

YUKON WATER BOARD

LICENSING GUIDELINES FOR

TYPE A QUARTZ MINING UNDERTAKINGS

INTRODUCTION

Under the terms of the *Waters Act* (the *Act* or “*WA*”), the Yukon Water Board is charged with licensing the use of waters and the discharge of wastes into waters within the Yukon Territory. In these guidelines, the terms “use of waters and ‘Water use’ and the like will be deemed to include the deposit of waste.

The *Act* and associated *Regulations* recognize various types of undertakings relating to the use of waters and the deposit of wastes, as well as different categories of licences. The types of undertakings include Industrial, Placer Mining, Quartz Mining, Municipal, Power, Agricultural, Conservation, Recreational and Miscellaneous. Licences are categorized as either Type A or Type B according to various thresholds of use and the category of the undertaking.

Through the *Act* and *Regulations*, the Board is mandated to receive and review applications for the use of water and the deposit of wastes, carry out public reviews, and establish appropriate terms and conditions controlling each requested use.

The purpose of these guidelines is to publicize the criteria for the Board’s deliberations regarding the licensing of Type A Quartz Mining Undertakings and to clarify the Board’s expectations on such applications. They are not intended to serve as fixed standards for licensing; nor do they represent minimum licensing requirements. Rather, they are intended to set out a framework of principles and policies that the Board can apply in its licensing deliberations. The Board may deviate from or supplement the guidelines. Similarly, the Board may require specific licence conditions for particular undertakings, on a case-by-case basis.

Type A quartz mining undertakings may vary significantly in their magnitude and in the potential environmental effects associated with them. The guidelines contained in this document assume the development of a mine with significant potential environmental impacts such as those resulting from acid rock drainage or the failure of a large tailings impoundment. Projects such as this are considered to fall into the Very High Consequence of Failure category described in the *Canadian Dam Safety Guidelines* (January 1999). In situations where this category is not appropriate for some reason, the Board is prepared to consider well developed and documented justification for the use of alternative consequences of failure criteria developed in accordance with the *Canadian Dam Safety Guidelines*.

The guidelines are arranged in a hierarchical format. The broadest principles are stated first and increasingly specific guidelines follow. Some of the guidelines are intended to apply at the application stage and others either during or after the licensing process.

The guidelines reference the submission of “preliminary” and “detailed” designs. These two terms and their applicability are further described in the guidelines. However, to be clear, the Board notes that it does not require detailed designs at the application stage.

1. STATUTORY REQUIREMENTS

The mandate of the Yukon Water Board is described in Section 12 of the *WA*:

“The objects of the Board are to provide for the conservation, development and utilization of waters in a manner that will provide the optimum benefit therefrom for all Canadians and for the residents of the Yukon Territory in particular.”

The Board also has statutory obligations under Chapter 14 of the Umbrella Final Agreement (*“UFA”*), principally in sections 14.8 and 14.9. Section 14.8.0 of the *UFA* provides that the Board shall not authorize any substantial alteration of the quantity, quality or rate of flow of water on or adjacent to settlement land, unless it is satisfied that:

(a) there is no alternative which could reasonably satisfy the requirements of the applicant; and

(b) there are no reasonable measures by which the applicant could avoid causing the alteration.

Section 14.9.0 imposes similar obligations upon the Board where a traditional use of water by a First Nation person in their traditional territory may be adversely affected by a licensed use.

In addition, as a territorial authority for Type A licences, the Board’s actions in enabling a project are suspended until a decision document has been issued under the *Yukon Environmental and Socio-economic Assessment Act* (*“YESAA”*) legislation.

Mining projects must also meet the requirements of the *Metal Mining Effluent Regulations* (*“MMER”*) for the discharge of waste.

2. PERFORMANCE OBJECTIVES

2.1 In licence proceedings, the Board will endeavour to:

- 2.1.1 protect public health and safety and, in particular, minimize risk to human life;
- 2.1.2 avoid, minimize and/or mitigate significant adverse environmental affects from the potential uses of waters authorized by it under the *Waters Act*;
- 2.1.3 achieve the objectives set out in the mitigation included in the *YESAA* decision document, subject to the Board's authority and responsibility under the *WA* and the *UFA*;
- 2.1.4 issue licences that do not grant or renew rights in respect to water contrary to a *YESAA* decision document;
- 2.1.5 avoid, minimize and/or mitigate negative socioeconomic and financial impacts of authorized water uses on the public;
- 2.1.6 avoid, minimize and/or mitigate negative socioeconomic and financial impacts on applicants and authorized water users, consistent with its other obligations to the public;
- 2.1.7 issue licences with conditions that address the specific aspects of the project being authorized and the site under development;
- 2.1.8 issue licences that are clear and enforceable and administratively consistent;
- 2.1.9 issue licences that recognize the possibility that the life of the project may exceed the term of a particular licence and that impacts or potential impacts of a particular project may persist or develop after activity directly related to the project has ceased;
- 2.1.10 encourage the use of both proven and innovative technologies. In the case of unproven technologies, the Board will take a cautious approach, expecting Applicants to provide more detailed rationales and contingency plans than might be expected in the case of proven technologies; and
- 2.1.11 act promptly and openly, pursuant to the principles of procedural fairness and natural justice.

