We received comments on the draft licence from DFO, Environment Canada, INAC, EMAB and the Tlicho government. Thanks for your efforts!

Patty Ewaschuk
Technical Coordinator

Wek’eezhii Land and Water Board

Phone: (867) 669-9591
Fax: (867) 669-9593
### PART A: SCOPE AND DEFINITIONS

<table>
<thead>
<tr>
<th>CLAUSE</th>
<th>CONCERN</th>
<th>SUGGESTED WORDING</th>
<th>RATIONALE</th>
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<tr>
<td><strong>AEMP Adaptive Management Plan</strong> needs only to provide a context for what the Plan is. Specific wording such as managing risk and flexibility may potentially limit the effectiveness of the Adaptive Management Process.</td>
<td>AEMP Adaptive Management Plan is a management plan that describes a framework for mitigation measures to be implemented and actions to be taken when specified thresholds in the AEM Program are exceeded;</td>
<td>This definition suits the purpose of the Water Licence and the Plan itself can describe what it includes and or its associated flexibility.</td>
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<td><strong>INAC’s Mine Site Reclamation Guidelines</strong> have identified a new term for closure plans. Previously the plan was referred to as an Abandonment and Restoration Plan (A&amp;R Plan). The recommended change is to a Closure and Reclamation Plan (C&amp;R Plan). All references to A&amp;R and restoration should be replaced with C&amp;R and reclamation. A definition of a “Closure and Reclamation Plan” should be included in this section. Further, the licence should be reviewed for these terms and adjusted. Also, see Part L comments.</td>
<td>Closure and Reclamation Plan is a document prepared by the mine proponent, that contains and describes all of the studies and plans related to the closure and reclamation of the mine site and all of the related mine facilities (previous versions of this licence referred to Abandonment and Restoration Plans).</td>
<td>It has been agreed to during the preparation of the INAC Mine Site Reclamation Guidelines that the term ‘restoration’ is misleading as it infers a complete return to original condition. The term ‘reclamation’ has been agreed to be more applicable, as the activities will involve mine infrastructure removal and the return to, as close as possible, original conditions.</td>
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<td>Clarification is required between the definitions for “Dewatering” and “Draw Down”. The definitions as presented in the Draft Renewal Licence are very similar.</td>
<td>Dewatering is the complete removal of water from an existing water body or portion thereof by pumping or draining. Draw Down is the partial removal of water from an existing water body or portion thereof by pumping or draining.</td>
<td>The proposed definitions provide more clarity for each activity. The Licence should be reviewed to ensure that the appropriate term is being used. The purpose of the activity will dictate which term is correct for the undertaking at hand (i.e. A21 dike dewatering).</td>
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</tr>
<tr>
<td>PART A: SCOPE AND DEFINITIONS</td>
<td>This section includes a definition for “PKC Treatment Facility”. It is unclear whether this is something that still exists in the current mine plan. If not, then the definition and any clause specific to the PKC Treatment Facility should be removed. See also SNP Station Number 1645-17. Because of the close relation of the terms (PFC Facility and PKC Treatment Facility), the water licences should be reviewed to ensure that the right term is used in the right place.</td>
<td>Consider similar wording to other definitions or clauses (e.g. Geotechnical Engineer or Engineering Geologist).</td>
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<tr>
<td>PART A: SCOPE AND DEFINITIONS</td>
<td>This section includes a definition for “Mine Design”. The definition makes reference to a ‘design Engineer’; however, a design Engineer or “Engineer” proper is not defined under Part A.</td>
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<td>PART B, ITEM 3</td>
<td>This clause could be improved to better accord with Section 17 of the NWTWA. For reference and possible wording see Part B, Items 4 &amp; 8 of the BHP water licence, as well as, the security provisions in the Snap Lake water licence.</td>
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<tr>
<td>PART B, ITEM 4</td>
<td>k) refers to only the North Country Waste Rock Pile and the mine plan mentions an additional rock pile referred to as the South Country Waste Rock Pile. This clause should be changed to include reference to the South Country Rock Pile, if this pile remains part of the current mine plan.</td>
<td>k) annual reporting of the quantity of waste rock disposed in the North and South country rock piles and inert rock stockpiled for reclamation purposes;</td>
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<tr>
<td>PART C, ITEMS 3, 4, 9, 10</td>
<td>These clauses and others in the draft water licence refer to ‘Schedules’ and it is not clear if these schedules pertain to those in Water Licence N7L2-1645. For example: Part C, Item 3. Is it the intention to incorporate these schedules from the existing water licence into the renewal?</td>
<td>Wherever this licence refers to a ‘Schedule’, such reference should be followed by the water licence description e.g. “Water Licence N7L2-1645”.</td>
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<tr>
<td>PART C, ITEM 3</td>
<td>This clause should be reworded to be clearer and to request the comprehensive delineation program be submitted to the Board for approval. The results of the delineation program are crucial to the development of appropriate containment structures. The program should properly identify soil, rock and ground ice conditions prior to construction, along the centerline of all containment structures and runoff control ditches. This type of information will be useful and assessing whether the proposed design is appropriate for the conditions.</td>
<td>Prior to construction of containment structures and runoff control ditches, the Licensee shall submit for Board approval a comprehensive delineation program to identify soil, rock and ground ice conditions along the centerline of the proposed containment and control structures. This program shall be developed in accordance with Schedule 1, Item 1, of Water Licence N7L2-1645. The results of the comprehensive delineation program shall be submitted to the Board prior to the start of construction activities. Note, that for both the program and the results, it may be appropriate for the Board to consider a timeline for submission.</td>
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<td>PART C, ITEM 14</td>
<td>This report would not require Board approval as it is submitted after the fact (90 days). This would be similar to an “As-Built” report. Typically the Board allows comments on such reports but does not approve them. INAC reads the clause to state that the submission is required within 90 days after</td>
<td>This information is critical to the design and development of containment structures and runoff control ditches. Alternative designs and/or methods of construction may be required based on the results of the delineation program. In the past plans or programs of this nature have been circulated for comment but were not for Board approval. Given the importance of such information the delineation program should be before the Board for approval.</td>
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<tr>
<td>PART C, ITEM 14</td>
<td>The Licensee shall within ninety (90) days after completion of any structure designed to contain, withhold, divert or retain waters or waste, submit to the Board, a geotechnical engineering report prepared by a Geotechnical Engineer and/or Engineering Geologist that shall include as-built drawing, documentation of the field</td>
<td>This is consistent with other “As-Built” plans or reports. Additionally, to be consistent with BHP’s Water Licence which requests a similar report (Part E, Item 4), the report does not require Board approval.</td>
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completion.

