Tsilhqot’in National Government: Final Submission

August 23, 2013

… [M]y family and I, we use Teztan Biny for sustenance. My children now have memories of getting their first fish at Teztan Biny. These memories are imprinted into their minds. I will eventually fast and sweat there, but I know now that I'm not ready.

When I'm ready, I know that this will fill me spiritually like no other place, and for my children when it is their turn. Currently, myself and my family go to support other spiritual people of that area.

It is the only place we go that we do not bring food knowing that the lake will provide for us no matter what. Personally I do not know another place like this.

For myself, there is no mitigation or option for mining this area, and this will never change.

... In a hundred years we will all be dead, everyone here, not even our words will really matter. It will be our actions, what we leave for future generations. Our struggles of today will be our victories of tomorrow.

Sechanalyagh [thank you]. I don't have anything else to say.

- Blaine Grinder, of Tl'etinqox-t'in[1]

[1] CEAR #1019, Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session, pp. 95-96.

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1. OVERVIEW

On November 2, 2010, the Federal Government rejected Taseko Mines Ltd.'s (the "**Proponent**") Prosperity Copper-Gold Mine. In so doing, the Federal Government stated that its decision did not "preclude the proponent from submitting a project proposal that *includes addressing the factors considered by the panel*".[2]

Instead, the Proponent submitted "New Prosperity" (the "**Project**"). New Prosperity is identical in almost all respects to an alternative mine design that the Proponent itself described in the previous review as *less* "environmentally responsible" and *less* "appropriate with respect to technical issues and impact on the physical environment" than the rejected Prosperity proposal.[3] During the previous review, the Proponent asserted, and the Panel agreed, that this New Prosperity design "would in time likely result in contamination of Teztan Biny".[4]

The previous Panel also concluded that the alternative mine plans (including New Prosperity) would still destroy the cultural and spiritual value of the area for the Tsilhqot'in people, and would not meet with the approval of First Nations:

> While First Nations were clearly opposed to the preferred alternative, no support was offered for any of the other alternatives. The Panel observes that the proximity of the open pit and associated mining facilities would be close enough to Teztan Biny (Fish Lake) to eliminate the intrinsic value of the area to First Nations even if another alternative were chosen. It appears to the Panel,

[2] [Previous] CEAR #2367, Government of Canada Response to the Report of the Federal Review Panel for the Taseko Mines Limited's Prosperity Gold-Copper Mine Project in British Columbia [emphasis added].

[3] See the Proponent's statements reproduced in CEAR #793, Letter to the Panel from J.P. Laplante on behalf of the Tsilhqot'in National Government concerning the Proponent's Statements in previous Panel Review. The Proponent clearly stated that it reached these conclusions without regard to the economics of these alternatives.

[4] *Report of the Federal Review Panel Established by the Minister of the Environment[:] Taseko Mines Limited's Prosperity Gold-Copper Mine Project* (July 2, 2010) (the "Panel Report"), p. 50; [Previous] CEAR #2253, Hearing transcripts Volume 29: April 26, 2010 Topic-Specific Session, p. 5450 [Scott Jones] ["What happens to the water quality in Fish Lake, if you try and preserve that body of water with the tailings facility right up against it, is that over time the water quality in Fish Lake will become equivalent to the water quality in the pore water of the tailings facility, particularly when it's that close. You might be able to delay that by moving the tailings facility farther away to Fish Creek south. You may even be able to minimize that, reduce it by mitigation measures that could be applied. *But eventually that water quality will change*"].

> therefore, that none of the alternative mine development plans examined would receive support from First Nations.[5]

After several months of environmental assessment for New Prosperity, and several weeks of public hearings, it is clear that the previous Panel and the Proponent were correct.

Government reviewers and other experts have concluded that New Prosperity poses a clear risk of contamination to Teztan Biny (Fish Lake) and other water bodies, and would almost certainly result in the death of its fish population. The proposed methods of maintaining the lake (recirculation of the entire lake system) and treating the water in Teztan Biny in response to contamination from the upstream Tailings Storage Facility ("**TSF**") are entirely unproven, untested and unprecedented at this scale.

For the Tsilhqot'in people, the loss of Teztan Biny, Y'anah Biny (Little Fish Lake) and Nabas would remain "high magnitude, long term, irreversible", as found by the previous Panel.[6] It would mean the loss of "one of the last, best places for Tsilhqot'in culture".[7] As noted in the previous review, the impacts on the mental and physical health of Xeni Gwet'in would "overwhelm" the community at a stage when it is in positive recovery.[8]

The Tsilhqot'in communities and leadership overwhelmingly and resolutely oppose this Project.

This is the closing submission to the Panel from the Tsilhqot'in National Government ("**TNG**"). This submission first discusses some of the central issues for this Project review (*e.g.* the precautionary approach, adaptive management, uncertainty). It then outlines the likely significant, adverse environmental effects of this Project after mitigation, including on asserted Aboriginal rights and title. Finally, we offer some concluding remarks as to why the Project's significant cultural and ecological effects cannot be "justified in the circumstances".

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[5] Panel Report, p. 50 [underscore added].

[6] Panel Report, p. iii.

[7] CEAR #964, Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session, p. 222 [Edwin Kolausok].

[8] Panel Report, p. 202; [Previous] CEAR #2037, Response to questions posed by the Panel following the March 31, 2010 presentation by Shari Hughson (From Shari Hughson to Review Panel).

2. THE PANEL'S MANDATE

With the conclusion of the public hearings, the Panel's mandate is now to prepare a report setting out its conclusions and recommendations with respect to environmental effects and mitigations.[9] "Environmental effects" in this context includes effects on Aboriginal rights, Aboriginal cultural heritage and the current use of lands and resources by Aboriginal peoples for traditional purposes.[10]

If the Panel concludes that the Project is likely to cause significant adverse environmental effects after mitigation, then it may include in its report a summary of any information that it has received with respect to the justifiability of those significant adverse environmental effects.[11]

TNG's position on all of these matters is set out in this submission.

We want to stress from the outset that the Panel's primary role is to identify and assess the likely impacts of the Project on the environment and Aboriginal rights, cultural heritage and traditional practices.

We say this because the economics of the mine, the promises of jobs and business, have been a central refrain throughout the hearings. While these factors may inform political decision-making about the Project by the Federal Government, they should have no role in the Panel's primary mandate of clearly, accurately and comprehensively reporting the likely environmental and cultural impacts should the Project proceed.

This is the very purpose of environmental assessment and the only way that the Federal Government and the public can achieve a full understanding of not only the economic *benefits* of the Project asserted by the Proponent, but also the likely environmental and cultural *costs*.

We submit that the Panel's role in this regard is particularly important because the Panel has heard directly from the Tsilhqot'in membership throughout 10 days of Community

[9] CEAR #124, *Amended Terms of Reference for the Federal Panel Reviewing the New Prosperity Gold-Copper Mine Project*, Part 6.
[10] *CEAA 2012*, s. 5(1)(c); CEAR #155, *Letter from the Review Panel to Registered Parties - Regarding Mandate of the Panel to Assess Impacts on Aboriginal Rights*.
[11] CEAR #124, *Amended Terms of Reference for the Federal Panel Reviewing the New Prosperity Gold-Copper Mine Project*, s. 6.4.

Hearings. Federal decision-makers do not have this opportunity. The Panel's report will be a critical document for them to understand not only Tsilhqot'in culture, but also the nature and magnitude of the cultural impacts that would be experienced by the Xeni Gwet'in and the Tsilhqot'in communities if the mine were to proceed.

At the General Hearings, the Panel Chair asked Ann Marie Sam of Nak'azdli First Nation for one recommendation. Ms. Sam said, "we really need to listen to the communities that are going to be directly impacted because they are the ones that are on the ground".[12] We respectfully ask that the Panel fully and clearly convey the voices of the Tsilhqot'in people, their commitment to their culture, and the likely impacts of this Project for their Tsilhqot'in way of life, their communities and their traditional lands.

[12] CEAR #692, *Revised Hearing Transcript Volume 2: July 23, 2013 General Hearing Session*, p. 137 [PDF].

3. PRECAUTIONARY APPROACH

The Panel is mandated to adopt a "precautionary approach" in conducting its assessment.[13] The precautionary principle is frequently stated as follows:

The precautionary principle states that: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation" (United Nations, 1992).[14]

The "precautionary principle" was defined in the previous Panel's Terms of Reference to mean "the application of prudent foresight, the recognition of uncertainty, and, when decisions must be taken, *to err on the side of caution*".[15] We submit that this definition is equally appropriate for *this* Panel's review.

Indeed, the EIS Guidelines impose a *positive* burden of proof on the Proponent to … demonstrate that all aspects of the Project have been examined and planned in a careful and precautionary manner in order to ensure that they do not cause serious or irreversible damage to the environment and/or the human health of current or future generations.[16]

This direction has particular importance in the present case. At the Topic-Specific Hearings, virtually every Federal Department identified substantial risks and uncertainties with the Project as proposed. The risks, information deficiencies, and uncertainties described by Federal Departments concern the most fundamental issues of this review, across the whole range of potential Project impacts. These concerns were echoed by various Provincial reviewers, and experts retained by TNG. All of this is reviewed in subsequent sections of this submission.

[13] *CEAA 2012*, s. 4(1)(b).
[14] Environment Canada, *Planning for a Sustainable Future: A Federal Sustainable Development Strategy for Canada*.
[15] [Previous] CEAR #48, *Review Panel Terms of Reference*, Annex 1 Definition of Terms.
[16] CEAR #81, *New Prosperity Gold-Copper Mine Project Environmental Impact Statement Guidelines (Prepared by the Canadian Environmental Assessment Agency)*, p. 5.

In response, the Proponent argues that "certainty" and finality" are not required for Project approval and has cited authorities to this effect.[17]

We agree that "certainty" is not required at this stage, and some degree of uncertainty is inherent in environment assessment. However, this does not mean that the Panel must or should accept the Proponent's assessment of Project impacts in the face of the exceptional degree of uncertainty and risk identified here by government regulators and other experts, particularly as these uncertainties are a direct result of the Proponent's failure or refusal to provide critical information required by the Panel to discharge its mandate.

We submit that the following factors are relevant to the application of a "precautionary approach" in the present circumstances:

3.1 Second Project Review

In rejecting the Prosperity Proposal, the Federal Government stated that its decision did "not preclude the proponent from submitting a project proposal that includes addressing the factors considered by the panel". In our view, this second effort at approval imposes a positive obligation on the Proponent to demonstrate that it has addressed the significant adverse environmental effects identified by the previous Panel. Indeed, this is the very purpose of the second review, as expressed by the Minister of Environment in establishing the Panel.[18]

3.2 Purpose of CEAA 2012

One of the stated purposes of *CEAA 2012* is to consider proposed projects "in a careful and precautionary manner to avoid significant adverse environmental effects". The Panel should apply precaution in a manner that identifies and assists the Federal Government to avoid likely significant adverse environmental effects.

[17] See: CEAR #825, *Email to the Panel Secretariat from McMillan LLP, Counsel for Taseko Mines Limited, forwarding the appeal documentation of the Williams case and summaries of cases in support of Taseko's position that the panel could proceed "to approve the project despite uncertainties that might exist at this early stage"*.

[18] CEAR #81, *New Prosperity Gold-Copper Mine Project Environmental Impact Statement Guidelines (Prepared by the Canadian Environmental Assessment Agency)*, p. 2.

3.3 Magnitude of Potential Project Impacts

The potential impacts of the Project for the Tsilhqot'in Nation were described in the previous review as "high magnitude, long term, irreversible",[19] "unquantifiable and beyond comprehension",[20] including long-term impacts on the physical and mental health of the Tsilhqot'in communities.[21]

We submit that the nature and magnitude of these risks to the Tsilhqot'in people and the public heightens the importance of a precautionary approach to the assessment.

3.4 Proponent's Failure to Provide "Sufficiently Sound" or "Credible Science"

Although environmental assessment accepts some inherent uncertainty, this does not justify poor quality work by the Proponent. It is the Proponent's obligation to provide sound, credible and transparent science supporting its conclusions on the possibility of occurrence of harm and the magnitude of that harm (including the extent of possible damage, persistency, reversibility and delayed effect).[22]

In our submission, as reviewed below, the Proponent has failed or refused to meet this basic obligation despite repeated efforts by the Panel and other parties, including TNG, to obtain such information.

3.5 Previous Statements by The Proponent

In the previous review, the Proponent compared this mine design (then known as "Option #2) against the preferred Prosperity option (Option #3) and described the rejected Prosperity design as "the most environmentally responsible" and stated that, *economics aside*, the rejected Prosperity design was "the most appropriate option with respect to technical issues and impact on the physical environment".[23] The Panel and

[19] *Panel Report*, p. iii.
[20] *Panel Report*, p. 190.
[21] *Panel Report*, p. 202.
[22] CEAA, *A Framework for the Application of Precaution in Science-Based Decision Making About Risk,* pp. 7-8 ["Overall, the responsibility for providing the sound scientific basis should rest with the party who is taking an action associated with a risk of serious harm"].
[23] CEAR #793, *Letter to the Panel from J.P. Laplante on behalf of the Tsilhqot'in National Government concerning the Proponent's Statements in previous Panel Review*.

the Proponent itself concluded that Option #2, now proposed as New Prosperity, "would in time likely result in contamination of Teztan Biny".[24]

Given these statements, we submit that if the Proponent now expects the Panel and others to accept the *opposite* of what it told the previous Panel, such assertions should be approached with caution.

The reality that some degree of uncertainty is inherent in environmental assessment is not *carte blanche* for unacceptable levels of uncertainty and risk, especially in light of the above factors.

As discussed following, the uncertainties in the present case do not relate to contingencies or distant risks. Rather, the *most central* issues before this Panel (*e.g.* the likely impacts of the Project, the ability to maintain Teztan Biny, the efficacy or otherwise of primary mitigations such as water treatment) are characterized by exceptionally high levels of uncertainty and risk.

We submit that the EIS Guidelines for this Project set out the central question before the Panel, in applying a precautionary approach in the particular circumstances of this review: *has the Proponent demonstrated that the Project would not "cause serious or irreversible damage to the environment [including cultural heritage and current use] and/or the human health of current or future generations"*?

[24] *Panel Report*, p. 50; [Previous] CEAR #2253, *Hearing transcripts Volume 29: April 26, 2010 Topic-Specific Session*, p. 5450 [Scott Jones] ["What happens to the water quality in Fish Lake, if you try and preserve that body of water with the tailings facility right up against it, is that over time the water quality in Fish Lake will become equivalent to the water quality in the pore water of the tailings facility, particularly when it's that close. You might be able to delay that by moving the tailings facility farther away to Fish Creek south. You may even be able to minimize that, reduce it by mitigation measures that could be applied. *But eventually that water quality will change*"].

4. MONITORING AND ADAPTIVE MANAGEMENT

The Proponent relies heavily on commitments to monitoring and adaptive management in response to the substantial uncertainties and risks identified by government reviewers and other experts.

Critically, "adaptive management" is not a substitute for mitigation measures. Nor is it appropriate as a response to uncertainty about the significance of environmental effects. This is set out clearly in CEAA policy guidance:

4.1 Uncertainty about Significant Adverse Environmental Effects

If, taking into account the implementation of mitigation measures, there is uncertainty about whether the project is likely to cause significant adverse environmental effects, a commitment to monitor project effects and to manage adaptively is not sufficient.

A commitment to implementing adaptive management measures does not eliminate the need for sufficient information regarding the environmental effects of the project, the significance of those effects and the appropriate mitigation measures required to eliminate, reduce or control those effects.

Where additional information collection or studies are needed over the life-cycle of the project, such studies in themselves should not be considered "mitigation measures".[25]

Further, in respect of proposed mitigations, the Panel's mandate is to assess measures that are "*technically and economically feasible* and that would mitigate any significant adverse environmental effects of the Project".[26]

In the present case, primary mitigation measures (*e.g.* water treatment, recirculation of lake flows) have not been demonstrated to be "technically and economically feasible".

[25] CEAA, *Operational Policy Statement: Adaptive Management Measures under the* Canadian Environmental Assessment Act This Operational Policy Statement was adopted under the previous *CEAA* legislation, but the Agency has *advised* that such documents "may still be of interest to those undertaking environmental assessments under CEAA 2012, provided that they have not been replaced by an updated version in the previous table". The Operational Policy Statement has not been replaced and remains equally applicable under *CEAA 2012*.

[26] CEAR #124, *Amended Terms of Reference for the Federal Panel Reviewing the New Prosperity Gold-Copper Mine Project*, s. 2.2.d; CEAA 2012, s. 19(1)(d).

CEAA policy makes it clear that, in circumstances such as this, "adaptive management" is not an appropriate response:

> "Section 16 of the Act [now s. 19(1)(d)] requires every type of EA to consider measures that are technically and economically feasible, and that would mitigate any significant adverse environmental effects. The implementation of these measures is then taken into consideration by the responsible authority when making its course of action decision. Therefore, it is insufficient to assert that implementation of an unidentified future measure, developed as a result of adaptive management, constitutes mitigation of a predicted adverse environmental effect.
>
> Commitment to adaptive management is not a substitute for committing to specific mitigation measures in the EA prior to the course of action decision. Adaptive management is an approach involving flexibility to modify mitigation measures or develop and implement additional measures in light of real-world experience."[27]

As a matter of law, a significant adverse effect can only be rendered insignificant by technically and economically feasible measures – the courts have described feasible mitigation measures as "practical means",[28] "known technologies",[29] and as measures that are "known and proposed" and that "can and will" mitigate environmental effects (*Express Pipelines*).[30] In a particularly apt statement from the Federal Court,

> " … future prospects for the monitoring of water quality will do nothing in themselves to enhance water quality, or even to restore it. Monitoring plans for the future are a far cry from known technology whereby the adverse water quality effects can be mitigated."[31]

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[27] CEAA, *Operational Policy Statement: Adaptive Management Measures under the* Canadian Environmental Assessment Act.

[28] *Alberta Wilderness Assn. v Cardinal River Coals Ltd.,* [1999] 3 FC 425, [1999] FCJ No. 441 (QL) (TD), paras. 55-56.

[29] *Pembina Institute for Appropriate Development v Canada*, 2008 FC 302, para. 25; *Canadian Wildlife Federation Inc. v Canada (Minister of the Environment)*, 31 FTR 1, [1989] FCJ No. 1144 (QL) (TD) at p. 15.

[30] *Alberta Wilderness Assn. v Express Pipelines Ltd* (1996), 137 DLR (4th) 177 (FCA) at p. 182d-f.

[31] *Canadian Wildlife Federation Inc. v Canada (Minister of the Environment)*, 31 FTR 1, [1989] FCJ No. 1144 (QL) (TD) at p. 15 [emphasis added].

5. SIGNIFICANT ECOLOGICAL EFFECTS

5.1 Introduction and Overview

The Panel is required to assess the likely environmental effects of the Project, which includes effects on cultural heritage and the current use of lands and resources by Aboriginal peoples.

This chapter considers the likely ecological impacts of the Project. The following chapter addresses the likely cultural impacts of the Project.

This chapter is in two parts. The first part focuses entirely on the technical question about the proponent's ability to manage Fish Lake as a fish-bearing aquatic ecosystem during mining and beyond. This is an explicitly stated goal for Taseko's revamped Prosperity mine project and it is, consequently, the principal environmental impact issue that the Federal Review Panel will have to consider.

The second part discusses several other, less central but substantive concerns about the proponent's assessment that the TNG want to bring to the Panel's attention, and urge their due consideration during the Panel's deliberations on this project.

One of the explicitly stated goals of the proponent for the New Prosperity copper-gold mine is to preserve Fish Lake in perpetuity as a fully functioning aquatic ecosystem. To achieve such a goal, a number of discrete objectives would need to be achieved, including the following:

- the water quality in Fish Lake would need to be maintained at or near baseline conditions or, in the proponent's view, such that specified water quality objectives for the lake are met;
- the existing species diversity, structure and function of the resident biological community would need to be maintained; and,
- the natural regime of water volumes and levels of the lake and stream flow dynamics of the upstream feeder streams would need to be maintained.

These are the components that the Proponent needs to demonstrate can be protected and maintained for Fish Lake and its tributaries during and after its project.

As has been shown during the federal Panel hearing, achieving these objectives for Fish Lake would be technologically complex, and would require dedicated if not onerous management attention over the long term.

Additionally, the mitigation requirements for some components (such as water treatment to maintain water quality) would, according to a number of expert submissions, likely be economically unachievable.

While the proponent has stated that these objectives can be achieved through the mine plan and management regime proposed in the 2012 New Prosperity EIS, a detailed review of the proposal finds that the proponent has fundamentally failed to make the case that the lake will survive intact the effects of the proposed mine.

It is apparent from the available information about the project that Fish Lake confronts at least three serious risks if the project proceeds, including:

- contaminated groundwater moving from the TSF and other sources (e.g., non-PAG wasterock and soil stockpiles) into Fish Lake (and adjacent watersheds) over the mine life and beyond;

- changes during mine life in water quality and biota in the recirculation scheme, including nutrient imbalances, toxic algal blooms, de-oxygenation, trophic web restructuring, and fish die-off; and,

- the loss of Fish Lake water through hydraulic connections to the pit during mine dewatering such that fish and fish habitat are affected.

As a result of widespread information deficiencies in the EIS and questionable analytical methods, both federal and provincial government reviewers raised a host of uncertainties and risks about the fate of Fish Lake, but typically stopped short of being blunt about their predictions as to what would be likely to happen. In some cases, government reviewers noted that the information was so deficient that they were unable to conduct a meaningful evaluation of the issues.

It is clear from the evidence submitted by virtually all intervenors in the technical sessions that significant and critical information gaps exist in the proponent's EIS. Further, huge uncertainties in the proponent's understanding of the potential impacts and what measures would be required to effectively manage the ensuing environmental risks are pervasive and sobering characteristics of the information presented.

On almost all of the technical issues arising from the proposed project, significant matters remain unresolved or fraught with high uncertainty at the close of the public hearings.

A number of intervenors, including the TNG, raised the Precautionary Principle as a tool to assist the panel in working through the information presented during the hearings, and in resolving the numerous uncertainties that have been identified. One of the elements of the Precautionary Principle is that the burden of proof for project viability rests with the proponent (as explained above).

The Panel is encouraged to apply the Precautionary Principle rigorously to its assessment of the proponent's application wherever uncertainty is found.

For the reasons detailed below, the TNG finds that the proponent has failed on all accounts to provide sufficient information and analysis that demonstrates the proposed project with regard to maintaining Fish Lake is technically and economically achievable.

No instance was found in the evidentiary record where the proponent provided sufficient reliable information and analysis to demonstrate any potential adverse environmental effect respecting Fish Lake and the adjacent affected watersheds has been resolved with any reasonable certainty and clarity.

It also has become clear through the EIS review that the proponent has undertaken virtually no new environmental data collection at site for purposes of supporting its new proposal. While some drilling and test pit work was done in the intervening three years to supply pre-engineering data for pit and TSF embankment design, the proponent relied completely on old and interpolated data for the groundwater and surface water assessments of the new mine design. No effort was apparently made to collect or update relevant baseline information for the assessment of the new project.

Despite being requested by several different parties (including the Panel) to develop new site data for particular components of the proposed project, the proponent failed to do so, opting instead to argue why the requested new data were not required or, in some cases, why existing and arguably reliable data were excluded in the assessment.

In addition, the 2012 EIS was replete with information that was either inconsistent with, or not found in, the support technical appendices. There are numerous examples of this, but perhaps the most egregious instance is the proponent's failure to provide any information (other than graphical presentations of results) on the water quality modeling it purportedly conducted for long-term Fish Lake water quality. Given that the explicit goal of the project is to maintain lake water quality to acceptable levels, there is no

evidence in front of the Panel that substantiates the predictions or about how the modeling exercise was conducted, what assumptions and input parameters were used, how the analysis was conducted, or how the results have been interpreted.

The Panel should note that the non-availability of the SRK model description is in complete contrast to the Knight Piesold water quality modeling done for the downstream water bodies adjacent to the Fish Lake system.

To compound the matter, Triton's biological impact predictions for Fish Lake (Appendix 2.7.2.4B-F) apparently relied upon the SRK water quality model results as Triton's model inputs. Since the proponent refused to supply the SRK analysis (despite several requests for it), it is not possible to also meaningfully evaluate the Triton results.

Unfortunately, Triton also added a disclaimer to its predictions of Fish Lake biological impacts, stating that no third party (such as the Panel) can rely on the information without written approval from Triton. Such approval, easily delivered, was never provided.

This situation has left the Panel and intervenors in the bizarre predicament of having the two key documents relating to the long-term predictions of ecological impact in Fish Lake without any supporting technical analysis. There is no substantive explanation in front of the panel that describes how SRK's water quality modeling and Triton's biological impact modeling for Fish Lake was carried out, or what the limitations of the work might be.

The absence of such information completely handicaps any ability to verify the predictions made about Fish Lake water quality or biological impacts, or to meaningfully evaluate how the proposed project would likely to affect Fish Lake in the long term.

This deficiency is a fatal flaw for the proponent's application.

The pervasive selective use of data in the EIS has produced an obvious pattern of bias towards presenting information or skewing the analysis uniformly to support the proponent's consistent findings of 'no significant adverse effects'. The overall net effect is to seriously undermine the credibility of the proponent's case that the project is viable on any account--environmentally, economically, or technically.

In short, the proponent's case is fraught with the following critical deficiencies:

- insufficient and non-reliable data to describe baseline conditions for hydrometeorology, hydrogeology and groundwater pathways, water quality for streams and lakes, and Fish Lake aquatic ecosystem characterization for composition, structure and function;

- insufficient explanation and transparency about methods used for predictions of source term geochemical influences on water quality, predictions of groundwater flow pathways and rates, predictions of seepage rates from the TSF impoundment, predictions of down-gradient water quality changes to the Fish Lake recirculation system and adjacent water bodies such as the Big Onion and Wasp Lake, lower Fish Creek, and the Taseko River;

- insufficient information to demonstrate that maintaining water levels in the Fish Lake recirculation system are technically and economically achievable;

- insufficient information to demonstrate that key operating and closure measures to be implemented (including the TSF embankment depressurization pumps and groundwater collection system, maintaining an aqueous cover on the PAG pile, Fish Lake water recirculation and treatment, and the post-closure site water treatment) are technically and economically achievable.

5.2 Can Fish Lake Ecosystem be Maintained in Perpetuity?

5.2.1 Introduction

Given the preservation of Fish Lake as a central premise for the New Prosperity project, the question of its achievability is arguably the critical question for assessors.

Our review of the EIS and evidence brought before the hearing is that the answer to this question is unequivocally 'no'.

As the analysis below illustrates, the proponent's case for demonstrating that they can operate the project and maintain Fish Lake as a viable aquatic ecosystem, falls far short of the standard of proof required.

The standard of proof for this project requires that the proponent provide sufficient and reliable information and conceptual plans for managing the project that assessors have a reasonable level of comfort that the project will be technically and economically viable, and that adverse effects after mitigation will be acceptable. This is what the *EIS Guidelines* demand, and this is what the proponent did not provide.

The Precautionary Principle places the burden of proof on the proponent to demonstrate that these objectives can be achieved.

The Fish Lake ecosystem will be subject to two broad types of impacts: first will be the impacts of continuously recirculating and treating lake water in the long-term; and,

second, are the potential effects of contamination from mine water seepage exiting the tailings impoundment and entering Fish Lake.

Detailed review by TNG's consultants, Fisheries and Oceans Canada ("**DFO**") and Environment Canada ("**EC**"), and other intervenors, make it clear that for many important issues the proponent has not provided sufficient reliable information, analysis, or mitigation plans to credibly support its proposal. The reality is that the proposal is so lacking in dependable information and analysis on the Fish Lake issue that it is not possible to meaningfully evaluate it.

The deficiencies in the EIS substantial and numerous in all three of the areas considered in environmental assessments:

- the adequacy of baseline information;
- the robustness of the analytical and interpretive methods; and,
- the likely effectiveness of the proposed mitigation.

5.2.2 Baseline Information

5.2.2.1 Introduction

The importance of adequate and reliable baseline information for any impact assessment cannot be over-stressed. Without a good knowledge of existing site conditions, the basis for all that follows in terms of site assessment, modeling, impact predictions, and mitigation planning, is questionable.

With respect to the protection goal for Fish Lake, the following baseline information is required for the following components:

- rock geochemistry (for source term predictions for future water quality);
- hydrogeologic characterization (for determining pathways and rates of potentially contaminated groundwater entering Fish Lake);
- stream and lake water quality and site hydrology (for modeling future WQ and water balance of Fish Lake and mine components); and,
- ecological data for Fish Lake species composition, trophic structure, and function.

The EIS Guidelines recognized the need to have such information provided in the EIS to support the impact analysis, predictions and mitigation plans prepared by the proponent.

To an overwhelming extent the EIS failed to provide meaningful, representative and reliable baseline information in any of these critical areas, as described in detail below. This means that the proponent has an insufficient understanding of how the Fish Lake watershed (surface and subsurface) works as an integrated and self-sustaining natural system and, therefore, all the proponent's predictions about future outcomes for Fish Lake are questionable and should be regarded with a high degree of uncertainty.

5.2.2.2 Uncertainties in Geochemical Source Terms

The predictions of future water quality for various mine site components and potentially affected water bodies depend upon a reliable characterization of the mine's rock geochemical properties, known as the 'source terms'. If these are wrong or underestimated, then all predictions of mine waters such as TSF porewater and other stockpile seepage will be inaccurate.

Dr. Kevin Morin in his submission noted a number of deficiencies in the proponent's geochemical characterization and predictions of source terms.[32] His key findings with respect to potential effects on Fish Lake are:

- the EIS provides unreasonably low predictions of project effects on water quality, water contamination, and aqueous concentrations in seepage from the TSF and other mine site components, Tributary 1, Fish Lake, and other lakes;
- potential exists for 'rapid' ARD development in some PAG rock and ore;
- runoff from soil stockpiles was not properly assessed, and some of these drain to Fish Lake.

The underestimation of dissolved and solid contaminant concentrations for some of the rock source terms means that there is a risk of higher concentrations of contaminants than predicted by the proponent entering Fish Lake and other water bodies and pathways via the seepage that exits the TSF, ore stockpile and soil stockpiles.

[32] CEAR #653, *Review of Geochemical Source Terms, Water Quality, Metal Leaching and Acid Rock Drainage (Received July 19, 2013) NOTE: Entry revised July 20, 2013. At the request of TNG, document*

Natural Resources Canada ("**NRCan**") also identified issues with the proponent's determination of ARD onset lag-time, and with the lack of scale-up from lab testing that 'might lead to uncertainties in water quality predictions.' Additionally, NRCan found that evaluation for metal leaching under neutral pH and low oxygen conditions, such as would exist in the TSF tailings, was lacking. [33] NRCan pointed out, all the proponent's geochemical test work focused on acid drainage issues, but no work was done for investigating metal leaching under neutral issues.

5.2.2.3 Hydrogeologic Characterization

Having a comprehensive and reliable understanding of the groundwater system at the mine site is critical information for predicting how mine components, particularly the TSF, will affect ground and surface water quality at the site and down-gradient water bodies. The efficacy of all proposed measures to manage the mine and mitigate its impacts to Fish Lake and other water courses can only be evaluated against an accurate characterization of the affected groundwater system.

