



Environment
Box 2703, Whitehorse, Yukon Y1A 2C6

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VIA EMAIL

Monday, February 1, 2010
@ 3:37pm

January 29, 2010

Yukon Water Board Secretariat
Suite 106, 419 Range Road
Whitehorse, Yukon
Y1A 3V1

Attn: Carola Scheu
Manager, Yukon Water Board

**Re: Intervention Amendment for Type A Water Licence Application
QZ08-084 Western Copper Corporation.**

Please find attached a document which is intended to clarify pages 4-6 of Exhibit 5.7, submitted by the Yukon Government. The changes are highlighted in bold text for reference. Also attached, for convenience, is a complete version of Exhibit 5.7, with the amended text replacing the original.

We understand that this material may be considered by the Board as a "late filing" and thus we will seek the permission of the Board to enter it into the record at the hearing, should one be called. We thought it prudent however, to provide this material sooner than later.

Thank you again for the opportunity to review and respond to this application. As required by the Yukon Water Board Rules of Procedure, copies of these documents have also been forwarded to the applicant and the other interveners. Any further correspondence may be forwarded to the undersigned.

Sincerely,

Randy Lamb
Manager, Environmental Affairs Section
Department of Environmental (mail code: V-8)
phone (867) 667-5409 fax (867) 667-3641
email: randy.lamb@gov.yk.ca

copy: Western Copper Corporation
Interveners list



Environment

Box 2703, Whitehorse, Yukon Y1A 2C6

RECEIVED
R/C VIA EMAIL

Monday, February 1, 2010

@ 3:37 pm

January 25, 2010 (amended January 29, 2010)

Yukon Water Board Secretariat
Suite 106, 419 Range Road
Whitehorse, Yukon
Y1A 3V1

Attn: Carola Scheu
Manager, Yukon Water Board

**Re: Intervention for Type A Water Licence Application QZ08-084
Western Copper Corporation**

Please find attached the intervention of the Yukon Government on the above-captioned matter.

The Yukon Government is not requesting that a public hearing be held in relation to application QZ08-084, however, should the Board determine that a hearing will be convened, representatives of the Yukon Government will attend and participate as intervenors. We anticipate that the following persons will attend:

Randy Lamb, Manager, Environmental Affairs, Yukon Environment
Kevin McDonnell, Director, Water Resources, Yukon Environment
Bob Truelson, Manager, Water Quality, Yukon Environment
David Flather, Lorax Environmental
Derek Fraser, Development Assessment Branch, Executive Council Office
Laurie Henderson, Legal Counsel, Yukon Department of Justice.

For information, a curriculum vitae has been included as Attachment 1 of this intervention for Mr. Flather. At this point in time we do not believe that we will require any audio-visual equipment in support of our intervention.

Should you have any questions about the intervention or the representatives of the Yukon Government, please contact Randy Lamb at 667-5409.

PART A: INTRODUCTION

Western Copper Corporation (the "proponent" or "WCC") submitted an application for a Type A water licence (the "application") to the Yukon Water Board (the "Board") for its proposed Carmacks Copper Project (the "project"). In support of its application, WCC provided to the Board a considerable amount of background material, as would be anticipated for a quartz mining undertaking as complex as this project.

The Yukon Government ("Yukon") reviewed this material and subject to

- (a) the comments, concerns and deficiencies expressed below; and
- (b) the Board not granting rights contrary to the decision document issued on September 12, 2008 by Yukon or setting terms that conflict with this decision document, as set out in s. 86 of the *Yukon Environmental and Socio-economic Assessment Act*, S.C. 2003, c.7,

Yukon supports issuance of a water licence to the proponent for the project.

With respect to paragraph (a) – comments, concerns and deficiencies - Yukon identified four areas of concern with the application. It is our submission that these four areas must be addressed as described below in a licence, should the Board determine that a licence will be issued by it in support of the project. At the end of the discussion on these four issues, Yukon provides some comments on the draft licence submitted by the proponent.

The four areas of concern are:

- a. selection of effluent discharge standards;
- b. the proposed monitoring schedule;
- c. dam safety, particularly as it relates to the processing plant and classification under the *Canadian Dam Standards*; and
- d. the water balance data and analyses.

Each is described more fully below.

