

# Tyhee Gold Information Requests

*Yellowknives Dene First Nation*

---

## Table of Contents

Section 1: Project Description - Basics .....	2
Section 2: Wildlife .....	8
Section 3: Rock and TCA Management .....	13
Section 4: Water Quality and Downstream Impacts .....	18
Section 5: Closure and Reclamation .....	22
Section 6: Archaeology, Traditional Knowledge, Socio-Economics .....	32
Section 7: Cumulative Effects .....	37

**FROM:**

Todd Slack  
Research and Regulatory Specialist  
Yellowknives Dene First Nation  
Land and Environment  
P.O Box 2514, 901 Sikyea Drive (Ndilo)  
Yellowknife, NT  
X1A 2P8  
Ph: (867) 766-3496  
Fax: (867) 766-3497

**TO:**

Nicole Spencer  
Environmental Assessment Officer  
Mackenzie Valley Review Board  
tel: 867-766-7062  
fax: 867-766-7074  
email: [nspencer@reviewboard.ca](mailto:nspencer@reviewboard.ca)

## Section 1: Project Description

**IR Number:** 1-1

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Project Description

### **Preamble:**

Tyhee's March 28<sup>th</sup> Information Request response introduced significant changes to the mine's proposed development plan yet provided no additional details. Subsequent correspondence has served only to obfuscate the matter rather than provide clarity.

For example, there is confusion surrounding simple matters that should have been clearly outline in the project definition – the length of operation, the size of the operation, the height of the waste rock piles, the depth of the pit – all matters which the Parties are now forced to use one of their two information gathering stages to address.

Another example is the question of Nicholas Lake. The proponent seems to be suggesting that it is part of the YGP, but not part of the current assessment. The project has been removed because of the contaminant issues associated with the ore (especially arsenic), but there is no further discussion as to how the arsenic issue will be resolved so that the deposit can be mined as indicated in year 4.

### **Request:**

YKDFN request that the company provide clear and unambiguous details as to the entire mine plan and project description, including but not limited to: the metrics of the revised operations; the relationship between the Nicholas Lake operation and the Environmental Assessment; and new impact predictions based on the current development scheme.

**IR Number:** 1-2

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Accidents and Malfunctions

### **Preamble:**

There is no dispute that the company complied with ToR by providing an accidents and malfunctions section, however, the section fails the adequacy test in almost every way.

Item 3.5(1) of the ToR reads:

*“Predictions for the risks, modes of failure, and impacts of accidents and malfunctions including how the developer will use such information in planning and designing, with particular consideration to:*

*a. a failure of any feature of the tailings containment area:*

*b. major fuel spills at the YGP site or along transportation routes;*

*c. accidents involving the transportation and handling of cyanide containing compounds; and*

*d. the occurrence of 100 year extreme precipitation events causing greater than-expected inflows into the tailings facility.”*

Specific to item (a) above, in Review Board IR 1-2-9, the company notes only one potential mode for TCA failures – overtopping. Slope instability is discussed but immediately discounted, without a risk assessment or explanation as to why it is ‘less likely’, and no management actions are discussed in the paragraph that follows, there is only discussion on overtopping.

**Request:**

1. The proponent must complete a thorough risk assessment that analyzes the probable modes of failure and consequences of impacts of items (a) to (d) above.
2. In IR 1-2-9 the proponent notes that emergency materials will be stockpiled on site. Please provide quantities, types and locations (with map) of materials that will be stored.
3. In IR 1-2-9 the proponent asserts that overtopping is not likely to result in outright failure. Please provide a background of worldwide tailings dam failures over the last 10 years, identifying the causes, the environmental damage, the financial costs, and the management response/containment. Please highlight any instances in which overtopping was either the root cause, or a contributing factor, to the failure.
4. In IR 1-2-9 the proponent does not discuss a catastrophic failure of the dam and the impacts. In addition to item 1, please identify what management actions are available if a catastrophic failure of the dam were to happen – with indications as to response time and materials needed.
5. The developer must provide a thorough analysis of the impacts of cyanide spilling into the environment and what contingencies exist to respond. Secondly, the proponent must identify what equipment or neutralizing agents would be required. Third, a thorough desktop study should be commenced to look at other cyanide operations in the world and examine the impacts of spills and/or poor controls into the environment, with special regard to drinking water.
6. Given the extremely variable water balance (from DAR to recent IR response), what are the planned contingencies for higher than expected inflows into the mine site, especially during extreme events? If the answer remains “the installation and operation of additional pumps will be used...” the company must provide timelines which reflect decision

making, transport and installation as well as the ability of the TCA to treat such increased inputs throughout the operational life of the mine.

7. In reviewing the information provided by the proponent in sections 8.1 and 8.2, it seems that the company's response is solely preventative measures. When and if a spill occurs, the final action seems to be reporting it to the spill report line. Emergency measures are also discussed in section 6.8, but again, there is little discussion on what the company's role is should an accident or malfunction occur. YKDFN require a meaningful response to ToR section 3.5(4) that indicates not just what will be done to decrease the likelihood of an emergency, but also the response should such an event occur.
8. The Spill Response plan submitted as appendix K does not address the concerns in this section and must be updated for consideration in terms addressing item 3.5(5)
9. On page 596, the proponent states "there have been no significant discharges of petroleum products into any waters along the winter road corridor". For clarity, what does the proponent consider a significant discharge?

**IR Number:** 1-3  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Water Balance

### **Preamble**

The water balance values presented in these two documents (DAR Section 4.12.3, Knight Piesold Report Section 3.0) are significantly different.

### **Request**

- 1) The Knight Piesold water balance seems to indicate an initial volume of in Winter Lake of 1.4M m<sup>3</sup> (section 3), while the DAR uses a figure of 783k m<sup>3</sup>. Please provide explanation of why these numbers are different, how they were derived, and the level of confidence associated with the new value.
- 2) The Tyhee letter of June 15th states that the "*water balance differences from those stated in the DAR and those submitted as and [sic] IR response on May 31st, 2012 are a result of findings during the Feasibility Study and the difference in the revised mine plan*". The 'DAR water balance' was also submitted on March 28th, 2012 in response to Review Board IR 1-2-3 with no indication that the data would be changing. Please provide appropriate background so that the parties can understand the timelines associated with this Feasibility Study, when it became clear that the proponent would be submitting a new water balance, and if the response provided in 1-2-3 is still valid.

- 3) Please provide a comparison of the two values, showing where there are differences and the rationale behind these predictions.
- 4) Please provide a discussion on the level of confidence associated with the two water balances.
- 5) Given the differences between the previous water balance and the update, what contingency is available if the new values are incorrect, including a discussion how the project will be affected if quantities of water are limited.
- 6) Please provide an updated discussion on the projected water withdrawals from Giauque Lake and the potential impacts of this drawdown in both dry and wet years.
- 7) There is no water balance provided for the exploitation of the Nicholas Lake deposit or an indication as to the water needs for future processing of this ore. Section 1-1-6 states that no water withdrawals are planned – however it is unclear if this means that the project no longer needs to draw water or if the company is stating that it does not believe that this needs to be considered within the scope of this Environmental Assessment.
- 8) The ROM input to the water balance seems excessively low compared to other operations in the NWT. Please provide rationale and a confidence measure for this value.