As this issue is central to a determination about the project's overall environmental feasibility, a number of reviewers focused their efforts on assessing the robustness of the proponent's information and knowledge of site hydrogeology and then how this information was used in developing monitoring and mitigation plans for the mine's operation and closure. An accurate and complete analysis of the hydrogeological baseline is essential for the construction of models used to predict groundwater flows and pathways at the site and, hence, gaining some meaningful understanding about what will happen to Fish Lake water quality in the long-term.

It is a fair to say that all reviewers of the groundwater modeling, predictions, and mitigation plans found significant uncertainties throughout the information delivered in the EIS, and concluded in some instances, that serious risks were posed by the pervasive problems they identified, such as incomplete information, inconsistent information among support documents, unexplained conclusions; information referenced that could not be located, unsupported assumptions and questionable inputs and methods in the various models used in making predictions, poorly done or non-conservative sensitivity analyses performed for certain modeling exercises, and so forth.

Watterson Geoscience's review of the groundwater issues on behalf of TNG is a critical piece of evidence for the Panel's consideration, since it apparently represents the only

[33] CEAR #774, *Revised Hearing Transcript Volume 6: July 27, 2013 Topic-Specific Session on Geology and Hydrogeology* p.15

thorough review of the proponent's site-wide hydrogeological baseline work, the edifice upon which all understanding of current and future site groundwater behaviour stands.[34]

The Watterson report describes an impressive array of information deficiencies, inconsistencies and other problems with the proponent's information on site hydrogeology, and illustrates how all these fall short of meeting the requirements set out in the *EIS Guidelines*.

On July 18 the proponent submitted a memo outlining the additional field investigation the company would do following environmental assessment stage. [35] In this memo Taseko defines Step 1 (EA stage) in a 'typical site investigation' as the collection of 'enough physical information to carry out a prefeasibility level study or proof of concept'. This is a reasonable definition.

However, inconsistencies arise in the further descriptions of the work to be done as part of Step 1 in the various parts of the development zone. For example, for the area between the pit and Fish Lake (Area A in the memo) Step 1 is to include wells, geotechnical drilling, pump and packer tests. Unfortunately, the proponent did not collect any of these data types for the new project's assessment, and it rejected the only useful aquifer test results that, according to NRCan, provided a meaningful picture of the groundwater flows between the lake and the pit.

Similarly, for the TSF basin area (Area H) there is no hydrogeological investigations slated for 12 km^2 area of the basin beyond surficial test pits.

No criteria are specified for any of this work, at any Step. The objectives for each activity are not defined. Specifically, there are no quantitative or qualitative criteria identified to determine sufficiency of information at any step, but particularly for the EA step.

How is one to know when 'proof of concept' has been determined at the EA stage? From the description provided by Taseko it is not possible to do this. The place to make such a determination lies with the *EIS Guidelines*. We should not lose track of these, for these rightly prescribe the array and level of detail required for all of the components of the proposed project. As TNG has documented from the time of the initial *Guidelines* review to this current detailed review stage, the proponent has failed in large measure to

[34] CEAR #659, *Written Hearing Submission filed by the Tsilhqot'in National Government - Hydrogeology Review (Received July 19, 2013)*
[35] CEAR 642.

provide anywhere near the substantive information requested. The Watterson submission, as one example, details well the discrepancies between the *Guidelines* and the *EIS* for the groundwater assessment.

The TNG ask the Panel to consider the July 18 memo (CEAR 642) as essentially unhelpful in determining information needed at the EA stage. It is apparent that this memo was hastily cobbled together without much thought about the details of the tasks ahead and what relevance they would have to satisfying the criteria (not defined) at each step.

The key point is that our review, and the submissions of other reviewers, are clear that the 'proof of concept' has not been delivered for any aspect of the project relating to the maintenance of Fish Lake.

TNG concludes there are two fatal flaws in the hydrogeological assessment.

First, there is insufficient geologic and hydrogeologic data to properly characterize site hydrogeology and groundwater systems including, particularly, preferential groundwater flow paths that would enhance seepage flows to Fish Lake and other water bodies.

Second, all the hydrogeologic modeling is based on extrapolated and old data and non-conservative assumptions because the proponent refused to collect sufficient new, site-specific groundwater data in the appropriate places (especially between the lake and the pit, the lake and the impoundment, and under the TSF basin).

The lack of adequate baseline characterization data and analyses results in a significant lack of confidence in all analyses and findings completed by the proponent that are based on this information, with the result that the potential risk to down-gradient receptors including fish and fish habitat from project impacts is significantly underestimated by the proponent. Further, they call into question the feasibility of the proponent's plans for monitoring and mitigation of seepage and groundwater flow, as discussed later in this chapter.

Watterson concludes,

> "...the lack of reliable data and robust analyses in the EIS and supporting documents is so profound and extensive that it indicates an apparent inability or unwillingness by the proponent to conduct its work consistent with the panel's established guidelines and best professional practices. The result of all this is that the panel is faced with huge uncertainties in attempting to develop an accurate understanding of the site conditions and the project's likely impacts to ground water and surface water resources.

> Groundwater, the receiving environment, fish and fish habitat in the Fish Creek basin, Big, Little Onion and Wasp Lakes, Beece Creek and adjacent Taseko River are exposed to a high level of environment risks from the proposed mining program, about which extraordinary levels of uncertainty exist. Although the primary sources of risk originate from the impacts of escaped seepage from the TSF on site groundwater, surface waters and the potential interactions between the open pit and Fish Lake, other sources of significant and long-term risk result from the proposed project." [36]

5.2.2.4 Site Water Quality and Quantity

Macdonald Environmental Sciences Ltd.'s (MESL) exhaustive review of the proponent's baseline characterization of surface water hydrology, sediments, and the biological communities resident in the impact zone of influence showed such numerous and serious deficiencies that none of the information was adequate to support a sound understanding of baseline conditions for water quality, water flows, sediment characterization, or lake ecology for any of the water bodies, including Fish Lake.

Without such information, the credibility and utility of any impact analysis that depends upon the existing baseline dataset is questionable. [37]

5.2.2.5 Fish Lake Ecosystem

In order to design a system for mitigating impacts and managing Fish Lake in accordance with the sustainability goal, a sound understanding of how the lake and the watershed currently functions is critical. The proponent would need to demonstrate that reasonably accurate, comprehensive, and detailed knowledge about the composition, structure, and functioning of the lake-stream ecosystem in its undisturbed condition has been collected and properly interpreted such that the proponent knows how the system works such that it can then design the appropriate monitoring and mitigation programs.

If knowledge of baseline conditions is deficient in any substantive respect then all that follows in the planning exercise (e.g., modeling, impact analysis, monitoring programs, mitigation plans, management programs, etc.) is necessarily compromised and suspect.

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[36] CEAR #659, *Written Hearing Submission filed by the Tsilhqot'in National Government - Hydrogeology Review (Received July 19, 2013)* p.36.

[37] CEAR 684, *A Review of the Adequacy of Baseline Water Quality Data and Mitigation of Mining Impacts .* CEAR #810, *Exhibit - 48: Dr. Karen Hurley presentation on behalf of the Friends of the Nemaiah Valley on Cumulative Impact, Watershed Values and Sustainability on Day 2 of the Aquatic Environment topic-specific session*

Additionally, because significant fish habitat would be destroyed by the project, baseline information needs to document the types and quality of existing fish habitat such that compensation plans could deliver replacement habitat equivalent to that lost to the project.

Detailed reviews by MESL, DFO, Stockner and Brandt have demonstrated that the baseline information developed by the proponent for the Fish Lake ecosystem is far from comprising a realistic and dependable knowledge base upon which to plan the future environmental management of the site, fish habitat compensation plans, adaptive management plans for the lake recirculation system, and the replication of the natural system by artificial means.

DFO [38] and MESL[39] identified a host of problems with the proponent's information base for Fish Lake including, importantly, the following:

- inconsistent and inappropriate water chemistry sampling over the years, with more recent sampling done, inexplicably, by integrating values throughout the water column which does not reflect the seasonal spatial variation in nutrient availability within lakes;

- poor data replication, a high degree of variability, and a failure to incorporate spatially-resolved nutrient availability;

- substantially reduced confidence in the proponent's understanding of Fish Lake seasonal nutrient dynamics;

QA/QC issues which raise 'significant concern and uncertainty regarding the likelihood that adequate monitoring will be undertaking to effectively implement the proposed adaptive management plan to mitigate unexpected ecosystem changes;

- improper characterization of Fish Lake as phosphorus-limited, pointing to an array of evidence that suggests that the lake experiences nitrogen-limited conditions for primary production and, moreover, there exist conditions in the

[38] CEAR #886, *Fisheries and Oceans Canada Response to Undertaking 12 (U-012): Provision of the "Technical Review of the proposed recirculation scheme of the New Prosperity Gold-Copper Mine Project on predicted effects on fish and fish habitat of the Fish Lake watershed"*

[39] CEAR #684, *A Review of the Adequacy of Baseline Water Quality Data and Mitigation of Mining Impacts* CEAR #805. *Exhibit - 43: D.D. MacDonald presentation on behalf of the Tsilhqot'in National Government on an Evaluation of Water Quality and Quantity Conditions in the Vicinity of the New Prosperity Gold-Copper Mine Project on Day 2 of the Aquatic Environment topic-specific session*

lake that may exacerbate N-deficiencies should the proponent recirculate hypolimnetic waters to the tributaries as proposed;

- not clear that the proponent's characterization of Fish Lake limnology and fish biomass predictions are accurate to confidently predict changes to Fish Lake;
- proponent acknowledges that its predictions of future N dynamics are 'highly uncertain' (IR#19), and thus it is not clear how the recirculation system will impact N cycling within the watershed and lake; and,
- the proponent's plans for managing the tributary streams have a number of identified risks that are not addressed, and very little detail on which to judge the merits of the approach; and,
- high degree of uncertainty that the proponent's management and mitigation plans can respond in time based on the monitoring approach, and as a result, may not be equipped to prevent an irreversible shift in the lake's ecological function and viability as a fish-supporting ecosystem.

5.2.3 Analysis of Effects to Fish Lake

Inadequacies in site baseline data and characterization (i.e., building the knowledge base) necessarily lead to inaccuracies in understanding the system and conducting the impact analyses. As is summarized in the evidence above, baseline deficiencies prevail such that the proponent has very little understanding of the current characteristics of Fish Lake ecosystem.

The analysis of the proposed project by Dr. John Stockner, a senior Canadian lake ecologist, led him to a succinct and unequivocal conclusion--if the project proceeds, Fish Lake will be dead to fish within a decade.[40]

Darren Brandt, an experienced applied ecologist specializing in lake responses to nutrient shifts and other human-related land use disturbances, arrived at same conclusion.

Brandt and MESL both found that the proponent had provided insufficient data and understanding of biology of the Fish Lake system, as well as the synergistic effects of multiple variables changing over time. As Brandt and MESL pointed out, it would be

[40] CEAR #680, *A Fish Lake Testimony.*

inappropriate and unwise to propose, as the proponent has done, that simply meeting WQ standards would protect the Fish Lake aquatic ecosystem.

Brandt provided a picture, radically different than that described by the proponent, of what can be expected at Fish Lake if the project proceeds:[41]

- increased primary productivity;
- increase in inedible phytoplankton;
- increase in duration and severity of blue-green algae blooms;
- increased internal cycling or loading of nutrients with positive feedback loop;
- decrease in carbon flow into the food web resulting in decreased fish production;
- outflow recirculation will result in increased nutrient concentrations within the lake, effectively turning it into an aquarium;
- the loss of wetlands associated with the project will result in severe changes in hydrology, increase in metals and nutrient concentrations that cannot be mitigated; and,
- a fish die-off in the lake likely to occur within a decade.

Stockner noted the approach to impact analysis should have provided information on lake functional responses to human intervention, and needed to adopt an ecological approach which focuses on major connections between basin, wetlands and lake trophic state. Such an approach would also have included consideration of the following facts:[42]

- aquatic ecosystems food webs have higher connectance and fewer trophic levels than other types of ecosystems, with complex feeding relationships between species meaning the population fluctuations in one species can dramatically affect another;

[41] CEAR #807, *Exhibit - 45: Darren Brandt presentation on behalf of the Tsilhqot'in National Government on A Holistic Ecologist's Perspective on Lake Responses to Disturbance.*

[42] CEAR #680, *A Fish Lake Testimony.* CEAR #808, *Exhibit - 46: John Stockner presentation on behalf of the behalf of the Tsilhqot'in National Government on Limnology, Nutrient Balance, and Aquatic Ecological Sustainability.*

- the edible phytoplankton community is the key to a healthy zooplankton populations, which in turn is the key to healthy fish populations;
- extreme eutrophic conditions can occur easily in these lakes resulting in the formation of large carbon sinks and declines in fish population;
- the introduction of substances derived from the drainage basin by inflow streams can influence biogenic carbon production within a lake, resulting in a myriad of complex and multi-faceted interactions and reactions between incoming pollutants and the metabolic pathways of the lake ecosystem;
- there are both direct and indirect secondary and tertiary responses in water chemistry and biota from pollutants, usually leading to shifts in the phytoplankton and zooplankton community structure and function;
- such shifts ultimately affect the rainbow trout forage produced from pelagic, wetland, littoral and benthic communities, all of which interact within the lake ecosystem;
- these multiple pathways mean that it is imperative to understand and address the impacts of these disturbances on lake water chemistry, food web, and annual hydrologic cycle.

Aside from the fact that the proponent's impact analysis for Fish Lake did not take an ecosystem-based approach, Dr. Stockner identified these additional deficiencies:

- the available information on the proposed project fails to define cumulative and synergistic consequences of mining on lake function;
- any modification of the seasonal hydrograph for Fish Lake will 'unquestionably' severely impact rainbow trout populations;
- modeling multiple impacts on Fish Lake's physical, chemical and biotic food-web responses is extremely complicated, and lake dynamics must be completely understood with a solid pre-disturbance and statistically tested database;
- the proponent's database is 'very poor and ignores several key variables' such as microbial impact, phytoplankton species shifts, 'real' C^{14} estimates of carbon production, etc.;

- looking at pollutants in isolation, and representing complex community responses in terms of a single surrogate variable like chlorophyll-a, as the proponent did, is a mistake;

- the monitoring and modeling done by the proponent does not effectively address these complex interactions that occur within the Fish Lake food web;

- there is a serious question as to whether the proponent has a sufficient understanding of lake ecosystem function and dynamics to properly address these issue or attempt to model them;

- there is no detailed discussion of the baseline seasonal changes in plankton community composition of Fish Lake; and,

- a critical component of the lake ecosystem is the microbial communities, for which no sampling or analysis was undertaken by the proponent, nor was any discussion presented to demonstrate that the proponent effectively understood the role and importance of this component.

Water quality predictions for the lakes and streams, generated through modeling using the proponent's baseline data as inputs, are an important example where the results are undermined by an unreliable dataset. As MESL noted, the insufficient baseline dataset, plus the use of inappropriate detection limits and selective data for model inputs, has resulted in:

- low confidence of the predictions for future water quality, streamflows, and sediment quality.

- questionable usefulness of any future aquatic effects monitoring program;

- inability to evaluate robustness of methods and results obtained from the modeling; and,

- substantial uncertainty in estimates of water and sediment quality, and streamflow under baseline conditions. [43]

[43] CEAR #810, *A Review of the Adequacy of Baseline Water Quality Data and Mitigation of Mining Impacts* p21.

In terms of predicted changes to the Fish Lake aquatic ecosystem, the inadequate database and inappropriate methodologies led the proponent to highly questionable results, including:

- uncertainty about how various sets of water quality and toxicity criteria were applied in the assessment;
- inconsistent use of water quality guidelines in long- and short-term predictions;
- inconsistent labeling of sites between EIS and appendices;
- inability to determine how the distributions of concentrations were calculated and what they consisted of;
- no descriptions of model methods, underlying assumptions;
- lack of incorporation of wetland loss in predicting levels of nutrients and metal in Fish Lake;
- likely under-estimates of predicted concentrations of COPCs due to seepage inputs;
- no assessment of interactive, synergistic effects of likely combinations of stressors acting cumulatively on Fish Lake water quality and biota;
- no assessment of multiple stressors such as blasting, increased nutrients, increased metals, increased total suspended solids, increased water temperature, decreased dissolved oxygen, etc., that interact to affect aquatic life;[44]

A number of reviewers noted the absence of any technical information describing the water quality model (SRK model) for the Fish Lake watershed. Unlike the technical report supplied for the Knight Piesold (KP) water quality model for the TSF and adjacent watersheds, the only information provided for the Fish Lake WQ predictions are the graphical representations provided in Appendix 2.7.2.1-I. Providing only pictures of results does not meet the EIS Guidelines requirement which requires the EIS to provide

[44] CEAR #684, *A Review of the Adequacy of Baseline Water Quality Data and Mitigation of Mining Impacts* CEAR #810, *Exhibit - 43: D.D. MacDonald presentation on behalf of the Tsilhqot'in National Government on an Evaluation of Water Quality and Quantity Conditions in the Vicinity of the New Prosperity Gold-Copper Mine Project.*

> "all data, models and studies will be documented such that the analyses are transparent and reproducible" and, further, that "the Proponent shall provide in its EIS, as appendices if necessary, copies of all technical studies, inventories or other supporting technical documents relied on by the Proponent in the EIS". [45]

TNG repeatedly requested this information, but the proponent never provided it.[46]

The Panel also directed Taseko to provide this information prior to the hearings, but the proponent never provided the Fish Lake modeling information.[47]

Taseko did provide digital files with WQ modeling data, but the Fish Lake information was not part of this.

EC was also unable to find this critical information and thus was not able to assess these predictions. [48]

Despite having requested on several occasions information about the Fish Lake water quality modeling methodology, the proponent never provided it. The digital files that Taseko said contained the required information did not contain data for Fish Lake.

Source Environmental Associates ("**SEA**") summarized the situation:

> "TML has not provided clear and transparent information regarding the project, especially with respect to Fish Lake water quality modeling. This is a significant shortcoming of the EIS, because without being able to review the water quality

[45] CEAR #81, New Prosperity Gold-Copper Mine Project Environmental Impact Statement Guidelines (Prepared by the Canadian Environmental Assessment Agency), p. 7.

[46] CEAR #488, Letter from the Tsilhqot'in National Government to Taseko Mines Limited requesting information on Fish Lake Water Quality Modelling. CEAR #490, Letter to the Panel from the Tsilhqot'in National Government concerning information deficiencies in Taseko's Environmental Impact Statement (see Reference Document Number 129). CEAR #515, Tsilhqot'in National Government's Response to Taseko Mines Limited concerning Taseko's response regarding information on Fish Lake Water Quality Modelling (see Reference Document Number 493). CEAR #560, Letter to Taseko Mines Limited from the Tsilhqot'in National Government requesting Additional Information (see Reference Document Numbers 488, 490, 515 and 529).

[47] CEAR #566, Letter from the Federal Review Panel to Taseko Mines Limited concerning Sufficiency of Information of the New Prosperity Gold-Copper Mine Project Environmental Impact Statement (see Reference Document Numbers 129 and 494), p. 3.

[48] CEAR #738, Written Hearing Submission of Environment Canada (see Reference Document Number 717 for supplemental information), pp. 5, 11.

modeling documentation associated with Fish Lake, it is not possible for reviewers to understand the fundamental reasons for the modeling results, or to evaluate the results." [49]

DFO also noted key deficiencies in the modeling predictions: [50]

- the proponent's own lack of confidence in N predictions from its modeling effort, coupled with the failure to adequately capture current seasonal N availability and accurately predict future nutrient variability 'severely compromises confidence' in the EIS predictions of future fish productivity in the lake;

- despite the importance of seasonal N-availability to food web productivity in Fish Lake and the uncertainties in future ecosystem dynamics associated with recirculation, the proponent inappropriately predicted fish biomass using a model relating biomass to total P;

- the proponent's water quality model inputs likely do not capture real seasonal variability in N-availability in Fish Lake throughout the growing season, necessarily dampening variability in future water chemistry predictions; and concludes that,

- 'significant uncertainty' exists in the proponent's predictions of fisheries productivity.

Environment Canada (EC) noted the lack of documentation about the Fish Lake water quality model, to the extent that EC could not evaluate it; [51]

"While the Proponent indicated that "complete details of the stochastic water quality model used to predict water quality in Fish Lake, Fish Creek Reach 8, Fish Lake Tributary 1, TSF Lake, and Pit Lake can be found in Appendix 2.7.2.1-I" (page 706 of the EIS, CEAR #129), those details could not be located." [52]

[49] CEAR #708, *Review of the Environmental Impact Statement and Supplemental Information Responses*
[50] CEAR #886, *Fisheries and Oceans Canada Response to Undertaking 12 (U-012): Provision of the "Technical Review of the proposed recirculation scheme of the New Prosperity Gold-Copper Mine Project on predicted effects on fish and fish habitat of the Fish Lake watershed"*
[51] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.127
[52] CEAR #738, *Written Hearing Submission of Environment Canada (see Reference Document Number 717 for supplemental information)* p.5

In its questioning of EC about the lack of information on the water quality model, the proponent referred to EIS pp. 521-537 as a description of the modeling exercise.[53] This reference text, however, relates mostly to the Knight Piesold water quality model for adjacent watersheds, not the SRK water quality model done for Fish Lake system. Subsequent filings [54] by the proponent intended to respond to EC's concerns about the WQ modeling fail to shed any further light on the WQ values used for Fish Lake in the assessment.

EC expressed frustration with the lack of good information:

"You are getting to one of the crux issues here, if we have uncertainty we don't have confidence in projections made and until we can address that and come to a consensus about what's happening in the model, then our confidence is not high enough to make a lot of judgment about what is happening." [55]

EC noted the following additional problems with the EIS:

- did not agree with the unexplained approach used to assessing current hydrologic baseline conditions in the Fish Lake watershed, which was changed from the methodology used in the 2009 EIS;
- proponent's use of a model is not a substitute for a sensitivity analysis.[56]
- 'other sources of uncertainty' exist with the proponent's estimates of long-term hydrometeorological conditions at the site, including the effects of climate change on the range of hydrologic responses;
- not clear that the proponent's water balance results for TSF are sensitive to the input hydrometeorological parameters; [57]

[53] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.146
[54] CEAR #871, *Taseko Mines Limited's Response to Undertaking 10 (U-010): Provide clarification of the water quality numbers for Big Onion Lake, Wasp Lake, and Fish provide clarification of the water quality numbers for Big Onion Lake, Wasp Lake, and Fish Lake and data discrepancies between the modeling and the EIS*
[55] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.131
[56] CEAR #738, *Written Hearing Submission of Environment Canada (see Reference Document Number 717 for supplemental information)* p.21

- concerns with the proponent's assessment of future climate change (i.e., beyond mine operations);
- concerns with the proponent's evaluation of the observed climate record;
- nontransparent documentation of the characteristics (i.e., source, methods, and time periods) of the climate scenario data used;
- inappropriate use of the current range of variability in streamflow volumes to predict future streamflow volumes resulting from climate change;
- no scientific basis for the proponent's use of simple extrapolation of linear trends from an observed record to 'predict' future climate;
- inappropriate use of 'mean' conditions to predict impacts of climate change rather than using the range of possible changes;
- the EIS fails to demonstrate that the proponent's climate and hydrological trend analyses are representative of regional conditions.[58]

In response to EC's list of deficiencies in the WQ modeling work described in the EIS, the proponent filed supplementary information purporting to address these, including a number of commitments to later 'reduce the uncertainties identified at the Environmental Assessment (EA) stage', and to convince the Panel that the project would not have significant adverse effects. [59]

The difficulty will all this proposed future work is that, of course, it should have been conducted at the EA stage because it is all required to meet the 'proof of concept' standard that the proponent has stated is appropriate for this stage of review.

[57] CEAR #738, *Written Hearing Submission of Environment Canada (see Reference Document Number 717 for supplemental information)* p.22.
[58] CEAR #738, *Written Hearing Submission of Environment Canada (see Reference Document Number 717 for supplemental information)*
[59] CEAR #978, Taseko Mines Limited's Response to Undertaking 10 (U-010): Provide a response to the discrepancies detailed in Environment Canada's Written Submission (see Reference Document Number 738)

TNG has provided the Panel with a critique of Taseko's proposed future work program.[60] The proposed additional studies and planning to be done following EA stage should not be considered an appropriate approach, as explained in detail in our submission, to solving information deficiencies that should have been resolved at the EA stage, as required by the EIS Guidelines and professional EA practice.

MESL summarizes the overall picture for usefulness of the proponent's work on water quality and quantity:

> "The proponent has failed to demonstrate that changes in water quality & water quantity due to mine-related activities will not cause significant adverse effects. There is a significant risk of failure if project proceeds." [61]

On the basis of the deficiencies and inconsistencies in the EIS and supporting information and the resulting uncertainties, EC concluded the following:

> "Given the degree of uncertainty, Environment Canada is unable to draw any conclusions regarding the likelihood or magnitude of the effects of the project on water quality." [62]

5.2.4 Analysis of Seepage Risks From TSF

A major long-term risk to Fish Lake water quality is the seepage that will result from TSF pore water escaping into the groundwater pathways underneath the impoundment and moving down-gradient to the lake. This issue becomes central to the Panel's deliberations about the current proposal--what are the rates, concentrations, and loadings of contaminated seepage from the TSF that will reach Fish Lake, and what will the long-term changes to the lake be as a result of these flows?

The key requirement to understand how water moves currently moves through the site, and how these flows and pathways might change with the shift in regional groundwater table created by the impoundment and open pit is for the proponent to develop an accurate and representative conceptual hydrogeological model based on recent and

[60] CEAR #1112, Tsilhqot'in National Government Comments on the Taseko Mines Limited Submission regarding Water Quality Discrepancies

[61] CEAR #805, *Exhibit - 43: D.D. MacDonald presentation on behalf of the Tsilhqot'in National Government on an Evaluation of Water Quality and Quantity Conditions in the Vicinity of the New Prosperity Gold-Copper Mine Project.*

[62] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.122

site-specific data, as specified in the *EIS Guidelines.* As noted above, the proponent did not use recent and site-specific data for its modeling work of seepage escape from the TSF.

In short, as described below, reviewers had serious questions about the proponent's predictions of seepage rates and contaminant dispersion through the underlying shallow and deep groundwater system.

5.2.4.1 Problems with Model Inputs

Watterson Geoscience included a detailed analysis of the modeling work in its written submission to the Panel. Watterson's review started with an examination of the model inputs, and reported in Sec 4.2.1 a long list of deficiencies in the selection of data and, importantly, the overall simplification of the hydrostratigraphic units for modeling purposes, as follows:

- the "lumping" of the complex project area geology and stratigraphy into a few simple hydrostratigraphic units is inaccurate and inappropriate;
- the lack of detailed surface/groundwater interaction assessments means that key groundwater pathways from potential sources of contamination to down-gradient receptors have not been identified or characterized;
- the proponent's decision to not use the 1994 aquifer test data for overburden and basalt conductivity values, and developing estimates of K that are significantly lower than actual values, was a fundamental error; and,
- no discussion has been provided of data gaps and limitations in the proponent's simplifying of hydrogeologic units.

The Watterson report concludes that these deficiencies mean that the proponent's modeled predictions of project impacts and risk to down-gradient receptors have been significantly underestimated.

5.2.4.2 Problems with Seepage Modeling

The proponent conducted its seepage analysis through the use of two models: a regional 3-D numerical groundwater model (BGC model), and a 2-D model to determine flow rates through and beneath the three constructed embankments (Knight Piesold model).

The reviews conducted by both Watterson Geoscience and NRCan demonstrated that the numerical modeling provided by the proponent is not reliably supported by available data and, further, is not based on an accurate conceptual hydrogeological model.

As a result there are significant uncertainties about how accurately the proponent has been able to predict project-related changes to groundwater flow rates and movement patterns. And this, in turn, increases the risk that the contamination of Fish Lake and other adjacent water bodies over the long-term will occur.

For the reasons set out below, Watterson Geoscience found that the numerical model results can be considered 'highly inaccurate' and that they do not provide useful predictions of potential impacts on down-gradient receptors: [63]

- the numerical model was set up using limited data, simplified hydrostratigraphic units, optimistically low and non-conservative values for hydraulic conductivity, and assumptions but no data for glacio-fluvial deposit characteristics;
- unexplained inconsistencies in role of the gypsum line and seepage flow between the BGC and KP hydrogeological models;
- there is no consideration of potential flow through higher permeability overburden between the TSF and Fish Lake, between Fish Lake and the pit, and between the TSF and Big Onion, Little Onion and Wasp Lakes;
- inappropriate and non-rationalized use of a 'porous media' model (which can be applied only when the bedrock is sufficiently fractured and sufficient information is known about the fractures, including fracture density, orientation and permeability, to demonstrate that the fractured bedrock will hydraulically behave like a porous aquifer);
- inability of the porous media model to account for any 'fast' transport through preferential flow pathways; model produces only average flow rates with the hydrogeologic unit and cannot account for flow through discrete fractures;
- no assessment of preferential flow pathways and, hence, no information respecting time required for solute transport in preferential flow pathways;

[63] CEAR #659, Written Hearing Submission filed by the Tsilhqot'in National Government – Hydrogeology Review

- if site conditions do not meet porous media specifications then all model results can be considered 'highly inaccurate';

- inappropriate use of lower hydraulic conductivity values from the model instead of higher actual data *k* values for the upper stratigraphic units, which 'significantly' underestimates the amount of seepage from the TSF and the flow into deep bedrock;

- the proponent's model sensitivity analyses only a small part of the naturally occurring range in values, with no provided rationale for how the selected sensitivity range was selected and no consideration of "worst-case" scenarios, as requested in the *EIS Guidelines*;

- modeling did not include potential contaminated seepage from the ore and mine waste stockpiles, and freshly oxygenated bedrock around the open pit;

- the proponent's poorly supported position that 'there is no strong evidence available to suggest that any fault has significant control on groundwater movement..' resulted in the inappropriate exclusion of faults and other structure controls from the model despite substantial evidence that they could play a significant role in groundwater transport (corroborated by Eberhardt, CEAR 667);

- The Watterson report observes that, despite the inconsistencies among the various support documents, the EIS provides no reconciliation of the significant discrepancies about the role of faults, and concludes that groundwater flow through faults may be a key factor contributing to deep and long-term seepage flow from the TSF towards down-gradient receptors especially the springs and seeps along the Taseko River;

- an inappropriate cut-off of predictions at Year 100 when the TSF is expected to generate contaminated seepage forever;

- As noted in IR 14, the embankments will require permanent dewatering to maintain stability--no discussion or impact analysis has been completed should this dewatering system fail;

- the 2012 BGC hydrogeologic assessment, conceptual model and numerical modeling do not account for groundwater flow in shallow basalt layer (although this layer was included in TSF dam seepage studies conducted by KP);

- there is little information about whether sufficient till will be available within the project footprint to construct the embankment dams and ensure a fully-lined 12 km^2 basin for the TSF;

- long-term groundwater seepage quality from the open pit lake is not addressed in the impact analysis and risks to the down-gradient Lower Fish Creek and Taseko River are not discussed;

- the fate and effects of seepage that reports to "deep" groundwater (IR14) is unknown and unaddressed. As demonstrated by the NRCan numerical model the actual amount of seepage that may report to deep groundwater may be much higher than estimated by the proponent;

- the proponent's predictions of solute transport towards Fish Lake and towards Big and Little Onion Lakes, Wasp Lake and the Taseko River are based on the highly simplistic conceptual hydrogeological model, optimistically low *k* values for the hydrostratigraphic units, and the inappropriate porous media model, resulting in underestimations of actual flow rates and concentrations; and,

- there is no discussion of the impacts from potential groundwater flow pathways on TSF solute transport. As a result the proponent's estimates of potential down-gradient impacts from seepage flow, which do not include any consideration of flow through faults, may be 'highly inaccurate'.