3. INFORMATION GUIDELINES FOR APPLICANTS

3.1 The Board expects that Applicants for Water Use Licences will:

- 3.1.1 submit to the Board project designs which reflect a “best practicable technology” approach to development which considers state-of-the-art technology in the context of economic feasibility. If there are technical or economic reasons for the use of less than state-of-the-art technology, then the Applicant will be expected to submit clear, technically defensible and comprehensive explanations and justifications to the Board;
- 3.1.2 submit project designs, development/operating plans, and monitoring/maintenance plans which presume that the life of the project may exceed the term of the Licence and that impacts or potential impacts of the project may persist or even develop after human activity directly related to the project has ceased;
- 3.1.3 submit comprehensive information regarding baseline conditions at and near the project site. Such information will normally include:
 - a) surface and subsurface seasonal water quality and quantity;
 - b) surface and subsurface water flow patterns;
 - c) stream sediment data;
 - d) climatic data monitoring (particularly precipitation);
 - e) evaluations of permafrost;
 - f) descriptions of aquatic ecosystems particularly used by fish and other organisms;
 - g) descriptions of terrestrial ecosystems used by wildlife; and
 - h) descriptions of existing human activities and uses of resources.

Investigations should be sufficiently specific and detailed that they provide an appropriate understanding of the variability of the site.

- 3.1.4 submit information demonstrating that potential impacts to traditional uses and water rights under the *UFA* have been considered and that appropriate mitigation measures have been included;
- 3.1.5 submit designs based on a comprehensive water balance analysis;
- 3.1.6 submit a water quality model, with all assumptions and calculations clearly explained, that is sufficiently detailed to assess seasonal performance of

the project on both a short-term and long-term basis;

- 3.1.7 submit design information which is to a sufficient level of detail so as to minimize the necessity for licence amendments due to subsequent changes in the project. In general, project designs should be at a preliminary design level which follows from the prefeasibility and/or conceptual studies required to determine the desirability of proceeding with a particular project. The preliminary design establishes the location, appearance and operation of the project so that approvals for the project can be obtained and so that initial orders can be placed with suppliers. The preliminary design is based on specific site investigations, although additional investigations may be required later in the design process. The preliminary design should include:
- a) a complete project description;
 - b) initial specifications;
 - c) small-scale preliminary plans showing layouts and general dimensions of structures and components;
 - d) a project schedule covering engineering, procurement and construction activities; and
 - e) a budget cost estimate.

No significant changes to the project should be made after the completion of the preliminary design, although it is anticipated that additional details of the design will be developed. Significant changes to the project will require licence amendments;

- 3.1.8 submit applications that contain a preliminary decommissioning and reclamation plan for closure of the project that is based on a progressive reclamation approach. The plan should be designed to ensure long-term stability, maintenance and replacement of any structures remaining after closure, to minimize and/or mitigate significant adverse environmental effects, and to provide for ongoing monitoring. The plan's ultimate objective should be an environmentally sound abandonment of the site without further human intervention, unless the Applicant can demonstrate that a suitable long-term strategy and plan involving human activity has been developed;
- 3.1.9 submit a complete estimate of the cost of implementing the reclamation plan, including information on the derivation of unit costs used in the estimate. The cost estimate may be tied to a plan for staged mine development, but the complete cost of reclamation at any stage in the development must be identified;

- 3.1.10 submit a proposal showing how the Applicant plans to finance the implementation of the reclamation plan during any stage of mine development;
- 3.1.11 if the financial proposal in 3.1.10 requires the use of accumulated financial security, submit a detailed proposal for a review and approval process to be followed to release and utilize any financial security (or similar instrument) accumulated during mine life to implement the reclamation plan, if the release of accumulated funds is part of the Applicant's financial proposal. Applicants should note, however, that while financial security is commonly called for by water licences, the security is not held by the Board and cannot be utilized or released by the Board, but rather by the Minister who approves the licence, if one is issued. Approval of such a financial proposal would be by the Minister, not the Board; however, the public hearing for the application would be a convenient time for public discussion of such a proposal; and
- 3.1.12 submit a plan for temporary closure of the project in the event of temporary shutdown and the criteria proposed to be used to determine when the temporary closure plan will be implemented.