PART B: SUBMISSIONS OF YUKON GOVERNMENT

a. Selection of Effluent Discharge Standards

Yukon submits that the effluent discharge standards proposed in Exhibit 1.2.3.4 [Part H - section 3.6.1.4, Table 3-4, page 3-54]¹ of the application are not adequate because

- (i) the standards are not adequate to protect the receiving environment downstream of the project;
- (ii) the site specific water quality objective used to determine the copper standard is not adequate to protect the receiving environment downstream of the project; and

¹ These are also identified in Exhibit 1.2.1, paragraph 18

- (iii) the list of parameters for which standards are proposed is incomplete and hence not adequate to protect the receiving environment downstream of the project.

Inadequate Effluent Discharge Standards

Yukon submits that the most common approach used to develop effluent discharge standards for mining operations involves the integration of existing hydrological, biological and chemical characteristics of the receiving environment. In the case of the project, it is agreed by Yukon and the proponent that lower Williams Creek is the appropriately identified receiving environment and that station W12 is an acceptable point for taking samples that to determine the effect of effluent discharge from the project in the receiving environment. Acceptance of the station W12 is based upon consideration of Yukon's objective of protecting water quality in Williams Creek, protection of aquatic life in this system and, in particular, in recognition of the significant Chinook rearing values in lower Williams Creek. Balanced against these factors is the need to allow for an area of water for mixing and assimilation from the last point of discharge, which has been determined to be at stations W14 and W15, the Heap Leach Facility Sediment Pond and the Waste Rock Storage Area Sediment Pond.

Having agreed with the proponent that station W12 is an acceptable point to measure impacts on the receiving environment, Yukon considered the discharge standards and site-specific water quality objectives proposed by the proponent in its application. The proponent identified in Exhibit 1.2.3.4 [Part H – section 3.6.1.4, Table 3.3, page 3.53] site specific water quality objectives for aluminum, copper and iron. These objectives, the proponent asserts, were developed using the Background Concentration Procedure described in the document entitled *Guidance on the Site-Specific Application of Water Quality Guidelines in Canada: Procedures for Deriving Numerical Water Quality Objectives* (the "CCME guidelines"). The proponent also advanced a second site specific water quality objective for copper based upon its application of the Water-Effect Ratio Procedure, also described in the CCME Guidelines. From here, the proponent moved to its proposal for effluent discharge standards [Exhibit 1.2.3.4, Part H – section 3.6.1.4, Table 3-4, page 3.54].

In Yukon's submission, the proponent did not provide a clear connection between the site specific objectives it advanced for station W12 and the effluent discharge standards it has proposed based upon the *Metal Mining Effluent Regulations* (MMER). The absence of this analysis raised questions as to the adequacy of the proposed discharge standards. In addition, discharge standards are not proposed for aluminum and iron even though site-specific objectives were developed. To assist Yukon in reviewing these inconsistencies, Lorax Environmental ("Lorax") was retained to review the proposed effluent discharge standards. A copy of Lorax's report is included as Attachment 2.

To summarize Lorax's analysis, and as Table 1 below illustrates, Yukon submits that the effluent discharge standards advanced by the proponent are not sufficiently stringent to ensure that the site-specific water quality objective for copper would be met at station W12. Similarly, if the proponent release the remaining metals (As, Cu, Pb, Ni and Zn) at the suggested maximum limits under mean low flow conditions, all concentrations would

exceed CCME criteria applied to Williams Creek at W12 . Yukon submits that this is not acceptable *vis a vis* protection of the receiving environment.

Table 1: Comparison of WCC proposed discharge standards to CCME criteria and site specific water quality objective for copper

Parameter	Proponent Proposed Effluent Standard (mg/L) ¹	Predicted Concentration at W12 (mg/L) ²	CCME Criteria and Site Specific Water Quality Objective for Cu (mg/L) ³
pH	6.5-9.5 pH units	6.5-9.5 pH units	6.5-9.5 pH units
Total Ammonia	5.0	1.7	2.0
TSS	15	8.0	15.0
As	0.5	0.171	0.005
Cu	0.3	0.105	0.032 ⁴
Pb	0.2	0.069	0.004
Ni	0.5	0.172	0.11
Zn	0.5	0.175	0.03

¹ WCC has proposed MMER monthly means for TSS, As, Cu, Pb, Ni and Zn (as maximum concentrations in a grab sample)

² The numbers in red indicate exceedances of CCME criteria

³ CCME criteria are hardness based; ammonia is temperature and pH based

⁴Site-specific water quality objective for copper proposed by WCC

Yukon submits that a licence issued under the *Waters Act* must ensure that water is not degraded by an undertaking such that use of the water is detrimental to people or by any animal, fish or plant. Our conclusion on this is drawn from the definition of “waste” in the statute and the prohibition on the deposit of waste into water found at section 7 of the *Waters Act*.