Finally, Watterson points out that the proponent was made aware of crucial data shortcomings (such as aquifer tests and drilling investigations along the main embankment, along the TSF's west ridge, along the Taseko River, near the down-gradient lakes and near the open pit) at least as early as 2009. For whatever reasons, the proponent made it clear during this review that it had no intention to collect such information prior to permitting. This position strongly undermines confidence in the model results and predictions of potential impacts, and conveys the sense that the proponent is not interested in examining the strategic environmental issues raised by the project that need to be addressed in the EA stage, not the permitting one. As Watterson puts it...

> "The failure to reconcile these inconsistencies in the proponent's EIS means there is a high level of uncertainty about the hydrogeological conditions at the

site, with the result that the panel has little dependable information about the risks proposed by the project."[64]

The result of the company's position is that it does not allow an assessor to find that a defensible case on the facts has been made by the proponent, since it is reasonably conceivable that the delivery of good representative hydrogeologic data in these down-gradient areas might prove that the detection and capture of contaminated groundwater would be technically unfeasible, if not impossible.

5.2.4.3 Seepage Predictions

During mine life and beyond Fish Lake will be subject to seepage contamination from up-gradient sources such as the soil stockpiles, the ore stockpile and, especially, the TSF. Unfortunately, the proponent never bothered to evaluate the potential for soil stockpiles to generate WQ impacts, and this remains a risk of some uncertainty, as discussed in Dr. Morin's submission.

The analysis of seepage from the TSF received focused attention during the review, in large part due to the rigorous examination of the proponent's work by NRCan. This culminated with the submission of a new model exploring the input variables and the effects of boundary conditions and other model parameters in an attempt to get a more realistic picture of what might happen with respect to seepage flows exiting the TSF in the post-closure period.

The proponent used the BGC 3-D regional groundwater model to estimate total seepage leaving the TSF in the post-closure period at 760 m^3/d, the number carried forward in the EIS. NRCan's comparable estimate was some 11x this amount.

NRCan attempted to replicate the proponent's results, but found it could only do this by making aggressive downward adjustments in the hydraulic conductivity of the stored tailings (from $1x10^{-8}$ down to $7x10^{-10}$ m/s). Disagreement between the proponent and NRCan about this variable remained unresolved at the close of the hearing, with NRCan maintaining that the proponent 'has not used a conservative estimate of tailings hydraulic conductivity in TSF seepage predictions nor has the proponent investigated a realistic range of estimates in model sensitivity analysis'.[65]

[64] CEAR #659, Written Hearing Submission filed by the Tsilhqot'in National Government – Hydrogeology Review, p.36
[65] CEAR #648, *Written Hearing Submission and Presentation filed by Natural Resources Canada.*

Using the Knight-Piesold 2-D model to represent flows through the TSF embankments and under the foundation to the shallow groundwater zone, the proponent produced a second estimate of seepage at 4752 m^3/d, approximately 50% (2419 m^3/d) of which exited beneath the main embankment). NRCan's estimates using the same inputs as the proponent arrived at a slight increase in total seepage of 5011 m^3/d, which NRCan believed was reasonable given the 2-D approach and the boundary conditions set by the proponent. This 'benchmarking' gave NRCan confidence that its model was able to arrive at a reasonable estimate of seepage.

NRCan then used its more refined interpretation of hydraulic conductivities and defined a 'base case' scenario of approximately 8650 m^3/d, more than an order of magnitude greater than the proponent's 3-D model prediction and about twice that of the 2-D model prediction. Of that total, some 5087 m^3/d exited from beneath the main embankment towards Fish Lake, 2552 m^3/d from beneath the south/west embankments towards Big Onion Lake and Beece Creek catchments, and another 'unrecoverable' 1699 m^3/d into the deep groundwater zone beneath the basalt flows underlying the TSF.

NRCan noted that the deep groundwater flux was not modeled by the proponent's 2-D model, and that the 5087 m^3/d flux beneath the main embankment towards Fish Lake is more than twice the flux of the proponent's prediction.

NRCan observed that it was 'unclear if the proposed combined seepage mitigation measures can handle such a flux' and, in particular, it was 'unclear if the proponent's analysis of interception well requirements remains applicable'.[66]

NRCan then ran a 'conservative' scenario using a 'slightly increased' conductivity of the till and upper basal layer which resulted in a total seepage flux of approximately 10,000 m^3/d.

NRCan then adjusted its model to adopt a boundary condition for TSF pond water levels controlled by climate (precipitation and evaporation), rather than the 'constant head' boundary condition used in the proponent's modeling. NRCan viewed this as a more realistic model since it allows the water table in the TSF to be determined by the relative rates of inflow (recharge) and outflow (seepage)--an important factor because of the need to keep tailings and potentially acid-generating waste rock submerged in order to prevent oxidizing conditions. Using the climate data provided by the proponent, NRCan's 'climate-driven' model arrived at a predicted seepage outflow of 5594 m^3/d,

[66] CEAR #648, *Written Hearing Submission and Presentation filed by Natural Resources Canada.* p.19.

somewhat lower than the base case result using the 'constant head' boundary condition for the surface of the TSF.

Another important result of adopting the more realistic, climate-driven model is that the water table can now fluctuate and expose portions of the TSF pond area to the atmosphere. Under average climatic conditions, the water table drops 46 m below the spillway invert in the northwest corner of the TSF, and 37 m in the northeast corner. This implies that under average climate conditions significant volumes of tailings are likely to be exposed to an oxidizing environment and that, with alternating wet and dry years, these tailings will undergo cyclical saturation and de-saturation resulting in conditions favourable to generation of acid mine drainage, should a potential for AMD exist.

In summary, NRCan made the following findings:

- the proponent's estimates of total seepage from the TSF are underestimated; significantly increased seepage volume and more rapid travel time than predicted by proponent;
- basalt and overburden as significant groundwater flow pathways throughout the project area;
- importantly, the deep groundwater flux is unaffected by the change in boundary conditions, and remains an important flux to consider as it unrecoverable;
- the proponent did not use a conservative estimate of tailings hydraulic conductivity in the TSF seepage predictions, nor did the proponent investigate a realistic range of estimates in its model sensitivity analyses;
- NRCan's disagreement with the proponent's estimates of seepage rates remain unresolved;
- Since BGC's solute transport model relied on unrealistically low TSF seepage estimates to calculate the rates of the groundwater contaminant plume moving toward Big Onion Lake, the predictions of contaminant transport are similarly underestimated such that contaminants could reach Big Onion Lake and the Taseko much earlier than predicted, and in larger volumes;
- The time required for seepage to reach fish and fish habitat in all likelihood will be much shorter than predicted by the proponent, and groundwater flow pathways likely to be much more complex than described;

- there is a concern about the 'deep groundwater' seepage from the TSF that is not recoverable. NRCan expressed the view that this seepage would likely flow along the basalt layers and daylight in the springs to the west of ridge which are up-gradient to the Taseko River;

- the proponent's 3-D model inappropriately condensed the entire sequence of tills, glacio-fluvial deposits, and intercalated basalts lying above bedrock into a single homogeneous unit with isotropic hydraulic conductivity; and,

- hydraulic conductivity horizontally will be 'much higher' than the vertical conductivity, which is 'very important' because the till layer is presumed to act as a control on downward movement of water under the impoundment, and the lower vertical conductivity of the basalt layers acts as a kind of 'bottleneck', allowing seepage to move laterally along higher permeability zones in the basalts, a situation that would promote the migration of seepage towards the nearby lakes. [67]

As a result, NRCan recommended that the Panel:[68]

- disregard the proponent's 3-D regional and telescopic refined groundwater flow models;

- disregard the proponent's conceptual analysis of interception well requirements below the main embankment;

- disregard the proponent's solute transport modeling of the tailings pore water migration towards Big Onion Lake;

- consider that the proponent's 2-D seepage model inappropriately precludes any deep, unrecoverable seepage underneath the TSF;

- consider that the seepage leaving the basin of the facility--the most fundamental performance measure of containment, will probably be in the range of 7,000 to 10,000 m^3/d depending upon hydraulic conductivities, and this when the water table throughout the TSF is maintained at overflow level. Seepage rates will

[67] CEAR #773, *Hearing Transcript Volume 5: July 26, 2013 Topic-Specific Session on Geology and Hydrogeology* p.172.
[68] CEAR #773, *Hearing Transcript Volume 5: July 26, 2013 Topic-Specific Session on Geology and Hydrogeology* p.92.

likely be lower and subject to fluctuations when climatic variables such as precipitation and evaporation control water drainage of the facility; and,

- consider a strong likelihood that for average meteorological conditions and without mitigation measures the proponent will not be able to maintain all the tailings in a submerged condition, thereby establishing local hydrogeological conditions favourable for generation of acid mind drainage.

In its closing remarks submission NRCan reiterated these recommendations, and added the following: [69]

- the Panel should consider three of NRCan's modeling scenarios to 'gain a better appreciation of the effects of tailings conductivity estimates on TSF seepage model predictions';
- the Panel should not rely on the proponent's total seepage flux estimate and seepage recovery efficiencies in the EIS, including as key inputs to the proponent's site water balance and water quality models used in the assessments of environmental effects; and,
- the Panel should ensure that the proponent is committed to the application of criteria put forward for the separation of potentially from non-potentially acid generating materials and to execute the planned adaptive management measures upon observing unpredicted and adverse monitoring trends.

It is to be remembered that NRCan restricted its model to only the TSF footprint, and accepted the hydrogeological data values that it could find in the proponent's work. This has unfortunate limitations concerning the overall predictions made by NRCan since, as Watterson has shown, the hydrogeologic database for the TSF impoundment is seriously limited, including the lack of any borehole data within the basin area of the TSF footprint.

As a result, Watterson concluded neither the proponent's nor NRCan's model fully accounted for potential high-flow zones in glacio-fluvial sediments or within highly fractured basalt intervals. The result is that both models potentially seriously underestimate the existence of preferential groundwater flow pathways and, consequently, underestimate the risk to fish and fish habitat.

[69] CEAR #1123, Submission to the Panel of Closing Remarks from Natural Resources Canada

Watterson highlighted a few key deficiencies in the proponent's predictions:

- as the proponent did no borehole drilling within the 12 km^2 central basin area of the TSF footprint, no representative hydrogeologic data were used in the modeling, with the result that there remains significant uncertainty as to the thickness and continuity of the underlying till layer and, as a consequence, uncertainty about rates and volumes of TSF seepage that could escape the embankment foundation and central basin area into the underlying groundwater;

- packer and slug test data were inappropriately used in the groundwater modeling instead of the available aquifer test data;

- complex hydrostratigraphic units were lumped into four (BGC) or five (KP) units to model the entire area;

- all overburden (including basalt flows) combined into one 'till' unit;

- the non-conservative *k* value used for in the proponent's modeling of the 100 m upper basalt layer is two orders of magnitude lower than the geometric mean of the measured conductivities from boreholes on the site;

- insufficient data density or knowledge of fractures to support use of the proponent's numerical "continuum" (porous media) model, which only provides estimates of "average" solute travel time and does not account for flow through preferential pathways;

- non-conservative sensitivity analyses based only on +/- 5X (1/2 order of magnitude) variation in conductivity values that, additionally, were not based on observed data and did not conform to standard practice of using 1 or 2 standard deviations from the mean and rationalizing the selection or the value used;

- the solute transport model results are based on *k* values for overburden and bedrock that are 2 orders of magnitude lower than field data;

- the environmental effects of seepage through ground water into surface water receptors such as fish and fish habitat was not evaluated by the proponent;

- no analysis of seepage impacts beyond 100 years was provided; and,

- no data gap or limitations analysis.

Dr. Leslie Smith was requested by the Panel to present an independent assessment of the information relating to the prediction of seepage flow rates from the TSF. Smith found both Taseko's and NRCan's modeling approaches to be valid and confirmed that the NRCan base case model 'provided a useful and conservative estimate of foundation seepage', and that the likely real seepage from the TSF would be closer to the 100 L/s upper range estimated by NRCan.

It is important to note, however, that Smith cautioned that he did not review individual borehole logs and, moreover, he 'accepted without review' the following assertions of the proponent upon which he based his analysis:

- hydrogeological field investigation in the vicinity of the TSF provided representative results;
- reliable numerical estimates of the hydrogeologic parameter values were obtained from *in situ* testing;
- there is no evidence to suggest that faults zones have a hydraulic conductivity substantially greater than the surrounding bedrock, and therefore they do not represent distinct hydrogeologic features; and,
- the water balance for the TSF is in surplus, with water available to maintain a two metre water cover on the TSF at closure. [70]

Relying on the proponent's existing hydrogeologic baseline characterization is likely to be non-conservative because, as Watterson and NRCan observe, the hydraulic conductivities among rock units vary by several orders of magnitude, while the proponent examined the sensitivity of its predictions by only one half order of magnitude.

The B.C. Ministry of Energy and Mines ("**MEM**") reviewed the seepage modeling done by the proponent and NRCan, and reached the following conclusions: [71]

- there are large uncertainties in seepage model predictions 'irrespective of the modeling approach taken (NRCan vs. Taseko)';
- there is a large uncertainty with the present/thickness of till within the tailings facility to limit seepage;

[70] CEAR #668, *Independent Technical Review of Seepage Predictions for the Tailings Storage Facility* p.2
[71] CEAR #787, *Supplementary Review Comments submission to the Panel from the British Columbia Ministry of Energy and Mines* p.4

- it is uncertain whether hydraulic conductivity could be sufficiently enhanced over the large TSF area to meet (or exceed) Taseko's modeled conductivity;
- there is a large uncertainty with TSF seepage estimates; and,
- approach taken by the proponent is not conservative; significantly more seepage would occur from the TSF.

MEM subsequently modified slightly its comments in the July 30 memo (CEAR 787) in response to a challenge by the proponent to review its findings on the basis of new evidence presented at the hearings.

In the revision MEM noted the following: [72]

- MEM's concerns were not with the proponent's modeling methodology, but with the level of information presented by the proponent concerning the presence, thickness and hydraulic conductivity of the foundation materials because the sensitivity analysis results were sensitive to changes in the conductivity values such that by applying a 5x factor to the *k* value increased seepage rates by 4x which would be above the values determined by NRCan and Smith;
- MEM does not believe that the current analysis resolves the uncertainty related to the appropriate seepage rate with the current information that is available, and that a change in the seepage rates could have important implications to TSF seepage management, water treatment requirements and the ultimate water quality in Fish Lake and its tributaries;
- MEM believes that without additional water quality modeling the effects to Fish lake remains uncertain; and,
- the ability of the proponent to protect adverse effects to Fish Lake remains uncertain.

It is important to note that the main message of MEM's assessment as summarized above is unchanged in the revised comments, although some words were dropped or changed to respond to the proponent's concerns:

[72] CEAR #873, *Response from the British Columbia Ministry of Energy and Mines to McMillan LLP, counsel for Taseko Mines Limited providing comments on the New Prosperity Project and its environmental effects*

- the adjectives 'significant' and 'large' in describing the uncertainty MEM found in the above conclusions were eliminated;
- MEM's stated ability to evaluate the proposed groundwater capture system using current information was changed from 'not possible' to 'difficult'; and,
- it remained 'uncertain' about the proponent's ability to collect the expected volume of seepage from the TSF and to effectively treat water to maintain Fish Lake water quality rather than the project presenting 'significant environmental risks' due to the uncertain ability to effectively collect and treat water.

Finally, MEM's original conclusion that,

> "...it is unlikely that the project can be developed as currently designed without adverse effects to the water quality of Fish Lake and its tributaries from TSF seepage. Even with expensive and long-term measures to mitigate TSF seepage, the protection of Fish Lake water quality may not be assured."

was changed to read,

> "...there remain uncertainties around the ability to limit and collect the expected volume of seepage from the TSF, and the ability to effectively treat water to maintain water quality in Fish Lake and its tributaries This leads MEM to conclude that, as detailed in the EIS and supporting documents, the ability to prevent adverse effects to Fish Lake and its tributaries form a water quality perspective is uncertain."

In our view, the main conclusions by MEM have not substantively changed, and the Panel should consider the texts in light of the Precautionary Principle in interpreting these (and other reviewers' comments where findings are cautiously worded).

5.2.4.4 Conclusions About Seepage Risks

The reviews conducted by NRCan and Watterson show that the proponent's entire assessment of groundwater impacts and seepage risk is seriously flawed, and as a result the proponent substantially underestimates the potential impacts from the project on the environment.

All the proponent's estimates of groundwater baseflow impacts are significantly lower than what site conditions reasonably indicate are probable, and all estimates of seepage migration rates and concentrations are significantly below more realistic values.

Because of the lack of any directly measured hydrogeologic data for the rock units underlying the TSF, and the need to rely on data extrapolated from elsewhere on the site (which was later simplified), all modeling results remain highly uncertain.

At the end of the hearing process, it is evident that the uncertainties respecting the volumes and rates of TSF seepage that would move into the receiving environment are significant. Contaminated pore water from the impoundment will, in all probability, move in much greater quantities and at much faster rates than predicted by the proponent.

Attempting to place quantitative values for the rates and volumes of seepage escape into the shallow and deep groundwater systems remains at this point speculative at best. NRCan's closing remarks make it clear that there are limitations with the modeling approaches used by the proponent relative to NRCan's approach, and because different modeling methodologies were used, the estimates from the models 'should not be weighed equally by the Panel regardless of their actual values.' [73]

NRCan also notes that because the seepage analyses are unreliable, their use in the proponent's water balance model and water quality models should not be relied upon. In other words, none of the models constructed by the proponent to determine the project's impacts on water quality and aquatic biota are reliable.

5.2.5 Mitigation

5.2.5.1 Introduction

The proposed mitigation measures to address the impacts on Fish Lake from the mine and preserve the resident, baseline aquatic ecosystem in perpetuity are focused on two main areas:

- preventing contaminated seepage from all sources from entering the Fish Lake system; and,
- maintaining sufficient water quality and quantity in the Fish Lake recirculation system.

The proponent plans to control the flow of contaminated seepage from the TSF by a system of collection ditches, sediment ponds, and interception wells. Measures for the maintenance of the Fish Lake ecosystem include a recirculation scheme to pump lake

[73] CEAR #1123, *Submission to the Panel of Closing Remarks from Natural Resources Canada*

outflow water back into upstream tributaries that flow into the lake, and to maintain water quality so that it meets BC water quality objectives. The key question for the Panel is will these measures be effective in the long-term, and are they economically feasible?

The evidence on record for the first question is that the proposed measures have not been demonstrated to be technically feasible, or even conceptually realistic. More importantly, NRCan has concluded that the proponent's 3-D regional numerical model and the TRM groundwater flow models should be disregarded, including studies of interception well requirements and of tailings pore water migration toward Big Onion Lake which are based on these models. [74]

The evidence on the second question is that the EIS is completely deficient in terms of gaining any reasonable understanding of the costs of the proposed mitigation works, generally considered to very expensive by reviewers.

These conclusions are explained below.

For mitigation measures to be meaningful they need to be based on an informed and transparent understanding of what the likely impacts of the project will be. Where impact analysis leads to questionable or uncertain conclusions about what might occur (and how significant they might be), any proposed mitigation will be characterized by some degree of uncertainty as to how applicable and how effective it is likely to be, and whether it is even economically feasible to implement.

Risk increases with the degree of uncertainty posed. The soundness of the proposed mitigation, in other words, is dependent in the first instance upon the reliability of the predictions which, in turn, are completely dependent upon the accuracy of the baseline information used in the analysis, along with the appropriateness and rigour of the analytical methods used to generate the predictions. If either of these two precursors is substantially deficient, so also must be the reliability of the proposed mitigation to be technically and economically successful.

For the New Prosperity mine, as the evidence on record demonstrates, substantial deficiencies in the baseline knowledge of the site hydrogeology and groundwater conditions, coupled with the above-described problems with the proponent's predictions of impacts to Fish Lake water quality and biota, place any mitigation measures automatically on a shaky foundation.

[74] CEAR #1123, *Submission to the Panel of Closing Remarks from Natural Resources Canada*

5.2.5.2 Seepage Mitigation

Any determination about the proponent's ability to maintain Fish Lake as a functioning aquatic ecosystem must rest on the demonstrated adequacy of the proposed monitoring and mitigation plans. Sufficient detail about these must be available to determine that the plans are both technically and economically viable.

As for baseline site characterization and hydrogeological assessment, the proponent's monitoring and mitigation plans do not provide the information requested in the *Guidelines* to meaningfully evaluate them at this stage of review. Nor do they demonstrate technical and economic viability.

The proponent proposes that the layer of low conductivity till that covers the impoundment area will be sufficient to act as a liner that retards the movement of pore water into the underlying stratigraphy. It is not clear that the till is sufficiently thick or extensive that an effective liner is assured, nor is it clear where sources of borrow material might be for this purpose.

The effectiveness of the till as a liner in the TSF is an issue that requires proof of concept at the EA stage. Insufficient drilling has been done to provide such proof. This is serious issue and the burden of demonstrating the technical feasibility of co-disposal and PAG rock with tailings lies with the proponent.

It should also be noted that the proposal for co-disposing PAG rock with tailings in the impoundment is somewhat novel and untried. NRCan verified that the approach was relatively new and that they were not aware of any monitoring data that might demonstrate effectiveness of this method. [75]

The proponent's overall approach to mitigation is to proceed with the project, wait until impacts (such as contaminated seepage from the TSF) are detected, then figure out where and how to implement the mitigation.

Given the significant data gaps and lack of knowledge regarding predicted water quality, potential groundwater and seepage flow pathways, and so forth, this approach results in such overwhelming uncertainties for the assessor that many critical questions simply cannot be answered. How, then, in the face of such uncertainty is a sound determination about viability of the proposal reasonably made?

[75] CEAR #774, *Revised Hearing Transcript Volume 6: July 27, 2013 Topic-Specific Session on Geology and Hydrogeology* p.36.

Seepage through and under the main embankment is the main contaminant risk to Fish Lake. The proponent proposes to collect seepage that escapes the impoundment using seepage recovery ponds and groundwater interception wells. The proponent estimates that 50% of the seepage passing under the dam will be captured in the seepage recovery ponds, along with 100% of the seepage passing through the dam. In addition, the groundwater pumping wells will have a 60% capture efficiency of groundwater in the shallow groundwater zone. Total recovery, therefore, equals 80% of the total seepage passing under the dam as captured by either the seepage ponds or the groundwater collection wells.

Several reviewers have questioned the proponent's assumed capture efficiencies. Given the hydrogeologic complexity of the units in the Fish Creek watershed, as well as limited hydrogeologic data in the area between the lake and the impoundment, there are significant uncertainties about how well the proponent could design, install and optimize a groundwater well collection system before Fish Lake was affected.

Nonetheless, assuming for the moment the proponent's stated capture efficiencies, the table below sets out the comparative seepage rates as provided by Taseko and NRCan, and as assumed in the Source Environmental Associates WQ model. [76]

Some confusion has resulted from the fact that NRCan predicted seepage under the dam while KP predicted seepage both through and under the dam. The table below shows that the NRCan estimate for seepage passing under the dam is about 6x higher than the estimates by KPL (and BGC) for seepage under the dam, and about 6x higher for seepage going to Fish Lake.

[76] CEAR #708, Written Hearing Submission filed by the Tsilhqot'in National Government expert Dr. Rina Freed – Review of the Environmental Impact Statement and Supplemental Information Responses

Table 1. Key Seepage Assumptions for the SEA GoldSim Water Balance Model [77]

Parameter	Seepage Rate (L/s)			Receptor
	EIS	NRCAN (base case)	NRCAN (cons.)	
Total Seepage, Main Embankment	28.1			Seepage ponds; Fish Lake, capture wells
Seepage through Main Embankment; 65% of total	18.3			Seepage Ponds
Seepage under Main Embankment (KPL); 35% of the total	9.8	59	69.4	Seepage ponds; Fish Lake, capture wells
Seepage to Fish Lake from TSF, (bypasses ponds and capture wells)	2.4	11.8	13.9	Fish Lake

It follows that there is a significantly increased risk to Fish Lake if the NRCan estimates of seepage are to be considered. Groundwater collections wells are to be installed if groundwater monitoring wells detect seepage in rising concentrations. With respect to implementing water treatment and having in place an 'optimized' seepage detection and collection system, the Panel heard evidence that a reasonable time-frame for launching the mitigation program proposed was in the order of years, not months.

The Watterson submission identifies the following problems with the proponent's approach to monitoring and mitigation of the seepage issues:

- only general information regarding the groundwater monitoring program is provided, with no well designs or maps showing proposed monitoring locations;
- no plans to avoid, mitigate or compensate for contaminated groundwater have been developed;
- a wide range in expected seepage control efficiency has been presented in several reports, but none appear to incorporate a realistic knowledge of site hydrogeology, potential groundwater flow pathways or conservative estimates of hydraulic properties;

[77] CEAR #708, Written Hearing Submission filed by the Tsilhqot'in National Government expert Dr. Rina Freed – Review of the Environmental Impact Statement and Supplemental Information Responses, p.7

- no assessment has been done of potential impacts on receptor lakes and streams, fish and fish habitat;
- there are no detailed plans for follow-up monitoring or to evaluate seepage control system effectiveness;
- mitigation of seepage impacts may be needed in perpetuity; and,
- no discussion of data gaps or limitations is included in the monitoring and mitigation plan discussion in the EIS.

The Watterson report concludes that the proponent does not have an adequate knowledge of the complex site hydrogeology and potential groundwater flow pathways to effectively design a seepage mitigation program, and that this is borne out by the lack of information concerning realistic monitoring or mitigation strategies, raising significant uncertainty about the proponent's ability to protect Fish Lake.

MEM reached the similar conclusions about the proponent's ability to effectively mitigate the seepage risk: [78]

- the proposed groundwater capture system is conceptual, and it is not possible to assess the effectiveness of the groundwater pumping/mitigation system to capture at least 70% of the seepage that would otherwise report to Fish Lake; and,
- there is significant potential for fracture-controlled seepage flow which increases the uncertainty about effectiveness of mitigation.

The Panel's independent expert Dr. Leslie Smith noted that seepage interception via pump-back wells would be challenging at this site, for the following reasons:[79]

- the generally low hydraulic conductivity of the basalts;
- the heterogeneity of the basalts and the likely occurrence of preferential flow paths that may not be easily identified during site investigation;

[78] CEAR #787, *Supplementary Review Comments submission to the Panel from the British Columbia Ministry of Energy and Mines* p.4.
[79] CEAR #751, *Exhibit - 22: Dr. Leslie Smith's Independent Technical Review of Seepage presentation at July 26, 2013.*

- the considerable length of the Main and South embankments (4 km, 3 km);
- the need to incorporate a monitoring and action plan to defend against preferential flow paths that may not be detected until operations have begun; and,
- the possibility that it may take many months of water level and groundwater quality monitoring and system adjustments to achieve a high interception efficiency.

5.2.5.3 Mitigation of Fish Lake Impacts

The proponent predicts that, without mitigation, there will be impacts to Fish Lake as a result of seepage from the TSF. These are to be addressed through the BioteQ proposal for treating Fish Lake water.

The proponent also predicts that for the post-closure discharge of mine water from the site via the open pit there 'may' be water quality issues that will need to be addressed through treatment. No details of this water treatment have been described--the proponent says this is to be done during closure when pit water quality is better defined.

With respect to water quality in the TSF and the pit lake, the proponent stated the following: [80]

- there 'may' be significant adverse impacts to water quality;
- monitoring will reveal when action levels may be required;
- choosing a treatment option at this stage would be 'premature';
- a 'commitment' to the implementation of adaptive management plans will ensure 'that mitigation will take place before water bodies affected by the project experience any significant adverse environmental effects'; [81]

[80] CEAR #494, *Responses to the Supplemental Information Requests from Taseko Mines Limited, Supplemental Information Request 15/19/25/49 – Lake Productivity, Mitigation and Adaptive Management*, Response to IR#15e, p. 15-7

[81] CEAR #494, *Responses to the Supplemental Information Requests from Taseko Mines Limited, Supplemental Information Request 15/19/25/49 – Lake Productivity, Mitigation and Adaptive Management*, Response to IR #49

- there will be 'ample time' to monitor the tailings and pit lake water 'before final decisions are made regarding what type of water treatment facility (if any) is needed.'

Opposite views on these positions were presented by a number of reviewers, who pointed out that there was little technically defensible information presented to back up the claims. Most if not all reviewers predicted that significant adverse impacts to lake water quality are likely to occur and that water treatment should be considered as an integral component of the mine plan.

Dr. Kevin Morin noted the following deficiencies and uncertainties with respect to the proposed mitigation:[82]

- there is substantial ambiguity in the EIS around which location(s) would be treated, when treatment would have to start, how long treatment would be needed, whether full-scale treatment would be successful, and whether the cost of treatment would render the project economically unfeasible or a burden to the TNG and taxpayers;

- In terms of technical feasibility, the proposed treatment systems have not been shown to be successful at lowering aqueous concentrations of some contaminants to safe levels in full-scale, operating treatment plants at mine sites;

- there are no reasonable predictions of annual and cumulative costs for water treatment, which may have to be implemented soon after mining starts;

- Taseko has provided estimates for the reverse osmosis treatment with annual costs up to $14M, and costs for first 100 years at up to $1.5 B.

[82] CEAR #653, *Written Hearing Submission filed by the Tsilhqot'in National Government - Review of Geochemical Source Terms, Water Quality, Metal Leaching and Acid Rock Drainage*

MESL identified an array of problems with respect to mitigation of potential impacts to Fish Lake: [83]

- the proponent acknowledged that there was no evidence of a recirculation system for a wilderness lake being implemented at this scale;[84]
- recirculated Fish Lake flows likely inadequate to support spawning in low-flow years;
- winter flows in Upper Fish Creek will be insufficient to meet winter instream requirements for trout;
- inability to assess variability because baseline information on variability deficient and limited in temporal distribution;
- no sensitivity analysis presented that examined recirculation performance under realistic scenarios; and,
- the proposed Fish Lake water treatment system is conceptual only, with no details about effectiveness and no demonstrated precedents, implying that the technologies to be used are experimental and likely technically unachievable.

Other identified deficiencies include:

- lag times to implement the treatment system are identified as four years once a management response is triggered by monitoring, although EC found the lag time for the proponent to respond to increasing concentrations in the lake as 'an area of uncertainty'; [85]

[83] CEAR #805, *Exhibit - 43: D.D. MacDonald presentation on Evaluation of Water Quality and Quantity Conditions in the Vicinity of the New Prosperity Gold-Copper Mine Project.* CEAR #684, *Written Hearing Submission filed by the Tsilhqot'in National Government experts D.D. MacDonald, A. Schein, and J.A. Sinclair, MacDonald Environmental Sciences Ltd. - A Review of the Adequacy of Baseline Water Quality Data and Mitigation of Mining Impacts*

[84] CEAR #494, *Responses to the Supplemental Information Requests from Taseko Mines Limited, Supplemental Information Request 15/19/25/49 – Lake Productivity, Mitigation and Adaptive Management*, Response to IR #15/19/25/49d

[85] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.141

- the proponent submitted no evidence that the proposed water treatment could achieve the stated objectives, and admitted that it could find no examples of lake recirculation precedents at this scale;
- the proponent's consultants admitted they had no experience with lake circulation; [86]
- no evidence was submitted to show that the proposed water treatments for Fish Lake mitigation, or ultimate site water discharge, would be economically achievable;
- no evidence was provided to suggest that recirculation system would not be needed in perpetuity;
- the BioteQ proposal advanced by the proponent is strictly a conceptual proposal without any evidence of its likely effectiveness in meeting the water quality criteria for Fish Lake.