decisions that deviate from the original plans
and any data used to support these decisions.

**PART E, ITEM 1**
INAC is unsure why this clause refers to the
draw down of the North Inlet water to
increase storage capacity. As all discharges
are to meet the EQC’s of the WL and as
DDMI currently discharges on a regular basis
from the North Inlet Treatment facility, the
inclusion of this statement is confusing and
may not be warranted. Recently DDMI has
provided documentation to raise the dikes
surrounding the North Inlet to increase the
storage capacity. These dam raises are
consistent with the mine plan. Also, this
concern relates to SNP Station Number
1645-66.

**PART E, ITEMS 1, 2, 3, 5, 6, 7 & 10**
Please see our comments under Part C,
Items 3, 4, 9 & 10 above.

**PART F, ITEM 9**
INAC suggests a wording change to improve
clarity - unsure of the use of the word ‘or’ in
the first line. We make the assumption that
the Licensee will review and provide the
modified plans annually, and will also review
and provide such plans upon request of the
Board.

The Licensee shall annually, and upon request
of the Board, review the Plans…
…The modified Plans shall be submitted to the
Board and implemented upon Board approval.

(This wording change likely applies to: Part H,
Item 1; Part H, Item 17; Part J, Item 4; Part L,
Item 4.)

Note, within this licence there are a number of
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<tr>
<th>Part, Item</th>
<th>Reference</th>
<th>Comment</th>
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<tr>
<td>Part G, Item 1</td>
<td>c) refers to instrumentation reporting. The wording is unclear as proposed.</td>
<td>c) an instrumentation reading schedule shall be submitted to the Board for approval… …The Licensee shall carry out the instrumentation reading schedule upon approval of the Board. This wording is suggested to provide further clarity.</td>
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<td>Part G, Item 1</td>
<td>g) refers to a Water Retention Dike inspection report. The wording in this clause is unclear. This plan could potentially be for approval.</td>
<td>g) an inspection of the Water Retention Dikes shall be carried out annually in July by a Geotechnical Engineer. The Licensee shall submit the Geotechnical Engineer’s report to the Board within ninety (90) days of the inspection, along with the Licensee’s implementation plan for addressing each of the Geotechnical Engineer’s recommendations. This clause will require DDMI to prepare and submit an implementation plan.</td>
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<tr>
<td>Part H, Item 2</td>
<td>f) refers to a PKC Facility inspection report. INAC’s comments for Part G, Item 1 g) apply here also.</td>
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<td>Part H, Item 3</td>
<td>e) refers to a Drainage Control and Collection System (DCCS) inspection report. INAC’s comments for Part G, Item 1 g) apply here also.</td>
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<tr>
<td>Part H, Item 4</td>
<td>f) refers to a Dredged Sediment Containment Facility (DSCF) inspection report.</td>
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<tr>
<td>Part H, Item 5</td>
<td>f) refers to a North Inlet Facility (NIF) inspection report. INAC’s comments for Part G, Item 1 g) apply here also.</td>
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| PART H, ITEM 7 | This clause should be reworded so that it is clearer that all discharges to Lac de Gras are not to exceed the Item 7 a) schedule; not just those discharges occurring at SNP 1645-18. The Licensee shall ensure that any discharge to Lac de Gras shall not exceed the following Effluent Quality Requirements:  
   a) All discharges to Lac de Gras by the Licensee, including that from the Water Treatment Facilities at “Surveillance Network Program” Station Number 1645-18, shall not exceed the following effluent quality criteria: |
| PART H, ITEM 9 | The wording of this clause is unclear. First, the H. azteca component of the clause should be separate from the rainbow trout and water flea component (i.e. there should be separate clauses to address each). The H. azteca clause should be written so that the toxicity protocol is for approval. The clause also needs to address: protocol implementation, testing frequency and reporting. Please see suggested wording. Additionally, in regard to toxicity testing for rainbow trout and the water flea, INAC’s view is the limits should be set at the LC20 value. The “analysis of the scientific evidence” for Within ninety (90) days of issuance of the Licence, the Licensee shall submit to the Board, for approval, a water-only protocol for a toxicity test with the amphipod Hyalella azteca at SNP location 1645-19. Upon approval the licensee shall:  
   a) implement the protocol for monthly testing as specified in the Surveillance Network Program, such that, during periods of effluent discharge water at SNP location 1645-19 is not acutely toxic to H. azteca;  
   The current wording suggests that the rainbow trout and water flea component is contingent on the H. azteca protocol which is a separate issue in our view. Furthermore, 9a) and 9b) are not equivalent since only H. azteca is sensitive to ionized ammonia. Increasing the stringency of the rainbow trout or water flea to require achievement of the LC20 is a worthwhile goal in its own right. It should also be noted that both of those organisms are most sensitive to |
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<tr>
<th>PART H, ITEM 10</th>
<th>INAC suggest a change to the clause to increase clarity.</th>
<th>The Licensee shall submit to the Board a report on a proposed nitrate EQC in accordance with Board direction. Upon the Board’s receipt of the report, and any other related information required by the Board, the Board will set an EQC for Nitrate.</th>
<th>The suggested change is proposed for clarity. The proposed wording is based on the assumption that the Board intends to set an EQC for Nitrate.</th>
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<tr>
<td>PART J, ITEM 1</td>
<td>c) refers to submitting a detailed report on each unauthorized discharge to the Inspector. INAC suggests that this detailed report include the NWT Spill Report Number and GPS coordinates of the location.</td>
<td>The Licensee shall submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event. The report shall include the NWT Spill Report Number and GPS coordinates.</td>
<td>The additional details specified here will help Inspectors determine the exact location of the spill and will allow for more efficient and effective spill investigations and closures.</td>
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<tr>
<td>PART J, ITEM 2</td>
<td>Use of the wording “based on the measures that are proven to be effective and can be implemented” in this clause causes confusion. It appears that this wording comes from Part J, Item 5 of the N7L2-1645 Water Licence. This wording was specifically used for submission of the plan. At this time the plan is approved and it is not clear why this wording is added here and the intention of its inclusion.</td>
<td>The Licensee shall implement the Contingency Plan as approved under Water Licence N7L2-1645 and the Licensee will also address the following:</td>
<td>The present wording in the draft water licence causes problems with the continuity or intent of the sub-clauses.</td>
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<tr>
<td>PART J, ITEM 2</td>
<td>c) and d) may be referring to the same thing. It seems as though the original licence was to separate the sub-clauses after the ‘and’ in c) contingencies for the items identified in Schedule 3, Item 1, of Water Licence N7L2-1645; and</td>
<td>It would seem that in the previous licence the two sub-clauses had been inadvertently joined. The suggested</td>
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| PART J, ITEM 2 | e) i) this sub-clause is unclear given the proposed wording regarding retesting  
vi) it is unclear if the protocol is to be approved by the Board and when DDMI is to implement the protocol. |  |  |
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<tr>
<td>PART K, ITEM 1</td>
<td>Is it possible to establish and incorporate a &quot;due date&quot; for the revised report?</td>
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<td>PART K, ITEM 4</td>
<td>This wording is unclear; there is a reference to a Plan here (there is no definition of a AEM Plan). INAC understanding is that the 'Plan' and 'AEM Program' are one in the same. Also, the clause does not need to restate the definition of the AEM Program. Based on the wording that is proposed in the draft water licence, it is assumed that the AEM Program will be approved under N7L2-1645.</td>
<td>The Licensee shall implement the AEM program as and when approved by the Board under Water Licence N7L2-1645.</td>
<td>It is important for clarity that the document be referred to as the AEM Program as defined in Part A.</td>
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<tr>
<td>PART K, ITEM 5</td>
<td>Note there is a potential conflict in the wording of this clause in that, the revised AEM Program currently does not adhere to the AEMP Terms of Reference (e.g. the Dust Monitoring Program).</td>
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<td>PART K, ITEM 6</td>
<td>INAC suggests that the clause make reference to the submission of Plans for the</td>
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such studies which should be for Board approval.