**IR Number:** 1-4

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Incinerator Management Plan

**Preamble:**

Incineration Management, as discussed in Terms of Reference section 3.3.6 and in the DAR in section 6.7.2 and 6.8.1, lacks detail sufficient for the Parties to properly evaluate. This issue must be addressed in the Environmental Assessment as no regulatory regime exists to force compliance and the company would therefore have considerable freedom to emit levels of contamination that could prove harmful to the environment.

**Request**

- 1) As required by ToR 3.3.6(3), Tyhee must submit a conceptual incineration management plan, of sufficient detail, that links the guidelines that the company has committed to meet, what monitoring will provide data confirming that the guidelines have been achieved, and what management actions are available if the predictions are not met.

- 2) Section 6.7.4.1 notes that the project will ‘comply’ with the Land Use Permit conditions but ‘conform’ with Air Quality Guidelines. The proponent must provide further clarity on its commitments and a discussion on its intent with regards to compliance versus conformance.
- 3) There is no detail on the level of persistent organic pollutants in the local study area. The proponent must undertake appropriate research to develop this baseline information so that if changes should occur they can be properly attributed to cause.
- 4) The Fortune minerals project predicted significantly different levels of airborne contaminants (see table 10.4-9 in the Fortune DAR). Please provide a comparison to this project, explaining how the two projects could arrive at predictions roughly an order of magnitude different. As part of this analysis, provide a level of confidence associated with the predictions, as well as an analysis considering the development case compared to the baseline case.
- 5) Provide an analysis considering the potential mitigations and their effectiveness if causal links can be discovered between dust or particulate emissions and wildlife avoidance. In particular, please provide further explanation and research which supports the assertion “*Any dust-related effects resulting from the YGP are expected to occur within 10m of the main development footprint*”.
- 6) Section 6.7.5.1 states “*The LSA has not been substantially disturbed by human development*”. Please provide further clarity on this statement, especially in light of a relatively large contaminated site, and a lake, that has been significantly impacted by historic operations.

**IR Number:** 1-5  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Water Sampling Effort

**Preamble:**

YKDFN are concerned that the proponent has not adequately characterized the water quality, in the study area, with samples taken in different seasons and in different years. A more rigorous sampling effort would not only allow for a better understanding of the baseline, but would reduce the uncertainty in the impact predictions and assessment of effects.

**Request**

- 1) For each of the water bodies that have been sampled, please provide a map and a chart indicating when the water sample(s) was taken.

- 2) Please provide a discussion of the seasonality and multi-year approach of the background water sampling, best practices and the uncertainties that are introduced.
- 3) Please provide a discussion which evaluates the level of confidence for predictions based on limited sampling.

**IR Number:** 1-6

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Noise

**Preamble:**

Noise related issues are discussed in section 6.7.3 yet there is no reference to, or discussion of, background levels, the expected noise levels associated with the different phases of development, or how the project evaluated the associated impacts.

The DAR heavily references De Beers (2002) for its noise assessment. Considering the lack of field information, updated references should be utilized (i.e. the Gahcho Kue EIS).

**Request**

- 1) Please provide a new discussion on the noise levels, in light of the updated mill rate, power needs, and level of operations.
- 2) Please provide an analysis that takes into consideration noise level baseline and includes predictions for noise levels during the different phases of the project

## Section 2: Wildlife

**IR Number:** 2-1  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Wildlife Study Area and Research

### Preamble

DAR 6.1.3.1, Appendix E states that the WSA is a 25.5km x 25.5km study area centred on the mine site. However, the WSA is not adjusted to have a similar buffer on the Nicholas Lake deposit. The boundary on this deposit is approximately 5km. Other industrial developments utilize a 40km study area and their Wildlife Effects Monitoring Programs (WEMP) have shown a caribou zone of influence of 14-40 km (Diavik 2010 WEMP).

The Wildlife baseline studies were provided for Moose and Waterfowl only.

### Request

- 1) Within this small study area it will not be possible to properly assess the impacts to caribou – the proponent must either adjust their study area or provide an in-depth rationale, supported by scientific research with Barren Ground Caribou, as to why the study area is sufficient. Specific attention must be paid to how the proponent intends to address impacts caused by the Nicholas Lake deposit and the lack of sufficient study area around it to assess impacts.
- 2) The caribou survey results in Appendix E of the DAR do not contain any conclusions or information that would help inform the assessment and impact predictions. There is no discussion or conclusions. Please provide an update on how the project utilized this information in their project design and DAR preparation.
- 3) Appendix E notes that the moose “*results will be examined and compared with [ENR’s] forthcoming report once it has been released*” but YKDFN cannot find the additional information. Please provide this analysis.
- 4) Appendix E notes that “*Future surveys will compliment these results and comparative purposes*”. Please provide surveys since 2005 and the results of the comparative analyses.

**IR Number:** 2-2  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Caribou Baseline Information

### Preamble

DAR 6.6.1.1 states *“The YGP lies within the Bathurst herd’s winter range; however, it is outside known important migration corridors”*.

On page 229 of the DAR the project notes that the March 7<sup>th</sup>, 2005 survey noted 492+/- 340 Caribou, stating *“Caribou occur in the vicinity of the WGP during the winter months and intermittently during the migration”*. This indicates that slightly less than 1% of the herd was observed on a single day, in the only year of baseline caribou surveys. Other surveys that year show continued occupancy and utilization. Yet the proponent states that Caribou are an *“infrequent occurrence in the YGP area”*

**Request**

- 1) Please provide a map of the ‘known important migration corridors’ and a definition.
- 2) Please provide a map and analysis, evaluating the utilization of this area by the Bathurst Caribou herd, as well as the number of interactions that collared caribou would have had with either the ‘secondary route’ or the road to Nicholas Lake. Secondly, indicate any time that a collared caribou was within 5km of either of these routes.
- 3) Given the relatively small survey area and the high numbers of caribou observed, what inferences can be drawn on habitat utilization and quality?
- 4) What baseline information is available for caribou behaviour within the YGP study area? Please provide an update.
- 5) The project does not provide any discussion on why it will not have indirect effects such as what have been documented and observed at other mines in the Chief Drygeese Territory. Either provide this justification or explain how the indirect effects from the mine will affect caribou and other wildlife VECs.

**IR Number:** 2-3  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Draft WEMP

**Preamble:**

The DAR failed to adequately respond to Terms of Reference 3.3.3(4) and while the subsequent IR does potentially meet the requirement to provide a WMMP/WEMP, it does not provide a level of monitoring that would allow the proponent to test or evaluate the likely impacts.

It is not acceptable to allow this to be developed “upon project approval”, as there is no regulatory mechanism that will allow any Party or government department to enforce or require actions from the proponent. Thus the broad strokes and an enforceable framework must be established within the Environmental Assessment to provide an approach for the Parties to require action. Failing this, the proponent is free to implement a monitoring effort that meets best practices or no effort whatsoever.

Lastly, the Tyhee response to the IR references section 6.3.3, when it likely should reference 6.6.3.

## **Request**

- 1) The Draft Conceptual Wildlife Monitoring and Management Plan (WMMP) notes “*The current absence or low abundance of Bathurst caribou in the regional study area (RSA)*” without providing any baseline data on how they arrived at this conclusion.

The WMMP states “*monitoring will initially rely on anecdotal data recorded in wildlife logs related to Bathurst Caribou presence/abundance, harvester knowledge, and preliminary monitoring observations.*”

- caribou “*encounter such behaviour [industrial development] may show minor displacement behaviour and avoid the immediate YGP development area and/or roads*” (DAR 6.6.1.1, Supported by ZOI research at other industrial developments);
- there is no description of a TK/Harvester information collection scheme and the previous YKDFN TK ‘effort’ was seemingly based on a single site visit;
- there is no description of other ‘preliminary monitoring’;

It seems clear that this monitoring program is being built in such a way that will result in little information gathered and do it in a spurious, non-systematic way that limits its utility.