Minto Mine in Yukon was cited by the proponent as a precedent for the BioteQ technology, but this was rebutted at the hearing by Jim Kuipers who observed that the Minto treatment system turned out to be inadequate for dealing with nitrate and selenium. The mine operator's method of fixing this problem was to apply for a change in the effluent criteria to allow higher discharges into the environment. As Kuipers stated,

> "I have a very hard time seeing how treatment can be reliable when it becomes a very common place thing once the water quality is determined to be less than what was originally projected to then rather than propose additional treatment, they actually propose changing the standards. And I think that is something we could almost anticipate happening at this site." [87]

Kuipers also questioned the proponent's claim of being able to treat water for selenium, stating that there are no proven viable technologies for selenium removal. No evidence for selenium removal was provided by the proponent.

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[86] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.68

[87] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.233-234.

It is a major failure, if not a fatal flaw, that at this stage of review the proponent has ignored an obvious requirement that it should demonstrate that it can meet water quality guidelines in Fish Lake with its proposed mitigation schemes. To offset this deficiency, TNG commissioned Source Environmental Associates to prepare and run such a model using cadmium as a representative contaminant of concern. [88]

The SEA model results show water quality guidelines cannot be met with the water treatment approach proposed by TML. This is because the proposed treatment capacity is not adequate to improve cadmium levels to BC Water Quality Guidelines in Fish Lake. The problem cannot be resolved with the proposed treatment scheme, even at the uppermost rate of treatment possible--100% of the recirculation directed to treatment. As a result of the TSF seepage, Fish Lake cadmium levels (and other Contaminants of Concern ["**CoCs**"]) are expected to be higher than BC Water Quality Guideline for the protection of aquatic life.

Taseko stated that the influent concentration (i.e. the predicted Fish Lake water quality) will be maintained at 75% of the Canadian Council of Ministers of the Environment ("**CCME**") guideline. There is no basis for such a claim. It is not technically possible to maintain influent concentrations at 75% of the CCME guideline for cadmium in Fish Lake. This is because the mass loadings from the TSF seepage and other sources (e.g., ore and soil stockpiles) are present and must be considered when evaluating the water quality of Fish Lake.

SEA also agreed with concerns expressed by MEM on the practicality of treatment and feasibility of the cost associated with treatment.[89] In practice, treatment plant effluent water quality for cadmium (0.001 ug/L) has not been achieved in most mining operations at the scale of the proposed Fish Lake system. Achieving such low levels of CoCs would be prohibitively costly at the treatment rates proposed.

Treatment requirements of the project include 1) Fish Lake, 2) pit lake discharges to Lower Fish Creek, and 3) seepage pond water collected. Overall, this amounts to a very large volume of water to treat, likely through three different treatment systems, and possibly pushing the proponent's costs close to or over economically unacceptable

[88] CEAR #708, *Review of the Environmental Impact Statement and Supplemental Information Responses* CEAR #802, *Exhibit - 40: Dr. Rina Freed presentation on behalf of the Tsilhqot'in National Government on Water Quality Modeling.*

[89] CEAR #541, *Revised - Letter from the British Columbia Environmental Assessment Office to the Panel Secretariat concerning comments from provincial agencies concerning the Proponent's Responses to the Supplemental Information Requests.*

margins. From the public's perspective, a substantial and potentially prohibitive financial risk would arise if the project were to proceed.

SEA concluded that long-term (i.e. perpetual) pumping should be assumed for TSF main dam seepage and groundwater recovery, recirculation of Fish Lake and seepage collection from the south and west dams. These represent significant long term liabilities. Considering the seepage management issue, long-term recirculation and water treatment proposed for Fish Lake, SEA and MEM noted that this project does not compare favourably to other operating and proposed mines in the Province of BC.

The risk assessment conducted by the proponent did not consider accidents and malfunctions related to mitigation measures for maintaining Fish Lake (recirculation, aeration etc.) and those related to water treatment of TSF seepage. These measures are the primary mitigations for the project and any accidents or malfunctions related to them could have direct effects to Fish Lake. This is a critical deficiency in the assessment of the risks to the project.

Finally, SEA noted additional concerns about proposed mitigation:

- the ore and low grade ore stockpiles have been modeled optimistically, with correspondingly increased risk to Fish Lake from these contaminant sources;

- the proposed TSF seepage liner composed of native till and supplemented with compacted borrow materials is inadequate for mitigating the effect of TSF seepage on Fish Lake. As the proponent does not intend to construct an adequate liner system to protect Fish Lake, it is not possible to conclude that the risk to the Fish Lake aquatic environment is environmentally acceptable.

Environment Canada also questioned the technical feasibility of the proposed mitigation scheme, and concluded that the recirculation program was unproven at this scale.[90] EC's literature review on the topic revealed that 'very few of the systems' reviewed are lake-sized or start from natural conditions. Additionally, there are risks and uncertainties associated with lake recirculation systems.[91]

[90] CEAR #781, *Revised Hearing Transcript Volume 7: July 29, 2013 Topic-Specific Session on Aquatic Environment* p.147

[91] CEAR #738, *Written Hearing Submission of Environment Canada (see Reference Document Number 717 for supplemental information)* p.11

EC also noted problems with some of the treatment processes identified by the proponent:

- the potential for the whole water column to go anoxic during hypolimnetic aeration;
- unknown effects of alum on coupled metal and nutrient cycling, with possible alterations to benthic community dynamics; and,
- the scale and costs of the proposed mitigation schemes, particularly given the large volumes of water and the long timeframes involved are not provided.

EC concluded that:

> "It does not appear that the Proponent has fully evaluated or described the most appropriate method of managing Fish Lake to minimize water quality impacts." [92]

and, further, that:

> "In summary, Environment Canada is concerned that the recirculation mitigation measure proposed to manage water quality and the biological productivity of Fish Lake is unproven at this scale, and may require additional intervention to ensure success. The high level of uncertainty regarding the Proponent's proposed recirculation scheme is a particular concern given the stated goal of preserving Fish Lake."[93]

NRCan corroborated the experimental nature of a perpetual pumping scheme for mitigation:

> "I've been a technical reviewer for quite a large number of mining projects in Canada over the years, and this is actually the first one where I've seen it proposed to that pumping wells operating in perpetuity." [94]

[92] CEAR #738, *Written Hearing Submission of Environment Canada.* p.12
[93] CEAR #738, *Written Hearing Submission of Environment Canada.* p.12
[94] CEAR #773, *Hearing Transcript Volume 5: July 26, 2013 Topic-Specific Session on Geology and Hydrogeology* p.124

DFO also identified the following issues with respect to the proposed mitigation system for Fish Lake: [95]

- significant uncertainty in the impacts of recirculating water on nutrient cycling and lake food web as the effects of nutrient cycling are not apparently accounted for;
- the proponent's proposed mitigation strategy for climate warming of diverting greater flows of hypolimnetic water to the euphotic zone may result in increased flows of N-deficient water to the euphotic zone, potentially enhancing N-deficiency there and restructuring food webs in ways that are not beneficial to rainbow trout.
- it is unclear that the proposed adaptive management plan could be implemented with sufficient rapidity to account for a state-shift in eutrophication caused by a non-linear loading response, and whether the timelines for remediation would accommodate the persistence of the rainbow trout population;
- there is no analysis of the impacts of the proposed nano-filtration of large volumes of lake water at extremely high rates on planktonic organisms and trophic recycling in the lake;
- although the proponent states that the water treatment system is intended to also mitigate contamination of sediments, there are no details as to how this would be done, what area would be covered, or what the impacts of the treatment would be on substrate-associated fauna, lake turbidity, and sediment-sequestered nutrient and contaminant remobilization--all of which, DFO notes, have the potential to have novel and deleterious impacts on fish habitat.

Among other things, DFO concluded that:

- there are 'clear uncertainties' about the proposed mitigation to address metal contamination in water and sediment, and their interactive effects with plankton and nutrient recycling as well as physical impacts on benthos, water turbidity and sediment-laden nutrient fluxes;

[95] CEAR #886, *Fisheries and Oceans Canada Response to Undertaking 12 (U-012): Provision of the "Technical Review of the proposed recirculation scheme of the New Prosperity Gold-Copper Mine Project on predicted effects on fish and fish habitat of the Fish Lake watershed"*

- the proposed recirculation regime may exacerbate existing N-limitations of food web production in Fish lake by recirculating N-deficient hypolimnetic waters to the inlets to maintain flows in spawning and rearing lotic habitats, and to combat the anticipated impacts of climate change on both lotic and lentic habitats in the manipulated watershed; and,

- the information presented by the proponent regarding the proposed recirculation scheme raises 'substantial uncertainty in the future habitat and fisheries productivity of Fish Lake under mine development, and the ability of the lake system to support a self-sustaining rainbow trout population.'

B.C. Ministry of Energy and Mines ("**MEM**") identified the following concerns and uncertainties: [96]

- no detailed rationale provided in the additional information as to how the conclusion on high effectiveness of the mitigation plans and low residual effects were reached;

- 'significant adverse changes to water quality in Fish Lake and its tributaries will occur in the future even if an effective groundwater capture system could be implemented (which is uncertain)';

- water treatment should be considered as a primary mitigation requirement and not a contingency strategy; and should be considered to be required during mining, not post-closure;

- water treatment and pumping of Fish Lake water and TSF seepage would be required in perpetuity;

- the proposed water treatment system has 'not necessarily assumed the worst case scenario', and that concentrations of contaminants in the uncollected TSF seepage groundwater plume would continue to increase over time during mine closure as the groundwater plume migrates to Fish Lake' and eventually reaches the lake;

- the full effects of the groundwater plume may not occur until well past the 100 year post-closure period modeled by the proponent;

[96] CEAR #787, *Supplementary Review Comments submission to the Panel from the British Columbia Ministry of Energy and Mines*

- the proponent did not provide additional information requested by the Panel to demonstrate that the proposed water treatment systems would be effective, and no information or evidence of the achievability of treatment efficiencies has been provided;

- no analogue information on influent/effluent concentrations from other mines or bench/pilot scale data has been provided;

- the effectiveness of the proposed BioteQ system to mitigate eutrophication of Fish Lake is uncertain;

- the proposed water treatment technologies are not widely used in mining applications and none are in use in BC mine sites; these are complex treatment systems and not conventionally used given their high costs and known challenges for full-scale implementation, maintenance issues, large amounts of chemicals and reagents, and reliability;

- the proponent's risk assessment did not consider accidents and malfunctions related to the critical mitigation measures for maintaining Fish Lake (recirculation, aeration etc.) and those related to water treatment of TSF seepage; [97]

- costs of the proposed treatment system are considered to be very high cost, and the full costs of treatment should fully evaluated by the proponent at the EA stage;

- the amount of financial security required to fund this scale of long-term liability would be 'very high' and likely is unprecedented in the province;

- the details and costs of additional water treatment needed for pit discharge have not been provided.

In one submission the MEM stated its concerns that the uncertainties about mitigating TSF seepage and to effectively and economically mitigate impacts to Fish Lake were sufficient to conclude that the project likely could not be built without adverse impacts to Fish Lake,

[97] CEAR #655, *Written Hearing Submission filed by the British Columbia Ministry of Energy and Mines*

"MEM believes that the project presents significant environmental risks due to the uncertain ability to limit and collect TSF seepage and to effectively and economically treat water to maintain water quality in Fish Lake and its tributaries.

MEM concludes that it is unlikely that the project can be developed as currently designed without adverse effects to the water quality of Fish Lake and its tributaries from TSF seepage. Even with expensive and long-term measures to mitigate TSF seepage, the protection of Fish Lake water quality may not be assured." [98]

5.2.5.4 Fish Habitat Compensation

The proponent has advanced two separate fish habitat compensation schemes to offset fish habitat losses from the project. These schemes were reviewed by Dr. Craig Orr for TNG, who found:

- an unacceptable level of uncertainty in the baseline dataset and 'shaky' assumptions as to numbers of fish present, habitat characterization, and basic ecological conditions in the lake;
- faulty assessments of trout biomass and winter habitat conditions;
- low sampling of trout diet;
- outdated field surveys;
- questionable measures of productive capacity including how the measures were derived (habitat evaluation procedures, habitat suitability indices, etc.);
- faulty assumptions and modeling around stream flow duration, stream flow augmentation, and maintaining access to the lake;
- predicted flows reductions of 86% not adequately considered relative to potential impacts as per federal Fisheries Act flow thresholds;
- deficiencies in the proponent's plans to salvage rainbow trout;

[98] CEAR #787, *Supplementary Review Comments submission to the Panel from the British Columbia Ministry of Energy and Mines* p.6¨ Note that these conclusions were modified subsequently in response to concerns by Taseko, as discussed on pp. 26-27 above.

- poor consideration of the importance of genetic distinctions in upstream and downstream trout populations;
- deficiencies in calculations of habitat credits accruing through mitigation offsets, assessments of values of proposed replacement habitats (e.g. limiting factors), and plans to restore and enhance fish passage;
- technically invalid compensation plans to augment flows in habitats that are normally dry and not used for months by fish that reside in Fish Lake;
- deficiencies in the flow augmentation scheme with respect to lack of contingencies for catastrophic failures and the need for continued funding and maintenance;
- inappropriateness of most of the compensation measures which are to occur outside of the Fish Lake watershed and would not help maintain the viability of the rainbow trout population in Fish Lake;
- gross inadequacies of proposed riparian habitat replacement in that much of the proposed riparian reclamation will only occur after mine closure, leaving nearly two decades of inadequate riparian protection of fish habitat;
- overstated and inadequately supported benefits of hatchery augmentation; with no costs of the programs provided contrary to the EIS Guidelines; and,
- insufficient detail about the monitoring programs and adaptive management plans such that they cannot be meaningfully evaluated. [99]

Dr. Orr's overall conclusion about the proponent's fish habitat compensation programs states,

> "Overall, the continued function and resilience of the affected watersheds would likely be severely impacted, but by how much is impossible to say, given the overwhelming inadequacies identified in our review of baseline data and mitigation assumptions (pre- impacts), and of replacement habitat and other proposed mitigation measures (post- impacts). The Proponent has not met the

[99] CEAR #681, *Written Hearing Submission filed by the Tsilhqot'in National Government expert Craig Orr, Watershed Watch Salmon Society – A Review of the Adequacy of Baseline Fish and Fish Habitat Data and Proposed Mitigation of Mining Impacts*

burden of proof demonstrating that the New Prosperity Mine would not cause significant adverse environmental effects; according to proper scientific methodology and the precautionary principle, there is not enough information to demonstrate that the project, should it proceed, can successfully mitigate substantial degradation and destruction of fish habitat that it will cause. Huge uncertainties remain with assumed and/or assessed impacts as well as the future function and value of fish habitat." [100]

5.2.6 Will the Pit Drain Water From Fish Lake?

NRCan and others raised the notion that there is likely a good hydraulic link between Fish Lake and the pit, and that the groundwater withdrawn by pit dewatering wells during mining will originate in Fish Lake which is close at hand.[101]

Unfortunately, the proponent conducted no additional borehole drilling or aquifer tests to properly test out the hydrogeologic character of the intervening ground. Nor did it do any work to validate its interpretation of the single 1994 pump test that the results were spurious, leading the proponent to reject the data.[102]

NRCan took the opposite view--that the single 1994 pump test demonstrated a highly effective aquifer through which significant volumes of water are moving, and the pit would draw water from Fish Lake and not from groundwater 'storage' as the proponent had claimed. Dr. Eberhardt, the Panel's independent expert, agreed that NRCan's view was a possible interpretation.

NRCan's view is that the construction of 545 m pit within 500 m of Fish Lake will likely result in a reversal of hydraulic gradients that deliver groundwater to the lake, with flow leaving the lake and entering the underlying geologic units, with the potential to flow to the pit. NRCan disagrees with the proponent about the significance of these fluxes between the surface water system and the groundwater system, particularly as the debate is hindered by the lack of authoritative data (i.e. pump tests);

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[100] CEAR #681, *Written Hearing Submission filed by the Tsilhqot'in National Government expert Craig Orr, Watershed Watch Salmon Society – A Review of the Adequacy of Baseline Fish and Fish Habitat Data and Proposed Mitigation of Mining Impacts* , p. 29

[101] CEAR #648, *Written Hearing Submission and Presentation filed by Natural Resources Canada (Received July 19, 2013)* p.15

[102] CEAR #648, *Written Hearing Submission and Presentation filed by Natural Resources Canada (Received July 19, 2013)*

> "I think the proponent has been very remiss in that respect in disregarding the data from the 1994 pump text and not proceeding with a new test." [103]

NRCan also notes that the proponent estimates of seepage from Fish Lake induced by the pit drawdown amounts to 53 m^3/d relative to the 2900 m^3/d for pit dewatering. In NRCan's view this is potentially a serious underestimation, and NRCan provides evidence that indicates that the upper bound of seepage from Fish Lake could equal the dewatering rate of the pit (cited in some locations at 2900 m^3/d and in others at 11,000 m^3/d). NRCan recommends that the Panel consider that the rate of seepage from the lake will be equivalent to the maximum dewatering rate used during mining.

The proponent concluded that:

> "As demonstrated in both the review of the 1994 pumping test data, and in the geologic cross sections showing hydraulic conductivity results by test interval, there is no evidence to support any significant direct hydraulic connection between the lake and groundwater flow system tested by the pumping well." [104]

The correct interpretation of this statement is that there is no evidence because the proponent did not bother to look for any. This is not a defensible position for this key aspect of the proposal. The proponent has known for some time that the hydrogeologic characterization of the ground between the lake and the pit would be a key element in the assessment of this project, and it was incumbent on the company to prove its case and do the work necessary to get useful data to support its position. This it failed to do, arguing instead that it did not need to do this, even though the Panel had recognized the importance of the information and directed the company to consider doing it. The alternative, in the Panel's view, was that it would rely on the 1994 pump test data.

Instead of doing the aquifer tests which, consistent with the Precautionary Principle, would have been the right thing to do in this situation, the proponent then also rejected the Panel's other option. It dispensed with the only limited data it had (i.e., the 1994 pump test) because the results did not support its view of little or no hydraulic connection between the lake and the pit.

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[103] CEAR #773, *Hearing Transcript Volume 5: July 26, 2013 Topic-Specific Session on Geology and Hydrogeology* p.98

[104] CEAR #494, *Responses to the Supplemental Information Requests from Taseko Mines Limited Regarding the Environmental Impact Statement for the New Prosperity Gold-Copper Mine Project, British Columbia*, Response to SIR 10/11

Watterson Geoscience's submission supports the NRCan conclusion, noting that the effects of pit lake dewatering on Fish Lake, including induced drawdown and possibly slope stability issues, are significantly underestimated, as NRCan has demonstrated that the sediments between them are much more conductive than presented by Taseko. Hence, risks to fish and fish habitat from other sources of groundwater contamination, such as from the ore and waste rock stockpiles and the open pit, are correspondingly greater than proposed by Taseko.

The Panel also had Dr. Eberhardt review issues related to interactions between the pit and Fish Lake. Unlike Dr. Smith's review of the TSF seepage issues, Dr. Eberhardt reviewed all the baseline geologic information, including drill and borehole logs. His submission corroborates the notion advanced by Watterson and NRCan that high conductivity zones exist between the lake and the pit. Specifically, he found that: [105]

- logs for the boreholes located between the South pit wall and Fish Lake consistently indicate the presence of two significant intervals of sand and gravel varying in thicknesses from 10 to 25 m each, suggesting the presence of significant confined aquifers in this zone;

- equating the hydraulic conductivities of the fault zones to those of bedrock, as done by the proponent, was counter to most experience involving large fault zones similar in scale to the QD and East Faults, where the fracture zones adjacent to the fault gouge often serve to 'significantly enhance the permeability parallel to the fault';

- such faults may be in direct hydraulic contact with the confined artesian aquifer at the overburden/bedrock contact, and there is precedence where such a scenario 'significantly limited' depressurization efforts due to recharge to the confined aquifers provided by faults;

- all geotechnical and hydrogeological field investigations were carried out without consideration being given to the need to preserve fish Lake;

- there is an absence of dedicated investigation data targeting specific questions regarding what potential impacts if any the development of the open pit may have on Fish Lake;

[105] CEAR #667, *Dr. Erik Eberhardt's Submission to the Panel - Independent Geotechnical Review of the Proposed New Prosperity Gold-Copper Mine Project Preliminary Open Piit Design* p.2

- dedicated drilling and testing of the hydrogeological characteristics of the rock types within and adjacent to the QD and East Faults has not been carried out, or to the connection between the pit and the lake, such structures representing potentially significant sources of groundwater into the pit area and these faults may in direct hydraulic contact with the confined aquifer at the overburden/bedrock contact;

- equating the hydraulic conductivities of the fault zones to those of the bedrock 'would be counter to most experiences involving large fault zones similar in scale to the QD and East Faults';

- because of the potentially weaker nature of the rocks in the QD and East fault zones, a deep-seated, large failure there could extend further back from the pit crest that a comparable large slope failure in the southeast wall and, because the nature of the deposits between the faults beyond the pit limits has not been properly investigated it is uncertain whether any large failure (fault zone or southeast wall) would extend far enough to breach Fish Lake;

- the proponent's estimate of pit inflows may be underestimated since it does not appear to account for the potentially 'sizable inflows' that may occur along the north and south wall intersections with the QD and East Faults;

- despite the proponent's statement that the majority of the groundwater in the pit area is coming from 'isolated sand and gravel seams' that 'are generally thin and are not interpreted to be continuous across the site', the drill-hole data shows these sands and gravel beds to be on the order of 10-25 m thick and continuous across several hundred meters between the southern pit limit and Fish Lake, before pinching out further to the south, suggesting the presence of significant confined aquifers in this zone; [106] [107]

- a targeted investigation of the geotechnical and hydrogeological characteristics of the QD and East Faults 'is critical to understanding the potential effect these geologic structures may have on the open pit hydrogeologic and that of the overburden material between the south pit wall and Fish Lake.' Such drilling and

[106] CEAR #667, *Independent Geotechnical Review of the Proposed New Prosperity Gold-Copper Mine Project Preliminary Open Piit Design*, p.17

[107] CEAR #667, *Independent Geotechnical Review of the Proposed New Prosperity Gold-Copper Mine Project Preliminary Open Piit Design*, p.2

testing would have determined to what extent these faults are acting as flow conduits for recharging the aquifer in the pit area;

- statements made in the EIS to the effect that the interaction between the lake and the groundwater table has been assessed with respect to pit wall design 'are not strongly supported';

- there is a risk that slope displacements occurring during mining could potentially generate 'deep vertical tension cracks' behind the pit crest and that these could potentially breach the water control dams or Fish Lake directly;[108]

- insufficient assessment has been done to determine whether it is possible for a vertical conduit to develop in response to mining and pit slope failure;

- the proponent's failure modes analysis contains inconsistencies in ratings between earlier and more recent versions, with no explanation provided; and very few details provided in either the 1998 or 2009 assessments justifying the ratings assigned;

- ratings of 'extremely low' for scenarios of excessive seepage from Fish Lake and for 'catastrophic draining' of Fish Lake are optimistic given the uncertainty arising from the lack of targeted investigations to determine the properties and recharge characteristics of the aquifer; and,

- Taseko's conclusion that, based on packer testing, single well response tests, and core logs from exploration and geotechnical drilling, there is no evidence of a conduit that could provide a direct hydraulic connection between the pit and the lake is 'reasonable' according to Eberhardt (with the caveat that it is based on pre-mining conditions).

The above list of information deficiencies raises serious doubt with respect to the proponent's view that there is no significant hydraulic link between the pit and Fish Lake. While Eberhardt comments that the proponent's conclusion on this last point is 'reasonable', it is hard to place much credence in this, for the following reasons:

- the proponent did not develop any hydrogeologic data to assess the potential for a hydraulic link;

[108] CEAR #667, *Independent Geotechnical Review of the Proposed New Prosperity Gold-Copper Mine Project Preliminary Open Piit Design*, p.3

- there is no directly relevant existing information from the proponent that suggests such a link is not present (drill hole logs and packer tests were not conducted in the zone of interest);

- the proponent rejected the only pump test results available as spurious, even though NRCan demonstrated that there is a valid interpretation of the results that would indicate an effective hydraulic link is in place; and,

- Eberhardt, NRCan and Watterson agree on an interpretation of nearby hydrogeologic boreholes that several substantive layers of highly permeable glacio-fluvial material extend from the pit under the lake, easily providing such a conduit.

The proponent's belief that there is no or negligible hydraulic connection between the pit and the lake is simply not credible. The belief is not supported by any evidence but, rather, is based entirely on inference and, as a result, should not be entertained by the Panel as the likely explanation of groundwater conditions for that zone. Instead, as the evidence of NRCan, Eberhardt and Watterson has shown, there is a high probability of an effective hydraulic connection between the lake and the pit, and a very real risk that pit dewatering will simply result in a drawdown of Fish Lake.

It is conceptually possible that this could be mitigated by recycling inflows back to the lake but we have no assessment of this contingency measure. The proponent has not provided any information on the implications of such a mitigation scheme, and how it would interact with the proposed Fish Lake recirculation and treatment system.

5.3 Cumulative Effects

5.3.1 Cumulative Effects on the South Chilcotin Grizzly Population

The previous panel found that "the Project, in combination with past, present and reasonably foreseeable future projects would result in a significant adverse cumulative effect on grizzly bears in the South Chilcotin region and on fish and fish habitat." [109] This finding, accepted by the Federal Government, is one of the key questions before the Panel in determining the cumulative environmental effects of the proposed project.

The previous Panel noted that mitigation measures were proposed but would not significantly reduce the cumulative effect:

> "Taseko's mitigation measures included strict enforcement of speed limits to minimize bear-vehicle collisions and a policy of using a non-lethal approach in resolving any incident involving bears, should they arise. These mitigation measures would not replace lost habitat, nor would they reduce fragmentation of the landscape. Further, speed limits for vehicles may be difficult to enforce. Given the increased road traffic and further loss and fragmentation of habitat caused by the Project, in combination with reasonably foreseeable forestry activities, the Panel concludes that the Project would likely result in high magnitude, long-term effects on the South Chilcotin grizzly bear population." [110]

TNG strongly believes that these findings and conclusions remain the same and should be adopted by this Panel. As noted in the previous review, the mitigation measures proposed do not replace habitat or prevent fragmentation as a result of the Project. Vehicular traffic cannot be avoided. Forestry activities have continued to occur and will continue. The conditions for which a significant cumulative effect was found have not changed.

Due to the very nature of cumulative environmental effects, the reconfiguration of the mine layout does not dramatically improve or mitigate impacts to grizzly bears, especially in regards to fragmentation of habitat and human-bear interactions. Regardless of the reconfiguration, the proposal creates incremental access, human use of the area, mortality risk for grizzly bears, and combines with cumulative effects from already existing human-bear and livestock-bear conflict, rapid landscape change (e.g.

[109] *Panel Report*, p. ii
[110] *Panel Report*, p. v

mountain pine beetle and forestry activities), moose population declines, and declines in grizzly bear populations in adjacent Grizzly Bear Population Units.[111]

The mitigations proposed to address this significant adverse cumulative effect also fall short of addressing the issues or preventing the effect of mortality of grizzly bears. As noted by Dr. Sue Senger and Wayne McCrory, two of the province's foremost experts on grizzly bears and in particular on the South Chilcotin Grizzly Bear Population Unit, the mitigations proposed are not panacea to the factors that affect grizzly bear mortality or their cumulative effect.[112] In fact, they have been shown to have only very limited success in jurisdictions where significant public resources went to other related activities (e.g. enforcement, large 'core' zones without any human activity, etc.).[113]

Dr. Senger noted that:

> "My objections to your [Taseko Mines Ltd.] mitigation plan would come to the fact it's not based on data so you don't know what you're managing for and in my world that's very difficult…I was downstream of Fish Lake last year. I was on the riparian area less than 20 minutes before I was on current grizzly bear signs, fresh tracks, fresh digs, you will displace bears and my question is what's going to happen to those individuals[?]…Your [Taseko Mines Ltd.'s] projections of success are very optimistic. I've been working in these threatened units for more than 10 years and it's extremely difficult to achieve the result you're claiming. It takes one person to kill a bear and we've seen it happen over and over again and it's frustrating."[114]

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[111] CEAR #829, Exhibit - 54: Sue Senger presentation on behalf of St'at'imc Government Services on Sustainin St'at'imc Values Through Grizzly Bear Management at the Terrestrial Environment topic-specific session; CEAR #782, REVISED Wayne McCrory Report Submission filed by Friends of the Nemaiah Valley (FONV) ; CEAR #804, Exhibit - 42: Wayne McCrory presentation on behalf of the for Friends of Nemaiah Valley (FONV) on Grizzly Bears on Day 2 of the Aquatic Environment topic-specific session; CEAR #943, Letter from Wayne McCrory to the Panel concerning his knowledge of the Grizzly Bear Radio-Telemetry Study at the Cheviot Mine in Alberta; CEAR #942, Submission from Wayne McCrory to the Panel concerning his grizzly bear presentation at the Panel Hearings on July 30, 2013; CEAR #959, Wayne McCrory Response to the Panel concerning Taseko's grizzly bear access management information; CEAR #1073, Supplemental Written Submission by Wayne McCrory.

[112] CEAR #782, Revised Wayne McCrory Report Submission filed by Friends of the Nemaiah Valley (FONV), July 29, 2013.

[113] CEAR #959, Wayne McCrory Response to the Panel concerning Taseko's grizzly bear access management information, August 13, 2013.

[114] CEAR #832, Hearing Transcript Volume 9: Topic-Specific Session on Terrestrial Environment, July 31, 2013, pp. 181-182 [Dr. Sue Senger].

Even more importantly for the Panel to consider is that there have been no successful 'augmentations' of grizzly bears – once a population is extirpated, then the chances of recovery are perhaps insurmountable:

> "The immediate concern is mortality. Mortality risk is what is killing us, no pun intended. We can't keep losing bears. If we don't protect the bears we have right now, we have nothing for the future. If they extirpate, we're in a very serious situation where we may not be able to sustain or reintroduce bears. Maintaining the existing bears is critically important."[115]

5.3.2 Cumulative Effects on Moose Populations in Tsilhqot'in Territory

Moose population declines have been of increasing concern to the Tsilhqot'in. Elders and hunters have for a number of years been raising these concerns with TNG and provincial officials. In response, the Ministry of Forests, Lands and Natural Resource Operations conducted surveys in the winter of 2012 to assess population levels.[116] [117] The results are alarming and are tabulated in one of the overview maps provided by TNG to the Panel as an exhibit in the Toosey (Tl'esqox) community hearing.[118]

For Game Management Zone 5D, the total moose population was estimated to have decreased over the last 5 years by 51%, with bulls down 50%, cows 47%, and calves 64%.[119] This evidence is something that the previous Panel did not have, and means that this Panel should re-evaluate the findings of the previous Panel that this project did not have a significant adverse cumulative effect on moose populations.