| PART K, ITEM 9 | Part K, Item 9 & 12 should be joined. The intention and timeline of Item 12 should be addressed first. Subsequently, the review, as and when required, by the Board from Item 9 should follow. In terms of addressing the Part K, Item 12 wording, it would be preferable to have the submission to the Board for March 15, 2008, rather than January 31, 2009, as proposed. INAC is of the opinion that the AEMP be modified based on the results of the previous year’s data. If a modified plan is not submitted until January 31, 2009, we could potentially have an additional year of incomplete/impartial data. It is understood that the suggested timeframe would inherently lead to some tight timelines; the intent would be to have the modified AEM Program approved before the April sampling event. |
| PART K, ITEM 10 | c) refers to the interpretation of results; however, this line item is too general. INAC recommends that clauses c) and d) be amalgamated. The result is a single clause which in essence stipulates the same thing but provide more context to the individual clauses. c) an interpretation of the results, including an evaluation of any identified environmental changes that occurred as a result of the Project; The inclusion of this information is necessary to assess changes and determine if adaptive management is necessary. By not amalgamation these specific items, the first clause is ambiguous. The suggested change will allow for the interpretations of the results but also include reference to |
PART L, ITEM 1  |  To be consistent with INAC’s Mine Site Reclamation Guidelines, all references to A&R Plan and Restoration should be replaced.  
| Abandonment and Restoration should be replaced with Closure and Reclamation Restoration should be replaced with Reclamation. Abandonment and Restoration Objectives should be replaced with Closure Objectives.  
| This will help avoid any confusion between the WL and INAC’s Mine Site Reclamation Guidelines, currently referenced in the WL.  

PART L, ITEM 1  |  a) refers to the inclusion of closure objectives and the evaluation of alternatives. INAC’s Mine Site Reclamation Guidelines make reference to Closure Criteria which are a key component to assess reclamation activity and provide measurement endpoints to determine successful reclamation.  
| a) The plan shall include specific closure objectives and closure criteria and an evaluation of alternatives for the closure of each mine component. The plan shall include…  
| Closure criteria are an important component of Closure and Reclamation Plans and are necessary to fully assess reclamation activities and allow for sign-off on reclamation and the return of securities. The absence of closure criteria makes final assessments and sign-off difficult.  

PART L, ITEM 2  |  INAC suggests the following wording changes to provide clarity.  
| The Licensee shall annually, and upon request of the Board… ‘restoration liability’ be replaced with ‘reclamation liability’.  

specific information.
June 21, 2007

Patty Ewaschuk
Technical Coordinator
Wek’èezhii Land and Water Board
Box 32, Wekweeti, NT X0E 1W0

RE: Diavik Draft Water Licence – MV2005L2-0009

Dear Patty:

Thank-you for giving Fisheries and Oceans Canada (DFO) the opportunity to review and provide comments on Diavik’s draft water licence. I hope the following comments will be of assistance to the Board in the development of the renewal licence. As requested, DFO’s comments will focus on those changes that have been suggested in the draft.