In Yukon’s submission, adoption of the effluent discharge standards proposed by the proponent will not adequately protect water quality in lower Williams Creek from waste discharged by the proponent in undertaking the project. Simply put, and as noted above, if the proposed standards are used the predicted concentrations of several parameters – As, Cu, Pb, Ni and Zn – in the receiving waters at Williams Creek at station W12 will exceed the site specific water quality objective for copper and the CCME guidance for the remaining metals. This is not acceptable and does not support the intent and purpose of the *Waters Act*. Thus, in Yukon’s view, the effluent discharge standards proposed by the proponent must be rejected and another set of standards developed for inclusion in the licence.

Proposed Adequate Effluent Discharge Standards

Yukon approached the issue of identifying appropriate effluent discharge standards from the perspective of ensuring that the quality of the receiving waters, as represented by station W12, would be protected from adverse effects from the deposit of waste from the project during various phases of the undertaking (i.e. operations, closure and post-closure). Yukon also considered it important to expand the list of discharge standards to include other elements of concern that are found at the site.

The results of the modeling conducted in respect of this issue are provided in Attachment 2. To summarize, a mass loading approach was used to back-cast from site-specific water quality objectives and CCME criteria limits set at station W12 to predict the concentration of effluent that could be discharged at W14 and W15 while still meeting each of the site specific water quality objectives. This modeling considered predicted excess water discharge volumes from the project, average low-flow volumes in Williams Creek and the baseline chemistry of Williams Creek and recommended appropriate discharge standards.

With respect to the site specific water quality objectives that were used in the modeling, it is noteworthy that after reviewing the material in the application, Yukon concluded the following.

- (a) The objectives for aluminum and iron, as determined by the proponent based upon the Background Calculation Procedure detailed in the CCME guidelines, were acceptable.
- (b) The objective for copper should be set at a very conservative level because of the significant chinook rearing values in lower Williams Creek and present uncertainties surrounding the site specific water quality objective developed by the proponent (see Attachment 3).
- (c) The objective for selenium should be based upon water quality criteria from British Columbia rather than using a CCME standard as this data is more reflective of the situation in the project area given that it was developed based western species and habitats and is approximately twenty years newer in its derivation when compared to CCME site specific water quality objectives for aquatic life.
- (d) The remaining site specific water quality objectives should be determined following the CCME guidelines, except for pH, ammonia, and total suspended solids which are considered acceptable as proposed.

The modeling considered three phases of project activity – operations, closure and post-closure. The importance of looking at these three phases relates to the amount of discharge that may come from the Heap Leach Facility Sediment Pond and/or the Waste Rock Storage Area Sediment Pond during operations, closure and post-closure. For example, it is anticipated that at closure dewatering of the open pit will cease and water will accumulate in the pit rather than be pumped to the Heap Leach Facility Sediment Pond. Also, the Waste Rock Storage Area Sediment Pond is to be decommissioned such that seepage and runoff from waste rock facility is no longer collected and discharged to Williams Creek. During the post-closure phase, once rinsing and neutralization of the heap is completed, the liner is to be punctured, with water left to drain freely and discharge precipitation induced seepage will go directly to Williams Creek. Similarly for the waste rock facility, diversion ditches are to be removed or decommissioned such that it is likely that runoff and seepage from the waste rock facility will report directly to Williams Creek.

Table 2 summarizes the results of Yukon's modeling with respect to operations, closure and post-closure.

Table 2: Estimation of Effluent Discharge Permitted to Meet Site Specific Water Quality Objectives (Operations, Closure and Post-Closure)