Please provide:

- a) Indications as to the past dialogue with local hunters, including the results of these dialogues and how it has influenced the project.
  - b) How and when these continued dialogues will occur during the temporal period, as well how the accounts provided will be utilized to develop relative abundance information.
  - c) Please provide a study outline with regards to the wildlife monitoring road observation scheme, indicating the study objectives and a discussion of the level of confidence on study’s ability to meet these goals.
- 2) Please indicate why the project has not utilized the experience and best practices developed at other mines in terms of applying caribou monitoring that considers behavioural research, caribou response/interactions to roads, distribution/Zone of Influence, and collaborative development of goals and research methods.

- 3) In the DAR section 6.6.1.1, the proponent states “*With the implementation of the mitigation measures as described, and the GNWT’s population monitoring and subsequent harvest closures or reductions, the YGP development-related activities are not expected to affect the overall health or well being of the Bathurst caribou herd*”.
  - a) After reading the previous section, it is still unclear what mitigations are proposed. The section notes that Caribou will be given the right of way, encouraging the reporting of vehicle mortalities, and that wildlife harassment will not be prohibited, but it is not clear how complying with the law and voluntary reporting represent project mitigations that will offset the observed response (i.e. deflection at roads, zone of influence, etc.). Please provide a chart indicating mitigations relating to caribou, the effect, and how this level of effect is moderated by the action.
  - b) How does the GNWT population monitoring change the project impacts?
  - c) Please provide further clarity on the role of harvest closures/reductions and the relationship to the project. If the restrictions or closure were altered or lifted, would the project then have the potential to impact the health or well being of the herd?
  - d) Given that the creation of access is one of the largest effects to the health and well being of the herd, how does the proponent intend to monitor and control this?
- 4) In the DAR section 6.6.1.1, the proponent states “*YGP is not anticipated to block migratory routes or confuse migrating caribou*”. Traditional knowledge holders believe that the establishment of the diamond mines has significantly altered the migration route of the caribou, while western science has shown a wide zone of influence where caribou prefer to avoid the site. What basis does the proponent use for making this assertion and how have they tested this statement with TK holders.
- 5) Caribou Mortality ‘monitoring’ is described in a way that the listed items are optional. Please provide which of these items the company will implement as part of its WMMP.
- 6) The Wolverine section does not describe any monitoring actions. It notes that wolverine can be attracted to the site and that the waste management plan will address this. As a starting point for wolverine related monitoring, YKDFN would like the proponent to please provide clear indication whether or not the proponent is willing to enter in the GNWT’s Wolverine Hair Snagging project and what commitment it is willing to make to this end. This has emerged as the current best practice at industrial developments in the NWT.
- 7) There is no recognition or inclusion of Wolves within the monitoring regime. Please provide an update on what studies will be undertaken as part of the WMMP and what baseline exists to evaluate potential effects against.

**IR Number:** 2-4  
**To:** Tyhee NWT Corp  
**From:** Yellowknives Dene First Nation  
**Subject:** Impact Predictions  
**Reference** DAR Table 6.5-4

### **Preamble**

The DAR impact predictions contains conclusions that are not clear to YKDFN.

### **Request**

- 1) Dust deposition is identified as reversible in the long term, but there is no data presented on the mechanisms and rate of this recovery. Please provide information that shows the rate of recovery, the predicted return to the pre-development/baseline case, and the monitoring and mitigations available if the amount of dust generation is above expected.
- 2) Removal and burial of ecosystems is evaluated as medium term in duration and reversible. Please explain the proponent's conclusions and how they intend to monitor this reversibility.
- 3) Removal and disturbance to *P.foliosus* from Winter Lake is assessed as medium term in duration. If Winter Lake is destroyed, please provide details on how this impact only occurs 'over the life of the project'.
- 4) Given these predictions, please provide closure commitments and indicate what components/objectives and criteria that these impacts can be assessed for.
- 5) Section 11.1.2 Notes that "*The proposed YGP is considered to be a temporary land use*", but does not provide a rationale on how components such as the waste rock pile, the open pit and the TCA can be considered to be 'temporary' in nature.

## Section 3: Rock and TCA Management

### IR Number:

**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Potential for Acid Rock Drainage

### Preamble:

Both Appendix H and the Knight Piesold Report indicate that the Ormsby ore, and the processed tailings, are potentially acid generating. However, there is no synthesis of the data that these two reports provide. It is difficult for YKDFN to understand the survey efforts of each testing regime and what conclusions we should draw from this information.

### Appendix H

*7.1.1 Ormsby Rock ARD Potential – The Rock Types at Ormsby are either potentially acid-generating ... or have an uncertain potential to generate ARD.*

*7.1.2 Ormsby Rock Leaching Potential – All rock types report some leachate parameter concentrations that exceed CEQG-AL guidelines including of PH (<6.5), aluminum, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium and zinc. During kinetic testing, aluminum, cadmium, cobalt, copper, iron, lead, nickel, selenium and zinc concentrations increased as the pH of PAG samples dropped from neutral conditions. Barrel test results confirm that metal concentrations are higher upon acidification of the test leachate.*

The Knight Piesold report does not address the potential for ARD from the Nicholas Lake ore. In their submission of March 23<sup>rd</sup>, the company indicated that “[Nicholas Lake] has been removed from the mine plan” and from the overall YGP mill throughput. However, in the letter of June 15<sup>th</sup> the proponent states “this resource remains a component of the YGP as originally proposed in the Project Description Report and subsequent DAR and as such remains a part of this EA”. Thus, YKDFN must assume that Nicholas Lake is part of the EA and must be considered.

### Request:

- a) Completion of a report that synthesizes all of the available data with regards to Acid Rock Drainage potential for both the Ormsby deposit and Nicholas Lake. Amongst other issues, this report should also contain:
  - A discussion explicitly explaining differences between the Golder study (appendix H) and the Knight Piesold study submitted May 30<sup>th</sup>.
  - A discussion explaining the level of uncertainty that can be drawn from the testing to date.
  - A comparison survey with Fortune Minerals NICO project and De Beers Gahcho Kue project.