TNG believes that these reductions are the result of cumulative stressors and effects, including but not limited to: mountain pine beetle 'uplift' (e.g. the increase in forestry activity in response to the mountain pine beetle epidemic), the impacts of forestry activities on the well-being of wetlands, including the hydrology of wetlands after the pine beetle and logging have occurred, increased hunting (unregulated) as a result of improved access to ever-more-remote areas, poor management and oversight by the Province (e.g. irregular monitoring and surveys, extremely under-resourced

[115] CEAR #832, Hearing Transcript Volume 9: Topic-Specific Session on Terrestrial Environment, July 31, 2013, p. 184, [Dr. Sue Senger].
[116] CEAR #1083, Big Creek (MU5-04) Winter Moose Inventory (Ministry of Forests, Lands and Natural Resource Operations, Mar 2012)
[117] CEAR #1084, 2012 Anahim East (MU 5-12) Winter Moose Survey (Ministry of Forests, Lands and Natural Resource Operations, Mar 2012)
[118] CEAR #1134, Moose Population Estimate Maps Presented at the Toosey Community Hearing Session
[119] CEAR #1134, Moose Population Estimate Maps Presented at the Toosey Community Hearing Session

enforcement, poorly managed road access following forestry activities, and too many issuances of "limited entry harvest" licenses). In addition, increased wolf populations and other potential factors may play a role.

There is no 'smoking gun' identified - the one and only study to date looking at the potential factors and causes confirmed that, "there is sufficient evidence to infer that a large-scale decline in moose populations is generally occurring throughout the Cariboo Region," but found that there is a "paucity" of data (Conclusion #9) and a need for further investigation to understand the issues and what's happening.[120] Access due to logging roads and subsequent increase in hunting pressure is one of the factors that require further investigation.

The maps presented in Toosey by J.P. Laplante on behalf of TNG demonstrate an overwhelming degree of cumulative activity in Tsilhqot'in Territory.[121] Roads, forestry, mining claims (and activity and roads associated with exploration camps), as well as many other tenures and activities combine to create significant cumulative impacts to Tsilhqot'in current use, as well as the ongoing and future ability and *Aboriginal right* to harvest game each year.

The proposed Project will have a cumulative effect on moose in Tsilhqot'in territory. First, Nabas is one of the last prime moose hunting grounds and low density road area east of the Taseko River:

> *"Nabas Tezton (sic) and Big Onion Lake areas are truly the last places where the Tsilhqot'in can exercise their rights unimpeded east of the river [Taseko River]. This has special significance for communities like Yunesit'in and other like Toosey, whose caretaker areas have been significantly affected by logging."* [122]

Further to this, the increase in traffic, and concomitant road mortality with moose on all access roads, as well as improved access to the transmission line right-of-way, will have additive effects to moose populations already at risk. TNG believes that the EIS has underestimated the amount of new road or improved roads that would result from the transmission line and mine footprint, as well as the increase in use of the area by non-Tsilhqot'in hunters who would have access to improved roads.

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[120] CEAR #646 and CEAR #1081, McNay et al., "Re-evaluation of Trends in Moose Populations in the Cariboo Region 1985-2012", July 26, 2013 (Final Version of Report Submitted by TNG, CEAR #1081), p. 50.
[121] CEAR #924, Written Hearing Submission (Overview Maps) received from J.P. Laplante (August 7, 2013)
[122] CEAR #996, Hearing Transcript Volume 17: Toosey Reserve Community Session, August 16, 2013, p. 118, [J.P. Laplante].

The mitigations being proposed by the Proponent – to work with other road owners and forest licensees – should not be considered a valid mitigation for the Panel's deliberations. First, those road owners, whether public or private, are already under legal obligation to maintain, control or close the roads, as per their intended use. For a mine Proponent to claim that deactivating logging roads is one of their mitigations is dubious at best. It is further complicated by the lack of any evidence that road owners would agree to these changes. More importantly, these proposals do not mitigate the lost prime moose habitat that would result from the destruction of Nabas and Y'anah Biny.[123]

Lastly, TNG takes issue with the proposals for two reasons. First, negotiations with the Province and forest licensees have already taken place to try and address access management issues in the South Chilcotin region (as far west as the 4500 Road). Therefore, the Proponent is claiming that it is mitigating for actions *already* underway. Second, the transmission line would interfere with those negotiated areas of avoidance (due to moose habitat corridors)[124]. The transmission line and its maintained access roads would no doubt increase moose vulnerability to hunters and predators.

> The Project, if approved, would result in significant adverse cumulative effects on grizzly bears in the South Chilcotin region.
>
> The Project, if approved, would result in significant adverse cumulative effects on moose populations and habitat, and the Tsilhqot'in Aboriginal right to harvest moose for food and ceremonial purposes.

5.3.3 Cumulative Effects of the Transmission Line

The proposed transmission line is often forgotten in the discussion around the impacts of the proposed mine, but for the communities of Yunesit'in and Tl'esqox, the right-of-way and access roads for such a development would significantly impacted their caretaker areas.

In particular, the transmission line and vegetation management would create additional pressure on large game – both by hunters and by natural predators. Ms. Dixon in

[123] CEAR #924, Written Hearing Submission (Overview Maps) received from J.P. Laplante (August 7, 2013), [Moose Habitat Map].

[124] CEAR #924, Written Hearing Submission (Overview Maps) received from J.P. Laplante (August 7, 2013), [Moose Habitat Map].

?Esdilagh described the transmission line to the Gibraltar Mine as, "shooting galleries basically opening up in our back yard."[125] Not only would the right-of-way impact the degree to which wildlife were hunted, but the numerous access roads resulting from the transmission line would further facilitate access. Unlike roads built for forestry, these access roads would need to remain open indefinitely and perhaps forever.

As part of its cumulative impacts assessment, including the assessment of effects related to the transmission line, no specific attention was paid to evidence of moose declines in the Cariboo region, including the mine site and transmission line areas. One only has to review the moose corridor map[126] submitted by TNG to see that in fact, areas for which protection were sought due to high-value moose habitat are impacted by the right-of-way.

The mitigations being proposed by the company, such as access management measures, do not negate the fact that the transmission line would result in permanent roads and right-of-ways that would affect wildlife and alter hunting and predator-prey patterns. From a large game perspective, the area would certainly be better off *without* the transmission line.

TNG also questions the Proponents uncertain statements about the life of the transmission line. If the mitigations from the impacts are based not only on access management but eventual reclamation and closure of the right-of-way and roads, then any significant extension to the life of the transmission line effectively invalidates those measures.

The Proponent's inability to provide details on the potential scenarios for the life of the transmission line calls into question whether the line will ever be decommissioned. The final answer was ultimately that, "it would be irresponsible to try to guess what the future will hold in 20 or 30 years."[127]

> The transmission line, if approved, would contribute to the significant adverse cumulative effects from the Project on moose populations in the South Chilcotin region.

[125] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013, ?Esdilagh (Alexandria IR 12) Community Session*, p. 98, [Donna Dixon].
[126] CEAR #924, *Written Hearing Submission (Overview Maps) received from J.P. Laplante*, August 7, 2013.
[127] CEAR #832, *Hearing Transcript Volume 9: July 31, 2013 Topic-Specific Session on Terrestrial Environment*, p. 48 [Karl Gustafson].

5.4 Other Issues

The preceding section of this report has focused on the proponent's claim that it can mine and protect Fish Lake in perpetuity. However, there are a number of other technical issues that need also to be addressed. These are in no particular order.

5.4.1 Will Water Quality Impacts to Downstream Waters be Acceptable?

Distinct from the central question of whether the proponent will be able to maintain Fish Lake as functioning ecosystem during mining and beyond is the related question of whether the mine will affect aquatic resources outside the mine footprint; i.e., the down-gradient water bodies such as Wasp Lake, Big Onion and Little Onion Lakes, Beece Creek and the Taseko River.

Reviewers identified a number of deficiencies in the EIS information to substantiate the above, and in other cases predicted the potential impacts as having being significantly underestimated.

Environment Canada's review of the EIS found generally that the proponent may be underestimating the amount of seepage and, hence, the potential impacts to down-gradient water bodies such as Big Onion, with a commensurate increase in contaminant loadings.[128] Impacts to the Taseko River, less than 1 km downstream from Big Onion Lake, might also be increased.

Specifically, EC identified the following issues with off-site water quality impacts:

- given the proximity of Little Onion Lake to the proposed TSF location, the proponent's assumption that "TSF pore water does not contribute to groundwater base flow into Little Onion Lake" is questioned;
- the potential for the TSF to have impacts on the water quality in Big Onion Lake, particularly with respect to mercury and selenium, is a concern;
- while mercury would remain below the CWQG of 0.0000026 mg/L during the operational period, it would begin exceeding the CWQG by an order of magnitude during closure, reaching a level about 33 times higher;

[128] CEAR #738, *Written Hearing Submission of Environment Canada.*

- methyl mercury concentrations may be similarly elevated and may bioaccumulate in fish;

- the increased concentrations of selenium in the water column may result in increased concentrations in the food chain. Big Onion Lake is a small water body and, therefore, an increase in selenium in the food chain could lead to reproductive effects on the fish, amphibians and waterfowl found in that environment;

- apparent discrepancy diminishes confidence in the Proponent's predictions regarding Big Onion Lake water quality;

- the predicted concentrations of most parameters would increase in Wasp Lake, and in many cases these increases would be by orders of magnitude;

- in particular, selenium would increase by about two orders of magnitude and mercury would increase by almost as much. EC notes that elevated selenium levels in the order of 0.01 mg/L have been demonstrated to have eliminated fish species in some lakes;

- levels of both mercury and selenium would begin exceeding the CWQG during early mine operations and would be more than one order of magnitude higher than the CWQGs post-closure;

- sulphate, fluoride, cadmium, copper, iron, silver, aluminum, manganese, and thallium would all exceed the CWQGs by Year 21, decreasing after Year 31, but remaining over the CWQGs and the BC Water Quality Guidelines (except for thallium);

- seepage rates by Year 5 from the TSF to Wasp Lake are predicted to be approximately 130 m^3/d, and to Big Onion Lake approximately 340 m^3/d with potential for total seepage into these lakes to exceed 50 m^3/d by Year 1; and,

- there is no proposal to monitor these seepages during operations, even though volumes greater than 50 m^3/d are subject to MMER regulations.

5.4.2 Human Health and Ecological Risk Assessment

Dr. Jamie Doyle, an environmental toxicologist, reviewed the proponent's analysis of human health risks, and reached the following general conclusions: [129]

- the assumptions in the proponent's risk assessment are neither conservative nor precautionary;
- the proponent has not fully assessed the potential environmental effects;
- inappropriate guidelines were used in the assessment;
- a 'detailed site-specific human health and ecological risk assessment' should have been provided for this project, but was not;
- the EIS does not meet the requirements of the Canadian Environmental Assessment Act which stipulates that projects are to be 'considered in a careful and precautionary manner to avoid significant adverse environmental effects'; and,
- the EIS does not provide sufficient information to conclude that the project activities will not contaminate the land, food, and sources of medicine of the Xeni Gwet'in people' such that they can continue to use the land and resources unimpeded by concerns of contamination.

More specifically, Doyle found the following issues and concerns: [130]

- the basis upon which CCME screening levels used by the proponent do not reflect the lifestyle practiced by First Nations people, which can substantially enhance contact with soil;
- using the residential/parkland criteria in the soil quality guidelines as a basis for not conducting a site-specific risk assessment is not conservative and not precautionary, particularly when several contaminants exceeding CCME guidelines are found in local soil;

[129] CEAR #925, *Exhibit - 78: Jamie Doyle presentation on behalf of the Tsilhqot'in National Government at the Xeni Gwet'in Community Hearing Session*; CEAR #815, *Written Hearing Submission filed by Dr. James R. Doyle*; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*

[130] CEAR #815, *Written Hearing Submission filed by Dr. James R. Doyle.*

- given that baseline conditions may already be exposing people to toxic contaminants, any increased contaminants as a result of the project would increase the potential for adverse health effects;

- the project may change the physical properties of local soils by enriching the surface with smaller particle sizes from mine operations and exposing large areas of land to fugitive dust;

- dust deposition models were inappropriately limited to immediate vicinity of Fish Lake and the mine site when smaller particles may be deposited within tens of kilometres of the project, and some smaller portion at greater distances;

- assessment does not consider dispersion of smaller dust particles from increased traffic activity attendant to mine construction and operations;

- Health Canada has expressed concern that the dispersion model used in the 2012 EIS (2.5 micron) is substantially less conservative than the approach used in 2009 EIS (TSP);

- unclear as to whether the dispersion model has been validated for the physical configuration of the mine site, the input parameters; changes to input parameters between the 2009 and 2012 models which have not been verified by an independent source and the sensitivity of the mitigation measures to model outputs have not been provided, which undermines confidence in the model results;

- the proponent has assessed incremental risks to human health independently instead of assessing the cumulative effects of the many small risks that the project poses on human health in aggregate;

- inappropriate use of using an incremental percentage increase in Hazard Quotients to rule out a detailed empirical assessment of exposure to contaminants of concern; and this is inconsistent with a precautionary approach; and,

- the bioconcentration factors to determine post-closure concentrations of contaminants in fish need to be confirmed; there is some uncertainty in the values used.

Dr. Doyle's review presents a number of significant knowledge gaps in the proponent's results about the potential impacts of dust on biological and human

receptors in the zone of influence of the project. The way this assessment was conducted and the underestimation of potential impacts will likely undermine any confidence the community might have in the results, increasing potential avoidance of the area for traditional purposes if the project proceeds.

5.4.3 Delaying Information to Permitting

At various junctures throughout the EIS and subsequent submissions the proponent argues that certain information is not required at this stage of review, but can be developed during permitting or prior to construction.

Taseko's recent submission on further water-related investigations is a prime example.[131]

The proponent has also recognized the need for more information regarding the hydraulic conductivity in the overburden between the lake and the pit, but takes the position that this can be done as part of the detailed engineering design phase of the project. In our view this would be wrong. Detailed engineering is the proper course of action once the technical viability of the project has been demonstrated. In this case, the existence of a high conductivity link between the lake and the pit is not simply a matter to be resolved by 'detailed engineering'--it goes to heart of project viability because it places Fish Lake at risk.

Some presenters have taken the position that many of the information deficiencies can be handled at permitting, and that it is 'routine' practice to do so. First, as set out in clear CEAA policy, reviewed above, it is not "routine" to proceed in the face of this type and this magnitude of risk and uncertainty. Second, we are not in this case in a 'routine' situation. Unlike typical mines which undergo an EA review, this one has two objectives to prove, not one.

These two objectives are potentially mutually exclusive, and it is therefore critical to determine, based on a sound analysis of the facts, that both objectives can be mutually satisfied. This means more rigorous intellectual investment at this stage of review, and not later in the regulatory regime.

Accordingly, the Panel is urged to take a clear and tough stand on this issue in order to ensure that the critical strategic information needed to prove that the project is

[131] CEAR #1061, *Taseko Mines Limited Response to Undertaking 18 (U-018): Provide information on the components of a monitoring system for water quality and fish*

technically and economically viable is before the Panel when it writes its report to the Minister. It is our position that the key issues which demonstrate environmental, technical and economic viability need to be sufficiently supported by good information and analysis, as required by the *EIS Guidelines* and CEAA policy.

5.5 Conclusion

The burden of proof in the particular circumstances of this case lies on the proponent to provide an evidence-based analysis sufficient to demonstrate that its proposal can achieve the objectives of both minimizing (if not eliminating) any significant adverse impacts of its project on the environment and of maintaining Fish Lake as a functioning aquatic ecosystem.

Indeed, the *EIS Guidelines* were clear that the proponent needed to demonstrate that the project as proposed could be effectively conducted.

The proponent has not done this. The information and analysis presented in the EIS are completely inadequate to prove the concept is viable. The baseline data on all areas is deficient, the modeling is inappropriately conducted, and the results all tend to underestimate the extent of the impacts or the challenges to preserving the lake.

Groundwater conditions, preferential pathways, and structural controls on water flow are poorly understood, and movement of seepage could be significantly different and faster than the proponent anticipates. The reviews have demonstrated that the proponent has substantially under-estimated predictions of groundwater flow (volumes, concentrations, flow paths, contaminant transport, etc.) and has no reliable understanding of the local groundwater system or the potential for preferential flow paths. For this situation, too, the proponent failed to provide the substantive information set out in the *EIS Guidelines* for this topic.

A spectacular omission in the EIS that is front and centre for the Panel's deliberations is the absence of any meaningful information that describes how the analysis for predicting future Fish Lake water quality was done.

This problem is compounded by the Triton model which took the SRK predictions as inputs in order to model biological impacts to Fish Lake. This means that it is also not possible to evaluate the Triton model since it is dependent upon the SRK model for the accuracy of its results.

The result is that the two critical documents that address the fate of Fish Lake water quality and biological effects cannot be evaluated because the methods and assumptions used in the proponent's analyses are not available.

As MESL, Stockner and Brandt have shown, the proponent's understanding of the natural environmental conditions at Fish Lake is impoverished. Taseko has failed to meaningfully evaluate baseline conditions at the mine site, such that its knowledge about local hydrometeorology, surface water hydrology and quality, and groundwater behaviour, is profoundly lacking and inadequate for purposes of reliable impact assessment or for developing meaningful monitoring and mitigation plans. There is no credible evidence before us that demonstrates that the proponent can effectively manipulate the Fish Lake system so that it survives in viable form in perpetuity.

NRCan's findings alone amount to a fatal flaw for the project, as follows:

- the proponent's seepage modeling is unreliable and the Panel should disregard it; seepage rates may well be an order of magnitude greater than predicted;
- the Panel should also disregard Taseko's modeling for the water balance and water quality impacts, all of which depend on the seepage modeling results;
- modeling of the contaminant plume moving down into the Big Onion and Taseko watersheds should also be disregarded;
- the proponent's studies for the groundwater collection wells should be disregard. The model used for predicting biological impacts in Fish Lake, which depended upon the water quality models for inputs should also be disregarded.

In our review of the evidence on record, we conclude that the proponent has failed, comprehensively and irretrievably, to support its case that Fish Lake can survive as a viable, functioning ecosystem, both during mine life and post-closure.

There is so much uncertainty in all this that there is essentially no coherent information basis upon which to evaluate the proponent's predictions for the future of Fish Lake.

The proponent has presented no credible proposals for addressing contaminated seepage from the TSF or other sources that might affect Fish Lake and/or down-gradient receptors. It has produced no precedents for the mitigation works. It has produced no evidence of mitigation viability or of mitigation costs. The entire package of seepage detection and collection wells, plus the Fish Lake recirculation and water treatment programs, are inchoate, speculative, unprecedented, and ill-informed at best. No plans for long-term water treatment for site discharge have been presented.

It is not scientifically realistic to believe on the basis of the proponent's case that the impacts to Fish Lake can or will be mitigated, particularly given no compelling evidence to this effect. The opposite outcome can be expected according to the limnologists--a rapid ecological change in the lake including, among other things, the die-off of the resident fish population within a decade of mine start-up.

6. SIGNIFICANT CULTURAL EFFECTS

This chapter considers the likely cultural impacts of the Project for the Tsilhqot'in people. It describes the cultural impacts for the Tsilhqot'in even if Teztan Biny were "preserved" as the company claims (although these claims are not credible, as discussed above). Obviously, if the company failed to preserve the lake, then there is no question that the Tsilhqot'in would experience the full range of significant cultural impacts identified by the previous Panel, when the proposal was to destroy Teztan Biny from the outset.

However, whether Teztan Biny is artificially "preserved" or not, the record before this Panel supports the conclusion of Patt Larcombe in her expert report:

> "… there is a high probability that the combined impacts of the proposed New Prosperity project on Tsilhqot'in use of lands and resources for traditional purposes would lead to the same socio-cultural, physical and mental health, and economic impacts identified for the original Prosperity proposal and characterized by the Tsilhqot'in and the Prosperity Panel as high-magnitude, long-term, irreversible, and immitigable".[132]

6.1 Definitions

6.1.1 Nabas Central and Greater Nabas

Tsilhqot'in people differ in their interpretation of "Nabas", as it refers more to a general area than a specifically bounded place. As noted by the previous Panel:

> "The Tsilhqot'in referred to the general area south of Teztan Biny (Fish Lake) surrounding Y'anah Biny (Little Fish Lake) as Nabas ... The Panel heard differing interpretations of the exact boundaries of Nabas. Nabas Central was described as encompassing the area south of Teztan Biny (Fish Lake), including Y'anah Biny (Little Fish Lake), upper Teztan Yeqox (Fish Creek) and adjacent wetlands and meadows, as well as Wasp Lake. In contrast, Greater Nabas included Teztan Biny as well as some of the surrounding mountains. For the purposes of

[132] CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, p. 54

> this report, when referring to Nabas, the Panel is referring to the area described above as Nabas Central." [133]

For consistency, we have used these definitions of "Nabas Central" and "Greater Nabas" in this submission. "Nabas" is also used to denote Nabas Central.

6.1.2 "Aboriginal Traditional Knowledge"

The Panel is required to consider "Aboriginal traditional knowledge" in conducting its environmental assessment.[134] For guidance, CEAA offers this definition:

> "Aboriginal traditional knowledge (ATK) is knowledge that is held by, and unique to Aboriginal peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual and political spheres of the Aboriginal knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines …"[135]

It will be noted that Aboriginal traditional knowledge specifically includes "spiritual beliefs" and "culture".

CEAA policy specifically confirms that Aboriginal Traditional Knowledge can be used to assist with the "evaluation of environmental effects and the determination of their significance" (among other matters).[136]

Accordingly, contrary to statements made by the Proponent, the Panel can and should consider the spiritual and cultural impacts of the proposed Project, from the perspective of the Tsilhqot'in people, in assessing the significance of environmental effects.

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[133] *Panel Report,* p. 8. For overview map of the area, see: CEAR #850, *Exhibit - 61: Patt Larcombe presentation on behalf of the Tsilhqot'in National Government on Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes at the Human Environment topic-specific session,* Slide 5.

[134] CEAR #124, *Amended Terms of Reference for the Federal Panel Reviewing the New Prosperity Gold-Copper Mine Project*, s. 2.3.

[135] CEAA, *Glossary*, *"Aboriginal Traditional Knowledge"* [underscore added].

[136] CEAA, *Considering Aboriginal traditional knowledge in environmental assessments conducted under the* Canadian Environmental Assessment Act *-- Interim Principles* [underscore added].

6.1.3 "Cultural Heritage"

Environmental effects include project-related environmental changes that affect "cultural heritage".[137] CEAA policy directs the following approach to defining "cultural heritage":

> "For the purposes of this guide, cultural heritage resource is a human work or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has historic value. Cultural heritage resources are distinguished from other resources by virtue of the historic value placed on them through their association with an aspect(s) of human history. This interpretation of cultural resources can be applied to a wide range of resources, including, cultural landscapes and landscape features, archaeological sites, structures, engineering works, artifacts and associated records."[138]

"Cultural heritage" encompasses sites, landscape features and even "cultural landscapes" of historic value that hold "spiritual or cultural meaning" for the Tsilhqot'in people.

Once again, contrary to the Proponent's statements, the "spiritual or cultural" meaning of such sites and places to the Tsilhqot'in is directly relevant to identifying impacts on cultural heritage and assessing the significance of such impacts.

6.2 Permanent Destruction of Y'anah Biny and Portions of Nabas

The destruction of Y'anah Biny and the surrounding Nabas area (including the historic and present-day Tsilhqot'in cabins) are a direct and unavoidable impact of the proposed Project. This would result in significant adverse impacts on Tsilhqot'in culture and cultural heritage, as described below.

6.2.1 Permanent Destruction of Tsilhqot'in Cultural Heritage

The cultural, historical and spiritual value of the Y'anah Biny area to the Tsilhqot'in is well-documented, *e.g.*:

- The Ehrhart-English Report, prepared for the Proponent, concludes "[t]he most significant area of spiritual attachment is the Little Fish Lake area where a series of cabins have provided a home base for the cultural and economic lifestyle that

[137] *CEAA 2012*, s. 5(1)(c)(ii).
[138] CEAA, *Reference Guide on Physical and Cultural Heritage Resources*, c. 2.

has flourished in the study area for approximately 130 recorded years",[139] noting that "[l]oss of this area will significantly impact on this family and the Nemiah Band in general".[140]

- In fact, the Proponent's 2009 EIS confirmed the "significant historical value" of this area to the Tsilhqot'in, noting that the "William family and others who have heavily used the Little Fish Lake area have a strong spiritual attachment to specific locations, such as areas where cabins have provided a home base for the cultural and economic lifestyle" and confirming that "this area is considered home to certain families".[141]

- In a letter to this Panel, in response to the 2012 EIS, Ms. Ehrhart-English re-affirmed the significance of her original findings, noting that she had suggested to the Proponent at the time of her study that "they avoid the Little Fish Lake area all together. The reason was because of the importance of that area to the history and culture of the Xeni Gwet'in and the Tsilhqot'in in general".[142]

- The previous Panel confirmed the "deep ancestral connection"[143] of the Tsilhqot'in to Y'anah Biny and Nabas, describing this connection as "substantial", "unique and of special significance"[144] to the Tsilhqot'in.

The record before this Panel fully corroborates these conclusions. Linda Smith, an anthropologist and linguist, and member of Yunesit'in, submitted a report on the Nabas region that we ask the Panel to consider carefully.[145]

During the Panel's hearings, numerous living Tsilhqot'in members recalled being born or raised at Y'anah Biny, or living in the cabins that still stand near its shores.[146] Delia William (wife of Joseph William) explained to the Panel:

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[139] *Ehrhart-English Report*, pp. 49-50.
[140] *Ehrhart-English Report*, p. 50.
[141] [Previous] CEAR #76, *Environmental Impact Statement (final version)*, *Volume 8 - First Nations*, p. 2-46 to 2-47, 2-52 [emphasis added]. These statements were omitted from the Proponent's 2012 EIS.
[142] CEAR #264, *Letter of Comment to the Canadian Environmental Assessment Agency from Cindy Ehrhart-English concerning the Environmental Impact Statement (EIS) (see Reference Document Number 129)*, p. 4.
[143] *Panel Report*, p. 192.
[144] *Panel Report*, p. 203.
[145] CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*.
[146] See, *e.g.*: CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 162-63 [Delia William]; CEAR #917, *Hearing Transcript Volume 12: August 7,*

> "Jimmy William, Joseph's father brought his family from Xeni Gwet'in and raised them in the country back there. There are -- there were 12 children, they were all raised back there in Nabas and Onion Lake. I'm sure we will all feel the impact of the destruction of our beautiful land, our home and our memories … You destroying Little Fish Lake where our main home was to me ..." [147]

Many more described family and ancestors that had made their home at Y'anah Biny and Nabas[148] (by one estimate, "we have a population of several hundred" with a direct connection to this area).[149] Linda Smith's historical report conveys the substantial number of Tsilhqot'in members that lived at or have a connection to the Y'anah Biny/Nabas settlements.[150]

It should be emphasized that the families that originally resided at Y'anah Biny/Nabas came from several different Tsilhqot'in communities, anchoring the entire Tsilhqot'in Nation to this area.[151]

Many Tsilhqot'in spoke of their connection to the cabins at Nabas which they call "home".[152] Alice William explained how she and her husband are actively rebuilding her family's ancestral homestead on the shore of Y'anah Biny.[153]

2013 Community Session in Nemiah Valley, British Columbia, pp. 216-18 [Mabel Solomon]; *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 165 [Alice William]; CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 124 [Wanda Dick].

[147] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 162-63 [Delia William].

[148] CEAR #903,*Exhibit - 75: Lois Williams presentation at the Xeni Gwet'in Community Hearing Session*, p. 9; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 202 [Lois Williams]; CEAR #898, *Exhibit - 70: Betty Lulua presentation at the Xeni Gwet'in Community Hearing Session*, p. 1; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 214. [Chief Roger William]; CEAR #688, *REVISED Hearing Transcript Volume 1: July 22, 2013 General Hearing Session*, p. 93 [Chief Russell Ross]; CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 118-19 [Wanda Dick]; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 12-13 [Councillor Cecil Grinder]; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 2.

[149] CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 145 [Douglas Myers].

[150] CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, pp. 3-8.

[151] CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, pp. 3-8, 15; *Ehrhart-English Report*, pp. 47, 52.

Many others described historic and continued use of this area,[154] for hunting and trapping[155] and gathering plants and medicines.[156]

Tsilhqot'in members have described or identified numerous burials and burial features around Y'anah Biny and the Nabas meadows. This is to be expected in light of the generations of Tsilhqot'in occupation in this area. For example, Christine Cooper told the previous Panel that Celia Quilt had told her that six of her siblings are buried at the meadows at Y'anah Biny and Celia had buried three of her own children there.[157]

It should be emphasized that physical remains of such burials may be difficult or impossible to identify without traditional Aboriginal knowledge identifying the sites, and in some cases such knowledge may be all that remains.[158] In no way does this reduce the "cultural heritage" value of the area to the Tsilhqot'in people, as recognized by CEAA policy.

[152] *E.g.*, Mabel Solomon: "I was able to see my cabin in Nabas last year. My cabin is situated in the area of the proposed tailings pond. I don't understand why anyone needs to destroy our homes and our land": CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 220.

[153] CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 165. [Alice William]; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, pp. 9, 17-18.

[154] See, *e.g.*, Lois Williams, CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 202: "My father's side of the family have lived in Little Fish Lake and Onion Lake area and to this day they still continue to use that area, including myself, my family".

[155] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, p. 121 [Jimmy Lulua], p. 162 [Delia William]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 153 [Marilyn Baptiste], p. 223 [Mabel Solomon], pp. 225-26 [Dinah Lulua]; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 166 [Alice William]; CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, pp. 145 -46 [Douglas Myers]; CEAR #1003, *Written Hearing Submission and Presentation from Joyce and Gene Cooper*, p. 3.

[156] CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 223 [Mabel Solomon], pp. 225-26 [Dinah Lulua]; CEAR #1003, *Written Hearing Submission and Presentation from Joyce and Gene Cooper*, p. 6; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 20.

[157] [Previous] CEAR #2078, *Hearing transcripts Volume 20: April 13, 2010 Daytime Community Session*, p. 3533-34 [Christine Cooper]; see also: CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, p. 12.

[158] See the methodology and site-specific information in the confidential report, "The Identification of Ancestral Tsilhqot'in Graves Within the Vicinity of the New Prosperity Mine".

The cultural heritage value of the Y'anah Biny area is substantial and incontrovertible. As discussed, the Proponent itself has documented the profound historical, cultural and spiritual significance of the cabins at Nabas, and of the Y'anah Biny area generally.[159] The burials and burial features identified by Tsilhqot'in members in this area also contribute to its "cultural heritage" value, even if they have left no discernible physical traces to this day.

> On the record before the Panel, there can be no question that the destruction of these cultural heritage sites would represent a significant, permanent, and immitigable environmental effect of the Project.