Column 1 Parameter	Column 2 Baseline (Background) (mg/L) ¹	Column 3 Site Specific Water Quality Objectives at W12 (mg/L)	Column 4 Effluent Discharge - Operations (Modeled) (mg/L)	Column 5 Effluent Discharge – Closure (Modeled) (mg/L)	Column 6 Effluent Discharge Post-Closure (Modeled) (mg/L)
pH	7.88 pH units	6.5-9.5 pH units*	6.5-9.5 pH units	6.5-9.5 pH units	6.5-9.5 pH units
Ammonia -N	0.05	2	5.8	8.1	21.5
Nitrate – N	0.086	2.9	8.3	11.7	31.0
Nitrite – N	0.033	0.06	0.1	0.1	0.3
TSS	4	15*	36.2	49.4	125.0
Al	0.16	0.63*	1.53	2.10	5.33
As	0.00046	0.005	0.014	0.019	0.050
Cd	0.00003	0.00005	0.00009	0.00011	0.00025
Cu	0.004	0.007	0.01	0.02	0.04
Cr	0.0008	0.001	0.0014	0.0016	0.003
Fe	0.2	1.0*	2.5	3.5	9.0
Pb	0.0004	0.004	0.011	0.015	0.040
Hg	0.00001	0.000026	0.0001	0.0001	0.0002
Mo	0.0017	0.073	0.21	0.30	0.79
Ni	0.001	0.11	0.320	0.451	1.20
Se	0.00028	0.002	0.0053	0.0074	0.019
Zn	0.0053	0.03	0.078	0.107	0.277

* site specific water quality objectives proposed by the proponent

Columns 4, 5 and 6 of the above table show the predicted amount of each element or substance that could be discharged from the project during operations, closure and post-closure, respectively, while still ensuring that the selected site specific water quality objectives identified for station W12 are met. Concentrations are reported for a much broader range of parameters than identified in the application. However, in Yukon's submission all of these elements are found in Williams Creek and are of concern.

In considering how the results of this modeling might be translated into effluent discharge standards for inclusion in a water licence, Yukon acknowledges that there are a number of uncertainties and assumptions in the data used for this modeling, particularly related to the closure and post-closure situations. Site specific data collected during operations and refinements in the construction, operation and reclamation of the facilities may necessitate a review of the adequacy of the standards that should apply during these phases.

The need for a future review noted, based upon present predictive capabilities, Yukon submits that the effluent discharge standards set out in Table 3 for operations/closure and post-closure be included in the licence in relation to compliance points at stations W14 and W15. These standards should be considered maximum authorized concentrations in grab samples.

For reference, with but few exceptions, these standards are the same as the concentrations identified in Columns 4 and 6 of Table 2. The exceptions fall into three categories.

The first difference is simply due to rounding off (e.g. Table 2, Column 4 lists 0.011 mg/L for lead (Pb) whereas Table 3, Column 2 lists 0.01 mg/L for lead (Pb)).

The second exception, which relates to total suspended solids (TSS) and nickel, is that the standard identified in Table 3 is the same as that set out in the *Metal Mine Effluent Regulations*. In accordance with s.13(5) of the *Waters Act*, Yukon submits that the more stringent standard for TSS and nickel set out in the *Metal Mine Effluent Regulations* should be used rather than the amount indicated by the modeling.

The third exception involves ammonia. Although the modeling, which is reflected in Table 2, suggests that a less stringent standard could be adopted and the site specific water quality objectives for station W12 met, the proponent has indicated in its application that it can meet a more stringent standard. On this basis, Yukon submits that the proponent's suggested standard for ammonia (i.e. 5.0 mg/L) be adopted in the licence.

Table 3: Recommended Effluent Discharge Standards for Compliance at W14 and W15

Parameter	Effluent Discharge Standard – Operations & Closure (mg/L)	Effluent Discharge Standard – Post-Closure (mg/L)
pH	6.5-9.5 pH Units	6.5-9.5 pH Units
Ammonia -N	5.0	5.0
Nitrate – N	8.3	31.0
Nitrite - N	0.1	0.3
TSS	15*	15*
Al	1.5	5.3
As	0.01	0.050
Cd	0.0001	0.00025
Cu	0.01	0.04
Cr	0.001	0.003
Fe	2.5	9.0
Pb	0.01	0.04
Hg	0.0001	0.0002
Mo	0.2	0.8
Ni	0.3	0.5*
Se	0.005	0.02
Zn	0.08	0.28

* value taken from *Metal Mine Effluent Regulations*; where MMR limits were less than the modeled standards shown in Table 2, the MMR limits are proposed for inclusion in the license, consistent with the proponent's recommendation

b. Monitoring Schedule

Exhibit 1.16.2.9 [Appendix I – Environmental Monitoring Program of the application] details a monitoring schedule for the project. With but a few exceptions, Yukon submits that the monitoring regime proposed is adequate. These exceptions are as follows.