**Part A: Scope and Definitions**
The definition of the AEMP Adaptive Management Plan should be reworded to state that the plan is designed to identify what management actions will be undertaken when specific thresholds set in the Aquatic Effects Monitoring Program are exceeded. DFO supports the wording suggested by both INAC or Don MacDonald on behalf of the Tlicho Government.

DFO agrees with INAC that the definitions of dewatering and drawdown should be clarified and supports the rewording suggested by INAC.

**Part D: Conditions Applying to Water Use, Number 5a**
DFO supports this proposed change. However, DFO recommends that the word “consider” be removed and replaced with “use”.

*Suggested wording:* measures that will be undertaken to minimize the amount of raw water required from Lac de Gras; the measures shall integrate the requirements of or work done under other management plans or research projects and shall *use* alternative water sources such as the PKC Facility, Dredged Sediment Containment Facility, North Inlet Facility, and Pits

*Rationale:* The word “use” will ensure that the alternative water sources are utilized, reducing the amount of water required from Lac de Gras.

**Part K: Conditions Applying to Aquatic Effects Monitoring, Number 11**
Results from studies undertaken as a requirement of *Fisheries Act* authorizations should be included in the integration of all information related to assessing aquatic effects.

The expert panel that was formed to address the ammonia issue worked exceedingly well and provided valuable, objective information to all parties. Therefore, DFO agrees with the recommendation put forward by Don MacDonald on behalf of the Tlicho Government that the WLWB forms an expert panel to periodically review the design, results, and interpretation of the AEMP.
Part L: Conditions Applying to Abandonment and Restoration
The term “Abandonment and Restoration” should be replaced with “Closure and Reclamation”.

As per Part K (Conditions Applying to Aquatic Effects Monitoring), DFO recommends that the expert panel format be applied to the Closure and Reclamation Plan based on the effectiveness of this approach with the Ammonia Management Plan.

DFO appreciates the fact that much of our input from the Water Licence intervention has been incorporated into the draft renewal licence. If you have any questions, please contact me at (867) 669-4931.

Original signed by:

Bruce Hanna
Habitat Biologist
Fish Habitat Management
Department of Fisheries and Oceans - Western Arctic Area
On behalf of Environment Canada (EC) I have reviewed the draft water licence, and provide the following comments for your consideration.

Part A: Definitions
Definitions for acute and chronic toxicity should be included, with the acute toxicity definition outlining the use of LC50 vs LC20 as passing standards.

Part H: Conditions Applying to Waste Disposal and Waste Facilities
Item 8.a)
For clarity, the test method for rainbow trout should have updates noted by including the following after the test method number: “(amended in 1996 and 2000)”.

Item 9.a)
A 10-day toxicity test has been developed for *Hyalella azteca* which has survival as the test endpoint. This is an acute (or lethality) test, and has been proposed as a draft licence condition as a tool to assess the toxicity of un-ionized ammonia at the edge of the mixing zone (as per the INAC hearing submissions). When looking at the applicability of this toxicity test to waters at the edge of the mixing zone the evaluation done by Borgman contemplated discharges of 20 mg/L at end of pipe, diluted 20-fold at the edge of the mixing zone (Oct. 19, 2006 email from Uwe Borgman to Kathleen Racher). Given the new maximum average concentration licence limits for ammonia of 8 mg/L (for 2007) and 6 mg/L (from 2008 onwards) EC questions the utility of doing an acute *Hyalella* test at station 1645-19. The likelihood of acute toxicity occurring at the edge of the mixing zone seems very small; it would be much more likely that chronic effects might be seen there. EC acknowledges that the water-only 28 day chronic *Hyalella* test protocol is not sufficiently developed for use at this time, and suggests that until there is an appropriate chronic test, it is not worthwhile to conduct acute tests at 1645-19. Use of the acute tests at 1645-18 would be more
relevant, except that the protective role of potassium and sodium may make results less informative with respect to receiving environment effects.

**Suggested wording:**
This clause should be reworded to specify that a chronic test be used for 1645-19, at such time as an appropriate test be identified; and that the *Hyalella* acute lethality test be done periodically at 1645-18. It is suggested that this go in the SNP section of the licence so that as more information is available, changes can readily be made as appropriate.

**Item 9.b)**
This clause arises from Section 10, Phase 2 of the ammonia amendment Record of Agreement, which requires regulation of the effluent toxicity at LC50 values for trout, *Daphnia*, and *Hyalella* once it has been established that the protocol is feasible. If the protocol is not feasible, then it was stated that all available information would be assessed and a recommendation made by the experts group, if supported, for implementation of LC20 values for trout and *Daphnia* tests. Furthermore, the available information was to include toxicity testing results for round whitefish, to provide a basis for comparison of the sensitivity of trout and *Daphnia* tests and to allow the experts group to evaluate whether the LC20 or LC50 values were more relevant to native species.

As worded, clause 9.b) would have DDMI review the *Hyalella* results, and make a recommendation for the toxicity testing to be done using the LC20 value, if supported by the evidence. The renewal draft SNP is worded such that testing of effluent is for the LC20 value, and the requirement for round whitefish toxicity testing is carried forward in the SNP. As the SNP already has the LC20 as a requirement, it would make more sense for the evidence to be evaluated and if there is sufficient supporting evidence (e.g. round whitefish test results) to make a case that the LC50 should be used as the standard for passing, then relax the LC20 standard at that time.

The last bullet of the RoA Section 10 makes provision for another option to be brought forward should the evidence not support changing the toxicity test pass thresholds from the current LC50 to use of an LC20 value. It would be prudent to include a third item as 9.c) which gives the option of reviewing alternatives.