6.2.2 Permanent Destruction of Traditional Fishery at Y'anah Biny

The destruction of the traditional Tsilhqot'in fishery at Y'anah Biny is a direct and unavoidable impact of the proposed Project. Contrary to the Proponent's statements, this traditional fishery has been used by Tsilhqot'in members continuously for many generations.[160] Indeed, in the previous review, the Proponent itself acknowledged Tsilhqot'in fishing at Y'anah Biny.[161]

Before this Panel, once again, several Tsilhqot'in members spoke of historic and continued fishing at Y'anah Biny.[162]

> The permanent severing of this deep ancestral connection to a traditional fishery that has sustained generations since a time before contact, including those born or raised on the shores of this lake, would represent a significant, permanent, and immitigable environmental effect of the Project.

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[159] *Ehrhart-English Report*, pp. 49, 54
[160] *Ehrhart-English Report*, pp. 52, 67-69; see also: *Panel Report*, pp. 8, 179, 181-82
[161] *Panel Report*, p. 179
[162] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, p. 138 [Councillor Loretta Williams], p. 162 [Delia William]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 153 [Marilyn Baptiste], p. 207 [Jasmine Quilt], pp. 225-26 [Dinah Lulua]; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 166. [Alice William], p. 187 [Shania Cook]; CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 163 [William Myers]; CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 265 [Fanny Stump]; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, pp. 18-19 (includes photos); see also: CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 17-19.

6.2.3 Navigation for Traditional Purposes

The destruction of Y'anah Biny would eliminate the ability of Tsilhqot'in to navigate by raft or boat on Y'anah Biny for traditional purposes and the exercise of Aboriginal rights (*e.g.* fishing and hunting).

Several Tsilhqot'in members described historical and present day navigation of Y'anah Biny by boats and rafts for traditional purposes (fishing and hunting).[163]

The Proponent is simply wrong when it asserts that Y'anah Biny is not used for navigation.[164]

As confirmed by Transport Canada, the elimination of Y'anah Biny is permanent and impacts a large proportion of the Local Study Area. The Proponent has not proposed any specific compensation measures for this impact. Transport Canada further notes, "the impact of the TSF to navigation within the Project area is irreversible and appropriate mitigation measures for some effects may not exist".[165]

Accordingly, the destruction of Y'anah Biny would have a significant, permanent, and immitigable environmental effect on navigation for traditional purposes.

[163] CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 230 [Dinah Lulua]; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 122 [Trina Setah], p. 166 [Alice William], p. 187 [Shania Cook]; CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 198 [Student]; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, pp. 18-19 [includes photo]; CEAR #848, *Exhibit - 59: Transport Canada presentation on Navigable Waters Protection at the Human Environment topic-specific session*, Slides 13-15 [photos].

[164] CEAR #1093, *Letter to the Panel from Mcmillan LLP, Counsel for Taseko Mines Limited concerning Transport Canada Addendum to Written Submissions (see Reference Document Number 1004)*.

[165] CEAR #1004, *Transport Canada Addendum to Written Submission*.

6.3 Loss of Core Hunting, Trapping, Gathering Areas in Greater Nabas

Environmental effects include project-related environmental changes that affect "the current use of lands and resources for traditional purposes" by Aboriginal peoples.[166] Destruction of, and displacement from, core hunting, trapping and gathering areas are another direct and unavoidable impact of the proposed Project.

The heavy reliance on the Teztan Biny and Nabas areas by "much of the Tsilhqot'in population" for hunting, trapping and gathering plants and medicines was well-documented by the previous Panel, *e.g.*:

> "Hunters in the Tsilhqot'in communities indicated that the area surrounding Teztan Biny (Fish Lake) and in Nabas were excellent hunting territories. Species reported to be hunted for sustenance included moose, deer, caribou, elk, squirrel, beaver, duck, geese, swans, grouse, and wild chickens. It was repeatedly expressed that First Nations hunted to provide sustenance to their families as taught to them by their Elders …" [167]

Over the course of the public hearing, the Panel heard a substantial volume of information regarding how much of the Tsilhqot'in population continue to use the Project area for activities such as hunting, fishing, gathering of berries, plants and medicines, as well as for various cultural and spiritual ceremonies and activities.[168]

The Panel heard substantial information regarding the significant number of Tsilhqot'in members who continued to use the area of the proposed mine site for activities such as hunting, fishing, gathering of berries, plants and medicines, as well as for cultural and spiritual ceremonies and activities. Additionally, the Panel heard that the Teztan Biny area had substantial cultural value due to its pristine environment and inherent spirituality.[169]

This Panel similarly heard substantial testimony documenting the very active, extensive use of the Teztan Biny and Nabas areas by Tsilhqot'in for hunting and trapping,[170] and

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[166] *CEAA 2012*, s. 5(1)(c)(iii)
[167] *Panel Report*, p. 183.
[168] *Panel Report*, p. 179.
[169] *Panel Report*, p. 202.
[170] See, *e.g.*: CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, p. 104 [Catherine Haller], p. 125 [Cheotin], pp. 140, 160 [Councillor Loretta Williams], p. 199 [Dalton Baptiste], pp. 211-13 [Betty Lulua]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 8-9 [Naomi Setah], p. 23

for gathering plants and medicines.[171] Linda Smith explained how "people still come from as far away as Esdilagh to harvest these pure medicines" because of the high elevation and spiritual power of the Nabas region.[172]

Combined, the direct project footprint, the "no access" zone, and the "no shooting" zone would destroy or displace Tsilhqot'in members from almost 60 km^2 of prime hunting, trapping and gathering areas in the Teztan Biny and Nabas region, actively used today by large numbers of Tsilhqot'in members from all communities.[173]

In its EIS, the Proponent calculated the proportion of Tsilhqot'in hunting and trapping areas mapped by Ehrhart-English that would be directly impacted by the Project's footprint. However, the Proponent failed to include the "no shooting zone" in this calculation. The Proponent also failed to appreciate that Tsilhqot'in trappers carry

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[Michelle Myers], p. 112 [Jessica Setah-Alphonse], p. 219 [Mabel Solomon], pp. 225-26 [Dinah Lulua]; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 110 [Trina Setah], p. 135 [Alex Lulua], p. 166. [Alice William], CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, p. 102 [Joe Case], p. 150 [Pam Alphonse], CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 100 [Sonny Lulua], pp. 145-46 [Douglas Myers], p. 163 [William Myers]; CEAR #1003, *Written Hearing Submission and Presentation from Joyce and Gene Cooper*, p. 3; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 12-13 [Councillor Cecil Grinder], p. 94 [Blaine Grinder]; see also: see also: CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 21-22, 25-30.

[171] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, p. 104 [Catherine Haller], p. 125 [Cheotin], p. 199 [Dalton Baptiste], pp. 211-12 [Betty Lulua]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 17 [Jacqueline Merritt], p. 27 [Michelle Myers], p. 219, 223 [Mabel Solomon], pp. 225-26 [Dinah Lulua]; CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 110 [Trina Setah]; CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, pp. 87-88 [Mary William]; CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 185 [Valerie Johnny]; CEAR #1003, *Written Hearing Submission and Presentation from Joyce and Gene Cooper*, pp. 5-6; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 27 [Councillor Cecil Grinder]; see also: CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 23-24.

[172] CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 20.

[173] See: *Exhibit - 61: Patt Larcombe presentation on behalf of the Tsilhqot'in National Government on Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes at the Human Environment topic-specific session*, Slide 9.

firearms for protection and to dispatch larger, trapped species, such that the "no shooting zone" would also have a direct effect on trapping activities.

Taking into account these proposed restrictions, Tsilhqot'in members would lose access for hunting to approximately **40%** of the areas Ehrhart-English identified as relied upon for moose and deer harvesting. **100%** of bobcat, cougar, and squirrel harvesting areas would be lost (*i.e.* completely eliminated), over **98%** of wolverine harvesting areas, and over **85%** of fisher. For most other trapped furbearers (lynx, rabbit, marten, weasel) over **55%** of the harvesting areas documented by Ehrhart-English would be eliminated for current use.[174]

Of course, this represents only direct destruction and displacement by the Project, and it does not include Project-related effects (*e.g.* noise, light, traffic and roads, increased access and activity, etc.) on wildlife populations in the area. The Proponent acknowledges that an operating open-pit mine would affect the availability of wildlife in the area,[175] but it did not assess the resulting impacts on Tsilhqot'in hunting activities in the region. Undoubtedly, this would amplify the already significant direct impacts of the direct footprint and the "no shooting" zone.

The Proponent also calculated the proportion of Tsilhqot'in plant harvesting areas mapped by Ehrhart-English that would be directly impacted by the Project's footprint. By the Proponent's own account, the direct Project footprint alone would destroy from **50% to over 90%** of areas actively used for harvesting a number of traditional plants and medicines, including Labrador tea, balsam, cottonwood, blueberries, strawberries and crowberries.[176]

Given the proponent's acknowledgment that "many Tsilhqot'in members … confirmed the use of the Fish Creek watershed for plant gathering"[177] including for blueberries, strawberries and crowberries (identified as 57.7%, 62.3% and 91.8% impacted by the direct Project footprint, respectively), it is simply not credible to describe the impacts as "not significant".

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[174] See: Document #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 35-39.
[175] See *EIS*, pp. 1234-35 ["… sensory disturbance from adjacent operations and the TSF access road will still reduce wildlife use of this area"].
[176] *EIS*, pp. 1285-86.
[177] *EIS*, p. 1284.

Even by the Proponent's own estimation, the direct destruction and displacement required for the proposed Project (including the "no shooting zone") would substantially reduce or in some cases entirely eliminate harvesting areas actively used by many Tsilhqot'in members for a wide range of critical plant and animal species. This would extend across multiple generations and almost certainly much longer, given the almost certain need for perpetual water treatment, recirculation, monitoring and maintenance, effectively severing the connection to these lands that dates back centuries, prior to contact with Europeans.

> In itself, the destruction of, and displacement from, core hunting, trapping and gathering areas is a significant, permanent, and immitigable environmental effect on Tsilhqot'in current use of lands and resources for traditional purposes.

As discussed below, numerous other factors in addition to the direct Project footprint (*i.e.* noise, light, activity, fears of contamination, avoidance, etc.) would substantially increase this impact.

6.4 Loss of Teztan Biny and Nabas to an Industrial Zone

New Prosperity purports to "preserve" Teztan Biny, but the lake would be situated within a heavy industrial site, with the open pit to the north, the TSF to the south, and mine infrastructure, ore stockpiles, waste rock dumps and industrial traffic to the east.

The record before this Panel makes it clear that this proposal would eliminate the cultural and spiritual value of Teztan Biny to the Tsilhqot'in. The noise, blasting, light, dust, activity, traffic, and restricted access would largely or wholly eliminate Tsilhqot'in use of the area for fishing, gathering plants and medicines, teaching the youth, community gatherings and spiritual ceremonies.

Chief Percy Guichon expressed this point in his community of Tsi Del Del:

> "Even if the company say they can preserve a part of Teztan Biny, well, I've heard this expression that they are just putting it on life support system. This area would be destroyed for our people. They wouldn't have access to it. You know, the lake that they are trying to save would, you know, be surrounded by an operating mine. Who wants to go to a lake with a mine next door? You know, it would be just a big huge industrial zone in the middle of nowhere. You have

> noise, and trucks and dust, and keep out signs, no hunting signs, like I said earlier today."[178]

Indeed, statements by the Proponent itself suggest that the value of this area for community gatherings and teaching younger generations would be negated or degraded if the mine proceeds:

> "While the current Fish Lake camp site [i.e. the primary area for community gatherings] … at the northwest end of Fish Lake is not within the 2012 MDA, access to this site will be removed and access will be developed on the northeast side of Fish Lake to enable use, including navigation. Use of the area for recreation, teachings and gatherings will be modified with New Prosperity in light of adjacent mine operation activities and local effects on noise and aesthetic values.

With access to Fish Lake preserved through all phases of mining, opportunities for gathering, teaching can be maintained; while the experience may be altered from the traditional gatherings previously conducted on site, there may be other opportunities provided for teaching and engaging youth in with regards to environmental management and monitoring."[179]

The "noise effects" alone are significant. The Proponent itself characterizes noise impacts during operation as adverse, high magnitude, continuous in frequency and long-term.[180]

If anything, this assessment drastically *understates* the actual noise impacts, given a number of deficiencies in methodology, *e.g.*:

- In the EIS, "noise effects are considered during occupied periods, which are assumed to be *during the daytime period only*",[181] although it is well known that Teztan Biny and environs are used by the Tsilhqot'in (and others) for overnight occupation.[182]

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[178] CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, p. 184 [Chief Percy Guichon].
[179] EIS, p. 1291 [underscore added].
[180] *EIS*, p. 588. The Proponent nonetheless concludes that these impacts are "not significant" because they are ultimately reversible.
[181] *EIS*, p. 570 [emphasis added].
[182] See, *e.g.*, *Panel Report*, pp. 8, 83, 154, 178, 193.

- As a baseline for ambient sound, the Proponent used "the average rural ambient sound level in Alberta", which is based on at least 1-8 dwellings per quarter section of land.[183] Relying on this baseline for an area acknowledged to be a "noise-free wilderness"[184] understates the likely noise impacts of the Project.

- The Proponent measured the predicted noise level at 1.5 km from the Project area against the maximum regulatory standards.[185] However, these maximum noise levels are based on the assumption that the receptor is *within a dwelling* and that the walls of the residence provide a barrier against the sound.[186] Presumably the noise impacts for *outdoor* users of the lake, at closer range, would be significantly higher.

As confirmed by the previous Panel, the cultural value of Teztan Biny to the Tsilhqot'in Nation derives from its pristine condition:

> "[T]he Panel heard that the Teztan Biny area had substantial cultural value due to its pristine environment and inherent spirituality. The Panel heard, for instance, that medicines from this area were more powerful and the area was ideal for cultural ceremonies".[187]

The previous Panel concluded that the cultural value of Teztan Biny would be eliminated for the Tsilhqot'in if a mine proceeded in the area, even if the lake were "preserved" as now proposed:

> "While First Nations were clearly opposed to the preferred alternative, no support was offered for any of the other alternatives [including Option #2, the basis for New Prosperity].
>
> The Panel observes that the proximity of the open pit and associated mining facilities would be close enough to Teztan Biny (Fish Lake) to eliminate the

[183] *EIS*, p. 577, relying on the ERCB's *Directive 038: Noise Control* and the OGC's *Noise Control Best Practices Guideline*.
[184] *Panel Report*, p. 123.
[185] See *e.g.* the OGC's *Noise Control Best Practices Guideline*, p. 5 ["New facilities should meet a PSL of 40 dBA Leq (nighttime) at the nearest dwelling, or at 1.5 km from the facility fence line, whichever is the lesser distance"].
[186] See the ERCB's *Directive 038: Noise Control*, p. 3 ["The directive sets permissible sound levels (PSLs) for outdoor noise, taking into consideration that the attenuation of noise through the walls of a dwelling should decrease the indoor sound levels to where normal sleep patterns are not disturbed"] and the OGC's *Noise Control Best Practices Guideline*, p. 3 [reproduces the same statement].
[187] *Panel Report*, p. 202.

> intrinsic value of the area to First Nations even if another alternative were chosen. It appears to the Panel, therefore, that none of the alternative mine development plans examined would receive support from First Nations."[188]

The record before this Panel fully corroborates this conclusion. Tsilhqot'in users of the area overwhelmingly presented the view – explicitly or implicitly – that they would not return to Teztan Biny for fishing, hunting, trapping, community gatherings, plant and medicine gathering or spiritual ceremonies if the mine were constructed, and that this loss would be unfathomable for them.[189]

Community gatherings have occurred at Teztan Biny for generations, up to the present day.[190] As explained by Tsilhqot'in members, such gatherings provide an important opportunity to instruct youth in cultural practices,[191] and considerable hunting, fishing, gathering of plants and medicines, sharing of stories and songs, and ceremonies occur on these occasions.

As the Proponent appears to concede,[192] it is unrealistic to expect that the Tsilhqot'in would continue to bring elders and children to gatherings at Teztan Biny if it were situated in an industrial zone, accessed through the mine site,[193] and subject to noise and light disturbance day and night. This would effectively end community gatherings at

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[188] *Panel Report*, p. 50 [underscore added].

[189] See, *e.g.*: CEAR #894, *Exhibit - 66: Councillor Loretta Williams presentation, Xeni Gwet'in First Nations Government presentation at the Xeni Gwet'in Community Hearing Session*, Slide 4 ["To us nothing has changed from the project initially presented. In our eyes Fish Lake will still not be saved and we will still not use that area if this proposed project was to go ahead"]; CEAR #1124, Hearing Transcript Volume 21: August 21, 2013, Stswecem'c Xgat'tem, Dog Creek Reserve Community Session, p. 253 [Linda Smith] ["I can't imagine anyone using Teztan Biny as a ritual site if there is an open pit mine nearby"]; see also: CEAR #714, *Written Hearing Submission filed by the Tsilhqot'in National Government expert P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 40-43.

[190] See, *e.g.*: CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 129 [Jessica Setah-Alphonse].

[191] See, *e.g.*: *Panel Report*, p. 192; CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 213-14 [Betty Lulua]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 219 [Mabel Solomon];CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, pp. 87-88 [Mary William].

[192] *EIS*, p. 1291 [underscore added].

[193] Mr. McManus made one passing reference to the potential for "underground" access to Teztan Biny, but given that the company has not made any proposal to this effect in its EIS or supplemental materials – let alone assessed the feasibility of this measure, or presented this as an issue for discussion during the hearings – it cannot be considered a potential mitigation.

Teztan Biny and severely impact the multi-generational transmission of culture at this important site.

The previous Panel documented the considerable spiritual power and importance of Teztan Biny to the Tsilhqot'in people.[194] In the present review, this Panel also heard numerous Tsilhqot'in presenters speak about fasts, sweats, water ceremonies, naming ceremonies, bathing ceremonies, full moon ceremonies, men's groups, visions and other active spiritual and ceremonial use of Teztan Biny.[195]

The inherent spirituality of Teztan Biny derives from its remoteness and pristine state. As Catherine Haller explained, "There are ancestors singing on the island. Sounds beautiful".[196] And Councillor Lois Williams confirmed that, if the mine were approved, "[w]e cannot practise our rituals in Teztan Biny because our ancestors will be disturbed because of the mining activity.[197]

Again, it is unrealistic to expect the Tsilhqot'in could continue to use Teztan Biny for spiritual and ceremonial purposes while surrounded by a massive operating mine, with all of the noise, light and disturbance that this would entail.

> Mine-related noise, blasting, light, dust, activity, industrial traffic, aesthetic impacts and other continuous sensory disturbance, day and night, would have a significant, high magnitude, long-term and immitigable impact on Tsilhqot'in current use of the Teztan Biny and Nabas area for traditional purposes (*e.g.* hunting, trapping, fishing, gathering plants and medicines, camping, community gatherings, teaching younger generations, spiritual ceremonies), including use of the island in Teztan Biny for spiritual and ceremonial purposes.

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[194] See, *e.g.*, *Panel Report*, pp. iii, 192, 202, 244-45.

[195] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 104-114 [Catherine Haller], p. 140 [Councillor Loretta Williams], p. 212 [Betty Lulua]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 98-100 [Jessica Setah-Alphonse]; CEAR #1066, *Hearing Transcript: August 9, 2013 Site Visit, Xeni Gwet'in Nation, Nemiah Valley, British Columbia*, pp. 63+; CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 90 [Chief Russell Ross]; pp. 105-6 [Dwayne Hink], pp. 145 -46 [Douglas Myers]; CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 66 [Douglas Johnny]; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 12-13, 19 [Councillor Cecil Grinder].

[196] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, p. 114 [Catherine Haller].

[197] *Exhibit - 75: Lois Williams presentation at the Xeni Gwet'in Community Hearing Session*, p. 9; see also: CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 201-2 [Lois Williams].

6.5 Avoidance of Teztan Biny, Nabas – Perceived Contamination

Ms. Hughson, the primary health care worker in Xeni Gwet'in explained to the previous Panel:

> "I want to state unequivocally … that the mine going ahead will represent a contaminated site in the minds of the Xeni Gwet'in People whether anything happens or not."[198] *If the mine proceeds, the perception of contamination of the water, land, animals and plants is all pervasive. My experience is we will not be able to change this perception, even if it isn't true. This factor alone will cause people to stop eating traditional foods."*[199]

Ms. Hughson explained how this perception arises from the Tsilhqot'in worldview and belief system, in terms that should sound familiar to the Panel from the testimony of many Tsilhqot'in members:

> "Their [Tsilhqot'in] Spiritual Belief, their Religion, is that everything in nature is connected. Therefore, if you destroy or contaminate Fish Lake, you contaminate ALL the rivers, streams and lakes in their territory. They also believe that nature has a ripple effect, similar to throwing a stone in a lake, the circle of waves spread throughout the whole lake and on to the shore. Therefore, if you destroy or contaminate the land in the Fish Lake valley, the impact is felt by the land, animals, birds and plants throughout a much larger area, which encompasses their current territory. They believe that the interconnectedness of the land and all living things means that you cannot *contaminate* one area without harming all areas. Therefore their belief system (their Religion) tells them that contamination of Fish Lake is contamination of the majority of their territory."[200]

Dr. Alleyne of Health Canada reported in his presentation to the previous Panel:

> "I have seen in other communities where there was such a level of perception that the food source was contaminated that they would totally avoid foods from a

[198] [Previous] CEAR #1991, *Hearing transcripts Volume 13: March 31, 2010 Daytime Community Session*, p. 2060 [Shari Hughson, Nemiah Community Health Worker].
[199] [Previous] CEAR #1994, *Response to questions posed by the Panel following the March 31, 2010 presentation by Shari Hughson (From Shari Hughson to Review Panel)*.
[200] Previous CEAR #2037, *Response to questions posed by the Panel following the March 31, 2010 presentation by Shari Hughson (From Shari Hughson to Review Panel)*.

> certain area … [I]t is not uncommon for First Nations to totally avoid harvesting from areas that they suspect."[201]

During the previous Prosperity Panel hearings, many Tsilhqot'in members said that if the mine were built and operated they would stop harvesting animals, fish and plants throughout Greater Nabas, and beyond, due to concerns about mine-related air and water contaminants.[202] As noted by the previous Panel:

> "Members from Tsilhqot'in communities other than Xeni Gwet'in (Nemiah Band) explained to the Panel that, because of the development around their communities, they felt that medicines in the areas around their communities were contaminated. As a result, they would travel to Teztan Biny (Fish Lake) and the surrounding mountains where they felt the medicines were healthier and had more strength. The Panel heard that the loss of the Teztan Biny area could not be replaced by going somewhere else."[203]

Tsilhqot'in members and participants predicted that if the mine were to go ahead, their people would avoid traditionally harvested plants in the Project area and surrounding region due to a fear of potential contamination by the Project.[204]

> "[T]he Panel heard that the Teztan Biny area had substantial cultural value due to its pristine environment and inherent spirituality. The Panel heard, for instance, that medicines from this area were more powerful and the area was ideal for cultural ceremonies." [205]

> "The Panel also heard that it is unlikely that the Tsilhqot'in would use the area to exercise their Aboriginal rights due to the perception of contamination. The Tsilhqot'in consistently reiterated their spiritual connection with the land, the relationship between the land and the current use activities for traditional purposes, and how Project related changes would negatively affect this spiritual connection. Based on this information, the Panel has determined that the effect

[201] Previous CEAR #1930, *Hearing transcripts Volume 5: March 24, 2010 Daytime Session*, p. 704.
[202] For discussion, see: CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 40+.
[203] *Panel Report*, p. 197.
[204] *Panel Report*, p. 198.
[205] *Panel Report*, p. 202.

> of the Project on the established Tsilhqot'in Aboriginal rights would be irreversible." [206]

The record before this Panel fully corroborates these statements. Tsilhqot'in members from all communities expressed deep-seated concerns about contamination and stated that they would avoid Teztan Biny, Nabas, and the greater surrounding area based on the perceived risk of contamination from the mine.[207] As explained by David Setah,

> "And there's also talked about will our people use that area, the lake, even there's access. We got a pit hole on one side and we got a tailings on the other side. Our people won't go near it. I'll guarantee you guys that. I don't even think I could convince my youngest son that spoke on the first day here to go fishing when the mine is operating in there."[208]

This perception of contamination cannot be considered unreasonable by any standard, in light of the substantial risk of contamination of Teztan Biny identified by provincial and federal regulators.

Moreover, risk tolerance for contamination is culturally subjective, and it is clear that the Tsilhqot'in and the Xeni Gwet'in in particular, have a deeply entrenched world view and belief system that mandates high levels of purity for country food consumption, and very low tolerance for perceived contamination.

The Proponent's plan to involve Tsilhqot'in members in monitoring and education programs is unlikely to change this deep-seated world view. As Dr. Alleyne of Health

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[206] *Panel Report*, p. 218.

[207] See, *e.g.*: Exhibit - 75: Lois Williams presentation at the Xeni Gwet'in Community Hearing Session, p. 9; see also: CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 201-2 [Lois Williams] ["If the Prosperity Project mine proposal then our people will not want to practise hunting, fishing, gathering medicines and plants in the Teztan Biny, Nabas and surrounding area because of contamination"]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 219-20 [Mabel Solomon], pp. 226-29 [Dinah Lulua]; CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 111 [Catherine Haller]; *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 123 [Trina Setah], p. 140 [Alex Lulua]; CEAR #951, *Written Hearing Submission from Maria Myers received at the Yunesit'in, Stone Reserve*, p. 3 [Mariah Myers], p. 106 [Former Chief Ivor Myers], p. 214 [Brenda Haller]; CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, pp. 87-88 [Mary William], p. 184 [Chief Percy Guichon]; CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, pp. 99 [Donna Dixon].

[208] *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 145 [David Setah].

Canada informed the Panel, educational programs are not a "complete solution" because "as much as you may tell people there's no risk … some may choose to avoid it anyway".[209]

This certainly accords with the experience of Ms. Hughson, who described her experience trying to persuade elders to drink water from the tap:

> "Perception of contamination or toxins in their environment, whether there is or isn't contamination cannot be changed. An example of this is the water system here in Xeni. Water has been a critical part of my message for two-and-a-half years that people need to drink more of it, a lot more of it to be healthier. The fact that the subdivision and the homes in this area were hooked up to a system that people perceive as being treated, even though it isn't, they will not drink it.
>
> They think it tastes funny. They think it is contaminated. They don't want something from a pipe. So most people go to the rivers and mountain streams to gather their drinking water, including a primary water gathering location is Taseko River at the Davidson Bridge.
>
> The perception of contamination from the mine will be far more life-impacting than the simple water system issue that we faced here."[210]

In this respect, ?Esdilagh's experience provides another clear example of Tsilhqot'in abandoning an extensive traditional use area around the Gibraltar Mine based on perceptions of contamination.[211]

> The perceived risk of contamination of lands and waters proximate to a mine site would displace Tsilhqot'in people from using the Teztan Biny, Nabas, and surrounding areas for traditional activities, further contributing to the significant, permanent and immitigable impacts on Tsilhqot'in current use of these lands for traditional purposes.

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[209] CEAR #845, *Hearing Transcript Volume 10: August 1, 2013 Topic-Specific Session on Human Environment*, p. 92 [Dr. Alleyne].
[210] Previous] CEAR #1991, *Hearing transcripts Volume 13: March 31, 2010 Daytime Community Session*, pp. 2062-63 [Shari Hughson, Nemiah Community Health Worker].
[211] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, pp. 213-14 [Edwin Kolausok] ["They do not trust the industry or governments to look after their interests properly, and I point this out because here we have a real example of how people get displaced and do not benefit from their areas due to impacts from large mines, which the Tsilhqot'in fear could happen at the proposed mine you are reviewing"].

6.6 Impacts on Local Cattle Grazing

The previous Panel found that the impacts of the Project on the Solomon family of Xeni Gwet'in, which heavily relies on the Nabas meadows as range for cattle, would be "high magnitude and irreversible and it would be unlikely that their grazing areas could be replaced given the extensive use elsewhere".[212] This conclusion is substantiated by the baseline maps that TNG prepared from provincial data and submitted in the present review.[213]

In its EIS, the Proponent concedes that alternative range is "limited for cattle" but offers no new mitigations for these impacts (except to assist in the search for alternatives).[214]

There are no grounds to depart from the previous Panel's conclusion that "the Project would have significant adverse effects on the users of the meadows within the Teztan Yeqox (Fish Creek) watershed" including the Solomon family.[215]

6.7 Factors that Underscore the Significance of Adverse Impacts

As reviewed above, the Project would eliminate Tsilhqot'in cultural use of the Teztan Biny and Nabas areas (and likely the Greater Nabas region). The "significance" this impact is underscored by a number of factors.

6.7.1 Loss of a "Cultural Keystone Place"

The critical cultural importance of Teztan Biny and Nabas is well established.[216] Dr. Nancy Turner characterized Teztan Biny and Nabas as an exemplary "Cultural Keystone Place" for the Tsilhqot'in peoples, meaning a place of "high cultural salience for a

[212] *Panel Report*, p. 153. See also pp. 148, 152 ["all local meadows are being used for grazing at a sustainable level at present"]; see also: CEAR #714, *P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 30-31.
[213] CEAR #924, *Written Hearing Submission (Overview Maps) received from J.P. Laplante (presented at Tl'esqox, Toosey Reserve Community Session)*.
[214] EIS, p. 1164.
[215] *Panel Report*, p. v.
[216] *Panel Report*, pp. iii, 179, 190, 192-93, 202-3, 244-45; CEAR #714, *Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 12-15, 32-33.

particular group of people at a particular time, and critical to their identity and well-being"; *i.e.* one that plays an "exceptional role in a people's cultural identity".[217]

Dr. Turner's report notes that the Teztan Biny/Nabas region fully satisfies all criteria for a Cultural Keystone Place, and concludes that

> "...[t]he profound cultural and spiritual importance of not only Teztan Biny (Fish Lake), but also Y'anah Biny (Little Fish Lake) and the surrounding meadows at Nabas is undeniable.
>
> Because of this role [as a Cultural Keystone Place], it has a disproportionate or irreplaceable effect on the continuation of a people's culture and, ultimately, on their social-ecological resilience. A CKP is a place that is central to the safeguarding of the cultural identity of a people …"[218]

This conclusion is fully substantiated by the record before this Panel. By definition, losing this "Cultural Keystone Place" would significantly impact Tsilhqot'in cultural identity and resilience. As described by Dr. Turner,

> "The impact on this highly valued place that would occur should the development of the proposed New Prosperity Mine be permitted would be immense. Not only would there be irreparable ecological damage, but there would also be equivalent harm to Tsilhqot'in people's physical and emotional well-being and to their cultural integrity."[219]

6.7.2 Time Depth of the Connection

The significance of destroying, or displacing Tsilhqot'in from, these critical lands and waters is informed by their "deep ancestral connection"[220] to this region.

Settled populations of Tsilhqot'in resided in the Y'anah Biny/Nabas area as their "home" for at least several generations, continuously into the 1970s.[221] Family members and

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[217] CEAR #695, *Written Hearing Submission filed by Nancy J. Turner*, pp. 2-3. See also: CEAR #827, *Exhibit - 52: Nancy Turner presentation on behalf of the Tsilhqot'in National Government on Teztan Biny and Surrounding Areas as a Cultural Keystone Place for the Tsilhqot'in Nation* .