- A discussion of how the results of the Knight Piesold report have been incorporated into the Acid Rock Drainage plan

- b) Given the sampling to date, the company should provide an update on the amounts of Potentially Acid Generating (PAG) and non-PAG rock for each deposit.
- c) Page 381 notes that the mine plan was to blend *“nine parts flotation tailings to one part treated cyanidation residue”* to produce a NAG tailings. Is this still part of the mine plan and what degree of contingency exists if the levels of ARD/PAG are higher than expected?
- d) In section 4.7 of the Knight Peisold report, the company indicates a 100 percent survival in the toxicity samples. In reviewing Appendix C, the test seems to indicate 3 mortalities for Daphnia and the Rainbow Trout testing sheet is not present. Please provide an update.
- e) The Proponent must provide a discussion examining the toxicity and sampling research effort compared to other projects. A single toxicity test effort does not seem rigorous, especially considering the different results observed during Golder’s work and the Knight Piesold testing.
- f) These same tests and results must be prepared for Nicholas Lake. At this point it is uncertain how the company intends to process the ore as it is not part of the ‘overall YGP mill throughput’ but it will clearly be refined at some point. Given the heightened environmental risk associated with this ore (i.e. the reason it has been removed from the mine plan, also section 4.12.9 where the rock shows a *“propensity to generate ARD”* but no mitigation/management is provided) this induced development is clearly a matter to be considered at the EA stage and not during the MVLWB permitting as an amendment.
- g) The concordance table at the beginning of the DAR notes that item 3.2.2(6) – *“where the developer will place any acid-producing or metal leaching material as well as the projected volumes for each mineral”* is addressed in DAR 4.12.7 to 4.12.9. Not only is this information absent from these sections, but it does not seem to be found in the DAR at all. The proponent must meet the ToR requirements, which should be done in an Acid Rock Management Plan.
- h) Section 12.4.9.1 notes that *“until an effective PAG-NAG segregation criteria is defined, management and mitigation measures will be required for these units”*. The proponent must define a PAG-NAG segregation criteria to facilitate discussion and planning. This discussion should include a scientific discussion as to what constitutes PAG rock and a comparison to other mineral resource extraction developments in the NWT.
- i) ToR Key Line of Inquiry 3.3.1(6) notes that *“a plan for [acid rock drainage] monitoring, evaluation and management”* is required. The concordance table notes that this can be found in appendix H and section 4.12.9. YKDFN have reviewed these sections and cannot find a plan that addresses this. Can the company indicate how they met the requirement?
- j) If the company believes that they have adequately responded, they should prepare an analysis of the acid rock drainage plans for the existing mines and those currently in EA and provide a summary of similarities and differences.

**IR Number:****Source:** Yellowknives Dene First Nation**To:** Tyhee NWT Corp**Subject:** Tailings Containment Area – Discharge Regime Clarity**Preamble**

The YKDFN simply have no idea what the company proposal for the TCA operations are. The information request responses provide a rough outline and suggest that the vision presented in the DAR is no longer correct. The Knight Piesold report states that “*There are no expected discharges from the facility to off-site water bodies*”. It immediately contradicts this statement “*Tyhee NWT Corp. expects that there will be a need to discharge TCA water to the receiving environment during the term of the projects water license*”.

**Request**

- 1) Provide a clear and comprehensive Effluent Management Plan as to when discharges will be necessary. At a minimum, this plan should address the requirements found in Terms of Reference item 3.2.2(2) – the treatment steps prior to release and the effluent quality and quantity.
- 2) Provide a clear and comprehensive Effluent Management Plan for the Nicholas Lake site and ore processing.
- 3) Table 5.1 of the Knight Piesold report indicates significantly different TCA concentrations than noted in the DAR table 6.2-5. Please provide a discussion explaining the differences for each of the six elements noted, as well as an indication as to the confidence that the company has in these predictions.
- 4) Table 5.2 of the Knight Piesold report indicates the equilibrium concentrations in Narrow Lake shows parameters exceeding the CCME guidelines. Please provide a discussion showing how this result was arrived at and what the impacts to Narrow Lake would be at different points of time with different levels of discharge.
- 5) Please submit these tables indicated what background levels in Narrow Lake are at present, as well as completing subsequent analysis for receiving bodies further downstream.
- 6) ToR 3.3.1(10)(c) requires the proponent to describe the effects of this effluent into any water body and what mitigations are available. As part of the proponent’s effort to meet this requirement, a map and chart should be provided which indicates the baseline water quality in the downstream water bodies as well as the predicted changes in water quality as a result of the development.

**IR Number:****Source:** Yellowknives Dene First Nation**To:** Tyhee NWT Corp**Subject:** Tailings Containment Area – Volume, Past Research and Contingency**Preamble**

The DAR does not explicitly state the volume of the Tailings Containment Area, which YKDFN have attempted to discover from other sources, all of which seem to have different values. The original Producer's Development Report noted that there would be 12.1 Million Tonnes (Mt) of tailings, which was used to exclude some potential TCA sites from consideration, with the company advocating for the destruction of Winter Lake as a result.

The Golder Multiple [Tailings] Account Analysis (Appendix L) used a figure of 7.7 Mt. In YKDFN's view this invalidates this as a reference document, as it does not inform the Parties or the Board. This should be removed from the registry.

The Knight Piesold notes a tailings volume of 14.1 Mt of dry tailings and another approximately 0.9 Mt of 'CIL Tailing' (section 2.5.4 and 2.55). Curiously, this report also states that the initial volume of Winter Lake is roughly 1.4M m<sup>3</sup> – which is almost twice that presented in the DAR.

It has been very difficult to determine the planned size of the TCA as no metrics are presented, but Figure 4.3-1 indicates a TCA volume of 7,856,660 m<sup>3</sup> holding 13.356 Mt.

**Request**

- 1) The company should provide a clear indication on the size of tailings expected, both in terms of mass (Mt) and volumes (m<sup>3</sup>). This should be done for both the Ormsby and Nicholas Lake deposits
- 2) The project must complete a Multiple Accounts Analysis that considers the full volume of tailings to be produced and the selection of options. It is unfortunate that the proponent directed Golder to complete the work with the incorrect values.
- 3) Given that the TCA capacity is currently smaller than the proposed volume of tailings envisioned in the Knight Piesold report, what is the current proposal for the design and operations of the TCA.
- 4) Considering that the Knight Piesold report only considers the Ormsby deposit (and the company has indicated that the Nicholas ore will not be processed in the YGP mill), what will the processing plan be for this material and what will be the fate of the tailings produced (including metrics)
- 5) What are the commitments in terms of operational management of the TCA? The DAR is inconsistent in its crest height, maximum elevation of the tailings and water volumes.

- 6) Given the uncertainties that exist in terms of tailings size, tailings volumes, and management, the project should discuss contingencies that are available should the amount of tailings be larger than predicted.

**IR Number:**

**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Tailings Size and density

**Preamble**

The DAR notes that the tailings have a particle size of ranging from 80 to 98% passing through the #200 mesh (4.12.2.1), while the Knight Piesold report (2.5.4.1) notes 64% passing the No. 200 sieve.

The DAR notes that the deposition of this size particle in cold climates has been observed to increase the total volume of the tailings 15 to 30%, choosing to apply a value of 25% over the expected volume of tailings.

The DAR noted an average dry tailing density of 1.7t/m<sup>3</sup> while the Knight Piesold suggested a value of 1.2 to 1.4t/m<sup>3</sup>.

**Request**

- 1) Provide a discussion on the two types of results observed for tailing size and an explanation as to the degree of effort that went into the respective determinations. The proponent should provide a synthesis of both the information that went into the DAR and the Knight Piesold results – if the former are not scientifically relevant to this assessment and should be discarded, clear rationale should be provided.
- 2) Provide explanation as to what impacts the different particle sizes will have on likely volumes for the operations
- 3) Provide a contingency plan for tailings operations if the ice buildup in the TCA is higher than the 25% value that the proponent chose as well as a rationale why they did not choose the more conservative observed value of 30%.
- 4) Provide a discussion on the two types of density results observed and an explanation as to the degree of effort that went into the respective determinations. The proponent should provide a synthesis of both the information that went into the DAR and the Knight Piesold results – if the former are not scientifically relevant to this assessment and should be discarded, clear rationale should be provided.

## Section 4: Water Quality and Downstream Impacts

**IR Number:** 4-1  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Water Treatment Options

### Preamble

Throughout the document, the possibility of further water treatment options is discussed as a potential adaptive management option. However, there is little information provided as to the pros and cons of one option vs. another and under what options it would be considered. This seems particularly important for the exploitation of the Nicholas Lake Deposit.