**Suggested wording:**
9.b) Review use of the *Hyalella* toxicity test and provide an evaluation of the results with respect to setting the standard for a toxicity test pass at 50% survival (LC50) or 80% survival (LC20).
9.c) Provide a discussion of alternative approaches.

**Item 10.**
DDMI has already put forward their recommendation for nitrate limits (84/168 mg/L with annual loading of 2596 kg based on their selection of a long-term average of 54 mg/L as protective). In the public hearings, recommendations were also made by the Tlicho Government, to use 20/40 mg/L (Appendix B of their Oct. 23/06 intervention). EC did not provide a recommendation for limits, other than to note that a lower criterion would be both achievable and minimize loadings. EC supports the Tlicho recommendation.
Suggested wording:
Delete this clause, and add nitrate as a regulated parameter in Item 7.a) at 20 mg/L Maximum Average and 40 mg/L Maximum grab.

Part L: Conditions Applying to Abandonment and Restoration
The terms “abandonment and restoration” are being replaced by “closure and reclamation” as better representing a planned process by which areas which have been altered or disturbed by development are reclaimed. It is suggested that these terms be used throughout Part L.

SNP Section B.10
For clarity, the name of the algal test species should be updated to *Raphidocelis subcapitata* (formerly *Selenastrum capricornutum*).

SNP Section B.11.a)
This section should specify that both the LC50 and LC20 values be reported for both tests.

Thank you for the opportunity to review the draft water licence. Please do not hesitate to contact me at (867) 669-4735 with any questions or comments regarding the foregoing.

Yours truly,

Anne Wilson
Water Pollution Specialist
Environmental Protection Operations

cc: Carey Ogilvie (Head, EA-North, EPOD)
Mike Fournier (Coordinator, EPOD)
June 20, 2007

Zabey Nevitt
Executive Director
Wek’èezhìi Land and Water Board
1 – 4905 48 st.
Yellowknife, NT
X1A 3S3

Re: EMAB comments on draft water licence of June 6, 2007

Dear Zabey,

The Environmental Monitoring Advisory Board (EMAB) would like to thank the Wek’èezhìi Land and Water Board (WLWB) for the opportunity to comment on draft water licence MV2005L2-0009. In general the licence is a substantial improvement from previous versions, particularly in the requirement that the Aquatic Effects Monitoring Program (AEMP) require regular revision and approval, that the annual AEMP report require approval, and the requirement for a final closure plan. We also wish to take this opportunity to again express our appreciation to the WLWB for its strong leadership on the revision process for the AEMP including the development of the Terms of Reference (ToR) and inclusion in the licence of the requirement that the AEMP follow those ToR, and in addressing the development of ammonia effluent quality criteria (EQC).

Many of the recommendations we made at the November hearings have been addressed in the draft water licence. Our comments will largely focus on those recommendations we request the WLWB consider further.

H(7) and H(15)
EMAB recommended at the November hearing that the new licence set the goal of returning to the original ammonia EQC, while recognizing that many uncertainties remain, by providing a means for the WLWB to vary the limits as new information became available. Based on testimony by the Ammonia Expert Panel and interveners at the recent hearings in May, EMAB recommends the WLWB adopt the Panel’s recommendations for ammonia EQC while providing for revision of the EQC at a specific time, say September 2010, based on new information on effectiveness of ammonia management, behaviour of water and ammonia in the A418 pit and underground operations, and any other related information.

As we noted at the May hearing, there were no objections to the NWT Water Board’s original EQC or their reasons for decision stating that the EQC were intended to “...protect the water uses and minimize contamination of Lac de Gras.” and that “...these
criteria are sufficient to ensure that the water quality objectives are met in Lac de Gras.” EMAB continues to recommend that the goal of this part of the licence should be to return to the ammonia EQC set in 2000.

Due to the high level of interest in ammonia EQC EMAB recommends that any proposed revisions to the EQC or the Ammonia Management Plan be circulated for review and comment by the parties prior to approval.

K(5)
The licence requires that the AEMP follow the ToR approved by the WLWB. There are three items related to this clause.

a) In our intervention EMAB recommended the licence include a requirement for a description of evaluation criteria for the AEMP and approaches to be used to annually amend and adjust it. Items 4.3.1 and 6(f) of the ToR seem to address this by requiring a clearly defined and rigorous approach for evaluating the need for changes to the AEMP, including criteria and rationale. The May 2007 draft AEMP does not appear to fulfill this requirement and EMAB recommends the revised AEMP be closely reviewed to ensure this requirement is met.

b) The ToR set clear requirements for the AEMP in relation to incorporation of Traditional Knowledge (ToR, section 4.4.1), which Diavik Diamond Mines Inc (DDMI) has proposed to meet using a phased approach, with the first phase being completion of consultation with communities by the end of 2007. Continued oversight will be required to ensure that the rest of this phased process fulfills this requirement. As previously stated, EMAB is prepared to assist communities and DDMI in this dialogue and consultation.

c) The ToR also set clear requirements for Dust monitoring in the introduction to section 5 and section 5.1. In particular the introduction states that “DDMI must use recognized protocols for the collection and processing of field samples. If new methods are required, because of local conditions, then variances from established protocols should be noted and justified, and the implications to the resulting data discussed. In all cases, the AEMP will provide a defensible scientific rationale for: … c) proposed sampling methods; and d) numbers and locations of samples.” In addition section 4.4.4 of the ToR sets out requirements for each sampling component including: a description and rationale for the number and timing of sampling events and a description of statistical and analytical procedures. EMAB has submitted evidence that DDMI’s current data collection protocol is non-standard so the accuracy of the data cannot be verified. The May 2007 draft AEMP states that the dust monitoring program does not incorporate a statistical design element, so does not appear to meet this requirement of the ToR or the draft licence.