[218] CEAR #695, *Written Hearing Submission filed by Nancy J. Turner*, pp. 5, 16-17. Notably, Dr. Turner's assessment relies extensively on Tsilhqot'in testimony and Panel findings from the previous review, as well as the Ehrhart-English Report prepared for the Proponent, all of which were corroborated by the record before this Panel.

[219] CEAR #695, *Written Hearing Submission filed by Nancy J. Turner*, p. 2.

[220] *Panel Report*, p. 192.

others have continued to regularly return to and use these lands since then. Alice William is actively rebuilding her family's homestead, where she was raised, in the meadows near Y'anah Biny.[222]

Tsilhqot'in hold established Aboriginal rights to hunt, trap and trade throughout this region. By definition, this means that Tsilhqot'in people have engaged in such activities, on these specific lands, as a defining element of their culture, from a time before contact with Europeans (1793) and continuously to the present day.[223]

Countless generations of Tsilhqot'in people, including those alive today, have been born and raised, lived and died, raised their own families, and sustained themselves on the lands that would be destroyed or effectively lost for cultural use should the mine proceed.

6.7.3 Accessibility and the "One Stop Shop"

As noted by the previous Panel, Teztan Biny is highly valued as a "one stop shop" – one of the rare remaining places where the Tsilhqot'in can carry out almost all of their cultural and spiritual activities in one place.[224] Tsilhqot'in have repeatedly noted that this "one-stop shop" does not occur anywhere elsewhere in the territory in the same abundance.[225]

The Teztan Biny area also holds special value because, although remote, it is relatively accessible for elders and youth, and for events like community gatherings.

The destruction of much (or in some cases all) of the local harvesting areas for several plant and animal species, the "no shooting zone", and the industrialization of the area in

[221] CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, pp. 3-7; CEAR #714, *Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 9-10; *Ehrhart-English Report*, pp. 21, 47, 52; see also: [Previous] CEAR #1853, *Supporting documents to TNG's submission for the Public Hearings (From Woodward & Company on behalf of TNG to Panel Secretariat)*.

[222] *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 165. [Alice William]; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 9, 17-18.

[223] *R v Adams*, *[1996] 3 SCR 101*, para. 30.

[224] *Panel Report*, p. iii ["In the Panel's view, the ability to practice these activities in one location, together with cultural and spiritual values and the archaeological importance of the Teztan Biny (Fish Lake) area, contributed to the special value of this area for the Tsilhqot'in"].

[225] *Panel Report*, p. 195.

a manner that would almost certainly preclude community gatherings and trips with youth and elders (not to mention the general displacement from the region described above) would effectively eliminate these critical cultural qualities of the Teztan Biny region.

6.7.4 Cultural Refuge

Teztan Biny and Nabas represent one of the "last, best places for Tsilhqot'in culture"[226] as other areas of Tsilhqot'in territory have been intensively logged, developed and alienated to third parties. As noted by Chief Russell Myers Ross of Yunesit'in:

> "… [W]ith all the logging that's happened in the last 10 years or so, it's been sort of devastating for us to watch and to see so much of the forest go, and I would say that the Nabas and that area, Taseko, and in our southern western end is probably one of the few pristine areas in which we have a place to go and feel that it hasn't been completely ravaged."[227]

The same situation was described by members of several Tsilhqot'in communities.[228] In the words, of Linda Smith, also from Yunesit'in:

> "In my lifetime, those places I learned to love have been permanently altered by clearcut logging. My mother and I wept for weeks after seeing this intentional slaughter of our forest; we saw this as a massacre. In fact, all the lands cherished by the Yunesît'in have been destroyed. The only pristine area left on the Yunesît'in side of the river are the mountains, Nabaŝ, and Teztan Biny is part of that." [229]

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[226] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 222 [Edwin Kolausok].
[227] CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 90 [Chief Ross].
[228] See, *e.g.*: *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 135 [Alex Lulua] ["You might say we can go hunt somewhere else but with all the logging that's going on it wiped out their habitat"]; CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, p. 104 [Blane Charleyboy] ["… all of this industry going on around our caretaker areas have totally destroyed our way of life"], p. 181 [Chief Percy Guichon]; CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 197 [Roseanne Haller].
[229] CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 2.

Mapping prepared by TNG from readily available provincial data supports these concerns.[230] We ask the Panel to carefully consider these maps. As they demonstrate,

> "… [t]he Nabas, Teztan and Big Onion Lake areas are truly the last places where the Tsilhqot'in can exercise their rights unimpeded east of the [Taseko] river. This has special significance for communities like Yunesit'in and others like Toosey, whose caretaker areas have been significantly affected by logging." [231]

Simply "going elsewhere" to hunt, trap and fish is no longer a realistic alternative – *this* region has become "elsewhere" for many Tsilhqot'in people displaced by industry from other portions of Tsilhqot'in territory.

This situation has become increasingly dire with the rapid plummet in moose populations in the South Chilcotin (over **50%** reduction in 5 years),[232] making the prime moose hunting grounds around Teztan Biny and Nabas of particular significance.[233]

For the Tsilhqot'in, preserving these lands is truly a matter of cultural survival.

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[230] CEAR #924, *Written Hearing Submission (Overview Maps) received from J.P. Laplante (presented at Tl'esqox, Toosey Reserve Community Session)*.

[231] CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, pp. 117-18 [J.P. Laplante].

[232] See CEAR #1080, *Identification and Management of Moose Winter Habitat in the Cariboo Region: Literature Review and Mapping Pilot Study (British Columbia Ministry of Environment, March 2006)*; CEAR # 1081, *Re-evaluation of Trends in Moose Populations in the Cariboo Region 1985-2012 (Wildlife Infometrics Inc, July 2013)*; CEAR #1082, *Preliminary List of "High Value" Wetlands for Moose Within the Cariboo Forest Region (Ministry of Water, Land, and Air Protection, March 2004)*; CEAR #1083, *Big Creek (MU 5-04) 2012 Winter Moose Inventory (Ministry of Forests, Lands and Natural Resource Operations, Mar 2012)*; CEAR #1084, *2012 Anahim East (MU 5-12) Winter Moose Survey (Ministry of Forests, Lands and Natural Resource Operations, Mar 2012)*; CEAR #1069, *Winter Habitat Selection and Use by Moose in the West-Chilcotin Region of British Columbia (Bruce Gary Baker, July 1990)*; CEAR #646, *Written Hearing Submission filed by the British Columbia Ministry of Forests, Lands and Natural Resource Operations (Received July 19, 2013)*; see also: *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 135 [Alex Lulua]; CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, p. 104 [Blane Charleyboy], p. 162 [Geraldine Charleyboy]; CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 99 [L. Doxtator]; CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 197 [Roseanne Haller]; CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 94 [Annette Frank].

[233] *Panel Report*, p. 183 ["Hunters in the Tsilhqot'in communities indicated that the area surrounding Teztan Biny (Fish Lake) and in Nabas were excellent hunting territories"]; CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 13.

6.7.5 Importance of Teztan Biny to Traditional Diet

The Tsilhqot'in rely on lake fisheries, including Teztan Biny and Y'anah Biny, for food security in times of salmon shortages.[234] The loss of these regions for fishing, hunting, trapping and gathering would have significant economic and health impacts for the Tsilhqot'in.[235]

As explained to the previous Panel by Ms. Hughson, the Nemiah Community Health Nurse, Teztan Biny represents a "critical food supply" in maintaining the Xeni Gwet'in's present consumption rates of 50-75% traditional foods. Most Elders eat a minimum of 75% traditional foods.[236]

Ms. Hughson explained to the Panel that the Xeni Gwet'in would not be able to maintain these levels of traditional food consumption if the mine proceeded, with consequent impacts on physical and mental health.[237] The previous Panel concluded:

> "… the Panel notes that due to the perception of contamination, it is likely that the mine site would be avoided even after closure and reclamation. Given the reliance on traditional foods and the communities' commitment to improved health and traditional well-being, the Panel finds that the Project's impacts on the physical and mental health of the Tsilhqot'in communities would be long term." [238]

6.7.6 Cultural transmission

Teztan Biny and Y'anah Biny are important teaching environments. The previous Panel noted that "[m]any children identified how their families had taken them to Teztan Biny

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[234] *Panel Report*, pp. 180-81; CEAR #894, *Exhibit - 66: Councillor Loretta Williams presentation, Xeni Gwet'in First Nations Government presentation at the Xeni Gwet'in Community Hearing Session*, Slide 8; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 107 [Jessica Setah-Alphonse]; [Previous] CEAR #1991, *Hearing transcripts Volume 13: March 31, 2010 Daytime Community Session*, pp. 2069, 2075-76 [Shari Hughson, Nemiah Community Health Worker].

[235] CEAR #714, *Written Hearing Submission filed by the Tsilhqot'in National Government expert P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 49-52.

[236] [Previous] CEAR #1991, *Hearing transcripts Volume 13: March 31, 2010 Daytime Community Session*, pp. 2069, 2075-76 ["The salmon run was very low this year, so fishing in the fall and ice fishing in the winter became critical in all the local lakes, including Fish Lake, which became a critical food supply"]; *Panel Report*, pp. 96, 183.

[237] Previous CEAR #2037, *Response to questions posed by the Panel following the March 31, 2010 presentation by Shari Hughson (From Shari Hughson to Review Panel)*.

[238] *Panel Report*, p. 202.

and Y'anah Biny (Little Fish Lake), and adults and elders indicated that this was what had occurred when they were young as well".[239] In the present review, this Panel heard the same from community educators, youth and their families.[240]

As discussed above, even if Teztan Biny were physically preserved, its value as a cultural school would be eliminated. Families, elders and educators would not choose to instruct their children in Tsilhqot'in culture at such close proximity to an operating mine site.

The Proponent appears to concede this obvious fact when it states, "there may be other opportunities provided for teaching and engaging youth in with regards to environmental management and monitoring".[241] Needless to say, this does not mitigate or reduce in any way the significant cultural impact of losing a critical, accessible and much-loved teaching environment that has been actively used for generations to pass down traditional skills and knowledge.

6.8 Greater Nabas Region

The Tsilhqot'in have made it clear that the mine proposal would have indirect impacts to current use well beyond the footprint of the mine. Besides the direct loss of core hunting, trapping and gathering areas affected by the mine infrastructure, the "no access" zone, and the "no shooting" zone (60 km^2), the Tsilhqot'in stand to be displaced from a much larger area that is connected culturally and ecologically to the Teztan Yeqox watershed.[242]

In particular for the Tsilhqot'in are impacts to Wasp Lake, Beece Creek, Big Onion Lake and the Taseko River, and hunting, gathering, fishing and trapping near these water bodies. Many reviewers, including Environment Canada, Fisheries and Oceans

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[239] *Panel Report*, p. 182.

[240] See, *e.g.*: CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 213-14 [Betty Lulua]; CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 219 [Mabel Solomon]; *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 185 [Shania Cook]; CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, pp. 87-88 [Mary William], p. 147 [Pam Alphonse]; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 12-13 [Councillor Cecil Grinder], p. 95 [Blaine Grinder].

[241] *EIS*, p. 1291.

[242] See: Exhibit - 61: Patt Larcombe presentation on behalf of the Tsilhqot'in National Government on Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes at the Human Environment topic-specific session, Slide 9.

Canada, Natural Resources Canada, and the B.C. Ministry of Forests, Lands and Natural Resource Operations have all noted that the Proponent has underestimated the risks to these water bodies from altered water flows, contaminated seepage from the tailings storage facility, and in the future, contaminated pit discharge.

Federal and provincial reviewers noted that:

> "Natural Resources Canada recently expressed concern that Taseko's seepage rate estimates for the TSF may be 11 times higher than those modeled in the EIS … as a result, groundwater seepage estimates that were modeled in the EIS may be underestimated. If actual baseline groundwater seepage contributions into Taseko River are significantly higher than those modeled, then development of the Project could result in impacts to Taseko River that have not been considered by the Proponent."[243]
>
> …
>
> "Water from the seepage ponds are to be discharged to Big Onion Lake and Wasp Lake. These lakes are expected to see deteriorating water quality. Creeks leading from these lakes go to Beece Creek and Taseko River, highly valuable fish streams. Pit Water is expected to be discharged to Fish Creek long after the mining is completed. This water will receive little dilution in Fish Creek before it enters Taseko River."[244]
>
> …
>
> "Environment Canada is concerned that the Proponent may have underestimated the potential impacts of the Project on water quality in Wasp Lake, Little Onion Lake and Big Onion Lake. Given that these lakes drain to the Taseko River, Environment Canada is also concerned that the Proponent may have underestimated impacts on water quality in the Taseko River."[245]

Also in question is the Taseko River's ability to dilute contaminants entering as a result of the seepage, especially in the future as a result of climate change:

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[243] CEAR #691, Revised Written Hearing Submission Filed by Fisheries and Oceans Canada, July 23, 2013, p. 13.
[244] CEAR #646, Written Hearing Submission filed by the British Columbia Ministry of Forests, Lands and Natural Resource Operations, July 15, 2013, p. 35.
[245] CEAR #738, Written Hearing Submission of Environment Canada, July 25, 2013, p. 19.

> "In conjunction with accurate characterization of water quality, is the need for further modelling of mixing within Taseko River. Taseko River is glacially fed and predictions in a recent study suggest that these glacial contributions will likely decrease during the next 100 years (Moore, 2009). Taseko River and the Taseko Lakes watershed are fed by the Lord River and other major tributaries which flow out of the Lillooet Icefield. Bridge Glacier, which is part of the Lillooet Icefield, has been studied and modelled with respect to more immediate climate changes. The model output indicates that the glacier will decline by approximately 30% resulting in a comparable decline of summer stream flow within the next 100 years. The impacts from a reduction in stream flow and a change to water quality could result in limitations in Taseko River's mixing ability and capability to negate high metal inputs from Fish Creek as discharges are predicted to occur in Year 48."[246]

Therefore it is with reason that the Tsilhqot'in believe that the impacts from this project would radiate far beyond the "no access" zone fence or the "no shooting" zone signs. None of these impacts have been meaningfully assessed in the EIS.

What is clear after both the previous and current community hearings is that Tsilhqot'in community members would avoid a much larger area if the mine were built. This would be further enhanced by the construction of seepage pond facilities, groundwater wells, and pipes to deliver the contaminated seepage back to the water treatment plant or tailings storage facility.

Avoidance of these areas as a result of fear of contamination would impact Tsilhqot'in use, and technical reviewers' concerns which parallel the Tsilhqot'in make such avoidance understandable. For a more detailed discussion of avoidance, please refer to that discussion in Section 6.5, "Avoidance of Teztan Biny, Nabas – Perceived Contamination".

6.9 Taseko River

Based on the Proponent's commitment to water treatment, the previous Panel did not find significant adverse effects on fish health in the Dasiqox (Taseko River). However,

[246] CEAR #646, Written Hearing Submission filed by the British Columbia Ministry of Forests, Lands and Natural Resource Operations, July 15, 2013, p. 25.

this was based on a commitment that, "water treatment would likely be necessary prior to release."[247]

Since that time, based on the new TSF design, additional information from NRCan has raised new concerns about the ability to capture deep groundwater seepage escaping the TSF, and therefore, the ability to treat seepage and groundwater prior to release to the Taseko River.[248]

The deep groundwater contaminant plume expected by NRCan was not modeled by the Proponent. Reviewers noted that it would be impossible to capture, and would likely 'daylight' in the Taseko River. No effects assessment on potential impacts to the Taseko River is before this Panel in relation to this seepage input.

Reviewers also noted that salmon are a vital component to Tsilhqot'in culture and identity. [249] The Taseko River supports a unique biodiversity unit of sockeye salmon ("Taseko sockeye") that is provisionally 'red zone' classified as per the DFO's Wild Salmon Policy. [250] Other anadromous fish stocks within the Taseko include steelhead and Chinook. These are "diminished in abundance and being managed towards conservation and rebuilding." [251]

The Upper Fraser Fisheries Conservation Alliance (UFFCA) provided evidence to the Panel about the unique cultural practices that the Tsilhqot'in have in relation to these species, and in all cases, the conservation concerns that are increasing as a result of declining salmon stocks.[252] This is also influenced by the ever-increasing reliance of all Fraser River First Nations on the Chilko sockeye runs, which have comprised approximately 50% of all the sockeye salmon returning to the Fraser watershed. The increased reliance and pressure from both within the Tsilhqot'in Nation but also from

[247] Panel Report, p. 69.
[248] CEAR #691, Revised Written Hearing Submission Filed by Fisheries and Oceans Canada, July 23, 2013, p. 13.
[249] CEAR #803, *Exhibit – 41: Brian Toth on behalf of the Upper Fraser Fisheries Conservation Alliance presentation on Chilcotin Stocks' Status and Interest and Use*, Day 1 of the Aquatic Environment topic-specific session, July 29, 2013, Slide 24.
[250] CEAR #1039, *Upper Fraser Fisheries Conservation Alliance Response to Undertaking 21 (U-021): Provide information on when Taseko River sockeye were assessed as provisional "red zone" by Fisheries and Oceans Canada, according to Wild Salmon Policy criteria and thresholds*, August 16, 2013.
[251] CEAR #1029, *Exhibit – 106: Upper Fraser Fisheries Conservation Alliance presentation on Toosey's (and the Tsilhqot'in) Fisheries and the Fish Stock that support them*, Toosey Community Hearings, August 15, 2013, Slide 6.
[252] CEAR #651, *Written Hearing Submission received from the Upper Fraser Fisheries Conservation Alliance*, July 19, 2013.

outside the Nation elevates the consequences of any adverse impacts to fisheries resources downstream of the proposed mine.

The UFFCA also explained how the Taseko sockeye stock was genetically unique, and in serious decline. It is the objective of the TNG to protect this resource and given the precarious status of the stock, any additional risk from the mine is unacceptable to the Tsilhqot'in. The findings of government reviewers in relation to seepage into the Taseko River only heighten this concern.

> The Project, if approved, would result in significant adverse effects on proven Tsilhqot'in Aboriginal rights to hunt, trap and trade in the greater Nabas region, including established Tsilhqot'in Aboriginal rights to fish and gather plants and medicines in and near Big Onion Lake, Wasp Lake, Beece Creek, and nearby portions of the Taseko River, and asserted Tsilhqot'in Aboriginal title.
>
> While commitments have been received by the Proponent to capture contaminated seepage or surface discharge prior to entering the Taseko River, there remain significant uncertainties that the seepage will escape mitigation efforts and will daylight in the river.
>
> Therefore, the Project, if approved, would put at risk threatened sockeye stocks in the Taseko River, and Aboriginal rights to fish for salmon. Given the uncertainties of the effectiveness of the mitigations proposed, as well as the future impacts of climate change, the risks to fish health in the Taseko River are significant and should be carefully considered.

6.10 Cultural Impacts are Significant and Immitigable

In summary, the cultural impacts of the Project would be significant and immitigable, including:

- The permanent destruction of cultural heritage sites at Y'anah Biny, an area "considered home to certain families", and to which they hold a "strong spiritual attachment";[253]

[253] [Previous] CEAR #76, *Environmental Impact Statement (final version)*, *Volume 8 - First Nations*, p. 2-46 to 2-47, 2-52.

- The permanent destruction of the long-standing traditional fishery at Y'anah Biny, and the ability to navigate by boat and raft on Y'anah Biny for traditional purposes;

- Permanent destruction or long-term displacement from approximately 60 km^2 of prime harvesting areas in and around Teztan Biny and Nabas that are actively relied on by a large number of Tsilhqot'in members, substantially reducing or in some cases entirely eliminating harvesting areas for many plant and animal species;

- Long-term displacement of Tsilhqot'in from the Teztan Biny and remaining Nabas areas as a result of mine-related noise, blasting, light, dust, activity, industrial traffic, aesthetic impacts and other continuous sensory disturbance;

- Long-term displacement of Tsilhqot'in from Teztan Biny, Nabas Central and likely Greater Nabas and beyond as a result of perceived risks of contamination;

- Loss of meadows in the Teztan Yeqox watershed for grazing of cattle by the Solomon family;

- Severing of the deep ancestral connection to Teztan Biny as a "Cultural Keystone Place", a cultural school, an important place for community gatherings, a vital food fishery, and as a site for ceremony and spiritual connection, including the island in Teztan Biny;

- Loss of the last intact lands available for unimpeded Tsilhqot'in traditional use east of the Taseko River, at a time when moose populations are plummeting, with direct implications for the cultural survival of the Tsilhqot'in people.

The values associated with the Teztan Biny/Nabas area are unique, of special significance, and irreplaceable. As a result, the above impacts cannot be mitigated, adequately or at all, through financial compensation or "enhancement" of other traditional use areas.[254]

[254] See *Panel Report*, pp. 203, 242, 245 ["The Panel … does not believe that these recommendations would eliminate or accommodate the significant loss First Nations would experience as a result of the Project"].

To quote from the previous Panel report, the impact to the Tsilhqot'in of losing these lands would be "high magnitude, long term, irreversible",[255] "unquantifiable and beyond comprehension".[256]

> The Project, if approved, would result in significant adverse effects on Tsilhqot'in cultural heritage and current use of lands and resources for traditional purposes. These significant adverse effects cannot be mitigated.

[255] *Panel Report*, p. iii.
[256] *Panel Report*, p. 190.

7. SIGNIFICANT EFFECTS ON ABORIGINAL RIGHTS & TITLE

The Panel is mandated to accept information from First Nations regarding potential and established Aboriginal rights and title, and to assess the significance of potential impacts to these Aboriginal rights and title.[257]

7.1 Proven Aboriginal Rights to Hunt, Trap and Trade

Tsilhqot'in people have proven Aboriginal rights to hunt and trap birds and animals throughout an area that includes much of the Project Area for the purposes of securing animals for work and transportation, food, clothing, shelter, mats, blankets and crafts, as well as for spiritual, ceremonial, and cultural uses. This includes the right to capture and use wild horses for transportation and work.[258] Tsilhqot'in people also have a proven Aboriginal right to trade in skins and pelts as a means of securing a moderate livelihood.[259]

These proven Aboriginal rights are not at issue in the upcoming appeal of the *William* case to the Supreme Court of Canada, and as such are conclusively established.[260] Accordingly, the Claim Area, including the lands around Teztan Biny and Y'anah Biny, represents one of the few regions in Canada subject to a declaration of proven Aboriginal hunting and trapping rights.

For all of the reasons set out above under "cultural impacts", the permanent destruction of, or displacement of Tsilhqot'in from, these critical hunting and trapping grounds represents a severe infringement of proven Aboriginal rights.[261] The significance of this

[257] CEAR #124, *Amended Terms of Reference for the Federal Panel Reviewing the New Prosperity Gold-Copper Mine Project*, s. 3.8.
[258] *Tsilhqot'in Nation v British Columbia*, 2007 BCSC 1700, paras. 1239-41.
[259] *Tsilhqot'in Nation v British Columbia*, 2007 BCSC 1700, para. 1256.
[260] For a backgrounder on the *William* litigation, see: CEAR #824, *Written Hearing Community Submissions from Jay Nelson on behalf of the Tsilhqot'in National Government;* Doc #899, *Exhibit - 71: Jay Nelson presentation on Tsilhqot'in Aboriginal Rights and Title at the Xeni Gwet'in Community Hearing Session*.
[261] See *R. v. Morris*, *2006 SCC 59*, para. 53 ["Essentially, therefore, a *prima facie* infringement requires a 'meaningful diminution' of a treaty right. This includes anything but an insignificant interference with that right"]. This same test of *prima facie* infringement presumably applies with equal relevance to proven Aboriginal rights.

impact is magnified substantially in light of the evidence that these lands represent one of the last intact areas that supports unimpeded Tsilhqot'in hunting and trapping.

7.2 Established Aboriginal Rights to Fish and Gather Plants and Medicines

The Aboriginal fishing and gathering rights asserted by the Tsilhqot'in Nation have sufficiently strong support that they should be treated as tantamount to proven Aboriginal rights. In our view, these rights should be considered "established" Aboriginal rights.

The test for proving an Aboriginal right comprises the following criteria:

> "Van der Peet set out the test for establishing an aboriginal right protected under s. 35(1) [of the Constitution Act, 1982]. Briefly stated, the claimant is required to prove: (1) the existence of the ancestral practice, custom or tradition advanced as supporting the claimed right; (2) that this practice, custom or tradition was "integral" to his or her pre-contact society in the sense it marked it as distinctive; and (3) reasonable continuity between the pre-contact practice and the contemporary claim …" [262]

This test focuses on pre-contact practices exercised with reasonably continuity to the present day. With respect to the remaining element ("integral" to pre-contact culture), the Court has clarified that practices undertaken in pre-contact times for survival purposes meet this threshold.[263]

The available record amply satisfies the test for establishing Tsilhqot'in Aboriginal fishing and gathering rights at Teztan Biny, Little Fish Lake and Nabas. In particular:

- Although Aboriginal fishing and gathering rights were not at issue in the *Tsilhqot'in Nation* case, the Court made findings that meet the criteria for proving these Aboriginal rights. The Court held that "Tsilhqot'in people were present in the Eastern Trapline Territory at the time of first contact" and that "[t]he area has been used by Tsilhqot'in people since that time for hunting, trapping, fishing and gathering of roots and berries".[264] The Court also specifically affirmed that Nabas and Little Fish Lake were used for hunting, trapping and fishing and gathering prior to first contact with Europeans.[265]

[262] *Mitchell v. M.N.R.*, *2001 SCC 33*, para. 26, referencing *R. v. Van der Peet*, [1996] 2 S.C.R. 507.
[263] *R. v. Sappier; R. v. Gray*, *2006 SCC 54*, paras. 35 *et seq*.
[264] *Tsilhqot'in Nation v British Columbia*, 2007 BCSC 1700, para. 893 [underscore added].
[265] *Tsilhqot'in Nation v British Columbia*, 2007 BCSC 1700, paras. 902-904.

- The Court's findings of continuous fishing and gathering by Tsilhqot'in people in the region from pre-contact times to the present day suffice to establish the asserted Aboriginal rights. There is no question that these activities were for survival purposes and thus integral to Tsilhqot'in culture.

- With respect to cultural significance, the importance to the Tsilhqot'in of lake fisheries as an essential survival strategy in the face of periodic salmon shortages is well documented.[266] Lake fishing for Tsilhqot'in people is integral to cultural security and food security. The importance of gathering to the Tsilhqot'in people was also recognized at trial.[267]

- The Proponent's own English-Ehrhart report accords with the above. She records use of the mine site area by Tsilhqot'in people "as far back as 1860 and quite possibly before then" and documents consistent patterns of fishing and gathering across generations.[268]

Tsilhqot'in land use and occupation has been tested in one the most extensive trials in Canadian history and the resulting findings satisfy the criteria for proving Aboriginal fishing rights. Accordingly, Tsilhqot'in fishing and gathering rights should be characterized as tantamount to proven Aboriginal rights.

For all of the reasons set out above under "cultural impacts", the permanent destruction of, or displacement of Tsilhqot'in from, these critical fisheries and gathering areas would amount to a severe infringement of established Aboriginal rights.[269]

7.3 Asserted Aboriginal Ceremonial Rights

The Tsilhqot'in assert Aboriginal rights to conduct spiritual and cultural ceremonies at and around Teztan Biny, including the island in Teztan Biny where present-day and previous generations of Tsilhqot'in people have conducted rituals to receive their spiritual powers. This asserted Aboriginal right finds ample support in the testimony to this Panel and the previous Panel.

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[266] *Panel Report*, pp. 180-81.
[267] *Tsilhqot'in Nation v British Columbia*, 2007 BCSC 1700, paras. 675-77.
[268] *Ehrhart-English Report*, pp. 47, 52.
[269] See *R. v. Morris*, *2006 SCC 59*, para. 53 ["Essentially, therefore, a *prima facie* infringement requires a 'meaningful diminution' of a treaty right. This includes anything but an insignificant interference with that right"]. This same test of *prima facie* infringement presumably applies with equal relevance to proven Aboriginal rights.

For the reasons set out above under "cultural impacts", the displacement of Tsilhqot'in from this sacred site, and the practical impediments to conducting cultural and spiritual ceremonies at and around Teztan Biny (*e.g.* loss of pristine environment to mine-related noise, blasting, light, dust, activity and other sensory disturbance) would amount to a severe infringement of this asserted Aboriginal right.

7.4 Incidental Aboriginal Right to Teach Traditional Practices

Each of the Aboriginal rights reviewed above includes the incidental Aboriginal right to pass on these practices to younger generations through on-site cultural instruction.[270] Teaching these practices on-site is also important for passing on of the Tsilhqot'in language.[271]

As noted, even if Teztan Biny were physically preserved, its value as a cultural school would be eliminated. The loss of such a valuable, accessible and actively utilized place for cultural instruction (along with the broader area that would be destroyed or subject to the "no-shooting" zone and other mine-related displacement) further magnifies the significance of the impacts that the Tsilhqot'in would experience to each of the above-reviewed Aboriginal rights.

7.5 Aboriginal Title

The Tsilhqot'in Nation continues to assert Aboriginal title to the Project area, as set out in a separate brief to the Panel.[272]

Although the Tsilhqot'in are not seeking a declaration of Aboriginal title to the Project area in the upcoming appeal to the Supreme Court of Canada, this does not mean that the question of Aboriginal title to these lands and waters is conclusively resolved.

The appeal to the Supreme Court of Canada could conceivably result in a new trial (as in *Delgamuukw*), in a right to renew claims of Aboriginal title to specific sites within the Claim Area (as the B.C. Court of Appeal decided in this very case) or in negotiations with the Crown to resolve the outstanding issue of Tsilhqot'in Aboriginal rights and title (as in *Calder*, resulting in the Nisga'a Treaty). In this last case, the preservation of Teztan Biny/Nabas area would be of prominent interest to the Tsilhqot'in.

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[270] *R v Côté*, *[1996] 3 SCR 139*, para. 56.
[271] See, *e.g.*: CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 13.
[272] See: CEAR #824, *Written Hearing Community Submissions from Jay Nelson on behalf of the Tsilhqot'in National Government*, p. 10.

7.6 The Requirement of Tsilhqot'in Consent

The Proponent has repeatedly asserted that First Nations do not have a "veto" over development.

In our view, this is a political (and inaccurate) statement that has no relevance to the mandate of the Panel. However, to clarify the matter, we addressed this issue in a separate brief to the Panel.[273]

To briefly summarize, the Supreme Court of Canada has been very clear that in some cases, especially where the impacts on proven Aboriginal rights are substantial, the "full consent" of the affected First Nation may be required.[274] In our view, the proposed infringement of asserted and established Aboriginal rights in the present instance is of such a magnitude and nature that it calls for full consent of the Tsilhqot'in Nation.

In this sense, Canadian constitutional law accords with the requirement of "free, prior informed consent" under the U.N. *Declaration on the Rights of Indigenous Peoples*. In our submission, whether under s. 35 of the *Constitution Act, 1982*, or the U.N. *Declaration*, Aboriginal peoples cannot and should not deprived of a Cultural Keystone Place of such importance as the Teztan Biny region over their strong objections, and without their consent.[275]

Further, the fact that First Nations do not have a "veto" does not mean "anything goes", as the Proponent seems to imply, or that approvals must be granted notwithstanding severe impacts on First Nations' rights and interests. The duty to consult and accommodate First Nations' concerns becomes more demanding as the magnitude of potential impacts increases.[276] The Crown cannot lawfully authorize proposed development where it does not properly accommodate Aboriginal rights and interests, as demonstrated by the *William* case itself.