### Request

- 1) Provide a thorough discussion on the water treatment options available and the pros and cons associated with each, including their ability to address different contaminants of concern.
- 2) In particular, if nutrient levels were found to exceed the water quality objectives, what treatment options are available?
- 3) Under what conditions would the adaptive management for water quality and effluent treatment be considered (i.e. meeting the requirements of ToR 3.3.1 (4)(b))

**IR Number:** 4-2  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Effluent Impacts

### Preamble

Section 6.2.1.3 of the DAR notes “*The maximum, unattenuated concentration of cyanide estimated to reach the Narrow Lake inlet stream is at the lower end of the cyanide toxicity scale (to aquatic organisms)*”. In the DAR the TCA concentration for Cyanide is 24.1 (ug/L) while the Knight Piesold report noted 144ug/L

Section 6.2.1.3 of the DAR notes that the expected copper concentrations in the TCA are expected to be 5 ug/L, while the Knight Piesold report predicts a maximum value of 208 ug/L. The DAR states that “*no significant change from background is expected to occur*”

### **Request**

- 1) Given that the level of cyanide in the TCA in the Knight Piesold report is predicted to be almost 6 times (144 ug/L) the level predicted in the DAR, the proponent must provide a thorough and complete discussion of the impacts of this much higher level. Part of this must discuss what ‘part’ of the toxicity scale the effluent now falls to, as well as at what point the expected CN value returns to background levels.
- 2) IR 1-1-3 suggests that the “*low end of toxicity*” is any cyanide concentration that complies with the law and is not *acutely* toxic. The revision submitted May 31<sup>st</sup> notes that the removal of the Nicholas Lake ore will result in cyanide concentrations that are considerably lower than the MMER requirements and thus, on the ‘lower end’ of the toxicity scale. Noting the predicted increase in the cyanide concentration, YKDFN require the proponent to provide a clear discussion on the toxicity scale, providing a clear and comprehensive understanding, with examples, of how the proponent views the impacts of toxicity.
- 3) Given that the predicted Copper values are 41 times higher than in the DAR, what changes are expected to the downstream quality – please provide a thorough and complete discussion that evaluates the impacts associated with this much higher level.
- 4) The response to Review Board IR 1-1-2 notes that chronic toxicity in Rainbow Trout can be expected above a cyanide concentration of 5.2 ug/L. Acute toxicity was expected at observed at 27 ug/L. Given that the proposed water quality criteria for cyanide in the TCA is 1mg/L, a value almost 200 times this level, the receiving environment would be exposed to levels that would be harmful. Please provide a more complete description on the impacts to the receiving environment.
- 5) The response to Review Board IR 1-1-2 notes that the cyanide breakdown products such as cyanates are considerably less toxic than cyanide itself – on the order of 12 times less. Please provide additional discussion that allows for more meaningful comprehension – for instance, a more thorough description of the ‘toxicity scale’ discussed in the DAR.
- 6) The residual cyanide levels seem to vary significantly, with the result for DT-2 at 6.43 mg/L. The proponent chose 2.88 mg/L DT-1 sample as the basis for its further calculations, without providing rationale or a discussion on the certainty of these test results. Please provide this information as well as a comparison on the level of testing effort between this project and other industrial developments in the north.
- 7) Please provide a discussion on the total toxicity of the effluent. For example, if the effluent contains a proportion of cyanide *and* a proportion of less toxic (but still toxic) cyanates from the breakdown process, please explain how these, and other, compounds will affect the water quality and organisms of the receiving environment.

- 8) Given that the Nicholas Lake Ore is going to be processed in year 4, where will those tailings be deposited and what will the environmental impacts be?
- 9) The 2012 Environment Canada National Assessment of Environmental Effects Monitoring Data (<http://www.ec.gc.ca/Publications/51895DE7-90F3-4C6A-8786-DECbfd681f96/MetalMiningSecondNationalAssessmentE.pdf>) notes that mines subject to MMER effluent regulations continue have impacts to the receiving environment. Please indicate why this level of environmental contamination represents an appropriate water quality and how it recognizes the importance of conservation to the First Nation.
- 10) Table 6.3-3 states that “effects on fish and fish habitat will be avoided by adherence to water quality criteria and guidelines for the protection of aquatic life”, but only commits to releasing water that meets MMER criteria. Please explain how the project will comply to the guidelines for PFAL and to re-evaluate the impact using MMER values.
- 11) No fish in the downstream have been selected as a Valued Ecosystem Component. Please select a suitable aquatic VEC for impact predictions and monitoring.
- 12) Please provide a comparison that considers the receiving environments baseline water quality, the guidelines for the protection of freshwater aquatic life, and the MMER regulations. Included in this should be a discussion on the order of magnitude or size of the differences between these values.

**IR Number:** 4-3  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Effluent Impacts - Eutrophication

### **Preamble**

YKDFN are concerned with the impacts of increased nutrients being introduced into the environmental. All industrial developments in the North have had trouble with nitrates from blasting, but this project introduces further ammonia from Cyanide breakdown.

### **Request**

- 1) Please provide a discussion and appropriate research that indicates that eutrophication in the receiving environment is not going to occur.
- 2) The RB IR response 1-1-3 states “At 10°, a pH of 8 and 1.0mg/L total ammonia...At the water quality guideline of 5 ug/L cyanide, negligible amounts of ammonia will be produced, far below the 1.0 mg/L standard”. Using these parameters, the proponent predicts a concentration of 0.018 mg/L of un-ionized ammonia, with the CCME water guidelines being 0.019 mg/L. As a result, it concludes that this is not a risk. YKDFN are concerned with the very low margin for error associated with the prediction vs. the guideline and would like the proponent to provide an analysis that considers:

- a) inputs from blasting as well as cyanide breakdown, and
  - b) an updated evaluation that considers range of pH, an updated temperature input (the average temperature is not 10°C), and an updated predicted cyanide TCA concentration of 144 ug/L.
- 3) Please provide a discussion of the potential impacts associated nutrient releases by the Nicholas Lake mining and ore processing.

**IR Number:** 4-4  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Downstream Water Levels

### **Preamble**

This development will destroy several water bodies and alter the drainage patterns of the area. The IR responses provided a new footprint and a new TCA operational regime which presumably will then impact the amount of water available to the downstream.

### **Request**

- (1) Provide a map which clearly indicates the new flow of water in the Regional Study Area at selected dates during the operational life of the mine.
- (2) Please provide the quantity and sources for the inflow into Narrow Lake at present, as well as into the future, if the current mine development proceeds.
- (3) If the water level in Narrow Lake is different than discussed in the DAR, please provide updated impact assessments and discussions, with particular reference to increased erosion (and downstream sedimentation), TSS, TDS and contaminant loadings.
- (4) If the amount of water in Narrow Lake is altered from that discussed in the DAR, please update the accident and malfunction discussion of the impacts – clearly, if the lake is has less volume, the concentrations will be much higher.
- (5) If the amount of water in Narrow Lake is altered from that discussed in the DAR, please provide an impact assessment on fish and fish habitat in Narrow Lake and the lakes downstream.

## Section 5: Closure and Reclamation

**IR Number:** 5-1  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Closure and Reclamation – Schedule

### Preamble

The ‘closure plan’ does not contain a schedule of activities for either the Ormsby deposit or the mine plan to be developed for Nicholas Lake. Some documents have mentioned a closure plan on the order of 500 years (See DFO IR#1 most recently), which is wholly unacceptable.