K(10)c
EMAB had recommended this clause read “a scientifically defensible interpretation and discussion of results…” This was based on wording from the Ekati water licence and comments from our technical consultant about DDMI’s interpretation of some results in previous AEMP reports. EMAB is unclear whether the requirement for scientifically defensible interpretation is already covered through the ToR sections 4.4.4 and 5. etc so we draw this to the WLWB’s attention for consideration.
K(11)
It may be useful to require the three-year report to include not only effects but all situations where an early warning, moderate or high effects level is reached and the status of any investigation/determination of whether or not it is caused by the mine i.e. to report on any changes detected in Lac de Gras. This could be accomplished by inserting on the 4th line following “inception including any effects levels reached,”.

L(4)
The draft licence requires DDMI to review the Abandonment and Restoration Plan (A&R plan) but does not require regular revision. EMAB recommended that DDMI be required to submit a revised A&R plan for approval every three years, similar to the approach used with the AEMP. This approach provides an opportunity for parties, including Aboriginal Parties to the Environmental Agreement, to express concerns and recommend improvements in the public interest for review by the WLWB. EMAB continues to recommend this approach.

L(6)
EMAB is not aware of an approved Restoration Monitoring Program at this time. The draft Interim Closure and Reclamation Plan includes proposed restoration monitoring, but has not yet been formally reviewed or approved.

Although not directly related to the wording of the licence, EMAB draws the WLWB’s attention to the emphasis in our closing remarks at the November 2006 hearings on the Reasons for Decision you will issue when the licence is finalized, and particularly the opportunity to give direction regarding DDMI’s commitments in the Environmental Agreement on the Diavik Diamond Project, participant funding and processes for amending water licences between hearings. Other issues that could be considered in preparing Reasons for Decision include a means to ensure that previous AEMP reports are complete and accurate, preparation of criteria for determining when an amendment to a water licence is in the public interest and a protocol for submission and approval of reports required under both the water licence and fisheries authorizations.

Again, thank you for the opportunity to comment. If you require further information or clarification please feel free to contact John McCullum at the EMAB office.

Sincerely

Doug Crossley
Chair

Cc EMAB members (by email)
Parties to the Environmental Agreement
June 20, 2007

Patty Ewaschuk
Technical Coordinator
Wek’èezhìi Land and Water Board
#1 4905-48th Street
Yellowknife, NT X1A 3S3

Re: Review Comments – DDMI’s Draft Renewal Water Licence

Dear Ms. Ewaschuk:

Indian and Northern Affairs Canada (INAC) has reviewed DDMI’s Draft Renewal Water Licence. Please find attached (Appendix 1) INAC’s comments for the Board’s consideration. As part of the Draft Renewal Water Licence review process, INAC did not conduct a review of the Water Licence Schedules.

INAC would like to thank the Wek’èezhii Land and Water Board for providing the Draft Renewal Water Licence for review and comment. If the Board staff have any questions or require further clarification on the suggested changes to the draft licence please contact Dr. Kathleen Racher, Manager, Water Resources Division at (867) 669-2749.

Sincerely,

David Livingstone
Director
Renewable Resources and Environment

Attachments: Appendix 1
June 19, 2007

Patty Ewaschuk
Technical Coordinator
Wek’eezhii Land and Water Board (WLWB)
POB 32
Wekweeti, NT X0E 1W0

Dear Ms. Ewaschuk:

I am the Tlicho Government’s lead consultant on this file and I have been authorized to send this letter and associated detailed comments to you on behalf of the Tlicho Government. Thank you for the opportunity to review the draft water licence for the Diavik Diamond Mines Inc. Project on Lac de Gras (MV2005L2-0009). Our comments on the Scope, on the Definitions, on Parts H, K, and L, and the SNP of draft water licence are as follows:

1. **Scope**

No comments are offered on this section of the draft water licence. The Tlicho Government is on record as recommending that the Term of the Licence be no more than three years.

2. **Definitions**

A definition of the term “acute toxicity” should be added to this section of the water licence. Such a definition of acute toxicity should reflect the need to regulate effluent discharges from the mine such that less than 20% mortality is observed in both of the acute toxicity tests that are required to be conducted under the water licence (i.e., 96-h rainbow trout, *Oncorhynchus mykiss*, toxicity test and 48-h water flea, *Daphnia magna,*

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toxicity test. That is, effluent from the mine will be considered to be acutely toxic if ≤ 80% survival is observed for either rainbow trout or water fleas. Note: Such a definition of acute toxicity would need to be revised if water-only toxicity tests with the amphipod, *Hyalella azteca* are conducted on a monthly basis and in a manner consistent with the guidance provided by the co-chairs of the Expert Group.

The definition of the Aquatic Effects Monitoring Program (AEMP) Adaptive Management Plan should be modified as follows: “... a management plan that describes a way the results of the AEMP will be used to manage the project. The Adaptive Management Plan shall describe the mitigative measures that will be implemented and the actions that will be taken when specified thresholds in the AEMP are equalled or exceeded. The Adaptive Management Plan must be consistent with the Precautionary Principle, such that any risks associated with the project are borne by the proponent rather than the environment.”


Clause 7(a): In its written intervention, the Tlicho Government recommended that effluent quality criteria (EQC) be established for nitrate and phosphorus under a renewed water licence for DDMI. For nitrate, EQCs of 20 mg/L and 40 mg/L were recommended as maximum average and maximum concentrations, respectively. For phosphorus, it was recommended that percent reduction in phosphorus loadings needed to reverse the observed increases in primary productivity (i.e., algal growth) in Lac de Gras be determined based on input provided by interveners at a renewed public hearing during the spring of 2007. As these topics were not addressed at the recent public hearing on ammonia issues, it is recommended that the Tlicho recommendations for nitrate EQCs be included in Part H 7(a). In addition, it is recommended that the EQCs for phosphorus that were included in DDMI’s original water licence also be included in the renewed water licence (i.e., 0.2 and 0.4 mg/L as maximum average and maximum concentrations, respectively). A public process is needed to ensure that the WLWB has access to all of the information it requires to set EQCs for nitrate and phosphorous.