3.2 The Board gives notice to potential Applicants that its policy is that:

- 3.2.1 that dilution of wastewater is not an acceptable approach to wastewater management or to compliance with wastewater quality standards.
- 3.2.2 the LT₅₀ 96-hour bioassay is the recognized test for non-toxicity of effluent.

4. DESIGN GUIDELINES

- 4.1 The design, construction, operation, maintenance and surveillance of dams and associated water management structures should be carried out in a manner which is consistent with the recommendations contained in the *Canadian Dam Safety Guidelines* (January 1999) for the Very High Consequence Category, unless compelling reasons consistent with the *Canadian Dam Safety Guidelines* for a lower consequence category are provided.
- 4.2 Long-term dams and associated water management structures should be designed to withstand the Maximum Credible Earthquake (MCE) and pass the Probable Maximum Flood (PMF). Shorter term structures may be built to lesser standards

but a compelling rationale for the selected criteria must be provided.

- 4.3 Rock dumps and heaps should be designed to have a minimum factor of safety under static loading of 1.3 for short term cases (i.e. within the mine life) and 1.5 for long term cases (i.e. abandonment) as described in the *Investigation and Design of Mine Dumps* (British Columbia Mine Dump Committee, 1991). The factor of safety for dams should be as recommended in the *Canadian Dam Safety Guidelines* (January 1999).
- 4.4 Designs for dams and associated water management structures, rock dumps, and heaps should recognize the probable presence of permafrost and should include appropriate measures to manage permafrost and maximize the stability of the structures consistent with recommendations contained in the *Canadian Dam Safety Guidelines* (January 1999).

5. LICENCE GUIDELINES

- 5.1 If a licence is issued, it may contain a requirement to submit to the Board prior to the commencement of construction, the final detailed design drawings, construction plans and specifications for all proposed structures and facilities including, but not limited to:
 - a) waste rock dumps;
 - b) dams;
 - c) coffer dams;
 - d) impoundments;
 - e) drainage works;
 - f) diversions;
 - g) spillways;
 - h) waste storage facilities;
 - i) water supply systems;
 - j) wastewater transportation systems and treatment facilities; and
 - k) any other structure or facility relevant to the conditions of the licence.

Depending upon the complexity of the project and the potential impacts, the licence, if issued, may contain a requirement not to proceed with construction until notified by the Board.

For clarity, detailed design is the last level of project design. It should include the results of any additional investigations identified during the preliminary design process and all of the final detailed drawings and specifications required to construct the project. All engineering drawings and specifications submitted to the

Board must be sealed by a Professional Engineer licensed to practice in Yukon.

- 5.2 If a licence is issued, it may contain a requirement for water quality and flow monitoring points in addition to the points of compliance. Such additional monitoring points may be established for the purposes of monitoring the overall performance of the project and for identifying emerging problems in their early stages, as well as, for example, measuring and monitoring environmental effects including receiving water quality and biological and physical impacts.
- 5.3 If a licence is issued, it may contain a requirement to submit to the Board details of any modifications to or variations from the designs previously submitted, in advance of any related construction. Such submissions must include an explanation of the reasons for the change and an assessment of the potential environmental impact. All such design modifications must be sealed by a Professional Engineer licensed to practice in Yukon.
- 5.4 If a licence is issued, it may contain a requirement to submit to the Board a comprehensive decommissioning and reclamation plan, based on the preliminary plan submitted with the the Application, and a requirement to update the plan, including the cost estimates, from time to time as circumstances warrant.
- 5.5 If a licence is issued, it may contain a requirement to submit to the Board final record (as-built) drawings of all structures and facilities following the completion of construction. All drawings must be sealed by a Professional Engineer licensed to practice in Yukon.
- 5.6 If a licence is issued, it may contain a requirement to submit to the Board a detailed construction quality assurance/quality control manual before beginning the construction of structures or facilities and to submit the results of the monitoring following the completion of construction. The manual should be designed to ensure that construction materials and methods conform to the designs and specifications for the project, as well as generally accepted practices, and that proper documentation of construction is maintained. All construction monitoring should be carried out under the supervision of Professional Engineers licensed to practice in Yukon.
- 5.7 Licensees should be aware that licences are tied to the information submitted in the application to the Board and that significant changes to the project will likely trigger a requirement for amendment of the licence.

Attachment: Information Sheet for Quartz Mining Undertakings