Station W12

Monthly streamflow monitoring is proposed by the proponent for station W12 while continuous monitoring is proposed for station W10 (near the mouth of Williams Creek). Yukon submits that station W12 is the point where aquatic resources are to be monitored to ensure protection of the receiving environment. Further, flow data and assumptions based upon this station were used for back calculating effluent discharge standards upstream at the points of discharge. Considering uncertainties inherent in such modelling, it is important to have sufficient flow data collected from station W12 to enable verification of the adequacy of the modelling. Consequently, Yukon submits that continuous streamflow monitoring be conducted at station W12.

WCC proposes to sample water at station W12 monthly, whether discharging or not. Yukon agrees that monthly sampling is adequate when WCC is not discharging. Yukon believes that monthly sampling during discharge does not generate sufficient data to adequately represent water quality conditions and reflect changes that may be happening downstream as a result of the discharge of effluent upstream. Consequently Yukon recommends that WCC take weekly samples at station W12 when discharging.

Testing of Additional Parameters

Various parameters were identified for sampling and analysis in Exhibit 1.16.2.9 [Appendix I – Environmental Monitoring Program of the application]. Other parameters may be expected to be elevated in water as a result of mining activity and may influence toxicity. Yukon recommends that the following parameters be added to the water quality analysis list: mercury, phosphorous, total dissolved solids, sulphate, chloride, nitrite-nitrogen, nitrate-nitrogen and total alkalinity. Field parameters should also be included as part of a water license: pH, conductivity, and temperature.

As a final point under this category, Yukon is not asking that the proponent sample benthic and sediment. It has not asked for this on the basis that as required by s.7(1) of the *Metal Mine Effluent Regulations, SOR/2002-222*, the proponent will be required to conduct environmental effects monitoring studies of the potential effects of effluent on the fish population, on fish tissue and on the benthic invertebrate community in accordance with schedules made under the regulation. However, Yukon submits that copies of reports of the results of these studies be submitted to the Board for information.

Groundwater

Yukon submits that the final groundwater monitoring program is unclear in the proponent's application. WCC identifies the location of groundwater monitoring wells in Exhibit 1.23 [a drawing dated June 2008 in Volume VIII, Appendix U – Groundwater Monitoring and Supply Wells]. However, in Exhibit 1.16.2.9 [Appendix I – Environmental Monitoring Program, dated October, 2008], the proponent has identified that most of the existing monitoring wells will be decommissioned once project components are constructed. They also note that additional wells or other complimentary approaches will be established on site, particularly downgradient of project components. It is therefore unclear what the actual groundwater monitoring program is.

It is important to monitor groundwater for several reasons – to monitor changes in water quality, to determine if groundwater is being contaminated by the project, to monitor changes in groundwater quality due to changes that may occur as a result of disruptions to the current groundwater regime and the effect this may have on the baseline water quality in Williams creek. Consequently, it is important that sufficient groundwater data be collected, assessed, and considered in adaptive management plans. Considering the lack of clarity in the proponent's plans, Yukon recommends that the proponent submit a groundwater monitoring plan which identifies the location of wells, the associated sampling regime, interpretation of the data and how the results will be considered in their adaptive management plan. A draft of the plan should be submitted to the Water Resources Branch for comment, and the final plan submitted to the Board well in advance of initiating construction of the heap.

Meteorological Monitoring

Exhibit 1.16.2.9 of the application makes reference to the automated weather station established by Yukon on Williams Creek in 1994 and that data from this station was used in developing their designs and operational plans for the project. Ongoing meteorological data collection is necessary to confirm designs, operational plans and for closure. It is implied that Yukon will continue to be responsible for the provision of this information to WCC. Yukon recommends that the proponent be responsible for the collection and submission of meteorological data in their monitoring reports. Yukon would be pleased to assist WCC in that regard, but the ultimate responsibility for the collection and use of the data in designs and operational plans should rest with the proponent and not with government.

c. Dam Safety Classification

Exhibit 1.22.11 [Appendix T-11 at page 2] states that based upon the 2007 Canadian Dam Association, Dam Safety Guidelines, the heap pad and embankment and the Events Pond should be ranked "high" and "significant", respectively. Yukon acknowledges that attribution of a ranking is somewhat of a subjective exercise. However, it also submits that it would be in the public interest to rank these structures as conservatively as possible to ensure protection of life and the environment.

