of the *Waters Act*. In response, the board received interventions from the following parties:

Government of Yukon-Energy, Mines & Resources, Mining Lands (“GY-EMR”) which indicated no concerns or comments with the undertaking, and Government of Yukon-Environment, Environmental Affairs (“GY-ENV”), and Environment Canada (“EC”).

The board did not receive a request for a public hearing. The applicant did respond to the interventions from GY-ENV and EC.

In making licensing decisions pertaining to this application, the board took into account the *Waters Act*, *Waters Regulation*, the application, recommendations from the interveners, the board's standard licence requirements, Territorial Resources Base Map 115I/03, the YESAA Decision Document, Chapter 14 of the Umbrella Final Agreement and board policies.

Environmental Assessment

This application required an environmental assessment under the *Yukon Environmental and Socio-economic Assessment Act* (YESAA).

Prior to making licensing decisions, the board reviewed the Decision Document that is included in the water use register. As per section 86 of YESAA, the board is satisfied that the issuance of licence QZ06-073 is not contrary to the terms and conditions included in the Decision Document; however, the board noted that the Decision Document restricted the board's ability to make licensing decisions under the *Waters Act*.

Expiry Date

The Licensee proposed that the licence expire in the year 2010 to coincide with the existing Mining Land Use Approval. The board noted that a copy of the Approval was not included in the water use application nor was a copy provided by GY-EMR as part of its intervention in order to confirm the expiry date of the Approval. In determining the expiry date for the licence, the board considered the year proposed by the applicant and the recommendations of GY-ENV and Environment Canada regarding the submission of closure plans. The board determined that the licence will expire on December 31, 2012 in order to allow for the 5 year mining plan proposed in the application, as well as, to allow sufficient time for the development and submission and implementation of the permanent closure plans. Further details of the board's decisions regarding the permanent closure plans are provided below.

Water Use

GY-ENV recommended that the board not allow any water use, other than as proposed in the application. For clarification to the parties, the board only considers the water uses proposed by the Licensee in the application and has included authorization in clause 13 of the licence for the use of water. The authorization to use the water shall be as described in the application and subject to the conditions of the licence.

Design Drawings

The board agreed with the interveners that the design drawings provided as part of the application are conceptual. The board included conditions in the licence that require the Licensee to submit final detailed design drawings, sealed by a Professional Engineer licenced to practice in Yukon for the construction of the tailings settling pools, including a containment berm for each pool and the temporary rock storage areas. Since no party proposed a timeframe for the submission of the final designs, the board determined that the submission deadline for the drawings will be no less than 30 days prior to the commencement of construction which provides a reasonable timeframe for the submission of the drawings and also provides consistency in the licence.

The board also requires the Licensee to submit as constructed (record) drawings and construction reports for all structures and facilities. Similar to its decision regarding the final design drawings, the board determined that a 90 day timeframe would provide a reasonable period of time for the Licensee to submit the drawings.

Existing Lagoon and Tailings Settling Pools

GY-ENV recommended that design drawings, sealed by a Professional Engineer should be submitted for lagoon construction. The board was satisfied with the Licensee's response to the GY-ENV intervention which explained that the lagoon exists and is not a structure or facility that will require construction. The board determined that design drawings would not be required for the lagoon.

However, in regards to the tailings settling pools, which the Licensee described as swimming pools in the application, the board determined that design drawings would be required for the pools, including the requirement for specifications for the liners and a containment berm for each pool. The board requires the design drawings to be sealed by a Professional Engineer licenced to practice in Yukon. This requirement is included in clause 24 of the licence.

In its deliberation of setting a timeframe for the submission of this information, the board noted that no party intervened to the board to recommend a timeframe for the submission of the designs and specifications. In the absence of any recommendation to consider, the board concluded that a minimum of 30 days prior to commencement of operations would be satisfactory for the submission of designs and specifications, as well as, for other plans required by the licence to maintain consistency in the licence.