### Request

- 1) Provide a clear timeline for the mine plan and the completion of reclamation activities for the site as a whole and for each component.
- 2) For each component please provide a rationale for the closure option selected
- 3) Provide a discussion surrounding the structural stability for each component for the period between the end of operations and the period covering post closure.

**IR Number:** 5-2  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Closure and Reclamation – Temporal Period

### Preamble

The DAR 6.1.4 states that the temporal boundary is 12 years.

### Request

- 1) Provide a new statement of the proponent's anticipated temporal period given the changes to the mine plan.
- 2) Given the extremely long closure period, suggested to be up to 500 years (discussed elsewhere), why does the company believe that their responsibility ends after only 12 years?
- 3) Why does the project not include any period associated with post-closure – there must be a period after the closure has been finalized to ensure that the area is stabilized and the objectives/criteria are achieved. Please provide a clear discussion explaining the proponents view towards the temporal period, specifically explaining why section 11.3 notes '2-3 years' of monitoring, which seems to be outside the previously noted temporal period.
- 4) Please explain how the proponent will be certain that all of the closure objectives/criteria have been met and are stable and safe with only 2-3 years of post-closure monitoring.
- 5) Please provide a discussion on the certainty of the project to meet and prove that the closure objectives and criteria have been met (and are stable) within 5 years of the end of mining operations.

**IR Number:** 5-3

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Components, objectives, options

**Reference:** 11.2.1 to 11.2.5

### **Preamble**

ToR section 3.7(1)(a) asks for a list of closure components, objectives, and options/alternatives selected along with a rationale for each.

### **Request**

Provide this information as a list and/or chart allowing the closure thinking to flow from the goals through each component into the option selected with the objectives that will be achieved at closure for that objective.

**IR Number:** 5-4

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Rock Pile location

## **Preamble**

Section 4.3.5 notes “*Alternative sites for waste rock storage areas at both Ormsby and Nicholas Lake have been reviewed with recommended locations being based on accessibility and reduced environmental impact conditions*”

## **Request**

- 1) Provide an analysis of the potential options reviewed and an explanation of what environmental variables were considered in selecting the locations advanced in the original DAR.
- 2) Provide a discussion and a chart for the Ormsby and Nicholas Lake sites which illustrates the environmental impact considerations and how they influenced the current design and what additional environmental considerations exist between the current locations and the original DAR locations.

**IR Number:** 5-5

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Waste stream final locations

**Reference:** 11.2

## **Preamble**

ToR section 3.7(1)(d) requires the proponent to describe the methods and location for on and off site disposal of materials. Section 11 of the DAR mentions the disposal of waste, but it is discussed in such a way that the objective is unclear and there is no meaningful commitment. For example, randomly choosing the ‘storage component’ (11.2.4.2) the reclamation plan states:

- “*the AST foundations, containment berms and liner materials will be removed.*”

So these features will be removed, without providing a clear commitment on what the fate is?

- “*The potential hydrocarbon impacts to soil will be assessed and remediated on site or off site*”

Does not provide clarity or a commitment – almost certainly means that it will be left on site as the cost of disposal is zero.

- “*Any materials that are assessed to be hazardous will be disposed within on-site special material treatment facility or removed from site...*”

Again, this lacks clarity and will almost certainly result in the disposal of hazardous waste on site, something that the YKDFN have always objected to.

To be clear, this component was just selected as an example, the request below should be applied to each component.

## **Request**

- 1) Provide an updated section that meets the requirement of the Terms of Reference, providing clear and unambiguous commitments.
- 2) Explain what consultation has been undertaken with the Yellowknives Dene in regards to waste management, particularly addressing how the community views the use of their traditional lands as a hazardous waste site.
- 3) Provide a map and chart indicating where the predicted waste streams from each component will be deposited.

**IR Number:** 5-6

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Closure Consultation

#### **Preamble**

The ToR 3.7(1)(5) requires the proponent to describe the history of consultations undertaken since October 2008 where closure and reclamation issues were discussed as well as a record that shows how the developer adapted plans to address the concerns. The concordance table suggests that this information is present in section 5.4. However, in reviewing this section, YKDFN can find no record of any closure related engagement, nor can we find a result of how the concerns that the First Nation has with the current closure plan changed the development plan.

#### **Request**

The company must provide adequate information to address this item of the ToR: Describe the specific consultations undertaken to gather YKDFN views on the closure plan and then provide specific examples as to how this information has informed the design of the mine plan.

**IR Number:** 5-7

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Cost Estimate

#### **Preamble**

The ToR 3.7(1)(f) requires the provision of a cost estimate for closure, which the proponent has provided on p616. This estimate provides no detail and is based ‘primarily on the waste dump and TCA’. It is not clear how this was derived for the waste dump as there is no location, clear objectives or options presented. YKDFN believe that the costs of monitoring, the waste rock

piles grading, site re-vegetation and water management will be significant and have not been accounted for.

The new mine plan involves much higher use of the historic Discovery Mine, without providing clarity on the closure aspects and the relative contaminant contributions from the new development vs. the old.

### **Request**

- 1) The company should provide a clear and updated cost estimate that considers the closure on a component basis, as well as the post closure monitoring requirements as outlined in the response to ToR 3.7(1)(e). It should be adjusted to local prices, either by a soundly explained adjustment factor across the board, or in consultation with local business.
- 2) Provide clear information on the predicted operational contaminant contribution from developments that occur on the historic developed area compared to the contribution from the reclaimed site. Furthermore, the environmental impact should be discussed after closure occurs and how the proponent views this liability.
- 3) Please provide a discussion of progressive reclamation and the amount of expected liability that will be removed.
- 4) Provide a discussion that compares closure and reclamation of more advanced projects, with an explanation as to any significant differences in the predications.

**IR Number:** 5-8

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Narrow Lake/Water Flow

### **Preamble**

The post closure flow and quality of water is unclear.

### **Request**

- 1) Please provide a map and chart indicating the flow of water after closure operations have been completed and what the likely flows to the receiving environment, at selected times, will be. Within the chart please indicate what the respective contributions are (i.e. runoff from the site, seepage from the TCA, overflow from the pit, etc)
- 2) Please provide projected water quality of each of the contributing flows.
- 3) If Narrow Lake is the end recipient of this, please provide projected water quality values at several points after operations through to the post closure period. Included in this

analysis should be an evaluation that considers the current/background state of water quality in Narrow Lake.

**IR Number:** 5-9  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Closure and Reclamation – Airstrip

### **Preamble**

The DAR states that the airstrip would remain in place, providing a public safety feature in an area without an abundance of places for emergency landings. There are no details on how the proponent arrived at this decision or what criteria were used.

### **Request**

- 1) Provide a list of proposed, existing and closed aerodromes which could be used for emergency landings in this area.
- 2) What criteria or best practices exist for deciding when aerodromes should remain open or in place for emergency purposes? How were they applied to this case?
- 3) Provide closure objectives, options and criteria as well as appropriate costing information, should it be decided that the best closure option is to remove and reclaim the airstrip.

**IR Number:** 5-10  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Closure and Reclamation – Re-vegetation

### **Preamble**

The ToR 3.7(1)(6) requires the proponent to submit plans on how they intend to re-vegetate the mine site after closure and when it is expected to reflect a natural state. The former data is not clearly presented, the latter is absent.