With respect to the heap pad and embankment, Yukon submits that much of the concern associated with the ranking of "high" is due to the presence of Plant Site and

Events Pond, which are both immediately downstream of the pad and embankment. As noted by the proponent (at page 2 of Exhibit 1.22.11), in the case of a failure, the ore could be saturated or nearly saturated and result in a debris flow which would seriously damage the downstream infrastructure. The resulting risk of loss of life, damage to infrastructure, damage to the environment, loss of capability to treat solutions before discharge to the environment and loss of process results, all noted by the proponent in Exhibit 1.22.11, suggests that the most prudent course of action may be to relocate the Plant Site such that it would not be affected by a failure of the heap pad and embankment.

Should the proponent not agree to relocate the Plant Site, Yukon submits that the Board should impose a ranking of "very high" for the heap pad and embankment. The more rigorous design requirements associated with this ranking should go some way to minimize the risk of a failure and associated damage to the environment, and particularly the risk of a direct release of highly acidic debris containing high levels of dissolved metals into Williams Creek.

With respect to the Events Pond ranking, Yukon submits that the ranking of "high" is more appropriate than "significant" as proposed by the proponent. Should a failure occur at the Events Pond alone, it is anticipated that the downstream effect on Williams Creek will be very significant given that the pond will contain acidic solutions and high levels of metals. Further, given that it is downstream of the heap pad and embankment, Yukon submits that a failure of the heap pad and embankment may cause additional stress on the Events Pond that could only be withstood if the Events Pond was designed and constructed to the "high" standard.

d. Water Management Plans and Water Balance Updating

Yukon acknowledges that considerable resources, time and effort were expended by the proponent in preparing its application and that new data may well have been gathered after some documents were prepared. This said, Yukon submits that if water is to be protected, both in terms of quality and quantity, plans and documents must be updated and, as necessary, calculations made anew when new data becomes available. Yukon recommends that such updating occur as soon as possible with respect to the following.

- (a) The hydraulic structures described in Exhibit 1.6.1 [Appendix D-1 Preliminary Surface Water Management Plan (Operations)] appear to have been designed based upon data gathered from Pelly Ranch prior to the acquisition of information on site rainfall. Williams Creek rainfall and snow survey data indicate that precipitation amounts are greater at Williams Creek than at Pelly Ranch. Yukon submits that the hydraulic structure design estimates should be reassessed using the more recently collected data and should be based upon Williams Creek rainfall and snow survey data.
- (b) Exhibit 1.7.4 [Appendix E-4 Site Water Balance Update] provides an update of an earlier precipitation analysis using 2005-2008 data from the Pelly Ranch and

Williams Creek and uses these results to update the water balance. However, site evaporation is determined based upon earlier (i.e. late 1990s) data. Further, no estimate of evapotranspiration is provided and pond evaporation is used for all surfaces. Yukon recommends that evaporation should be estimated using data gathered from the Williams Creek meteorological station for pond and disturbed surfaces and evapotranspiration should be estimated for vegetated surfaces. This information should be incorporated into new calculations for the water balance associated with the project.

As a general observation, Yukon submits that the water balance for the site must be updated annually. Weather patterns have been observed to be changing; new data is being acquired and activities at the site may alter the water balance. Water balance analysis must remain current with these changes and any hydraulic structures must be designed (or redesigned) to accommodate these changes.

SUMMARY OF RECOMMENDATIONS

The following matters, as discussed above, should be incorporated into a licence for the project, should the Board determine that a licence should be issued to the proponent for the project.

- The effluent discharge standards identified in Table 4 of this intervention be included in the licence in relation to compliance points W14 and W15. These standards should be considered maximum authorized concentrations in grab samples.
- Continuous streamflow monitoring should be conducted at station W12
- Weekly sampling should be conducted at station W12 while the proponent is discharging waste from the heap leach facility sediment pond and/or the waste rock storage area sediment pond
- Field parameters pH, conductivity and temperature should be collected at all times the proponent collects water samples as a part of the monitoring program
- Water quality analysis should be conducted of mercury, phosphorous, total dissolved solids, sulphate, chloride, nitrite-nitrogen, nitrate-nitrogen and total alkalinity in addition to those parameters already identified by the proponent in its monitoring program.
- A copy of any environmental effects monitoring reports prepared as set out in the *Mining Metals Effluent Regulations* should be submitted to the Board.
- A groundwater monitoring plan should be developed identifying the location of wells, the associated sampling regime, interpretation of data collected and how the results will be used in an adaptive management plan. This plan should be submitted, in

draft, to Water Resources Branch for comment and the final plan submitted to the Board well in advance of construction of the heap.