The EQCs that are identified in the draft water licence for BOD₅, oil and grease, and fecal coliforms could result in substantially increased loadings of these substances to Lac de Gras. In the original water licence, the EQCs for these variables applied to discharges from the Sewage Treatment Facilities, which were typically < 700 m³/d. As the discharges from the mine via the main effluent discharge are likely on the
order of 40,000 m$^3$/d, loadings of these substances to Lac de Gras could increase by nearly a factor of 60, if DDMI discharged at the maximum permitted levels. Therefore, consideration should be given to lowering the EQCs for these variables to levels that are more consistent with those that will be routinely achieved in the final effluent.

Clause 9(a): In its written intervention, the Tlicho Government emphasized the importance of conducting routine whole-effluent toxicity testing with the amphipod, *Hyalella azteca*. It is important to note that the co-chairs of the Expert Group that were tasked with developing the water-only protocol have reviewed the protocol and deemed the toxicity test feasible to implement. It is also important to note that DDMI has previously implemented this protocol in a manner that was contrary to the recommendations provided by the co-chairs of this group. As DDMI has demonstrated that it is either unwilling or unable to follow the recommendations for implementing the water-only toxicity testing protocol, it is important that the WLWB establish a procedure for providing oversight on toxicity testing to ensure that it is conducted appropriately. It is important to note that the 10-d acute toxicity test with amphipods should be used to evaluate the toxicity of whole effluent (1645-18) and the 28-d chronic toxicity test with amphipods should be used to evaluate chronic toxicity at the edge of the mixing zone (1645-19).

Clause 9(b): In its written intervention, the Tlicho Government concurred with the terms of the Ammonia Record of Agreement. One of the terms of this agreement called for an analysis of the scientific data to be conducted and used to support a recommendation for setting toxicity testing limits at the LC$_{20}$ level for the 96-hr rainbow trout, *Oncorhynchus mykiss*, toxicity test and 48-h water flea, *Daphnia magna*, toxicity test. However, it is important to note that this clause of the Ammonia Record of Agreement was intended to be focussed on conducting an analysis of the scientific data to determine if it is feasible to implement water-only toxicity testing with *H. azteca* on a routine basis. If it was found to be infeasible to implement, then the limits for the acute toxicity test with rainbow trout and water fleas would be set at the LC$_{20}$ value. As currently worded, this clause of the draft water licence could be inappropriately interpreted to mean that the evaluation of the scientific data would focus on determining if toxicity testing limits could be set at the LC$_{20}$ value. Therefore, this clause of the draft water licence should be rewritten as follows: “Conduct an analysis of the scientific evidence on the water-only toxicity test with the amphipod, *H. azteca*. This
evaluation shall be conducted to assess the feasibility of conducting this test to evaluate the toxicity of whole effluent from the DDMI facility on a monthly basis. If the results of this evaluation indicate that it is not feasible to conduct this toxicity test with whole effluent on a monthly basis, then effluent from the DDMI facility will be considered to be acutely toxic if the survival of rainbow trout in 96-hr toxicity tests or water fleas in 48-hr toxicity tests is \(< 80\%\)."

Clause 10: In its written intervention, the Tlicho Government submitted its recommendations for establishing EQCs for nitrate.

Clause 12: In its written intervention, the Tlicho Government noted that the existing data from DDMI’s AEMP shows that changes in the trophic status of Lac de Gras are occurring in the vicinity of the mine. Because phosphorus releases from the mine are the most likely cause of such increases in primary productivity, the Tlicho Government indicated that mitigation may be needed in the near term to reverse this project-related effect before it becomes more serious. Currently, the draft water licence does not include any conditions for reducing the loadings of total phosphorous to Lac de Gras. Establishment of EQCs for phosphorous represents one approach to mitigating the potential impacts to Lac de Gras associated with eutrophication. In addition, the maximum monthly and annual loadings of phosphorus that are permitted under DDMI’s current water licence should be reexamined, with the goal of refining the maximum loadings of phosphorous that should be permitted to be released into the lake. It is important to take this action immediately because eutrophication of the lake will be very difficult to reverse once lake sediments have been enriched due to discharges of phosphorous from the mine (i.e., because phosphorus cycles from sediments into the water column each year).

12. Part K: Conditions Applying to Aquatic Effects Monitoring

General: On May 23, 2007, I submitted comments on the draft AEMP to the WLWB on behalf of the Tlicho Government. These comments documented a number of serious issues regarding the design of the draft AEMP, including lack of conformity with the instructions provided to DDMI by the WLWB. I ask the WLWB to consider these important criticisms of the draft AEMP during its deliberations regarding its consistency with the Board’s directions and with the requirements identified in the water licence.
Clause 4: Throughout the protracted review process, the Tlicho Government has documented numerous serious flaws in the draft AEMP. Accordingly we have concluded that the draft AEMP is unlikely to support determination of the short- and long-term effects in the aquatic environment resulting from the project, test impact predictions, measure the performance of operations, and evaluate the effectiveness of impact mitigation. Therefore, we strongly urge the WLWB to provide for a full review of the AEMP in a full evidentiary hearing. Such a hearing should be held no later than two years following approval of the AEMP.