Waste Rock

GY-ENV recommended that any waste rock with the potential for acid generation should be segregated and stored in a manner that prevents drainage to ground or to any watercourse. The board noted that the applicant did respond to the intervention to advise the board that the tailings stockpile and the waste stockpile will be separated.

The board determined that the rock monitoring and testing plan will require the Licensee to include details of any decision making protocol involving the segregation of rock materials in the storage area. The board included clause 25(g) in the licence, which requires the procedures for placement of rock in the temporary storage areas and plans for the segregation of rock types based on acid rock drainage potential to be submitted as part of the site assessment report for the temporary rock storage areas. The board also included clause 29 in the licence which requires all waste rock and tailings that are potentially acid generating to be relocated and stored in a lined storage area. With the inclusion of these conditions in the licence and the requirement for the placement of the potentially acid generating waste rock and tailings in a lined storage area, the board determined that there will be no potential for discharge to ground or to any watercourse.

Effluent Quality Standards

GY-ENV proposed that the board include effluent quality standards in the licence that are similar to the standards included in another licence issued by the board for a different quartz mining undertaking. GY-ENV advised that the standards in that licence were based on a recommendation by EC to be standards used for the past 20 years in the Yukon and that were demonstrated to be readily achievable, while still achieving the Canadian Council of Ministers of Environment, Canadian Water Quality Guidelines for Protection of Aquatic Life. GY-ENV advised the board that it would defer to EC as the authority if the *Metal Mining Effluent Regulations* (“MMER”) apply to this mining operation. EC did not provide any recommendations regarding the applicability of the MMER in regards to this mining operation.

In review of the list of standards included in the GY-ENV intervention and the standards included in the MMER, the board noted that the standards recommended by GY-ENV for arsenic and copper were more stringent than the standards included in the MMER for these two parameters. The GY-ENV intervention did not provide a comparison of the difference between the standards proposed and the standards required by the MMER or an explanation for the more stringent standards.

Since the applicant is proposing to mill, the board determined that the licence will include parameters and concentrations that are consistent with the MMER.

In considering the point of compliance for the effluent quality standards, the board noted that the interveners did not provide any recommendations for the board to consider. Typically, the board requires the point of compliance to be the last point of control, prior to discharging wastewater to the environment. The board determined that the last points of control for this mining operation will be the discharge in the form of seepage from the waste rock and tailings storage areas and from the final settling pools, prior to seasonal discharge to the existing trenches. The board has included the requirement for the point of compliance in clause 31 of the licence.

GY-ENV also recommended that the licence should not allow for the discharge of effluent to surface water and further suggested that any discharge should only be permitted to existing trenches. The board noted that although there may be a discharge of wastewater from the tailings pools, there will also be wastewater within the tailings that requires authorization from the board to deposit waste. The board determined that the licence will authorize the deposit of waste in the form of discharge water contained within the tailings and during seasonal closure, wastewater from the tailings pools shall be discharged to existing trenches as described in the application and subject to the conditions of the licence.

EC recommended that the board include conditions in the licence requiring the submission of a geochemical rock testing program which should include a requirement for a mitigation plan to be submitted for the board's approval prior to site closure, in the event that acid rock drainage ("ARD") is detected. GY-ENV also recommended that the Licensee should be required to develop and submit an ARD management plan in the event that ARD/Metal Leaching is detected and also proposed that the rock monitoring and testing plan be for a 2 year period. The Licensee responded to the interventions to advise the board of the scale of the proposed operation and to confirm to the board that the samples previously taken could be re-assayed with an appropriate test. The board also considered the Licensee's commitment to conduct monitoring for potential ARD discharge. The Licensee also confirmed in the response to the interventions that if ARD was detected as a result of testing, all milling would cease and all tailings or waste rock would be moved to a lined storage area until a solution acceptable to the board could be determined.

After deliberating the recommendations provided by EC and GY-ENV and the response of the Licensee, the board determined that the Licensee will be required to submit a detailed plan, a minimum of 30 days prior to commencement of construction, for rock monitoring and testing and to implement that plan upon commencement of excavation. These requirements are included in clauses 35 and 36 of the licence. Clause 35 also includes a list of details that the board determined must be included in the detailed plan for the sampling and testing of geochemical characteristics of rocks encountered during excavation.