Any language surrounding re-vegetation in the DAR is ambivalent and lacking conviction. The commitment varies from allowing nature to re-vegetate to considering active re-vegetation, but does not provide any context by which of these activities would occur. The proponent also states that re-vegetation studies will be conducted during mine operation, without indicating what they are, what the objective would be, or what re-vegetation efforts they would be informing – as there is no commitment to undertake any active re-vegetation efforts. The DAR repeatedly used phrases and passages that lack clarity:

*“revegetation efforts, if undertaken, would be evaluated during the post closure monitoring period” (11.2) or;*  
*“Where applicable, re-vegetation will be implemented to provide soil stability” (11.2.5.1)*

There is no clarity what these passages mean or when they would ever be enacted – to wait until the post-closure period to even consider if re-vegetation efforts are required is far too late, meaning that significant impacts are increasingly likely.

The overarching closure issue with the proponent’s re-vegetation plans do not require any re-vegetative effort or evaluation of success. It only requires the project to complete a task – grading, soil deposition, capping – it does not require that task to achieve a result or have an assessment of its effectiveness.

### **Request**

- 1) The proponent must meet the requirements of the Terms of Reference, providing a plan that indicates how the self-sustaining vegetation reflecting the ‘natural state’ will be established, and when it will be achieved. A discussion on the meaning of ‘natural state’ vs ‘productive wildlife habitat’ is essential for Parties to understand the proponent’s vision of the end use.
- 2) The proponent should provide clear re-vegetation objectives for each component. For instance, some components note that they will only be covered with soil, some note that they will be scarified, while others do not have any mention.
- 3) For those components covered with soil (especially the Waste Rock Piles with their steep sides), the project should provide a clear closure objective indicating the criteria by which they intend to minimize dusting and erosion.
- 4) Please provide an analysis/update of the sand and aggregate needs for the closure process. As part of this material assessment, please discuss the costs/benefits (and abundance) of using the till and lake bottom sediments as construction material rather than as closure material.

**IR Number:** 5-11  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Closure and Reclamation – Rock Pile scope

### **Preamble**

The waste rock pile is anticipated to be 108m high at closure.

### **Request**

- 1) Provide a discussion as the relative elevation differences in the area, specifically addressing the question as to the closest terrain feature that is this size. It is difficult for

community members to understand the proposed size without comparing it to a landform that they would know.

- 2) Conduct a view shed analysis to show the rock pile's visibility that would explain and show the distance that this feature would be visible from. Results should be provided in the form of a map and a discussion
- 3) Locate the next closest landform with a slope of this magnitude – 2.5V:1H is steep and a difficult concept to convey.
- 4) Discuss the stability of this slope over different time periods, up to and including 500 years into the future.

**IR Number:** 5-12

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Low Grade Stockpile

#### **Preamble**

There is no management or closure plan for the low grade rock storage if it is not processed.

#### **Request**

- 1) Provide a clear management plan for the seepage and runoff from this ore during operations.
- 2) Provide a closure plan for this component, indicating how the 900 000 tonnes of PAG ore will be 'treated and disposed of'.

**IR Number:** 5-13

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Pit Lake Water Quality and Fishery

#### **Preamble**

The 'closure plan' does not, in any way, discuss the water quality of the pit lake that they are proposing (or if they intend to create a 'lake') or what the physical characteristics will be. It does

not discuss how the pit lake will be integrated into the surrounding environment and what impacts or safeguards will be employed for fish and wildlife.

The company notes that the pit will be ‘partially backfilled’ without providing any indication as to what this means, why it is being done, or what criteria will be used in deciding if the backfilling should be undertaken.

### **Request**

- 1) Provide clear and scientifically supported predictions on what the expected post closure pit water quality will be and explain how the water quality will affect the fishery.
- 2) Provide clear direction and commitments on how the pit lake will be re-integrated into the surrounding environment and what measures will be taken to create fish habitat when water quality is suitable.
- 3) Provide a discussion on the contingencies available if water quality does not meet expectations and perpetual care and treatment is required.
- 4) Provide a clear closure objective for partially refilling the pit with waste rock and what criteria will be used to determine the amount, the type, the size and the quality of material to be deposited.
- 5) Provide costing and rationale why the pit cannot be filled completely as opposed to partially backfilled.
- 6) Provide a discussion on rate of inflow and the nature of the water flowing into the pit, with clear predications on when the pit will overflow, how this will be managed, and what contingencies are available if the inflow is more or less than the prediction.

**IR Number:** 5-14

**Source:** Yellowknives Dene First Nation

**To:** Tyhee NWT Corp

**Subject:** Closure and Reclamation – Open Pit vs Underground liabilities

### **Preamble**

Section 4.3.2 states “*both open pit mining and underground are viable options*”. While open pit mining is clearly cheaper to extract ore, it comes with a much higher environmental liability. When selecting the current mine plans for the Ormsby and Nicholas Lake site, it is not clear how the environmental liabilities and the cost of closure were factored in.

### **Request**

For each site, provide information on the costs of extraction over the life of the mine for both the open pit and underground methods, compared to the proponents understanding of the

environmental liabilities. Please include respective timelines for closure and reclamation to be completed.

## Section 6: Archaeology, Traditional Knowledge, Socio-Economics

**IR Number:** 6-1  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Heritage Resources

### Preamble:

In 2004 an archaeological field assessment was conducted “*on specific proposed development components identified on plans received in July 2004*” (DAR 3.7) while 2005 work was “*conducted on specific proposed development components identified on plans received in June 2005*” (DAR 3.7).

The archaeological reports for 2004 and 2005 (DAR Appendix F, not Appendix G as stated on page 311), prepared by Points West Heritage Consulting, clearly indicate that work performed is preliminary.

Points West Heritage Consulting’s 2005 Report contains eight recommendations for further work including that “*an archaeologist review the final plans for the mine development and associated facilities to determine whether additional archaeological field reconnaissance is warranted*” and that future work include “*input from local First Nations groups regarding any traditional land use knowledge of areas used with the YGP study area.*”

Completion of the archaeological work, started in 2004-2005, must include input from YKDFN Elders, and must be undertaken as soon as possible so that any further work at the site does not disturb evidence of past use of the area by First Nations. YKDFN’s Traditional Knowledge suggests this area should be rich in on-the-ground evidence of past use as it was an important staging area for seasonal travel to the traditional caribou hunting territory around Mackay Lake.

### Request

The proponent must indicate when further archaeological field research will be undertaken, the methodology that will be used (in particular the inclusion of First Nation’s Traditional Knowledge) and provide a map showing the extent of the area that will be surveyed.

**IR Number:** 6-2  
**Source:** Yellowknives Dene First Nation  
**To:** Tyhee NWT Corp  
**Subject:** Traditional Knowledge

### Preamble

The DAR contains almost no inclusion of Traditional Knowledge from the Yellowknives Dene. A single site visit does not represent a good faith effort to collect TK.

### **Request**

- 1) Please provide examples of when and how traditional knowledge was captured.
- 2) Please provide a discussion explaining what was learned and what information was recorded.
- 3) Section 3.7.7 states “*Documentary research suggest that the YGP study area is between past preferred travel routes from Great Slave Lake to various points north*”, while figure 3.8-2 shows YKDFN travel routes passing on either side of the site, including right through the Narrow Lake drainage. Please explain how the proponent arrived at this statement.
- 4) Please indicate where Traditional Knowledge and western science were found to be at odds or presented a disagreement, as well as how this was resolved and included within the DAR.
- 5) Please indicate where and how this knowledge influenced the design and operational management of the mine.
- 6) Please indicate the developer’s level of confidence that it has gathered sufficient and applicable TK.