The WLWB established a robust Expert Panel to review the Ammonia Management Plan and provide recommendations for setting EQCs for ammonia. The breadth of knowledge and depth of experience of the Expert Panel provided stakeholders with a high level of confidence in the outcome of this review. Therefore, it is recommended that the WLWB utilize a similar model for conducting a systematic review of the design results, and interpretation of the AEMP. That is, a three- to five person Expert Panel should be established to review the design of the AEMP within two years following issuance of the renewed water licence (and periodically thereafter). Such an Expert Panel should be selected to ensure that expertise is available in the following fields: water quality monitoring, sediment quality monitoring, tissue residue monitoring, biological monitoring, ecological risk assessment, human health risk assessment, cumulative effects assessment, environmental statistics, and adaptive management.

Clause 7: In its written intervention, the Tlicho Government emphasized the importance of adaptive management as a fundamental component of mine management, which is informed by the results of the AEMP. Due to the importance of the Adaptive Management Plan, it is important to have DDMI submit an acceptable Adaptive Management Plan before the AEMP is approved.

Clause 8: In its written intervention, the Tlicho Government indicated that there are major concerns regarding the quality of data that DDMI has been collecting under the AEMP. In addition, the Tlicho Government expressed its serious concerns regarding the procedures that DDMI has been using to evaluate, translate, store, manage, and retrieve data collected under the AEMP. For this reason, it is recommended that this clause of the draft water licence be amended to read, “The AEMP QA/QC Plan shall be developed in accordance with the guidance that is currently available from the USEPA (1998; 2001; 2006).” The citations
for the USEPA guidance documents are included in the References Cited section of this document.

Clause 11:  There appears to be typographical error in this clause. We suggest that the wording be changed as follows: “...AEMP program from the project inception, a description of the predicted short- and long-term effects of the Project, and an evaluation of the actual effects of the project to date. This evaluation of actual project impacts shall provide a comparison to predicted impacts.”

13.  Part L: Conditions Applying to Abandonment and Restoration

Clause 1(a):  In its written intervention, the Tlicho Government indicated that the Interim Abandonment and Restoration Plan must be modified to include specific goals and measurable component-specific objectives to guide activities related to mine closure. Therefore, it is recommended that this clause of the draft water licence be rewritten to include a requirement to develop such goals and component-specific objectives for mine abandonment and restoration through an open, public process.

This clause of the draft water licence should also be rewritten to indicate that the Abandonment and Restoration Plan should be revised to reflect current site information and lessons learned from operating the mine over the past seven years, to fix deficiencies and take into account recommendations provided by expert reviewers and stakeholders over the past five years, and to reflect the lessons learned in closure planning processes of the BHP Billiton Ekati project and the DeBeers Snap Lake project.

Clause 3:  In its written intervention, the Tlicho Government emphasized the need for DDMI: 1) to compile and interpret all of the available PKC monitoring data; 2) to prepare a stand-alone description of future monitoring and research studies that may be required to address uncertainties in closure planning of the PKC and other mine components; and, 3) to prepare a consolidated report on reclamation research activities undertaken to date, the results of those studies, and their implications for further work required to finalize the closure plan. While the third item is addressed in Clause 3(a), the other two recommendations do not appear to be addressed in the conditions applying to abandonment and restoration.
Clause 4: Considering the success of the Ammonia Expert Panel, the WLWB should consider establishing such an Expert Panel to review and evaluate the Abandonment and Restoration Plan and the Restoration Research Plan for the DDMI project.

14. Surveillance Network Program

Clause 11(a): This section of the draft water licence should be revised to make it clear that the results of the acute toxicity tests with rainbow trout and water fleas [as referenced in Part H, item 8(a) and 8(b)] shall be used to determine if whole effluent discharged from the mine is acutely toxic to aquatic organisms. For the purposes of this water licence (as opposed to the Fisheries Act), whole-effluent samples will be considered to be acutely toxic to aquatic organisms if the survival of rainbow trout or water fleas is $ \leq 80\%$.

Clause 11(b): This clause indicates that DDMI is required to conduct 96-hr toxicity tests with round whitefish to evaluate the sensitivity of this species relative to rainbow trout (subject to the availability of gametes). Up until now, DDMI has used this parenthetical clause as an excuse for not conducting the required toxicity testing with round whitefish. In fact, DDMI has expended little or no effort to obtain round whitefish fry to support such toxicity testing. Therefore, inclusion of this condition, as written, will virtually assure that DDMI will not conduct the toxicity testing identified in the SNP. The following revision is recommended to address this problem: “A special study will be designed and implemented within 12 months to evaluate the relative sensitivity of round whitefish to ammonia (i.e., compared to rainbow trout). The special study will involve acquisition of round whitefish fry from commercial sources or by collecting gametes in the field and raising them under laboratory conditions. Rainbow trout and round whitefish fry of similar age and size will be exposed to various concentrations of ammonia-spiked effluent for a period of 96-h and the results of these toxicity tests will be used to determine LC$_{20}$ and LC$_{50}$ values for both species. The Board will provide further instructions regarding toxicity testing with round whitefish following submission of these results to the WLWB.”

Clause 12(a): The Tlicho Government has previously indicated the need to conduct whole-sediment toxicity testing to determine if effluent discharges from the mine are adversely affecting sediment quality conditions in Lac de Gras. It is recommended that this clause be revised in include the need
to conduct 10-d toxicity tests with the midge, *Chironomus dilutus*, and 28-d toxicity tests with the amphipod, *H. azteca*, to evaluate the toxicity of sediment that accumulates within the initial dilution zone. Such tests should be conducted on an annual basis by collecting bedded sediment samples at each of three sites. Splits of these samples should also be analysed for total metals, TOC, SEM, AVS, total ammonia, PAHs, and hydrogen sulfide.

Various Clauses: Nitrite should be included in the suite of nutrients that is to be analysed in surface water, groundwater, effluent, and/or runoff samples.

I hope that these brief comments are helpful to you and the WLWB during the finalization of the water licence for the DDMI project.

Sincerely,

D.D. MacDonald,
Principal, R.P.Bio., C.F.P.

References Cited