The board determined that the licence will not require the board's approval of the mitigation plan as recommended by EC. The board determined that the licence will require the Licensee to include mitigation methods in the event that acid rock drainage is detected in any discharge, as part of the rock monitoring and testing plan. In developing the rock monitoring and testing plan, the Licensee will be able to formulate the length of time that the plan will require to be implemented and include this information within the plan. The board advises the Licensee to contact GY-ENV to determine whether any component of the plan triggers the requirement for an amendment to the licence in the future.

Permanent Closure Plan

The board considered the recommendations provided by GY-ENV and EC that the licence include a requirement for the submission of draft and final permanent closure plans. The board also considered the varying timeframes suggested by the interveners.

In review of the timeframes proposed by the interveners, the board noted that requiring submission of a final plan within 3 years of the expiry date of the licence could be interpreted in various ways such as submitting the plan the day before the licence expires which is not acceptable to the board. The board determined that the expiry date of the licence would be

extended to cover the 5 year mine plan proposed by the Licensee and to allow for the submission of the closure plans. The licence includes a condition for the submission of a draft plan for the permanent closure of the undertaking within 1 year of commencement of operations. This

requirement is included in clause 37 of the licence and details the minimum information that the draft permanent closure plan must include.

The board also included the requirement for the submission of a final plan for permanent closure. The final plan must be submitted a minimum of 1 year prior to the expiry date of the licence. The final plan must include the minimum information that is required for the draft plan and a discussion of the updates that have been incorporated into the final plan.

To ensure that the final permanent closure plan is implemented, the board included clause 39 in the licence. The board also determined that notification is required prior to the implementation of the final permanent closure plan and included clause 40 in the licence.

The board concluded that the one year timeframe between the time the final permanent closure plan is submitted and the expiry date of the licence will provide enforcement agencies with sufficient time to review the final permanent closure plan and advise the Licensee if any changes are required to the plan or if an amendment to the licence is required so as to allow the Licensee time to submit the appropriate applications for regulatory approval.

Monitoring and Surveillance

In regards to monitoring and surveillance for this mining operation, the board took into consideration the recommendations of the interveners and the Licensee's response to the interventions. GY-ENV provided recommended monitoring sites, parameters to be monitored and recommended that monthly reports be submitted to the board detailing all water use activities, water quality results obtained and information pertaining to new reagents or changes to addition rates and operating practices. GY-ENV recommended that due to the short operating season, the results of the monitoring should be submitted monthly. EC also provided detailed recommendations for proposed mining stations, frequency of monitoring and the parameters that should be measured.

The Licensee argued that the board should consider monthly monitoring as opposed to the weekly monitoring recommended by the interveners. In support of its argument, the Licensee advised the board that there will be 3 staff on site and the task of transferring the samples to Whitehorse to preserve the chain of custody for the samples would be excessively onerous as it involves a full day trip by air travel by one staff person. The board noted that the Licensee committed to conduct monitoring throughout the life of the mining operation and considered the sampling program provided by the Licensee.

The board determined that a monitoring and surveillance network program would be required to be conducted by the Licensee and the board included conditions in Part F of the licence that require compliance with the monitoring and surveillance network program attached as Appendix A of the licence and the requirement to submit monthly reports to the board. The board accepted

the argument of the Licensee that the results of the monitoring and sampling be submitted on a monthly basis during operations instead of weekly. Appendix A of the licence reflects the requirement for monthly monitoring and sampling when operating or discharging and the collection of quarterly water chemistry samples to be taken quarterly when operating.

In establishing the monitoring sites for Appendix A, the board included Stations 1, 2 and 3 which are the watercourses noted by the applicant to be down gradient from the project site. The Stations are the same sites described in the application for which the Licensee provided sampling results. The board included the UTM Coordinates for the three stations, which were also included in the application.