- WCC shall be responsible for the collection and incorporation of meteorological data and such data and analysis should be submitted as part of the monitoring program.
- The Plant Site should be relocated away from the heap pad and embankment or a ranking of "very high" pursuant to the Canadian Dam Association, Dam Safety Guidelines be set out in the licence for these structures. A ranking of "high" should be set out in the licence in relation to the Events Pond.
- Hydraulic structure designs should be updates to reflect more recently collected rainfall and snow survey data from Williams Creek.
- Evaporation and evapotranspiration rates should be determined for the project and incorporated into water balance calculations.
- Water balance calculations should be updated annually.

PART C: COMMENTS ON EXHIBIT 1.2.1

The proponent submitted a draft licence, which is included as Exhibit 1.2.1. Yukon reviewed the draft and offers a number of comments.

2. Part B, Paragraph 1 – This clause states that the Board has relied on the representations, warranties and undertakings provided by the Licensee in the material filed in the application. It further states that such representations, warranties and undertakings where referenced in the licence are considered by the Board to be a part of the licence, but shall be subject to, and may be modified by, the conditions of the licence. Yukon suggests that given the size and complexity of the application that it would be prudent to state in the licence where something in the application has been modified by the conditions of the licence.
3. Part B, Paragraph 3 – Yukon submits that this paragraph be deleted as its essence is found in the *Waters Regulation*, s.4(1).
4. Part B, Paragraph 4 and Paragraph 6 – Yukon submits that these paragraphs could be deleted. Paragraph 4 speaks to what is the law in any event; paragraph 6 is not required as it is covered by s.16(1)(c) in the *Waters Act*.
5. Part B, Paragraph 10 – This paragraph authorizes the Board to extend or revise dates for submitting materials specified in the licence. Yukon submits that this condition be amended to enable the Director of Water Resources Branch, Yukon Environment, to undertake this function. Doing so would eliminate the need for amendment of the licence and thus remove potentially significant time delays and

simplify procedures and thus enable both the proponent and the regulator to adjust these dates in a more responsive and time-effective manner.

6. Part B, Paragraph 12 – In addition to the information listed, Yukon submits that the following should be contained in annual reports
 - (a) description of water use (amounts and locations);
 - (b) quantity of water used on a daily basis;
 - (c) results of inspections, illustrated with photographs;
 - (d) plans for repairs and modifications of structures; and
 - (e) details of work carried out or planned in accordance with an adaptive management plan.

6. Part C, Paragraph 16 – This paragraph should be revised to state the following.

The Licensee is authorized to:

- (a) obtain and use water for a quartz mining undertaking at a rate not exceeding a total of 1600 m³/day from groundwater wells in Williams Creek drainage, subject to the restriction that this water shall not be used for industrial purposes if water is available for such purposes from mine pit dewatering and sediment ponds and events ponds, as these ponds are described in the application;
 - (b) obtain and use water from mine pit de-watering, sediment ponds and the events ponds, as these ponds are described in the application, for make-up water and dust suppression purposes;
 - (c) deposit camp wastewater to septic tank/leachate field systems in accordance with section 3.6.4 of the application (Exhibit 1.2.3.4);
 - (d) use and store water in the heap leach facility and processing plant, as these terms are used in the application;
 - (e) store water and wastewater in the sediment ponds and the events ponds, as these ponds are described in the application;
 - (f) discharge wastewater to Williams Creek from the heap leach facility sediment ponds and waste rock storage area sediment ponds in accordance with effluent discharge standards set out in paragraph 18 of this licence; and
 - (g) divert water not affected by the undertaking from undisturbed catchments in the developed area of the project and direct into existing watercourses in accordance with the Surface Water Management Plan, Appendix D of the application (Exhibit 1.6).
7. Part D, Paragraph 18 – This paragraph should be amended to reflect Table 4 of Part B.a of this intervention.
 8. Part G, Paragraph 31 – This paragraph should be amended to reflect the comments made in Part B.b of this intervention and as summarized at the end of Part B.
 9. Part G – A new paragraph should be added requiring the proponent to submit a Water Treatment Sludge Quality Assurance Plan.

10. Schedule A – The schedule should be amended to reflect the comments made in Part B.b of this intervention and as summarized at the end of Part B.