**IR Number:** 6-3

**To:** Tyhee NWT Corp

**From:** Yellowknives Dene First Nation

**Subject:** Historical Operation

**Reference** DAR 7.4

### **Preamble**

The DAR states “*The Traditional Knowledge collected from the NSMA and the YKDFN did not identify a change in wildlife harvesting, either the quantity or quality of harvest, during the period of time that the Discover Mine was in operation*”.

It is not clear what the basis was for this assertion. Discovery Mine operated from 1950-1969, a period which saw the now controversial 1960 Order in Council (SOR/60-430) declaration that barren ground Caribou were in danger of becoming extinct. ENR’s traditional knowledge research indicates that this was a period of rapid herd population decline.

### **Request**

- 1) Please indicate what YKDFN traditional knowledge was used to arrive at this conclusion
- 2) Provide a thorough analysis evaluating the differences behind the proponents statement and the other evidence available
- 3) Please discuss the level of confidence and applicability of drawing such a sweeping conclusion from the historic operations of this mine

**IR Number:** 6-4

**To:** Tyhee NWT Corp

**From:** Yellowknives Dene First Nation

**Subject:** Alienation of the Land

### **Preamble**

The DAR does not identify or recognize the concerns of YKDFN Traditional Knowledge holders or land users about their perception of the land and how it can change the way that land users will continue to access their traditional territory.

### **Request**

- 1) What effort was made to try and capture the areas that landusers and harvesters use their traditional lands in the presence of environmental risks? For example, areas of perceived (and real) contamination exist across the Chief Drygeese Territory and this project may create another area that is no longer viewed as desirable.
  - a. Please provide a discussion which considers the avoidance (or attraction), in geographic and temporal terms, that harvesters apply to perceived environmental contamination.
- 2) What effort has been made to evaluate the TK/Harvesters view of health and environmental contamination versus the western science approach?
- 3) Please provide an evaluation of how non-aboriginal harvesters view potential environment al contamination and if avoidance exists as a result.
- 4) Please explain how the relationship between aboriginal and non-aboriginal harvesters different avoidance levels may impact the harvesting areas available to YKDFN land users.
- 5) What commitment has the proponent made to include TK monitoring as a part of its Environmental Monitoring programs?
- 6) Please indicate how the project intends to monitor the harvesting levels in the regional study area (and what baseline it will be evaluated against), how they intend to overcome

potential avoidance if health concerns are negligible, and what mitigations will be available to ensure that harvesters are not widely alienated from the Discovery area.

**IR Number:** 6-5  
**To:** Tyhee NWT Corp  
**From:** Yellowknives Dene First Nation  
**Subject:** Hiring Preferences  
**Reference** DAR 7.1.2.3

### **Preamble**

*“Tyhee NWT Corp is considering a preferential hiring policy for local residents and Aboriginal peoples”*. Use of language such as “considering” means that the company is not actually making a commitment.

*“Tyhee will monitor its northern and aboriginal hires to measure the success of its northern hiring strategy. In the event that hiring goals are not met, Tyhee NWT Corp will review human resource policies...”*

### **Request**

- 1) Provide a clear commitment on the hiring preferences.
- 2) Please provide monitoring commitments and what mitigations the proponent is willing to enact if targets are not met.
- 3) The section in the DAR (and Appendix G) on northern hiring is very unclear. On one page the proponent states that it will attempt to employ 30% NWT employees, while just a few pages later it states *“The communities in the RSA are likely to provide most or all of the direct employment to the YGP”*. Please update and provide clear indication as to the company’s commitment.
- 4) YKDFN have consistently seen the benefit from additional mineral exploitation projects decline with each added project in their traditional territory. What mitigations and contingencies are available to ensure that the benefits are maximized? Please provide a comparison with other mines, showing relevant economic indicators and the individual and marginal benefits from each additional development.

**IR Number:**  
**To:** Tyhee NWT Corp  
**From:** Yellowknives Dene First Nation  
**Subject:** Socio-Economic TK Collection

## **Reference DAR Section 3**

### **Preamble**

The DAR does not include any discussion with YKDFN members on socio-economic conditions or concerns. Please refer to the Board 2007 *Socio-Economic Impact Assessment Guidelines*.

### **Request**

Please provide appropriate information that illustrates the YKDFN community view on socio-economic conditions. This section should include both baseline development and a plan on how the project will monitor impacts in the future.

**IR Number:** 6-6

**To:** Tyhee NWT Corp

**From:** Yellowknives Dene First Nation

**Subject:** Socio-Economic Data

**Reference** DAR Section 3

### **Preamble**

The DAR does not include adequate distinction on the socio-economic predictions for Ndilo and Dettah.

### **Request**

- 1) Please provide appropriate information that illustrates the predicted impacts to the YKDFN communities.
- 2) This project is occurring within traditional territory of the YKDFN, but it does not seem that the First Nation receives any direct benefit. Please provide an updated analysis that compares the financial benefits provided to YKDFN compared to the costs required to participate in regulatory processes, develop and implement social programs, and hire staff to deliver these programs.

## Section 7: Cumulative Effects

**IR Number:** 7-1  
**To:** Tyhee NWT Corp  
**From:** Yellowknives Dene First Nation  
**Subject:** Cumulative Effects Analysis

### Preamble:

The cumulative effects analysis replicates the same errors as the Gahcho Kue project, artificially limiting the analysis in scope and time. By doing this, they minimize the number of projects that can be considered and the seasonal habitat that are being affected. Several other projects are within the current range of the Bathurst Caribou and close to approval.

Particular to this project, the proponent's current closure plan is not the 12 years discussed in section 10.2 but rather on the order of 500 years – until the pit water quality has stabilized and is safe release, the project will continue to impact the environment. Special consideration needs to be applied in this case.

### Request:

- 1) More information should be requested regarding the criteria for selecting the specific reasonably foreseeable projects and for excluding others.
- 2) Specifically, the proponent should explain why they chose to exclude the following from their analysis:
  - a. Existing Operations:
    - i. Jericho – Existing Diamond Mine (See De Beers terrestrial presentation, slide 10)
  - b. Active NIRB Reviews:
    - i. Bathurst Port and Road (BIPR) – Submitted to NIRB in 2004
    - ii. High Lake (MMR) – Submitted to NIRB in 2006
    - iii. Hackett River (Xstrata/Sabina) - Submitted to NIRB in 2008
  - c. Reasonably Foreseeable (proposed and sufficient level of detail exists):
    - i. Ulu/Lupin – Elgin Mining
    - ii. Back River – Sabina Gold and Silver
    - iii. Seabridge Gold - Courageous Lake

Please provide individual responses that evaluate why the project was not included.

- 3) Please provide a more adequate evaluation that considers impacts from all developments across the range of the Bathurst Caribou.
- 4) Please provide adequate information that describes how this project will affect the demographics, availability and distribution of caribou, both directly and indirectly. The effect must be evaluated against a threshold which the proponent believes significant effects may occur.
- 5) Please provide what metrics were used as significant thresholds for impacts to caribou and habitat, with appropriate jurisdiction.
- 6) Please indicate the level of community involvement in setting the thresholds for significance.
- 7) Please indicate how traditional knowledge was used in the Cumulative Effects analysis and how it affected the evaluation of the results.