EC recommended that the licence include a condition that requires the Licensee to perform the monitoring activities according to acceptable professional standards of practice and provided a list for the board to consider. The board accepted the recommendation provided by EC and included the list of documents in clause clause 34 (b) of the licence.

GY-ENV recommended that the Licensee be required to maintain records of water use. Appendix A of the licence requires the water level and volume to be monitored for the clarifier pond and the process ponds. Clause 9 of the licence also requires the Licensee to provide details of water use as part of the annual report.

LC50 Bioassay Testing

GY-ENV advised the board that the chemical data sheets indicate toxicity levels and recommended that the LC50 bioassay testing should be considered to satisfy any risk factors even though any discharge will not report to land or to a watercourse. The board determined that this is not a straightforward test to do in this type of circumstance and the need for the test has not been clearly demonstrated by GY-ENV. The board concluded that this test will not be included as a requirement of the licence.

Use of Chemicals

GY-ENV intervened to advise the board that the Licensee should provide additional information pertaining to the chemicals that will be used as part of this undertaking (i.e. the ball mill or the flotation cell) and further advised that the Licensee should contact GY-Standards and Approvals Section to obtain the necessary permission for chemicals to be used during milling.

The board noted that the YESAA Decision Document also required the provision of additional information pertaining to the chemicals proposed to be used and that the information was to be submitted to the board. The Licensee did provide additional details of the chemicals to be used as during the mining operation and the board is satisfied that the submission of this information met the required condition in the YESAA Decision Document. The board also determined that

the licence will not include a condition requiring further details of chemicals to be used. The board advises the Licensee to contact the appropriate GY office to obtain all necessary permits for the use of the chemicals required for this mining operation.

GY-ENV recommended that mill reagents be stored safely to ensure that any spills do not enter water. The board accepted this recommendation and modified the typical licence condition that requires fuels, lubricants, hydraulic fluids, coolants and similar substances to be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any watercourse, to include mill reagents within the clause. The board is satisfied that this condition will ensure that these substances are not deposited or allowed to be deposited into waters.

Burying Untreated Tailings

GY-ENV intervened to advise the board that further information is required prior to authorizing disposal by burying untreated tailings. The board determined that GY-ENV did not provide any details to substantiate what additional information should be required and determined that sufficient information was before the board to issue the licence. The board concluded that the licence will allow for the deposit of waste in the form of discharge water contained within the tailings as described in the application.

The board is satisfied that the implementation of the rock monitoring and testing program will determine which rock types encountered have potential for acid generation and conditions of the licence provide for the separation and placement of waste rock and tailings that are potentially acid generating to a lined storage area. Any waste rock or tailings tested which are deemed to be non acid generating can be deposited back into the previously excavated pits, as the Licensee described in the application.

UFA-Chapter 14

Map 115I/03 is included in the Little Salmon/Carmacks First Nation Final Agreement. Little Salmon/Carmacks First Nation did not intervene to the board regarding this undertaking.

Territorial Resources Base Map 115I/03 was reviewed for settlement land. The map indicates settlement land parcel R8-A. The project location is less than 1 km from the southern boundary of the settlement land parcel.

The proponent proposes to utilize water that has pooled in existing trenches created from historic mining at the project location. The applicant has not proposed to use water from a watercourse that is flowing on, through or adjacent to settlement land, therefore the quantity and rate of flow of water will not be substantially altered, including seasonal rate of flow.

The licence includes effluent quality standards that are required to be met prior to the discharge

of any treated water from the settling pools to the existing trenches at the project location. All discharges to the environment will be contained in the trenches which are expected to either evaporate or seep into the ground. The nearest watercourse noted in the application is Klaza River which does not flow on, through or adjacent to settlement land. The proposed discharge will not flow across the ground surface to the river and the potential for any seepage from the trenches to daylight in a surface waterbody is minimal. Therefore, the board has concluded that the proposed discharges will not substantially alter the quality of water flowing on, through or adjacent to settlement land.

Original signed by Chairperson

July 18, 2007

Chairperson
Yukon Water Board

Date