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[273] See: CEAR #824, *Written Hearing Community Submissions from Jay Nelson on behalf of the Tsilhqot'in National Government*, pp. 14+ [PDF].
[274] *Haida Nation v British Columbia (Minister of Forests)*, *[2004] 3 S.C.R. 511, 2004 SCC 73*, paras. 24, 48.
[275] In this respect, we fully adopt the submissions of Amnesty International in CEAR #1002, *Written Hearing Submission from Craig Benjamin on behalf of Amnesty International*; CEAR #629, *Written Hearing Submission filed by Craig Benjamin, Amnesty International Canada (Received July 15, 2013)*.
[276] *Haida Nation v British Columbia (Minister of Forests)*, *[2004] 3 S.C.R. 511, 2004 SCC 73*, para. 39.

7.7 Conclusions on Impacts on Aboriginal Rights

The record before this Panel fully substantiates the previous Panel's conclusion of significant and immitigable impacts on asserted and established Aboriginal rights and Aboriginal title.[277]

> The Project, if approved, would result in significant and immitigable adverse effects on proven Tsilhqot'in Aboriginal rights to hunt, trap and trade, established Tsilhqot'in Aboriginal rights to fish and gather plants and medicines, and asserted Tsilhqot'in Aboriginal title and Aboriginal rights to conduct cultural and spiritual ceremonies at and around Teztan Biny.
>
> The Project, if approved, would also result in significant and immitigable adverse effects on incidental Aboriginal rights to instruct youth in these cultural activities at a highly valued and actively used cultural training ground.

[277] *Panel Report*, pp. iv, 218.

8. CLASSIFICATION OF "ENVIRONMENTAL EFFECTS"

Some unique challenges arise for this Panel because of the repeal and replacement of the *Canadian Environmental Assessment Act* midstream in the Panel's review process. This included a significant re-definition of "environmental effects". The new definition of "environmental effects" is complex and without judicial precedent or guidance.

The Panel is mandated to report on the full range of "environmental effects" as defined under the former *CEAA* and the Panel's Amended Terms of Reference. At the same time, the Panel is required to specifically report which of its conclusions and recommendations relate to "environmental effects" as now defined under *CEAA 2012*.[278]

To assist the Panel, TNG submits that the following clearly constitute significant environmental effects of the Project under both the former *CEAA* and *CEAA 2012*:

- Effects on fish and fish habitat;[279]
- Effects on water quality in Teztan Biny and other water bodies;[280]
- Effects on Tsilhqot'in cultural heritage and current use of lands and resources for traditional purposes;[281]
- Effects on proven and asserted Tsilhqot'in Aboriginal rights and title.[282]

TNG submits that cumulative effects on moose and grizzly populations and habitat arguably (given the lack of interpretive guidance) constitute significant environmental effects of the Project under both the former *CEAA* and *CEAA 2012*, as such effects would not occur "but for" federal approvals for the Project, and are thus "directly linked" to such approvals.[283] However, we acknowledge that there is some uncertainty as to the scope of s. 5(2)(b) under *CEAA 2012.*

[278] CEAR #417, *Letter from the President of the Canadian Environmental Assessment Agency to the Chair of the New Prosperity Gold-Copper Mine Project Federal Review Panel - Response Clarifying the Terms of Reference Regarding the Definition of "Environmental Effects" (see Reference Document Number 409)*.
[279] *CEAA 2012*, s. 5(1)(a)(i).
[280] *CEAA 2012*, s. 5(2)(a).
[281] *CEAA 2012*, s. 5(1)(c).
[282] *CEAA 2012*, s. 5(1)(c).
[283] *CEAA 2012*, s. 5(2)(a).

9. ADDITIONAL ISSUES

9.1 Engagement

The Proponent's record of engagement with the Tsilhqot'in Nation has arisen frequently in the Panel's hearings. The Proponent has repeatedly asserted that it has been "shut out" by the Tsilhqot'in Chiefs. The Proponent has also suggested on several occasions that its failure to present the Panel with site-specific or reliable information on certain matters (*e.g.* a community-specific human health risk assessment) is the result of the Chiefs' refusal to meet with the company.

TNG has submitted the engagement record with the Proponent, as of the rejection of the previous Prosperity proposal.[284] This record speaks for itself. However, we note the following:

- Throughout the previous Panel review, the Proponent consistently denied, dismissed and ignored the importance of Teztan Biny and the Nabas region to the Tsilhqot'in people, which further compromised an already strained relationship.

- After the Federal Government rejected Prosperity, the Proponent publicly announced, within weeks, that it intended to submit a new proposal, *without any effort to discuss this proposal with the Tsilhqot'in Chiefs.*[285]

- The previous Panel had already considered the "new" proposal (then known as "Option #2"), specifically concluding that "the proximity of the open pit and associated mining facilities would be close enough to Teztan Biny (Fish Lake) to eliminate the intrinsic value of the area to First Nations even if another alternative were chosen" and therefore "none of the alternative mine development plans examined would receive support from First Nations".[286]

[284] CEAR #290, *Letter of Comment to the Canadian Environmental Assessment Agency from the Tsilhqot'in Nation concerning the Environmental Impact Statement (EIS)*, pp. 70-101 [PDF].
[285] CEAR #290, Letter of Comment to the Canadian Environmental Assessment Agency from the Tsilhqot'in Nation concerning the Environmental Impact Statement (EIS), pp. 70, 73 [PDF].
[286] *Panel Report*, p. 50.

- The Proponent was well aware that its revised proposal did not address the Tsilhqot'in Nation's concerns and that the Tsilhqot'in Chiefs and communities were fundamentally opposed to this revised proposal. It hardly facilitates engagement (or an "open door") to publicly announce a revised application, known to be equally unacceptable to the Tsilhqot'in, without soliciting the views of the Tsilhqot'in Chiefs – and then expecting the Chiefs to consult about the details of how the Project should proceed.

- Nonetheless, the Proponent was not "shut out". In fact, as demonstrated by the record, TNG staff made every effort to have input into the EIS and provide Tsilhqot'in perspectives. TNG made requests for information from the Proponent required by the EIS Guidelines (to no avail). Efforts by TNG staff to have a dialogue on major issues before the Proponent concluded its EIS and reached conclusions about Project impacts and significance were also rejected by the company in its rush to file its EIS.[287]

- Nor did the Chiefs refuse to meet with the Proponent. The Chiefs agreed to meet with the Proponent if it responded to concerns raised by TNG, and if one potential outcome of such a meeting was a decision not to proceed with the Project. The Proponent did not respond to this offer.

- It is inaccurate for the Proponent to suggest that it has been "shut out" simply because it has not had a direct meeting with the Chiefs. As the record shows, TNG has diligently responded to all engagement from the Proponent.

- For example, TNG staff offered to work with the Proponent on the human health risk assessment and other studies that required community consultation under the EIS Guidelines[288] – but the Proponent did not respond to this offer, and instead substituted consumption data from outside of the region, thus underrepresenting the high rates of consumption of country foods in Xeni Gwet'in.

- The Proponent's "open door" is, in reality, an open door to discuss *how* (and not *whether*) the Project should proceed, on its own terms, and for matters that it chooses, in disregard of TNG's efforts at engagement.

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[287] CEAR #290, *Letter of Comment to the Canadian Environmental Assessment Agency from the Tsilhqot'in Nation concerning the Environmental Impact Statement (EIS)*, pp. 79-83, 87-98, 100-101 [PDF].
[288] CEAR #290, *Letter of Comment to the Canadian Environmental Assessment Agency from the Tsilhqot'in Nation concerning the Environmental Impact Statement (EIS)*, pp. 82-83 [PDF].

- The Proponent's track record speaks volumes in this regard. As noted in ?Esdilagh, Chief Mack has made considerable efforts for over a decade to engage Gibraltar in a human health risk assessment. The Province has finally made such an assessment a permit condition, *not as a result of Gibraltar's goodwill or corporate social policies*, but because of heavy lobbying of the Province by TNG and other First Nations. Even still, the terms of reference for this study remain incomplete, and it remains to be seen whether it will truly meet First Nations concerns.[289]

Finally, it should be noted that this is an exceptional situation, where the Tsilhqot'in Chiefs have been presented with a single, unacceptable proposal that fundamentally contravenes their cultural values, the mandate from their communities, the ambitions of Xeni Gwet'in and other communities, and the very survival of the Tsilhqot'in way of life. It is unrealistic in these circumstances to expect the Chiefs to facilitate the development of such a Project.

Notwithstanding this reality, the Tsilhqot'in Nation has made considerable efforts to inform the Proponent of its position and its concerns, little of which is reflected in the EIS, the assessment of Project impacts or the Proponent's public statements.

9.2 Revenue Sharing and Benefit Sharing Agreements

Reference has been made to potential compensation to the Tsilhqot'in Nation through the provincial policy on revenue sharing (in the form of "Economic and Community Development Agreements" or "ECDAs").

It is important to appreciate some important limitations of the ECDA policy:

- ECDA compensation is not fixed. Instead, it represents a portion of the mineral taxes actually paid to the provincial government. The mineral tax itself is based on net current proceeds and profits. Because of the ability of proponents to manage their tax liability, actual payment for some years may be nominal or in fact non-existent. For example, as best we can tell, Gibraltar Mines paid no mineral taxes to the Province in 2012.[290]

[289] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, pp. 64-66 [Chief Mack].
[290] CEAR #633, *Written Hearing Submission filed by Joan Newman Kuyek (Received July 17, 2013)*, p. 12. The Proponent's response to Ms. Kuyek's report agrees with this statement of how revenue sharing with First Nations is calculated and does not appear to dispute the non-payment of mineral taxes in 2012:

- ECDAs come with strings attached. In particular, to secure an ECDA, First Nations typically have to release the government of any past or ongoing liability for impacts on Aboriginal rights or breaches of the duty to consult and accommodate. ECDAs typically require First Nations to accept modifications and expansions of the Project in the future, provided a prescribed consultation process is followed.[291] In this sense, ECDAs represent a "blank cheque" for Project impacts and future expansions, if the First Nation is to receive the benefits under the ECDA.

- An ECDA in this case would not be negotiated until after the Project is approved. At this stage, where a First Nation has fully opposed a Project because of *bona fide* concerns about the impacts on its culture and lands, negotiating leverage is negligible – the Project is already approved.

- Even at face value (which is highly questionable, as discussed above), the compensation projected for ECDAs is disproportionate to the impacts for the Tsilhqot'in. The Proponent cites ECDAs projected to compensate First Nations in the range of $24m and $30m over the life of certain mine projects.[292] Dividing this by 20+ years for the present Project, between 6 Tsilhqot'in communities, yields paltry compensation for such significant impacts to areas of sacred and profound cultural importance.

- More importantly, as found by the previous Panel, and reinforced by testimony to this Panel,[293] "[m]any First Nation members indicated that no amount of monetary compensation could replace the loss of the Teztan Biny ecosystem".[294]

CEAR #869, *Taseko's Response to Undertaking 3 (U-003) to provide a detailed response to the presentation and the written submission by Joan Kuyek, D.S.W*, pp. 10-11.

[291] See, *e.g.*, the definition of "Project" in the *Nakazdli ECDA*, p. 2, which includes "any changes, modifications or expansions to the mine", as well as ss. 5.2, 5.5., 5.6.

[292] CEAR #1010, *Taseko Mines Limited's Supplemental Written Submissions Regarding Economic and Community Development Agreements*.

[293] See, *e.g.*: CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, p. 188 [Chief Percy Guichon]; CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 106 [Councillor Dwayne Hink]; CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, pp. 203-4 [Councillor Rosalie Montgomery], pp. 206-7 [Shawn Billyboy], p. 220 [Edwin Kolausok]; CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 62 [Georgina Johnny], p. 66 [Peyel Laceese].

[294] *Panel Report*, p. iv.

- As in the previous review, the provincial government did not present any submissions on the ECDA policy, and this Panel does not have any information to establish with certainty whether or to what extent the Tsilhqot'in would be compensated under the provincial revenue sharing process.[295]

With respect to potential benefit sharing with the Proponent, the record speaks for itself. Explaining company policy, Taseko representatives refused to commit to discussing an "impact benefit agreement" with First Nations.[296]

Moreover, Chief Mack explained ?Esdilagh's relationship with Gibraltar in these terms:

> "After over 40 years of existence this mine has provided our people with about three jobs and severely impacted our Aboriginal rights and displaced us from our lands. We have tried to engage with Taseko in a meaningful and respectful way, but we have run into significant challenges with them …" [297]
>
> "You would think if a company's going to be here for 30 years they would establish, take that time to cultivate a good working relationship. And what we've found is we've got a take it or leave it approach." [298]

And ?Esdilagh still hasn't received any revenue as IBA from the company, still haven't seen any contracts.[299]

Mr. McManus suggested that the failure – after 10 years – to secure an agreement with ?Esdilagh was a result of Tsilhqot'in opposition to New Prosperity. This is categorically false. As explained by Tribal Chair Joe Alphonse,[300] the TNG has fully supported ?Esdilagh in its efforts to secure an agreement with Gibraltar.

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[295] *Panel Report*, p. 245.
[296] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, pp. 177-79 [John McManus and Christie Smith].
[297] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 40 [Chief Mack].
[298] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 53 [Chief Mack].
[299] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 62 [Chief Mack].
[300] CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 50-52 [Chief Alphonse]; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 148 [Chief Joe Alphonse].

The real issue, as identified by Edwin Kolausok, is the company's aggressive, take-it-or-leave-it approach to First Nations:

> "?Esdilagh has tried to negotiate an impact benefits agreement with Taseko due to the long and significant impacts that Gibraltar Mine has had on ?Esdilagh and because of the massive expansion project which will compound those and is compounding those impacts.
>
> I was there at the table when we began negotiations, so I know very clearly what was going on. And even our original negotiator that we brought in because we wanted to have impartial people with experience to sit down and help us to engage with our team, and in the end they had to leave the negotiation table because they were not treated right, and because their view of what a proper impact benefit agreement would look like was rejected by Taseko in the end.
>
> ?Esdilagh was left with a take it or leave it, three-year offer on an expansion project that could go on for 20 years and given a one-week notice to accept the deal or it would be scrapped. This unilateral treatment effectively ended the negotiations by Taseko and left ?Esdilagh First Nations still without any meaningful accommodations or economic opportunities from this operating mine.
>
> Those talks did not breakdown and they really didn't have nothing to do with New Prosperity. In fact, Taseko did not want to talk with Tsilhqot'in National Government. They made that very clear to us. So we were in a very awkward position. And it's very complex, of course, but we still forged ahead and tried our best with clear respect to the company and to everyone to try because of the lack, simply because of the lack of any benefits for 40 years." [301]

Chief Bev Sellars of Xat'sull First Nation described the same experience with the company:

> "As to how to get First Nations involved in making sure, it's a simple solution. You involve us and you involve us in a meaningful way. Not, you know, not take it or leave it. And that's been -- it's been on Taseko's terms and Taseko's terms mostly and, you know -- so if we don't agree with it then, you know, the talks end.

[301] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, pp. 216-18 [Edwin Kolausok].

> I'll give you an example. And I hoped I didn't have to raise this. But you [Gibraltar] have a participation agreement with a community that is very close to us [Williams Lake Indian Band] … and we were told if we didn't settle for what they got then you wouldn't have a mandate to negotiate anymore and so we, up to -- even though the impacts are so much higher because it is our traditional territory, we're expected to take what another community got and that community has no traditional territory in this area." [302]

This track record provides little confidence in the Proponent's willingness to negotiate a fair and equitable revenue sharing agreement with the Tsilhqot'in Nation, after it has its approval in hand.

Similarly, the promises of jobs for Tsilhqot'in people must be considered in perspective. For example, Chief Percy Guichon estimated that Tsi Del Del Enterprises, a band-owned forestry company, employs 50 Tsilhqot'in members.[303] By contrast, Gibraltar Mines is said to employ 68 self-disclosed Aboriginal people, of *all* First Nations descent.[304]

While Tsilhqot'in communities clearly want employment opportunities, there is nothing to suggest that they would obtain jobs from New Prosperity on a scale that could not be obtained from more culturally appropriate vocations, or on a scale that would come close to compensating for the significant cultural and environmental impacts.

In sum, there is no certainty of fair and equitable economic benefits to the Tsilhqot'in should the mine proceed, either through provincial revenue sharing or benefit sharing with the Proponent. All indications are to the contrary.

More importantly, as noted by the previous Panel,

> "First Nations did not indicate substantial interest in monetary compensation for the loss of the Teztan Biny (Fish Lake) and Nabas areas, or for the proposed provincial revenue sharing agreement … a clear indication that financial compensation would not replace the loss of Teztan Biny and Nabas areas for the Tsilhqot'in ... [P]articipants … were not opposed to development, but were only

[302] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 112-13 [Chief Bev Sellars].
[303] CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, pp. 185-86 [Chief Percy Guichon].
[304] CEAR #836, *Taseko Mines Limited's Response to an Undertaking 002 (U-002): Provide information on the number of Aboriginal people employed at Taseko that are in Management and clarify how the calculation is done*.

interested in sustainable, culturally appropriate development opportunities that would sustain the local economy for future generations".[305]

9.3 Mine Expansion

In our submission, the assessment of cumulative effects for the Project must include the potential impacts of a future mine expansion, since the Proponent has publicly announced expanded reserves and an intention to operate the mine for an additional 13 years.

As discussed below, the previous Panel directed the proponent to include this potential expansion in its cumulative effects assessment. Nothing has changed since that decision. If anything, it is more essential than ever to consider the potential impacts of mine expansion.

On November 2, 2009, in the midst of the previous Panel's hearings for the original Project proposal, the company issued a news release announcing a 70% increase in mineral reserves.[306] The news release stated that the increase in recoverable metal would extend the life of the Project from 20 years to 33 years. In the news release, the Proponent's President was quoted as saying that the increase in mineral reserves will allow Taseko to mine deeper, higher grade mineralization and will allow the Prosperity project to operate for over three decades.[307]

In response, the previous Panel requested that the company provide additional information on the potential cumulative effects of the proposed Project in combination with a potential 13-year mine life expansion.[308] The Panel Chair acknowledged that expansion of the mine depended on the strength of future commodity prices, but noted that "environmental assessment – is a planning tool used to ensure that projects are

[305] *Panel Report*, p. 203.
[306] This news release is appended to a letter from the Tsilhqot'in Nation to the previous Panel, [Previous] CEAR #1310, *Letter in response to Taseko's announcement of increase in mineral reserves (From Tsilhqot'in National Government to Review Panel)*.
[307] See above and [Previous] CEAR #1436, *Letter to Taseko regarding the announcement of an increase in mineral reserves (From Review Panel to Taseko Mines Limited)*. This was not in response to a new discovery of mineral resources, but the opinion of the company that metal prices were high enough to classify more of the resource as "mineral reserve".
[308] *Panel Report*, p. 128.

considered in a careful and precautionary manner".[309] This same consideration governs here.

The previous Panel also commented:

> "… the Panel is also cognizant of the wording used by Taseko Mines Ltd. in its press release, which states "[t]his increase in recoverable metal, under present mine design criteria, extends Prosperity's mine life from 20 to 33 years". This seems to suggest that Taseko Mines Ltd. is reasonably certain that the mine life would be extended." [310]

Indeed, in the news release, the company's president stated in confident terms:

> "This increase in metal price assumptions will allow us to mine deeper, higher grade mineralization … With the size of this reserve and the longevity of its mine life, Prosperity will be one of the great mines of Canada. The 64% increase in recoverable gold and 80% increase in recoverable copper will allow Prosperity to operate for over 3 decades."[311]

In the previous hearings, the proponent made it clear that maximizing recovery of the full resource is its paramount goal. As noted by the previous Panel in its report:

> "In Taseko's view, the assessment of alternatives was also driven largely by the geographic proximity of the ore body to Teztan Biny (Fish Lake). Given that it was not possible to move the ore body, mine components would need to be built around it. Furthermore, while the desire to preserve Teztan Biny was expressed, Taseko noted during the public hearing that "it is not possible to preserve Fish Lake as a viable and functioning ecosystem while at the same time maximizing the full potential of the defined resource." As such, Taseko noted that a goal was to ensure that nothing in the selected mine development plan would prevent potentially expanding the mine in the future." [312]

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[309] [Previous] CEAR #1436, *Letter to Taseko regarding the announcement of an increase in mineral reserves (From Review Panel to Taseko Mines Limited)*, p. 2 [PDF].
[310] [Previous] CEAR #1316, *Letter in response to Taseko's announcement of increase in mineral reserves (From Review Panel to Taseko Mines Limited)*, p. 1 [PDF] [italics in original].
[311] See the news release appended to a letter from the Tsilhqot'in Nation to the previous Panel, [Previous] CEAR #1310, *Letter in response to Taseko's announcement of increase in mineral reserves (From Tsilhqot'in National Government to Review Panel)* [italics in original, underscore added].
[312] *Panel Report*, p. 37 [emphasis added].

In fact, during the previous Panel hearings, the company pointed to rising commodity prices as a factor that would lead to the eventual destruction of Teztan Biny *in any event*:

> "Bear in mind the Project as contemplated here mines about 50 percent of the resource.
>
> As commodity prices increase, as the potential pit increases, it increases out, radially out towards the lake. So that as commodity prices increase, as this thing demonstrates that it has higher and higher reserves, you would start to encroach on to the lake to the point that in order to ensure the safety of personnel and equipment and everything else working within that pit, you reach a point where you actually impact Fish Lake and you lose Fish Lake." [313]
>
> …
>
> "... if the pit enlarges to the point that it actually intersects with the lake and you lose the lake, if you'd chosen mine development plan one or two, in anticipation of saving the lake, you just kind of lost the game. If you know what I mean. You've made your best efforts to save the lake. And then maximizing the extraction of the resource, you've lost the lake." [314]

The Panel agreed that expansion of the mine would mean the certain destruction of Teztan Biny (Fish Lake), regardless of the mine development plan under consideration:

> "The Panel notes that expansion of the open pit would encroach on Teztan Biny (Fish Lake). While Taseko indicated that future mine expansion did not influence its consideration of alternatives, the Panel recognizes that there would be pressure to mine the full ore body in the future to maximize resource extraction. If the current Project proceeds and if future expansion was approved, Teztan Biny would be eliminated in any case." [315]

The Government of Canada, in rejecting the previous proposal, fully accepted "the conclusions of the Panel as presented in the Report". In directing New Prosperity to another Panel review, the Minister of the Environment expressly instructed the Agency to "design a process that will thoroughly assess whether the proposal addresses the

[313] [Previous] CEAR #2253, *Hearing transcripts Volume 29: April 26, 2010 Topic-Specific Session*, pp. 5428-29 [Scott Jones] [emphasis added].
[314] [Previous] CEAR #2253, *Hearing transcripts Volume 29: April 26, 2010 Topic-Specific Session*, pp. 5444-45 Scott Jones] [emphasis added].
[315] *Panel Report*, p. 50 [emphasis added].

environmental effects identified in the environmental assessment of the original Prosperity project".

The company is applying for New Prosperity based on its proposal to "preserve" Teztan Biny – at the same time the company is actively promoting expanded mineral reserves to its shareholders and the public that require the certain destruction of Teztan Biny to exploit.[316]

In fact, while this Panel proceeds with its review of the Project with a "20 year mine life", the company is advertising the Project to shareholders and the public as having a mine life of "+20 years", based on the expanded reserves, in recent promotional materials.[317]

Notably, the company's opening presentation for New Prosperity at the hearings in Williams Lake and each of the First Nations communities starts with a chart depicting New Prosperity as the 10th largest undeveloped copper-gold deposit in the world, *based on the size of the expanded reserves.*[318]

Also, it cannot be ignored that the *only* material change in project design between "Option #2", in the previous review and its present iteration as New Prosperity is the relocation of the waste rock stockpiles in exactly the manner that the company stated would be needed to facilitate mine expansion in the future.[319]

The EIS Guidelines call for assessment of the likely cumulative effects of the Project "in combination with other past, present or *reasonably foreseeable* projects or activities in

[316] For example, this Taseko Fact Sheet promotes the expanded reserve figures at p. 2: *http://www.hdgold.com/i/pdf/tko/TKO_FactSheet.pdf*. Taseko even cites the expanded mineral reserves in its Project Description for New Prosperity, p. 11. The mineral reserves promoted in recent materials references the 33-year reserves as indicated in Taseko Mines Ltd.'s 2009 Technical Report which heralded the 33-year version of the project (see p. 159 from the Report available from *www.sedar.com* and submitted December 17, 2009).

[317] Taseko Mines Ltd. Corporate Presentation, "Building Value Through Operating and Developing Major Mining Projects", September 2012, pp. 4, 11, Available at: *http://www.tasekomines.com/i/media/mce/presentations/TKO-Presentation-2012Sep.pdf*.

[318] CEAR #675, *Exhibit - 1: Taseko Mines Limited opening session presentation at the July 22, 2013 general hearing session*, Slide 2.

[319] [Previous] CEAR #2253, *Hearing transcripts Volume 29: April 26, 2010 Topic-Specific Session*, pp. 5444-45 [Scott Jones] ["So when you look at, for example, the pit and a Tailings Storage Facility in upper Fish Creek, you're still trying to preserve the lake and you still make the decision or you make the logical association to put the waste storage facility north of the pit because you're trying to do that. You only do that because you're disregarding this expansion that would actually intersect the lake"]. For New Prosperity, the Proponent has relocated the waste rock piles from north of the pit to east of Teztan Biny.

the study areas".[320] The threshold is "reasonably foreseeable" – the project or activity does not need to be *certain* or in application or review stages.

The EIS Guidelines reference CEAA policy statements for guidance on this issue. The potential for mine expansion in the present case can only be described as "reasonably foreseeable" (*i.e.* "[t]he action may proceed, but there is some uncertainty about this conclusion").[321] This was the conclusion of the previous Panel.[322]

The *Practitioner's Guide* also includes as "reasonably foreseeable" those projects or activities that "may proceed if the project is approved (*e.g.* induced action for which little information is available)".[323] It further notes that "[r]igid adherence to minimum regulatory requirement … is increasingly becoming unacceptable to many stakeholders if there is reason to believe that at least some reasonably foreseeable projects could have a significant cumulative effect with the project under review".[324]

Critically, there is no fixed and rigid standard that applies in every case without regard to context. Ultimately, the Panel must be satisfied that the cumulative effects assessment is sufficient in the particular circumstances of the Project before it. In the present case, the EIS Guidelines explicitly caution that they set out only the "*minimum* information requirements" and that "[i]t is the responsibility of the Proponent to provide sufficient data and analysis on any potential environmental effects to permit proper evaluation of the Project".[325]

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[320] CEAR # 81, *New Prosperity Gold-Copper Mine Project Environmental Impact Statement Guidelines (Prepared by the Canadian Environmental Assessment Agency)*, s. 2.7.1.4 (p. 34) [emphasis added].
[321] *Operational Policy Statement[:] Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act* (Nov. 2007), defn of "reasonably foreseeable".
[322] [Previous] CEAR #1436, *Letter to Taseko regarding the announcement of an increase in mineral reserves (From Review Panel to Taseko Mines Limited)*, p. 3 [PDF].
[323] Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker, 1999, *Cumulative Effects Assessment Practitioners Guide*, s. 3.2.4.1, "Action Selection Criteria".
[324] See above.
[325] CEAR # 81, *New Prosperity Gold-Copper Mine Project Environmental Impact Statement Guidelines (Prepared by the Canadian Environmental Assessment Agency)*, p. 6. Indeed, CEAA's *Operational Policy Statement* recommends the inclusion of even "hypothetical" projects where appropriate; that is, even where there is "*considerable uncertainty* whether the action will ever proceed". It states, "[t]o better reflect the broad objectives of the Act, the Agency position has evolved to include 'certain' and 'reasonably foreseeable' projects and, where appropriate those projects that are 'hypothetical'. This position is also consistent with the 'best practices' approach of the Practitioners Guide"].

The particular circumstances of this Project compel the scoping of the potential mine expansion into the cumulative effects assessment:

- the proponent itself has announced and continues to promote expanded mineral reserves in a manner that conveys reasonable certainty;
- the proponent has repeatedly emphasized the importance of maximizing recovery of the mineral resources;
- after careful deliberation and input from all interested parties, the previous Panel concluded that the potential mine expansion was "reasonably foreseeable" and assessment of its potential impacts was required to fulfill its mandate;
- the previous Panel concluded, and the Government of Canada agreed, that expansion of the mine would result in the certain elimination of Teztan Biny;
- a paramount purpose of this second review is to determine whether the proponent has addressed the significant environmental effects identified by the previous Panel, including the significant cultural and environmental impacts of eliminating Teztan Biny; indeed, the proponent's new proposal is premised on its assertion that it can "preserve" Teztan Biny;
- in advancing Option #2 as New Prosperity, the Proponent has made the one design change that it had identified as essential to facilitate future expansion of the mine;
- it is far from certain that any future mine expansion would be subject to environmental assessment and, even if it were, the considerations would be much changed from the present situation, given that substantial mine infrastructure would then be in place, the mine would be operating, and Tsilhqot'in use of the area would be substantially displaced – the present review is the only opportunity to fully consider potential impacts before development proceeds; and
- a guiding purpose of this review is to ensure that the Project is considered in a careful and precautionary manner.

Given that a central issue in this review – by the proponent's own admission – is whether the proponent can "preserve" Teztan Biny as a fully functioning ecosystem, we ask that this Panel consider one of the most likely ways this Project could result in the destruction of Teztan Biny, as identified by both the proponent and the previous Panel.

As an additional factor in the assessment of cumulative effects, the 13-year expansion of the mine life announced by the Proponent would result in the certain elimination of Teztan Biny, as conceded by the Proponent and found by the previous Panel.[326] It is not clear that an application to expand the mine in the future would be subject to provincial or federal environmental assessment, or that it would involve the same balancing of interests as the present application, given that substantial mine infrastructure would then be in place, the mine would be operating, and Tsilhqot'in use of the area would be substantially displaced.

[326] *Panel Report*, pp. 43, 49-50.

10. JUSTIFICATION

> "The Xeni Gwet'in People can succeed as a healthy First Nation community. They are rebuilding their lives and working hard to find the lifestyle that fits their beliefs and goals of self-sufficiency and a connection to the land. So the fourth point I wanted to make is the Federal Government needs to understand that anything they do or allow into this community that does not fit with the Xeni Gwet'in plan for recovery will probably damage the one community that could be the model for traditional First Nation success. If the Federal Government truly wants a First Nation community to succeed in a way that retains their traditional lifestyle, versus other First Nation communities that have succeeded through Western economics, they need to stop any encroachment on the Xeni Gwet'in territory and support them in ways that meet their needs in becoming a model community.
>
> … in mental health terms, the loss of land, loss of control, loss of self-determination, loss of identity, and all the emotional challenges represented by the mine proceeding would be classified by any health care provider as overwhelming. With a community of people who already have a fragile mental health state, it will be devastating. All their hard work to recover to this point may be lost and I'm not sure it could be turned around given the immensity of the losses they will perceive in their lives because of the mine."
>
> Shari Hughson, Nemiah Community Health Nurse[327]

If the Panel agrees the Project would result in significant residual environmental effects, its mandate is to collect information relevant to justification under *CEAA 2012*. The Proponent's main position is that such justification flows from the Project's potential contribution to government revenues, jobs, and the local economy.

TNG asks the Panel to convey to the Federal Government the following additional factors of direct relevance to justification.

[327] [Previous] CEAR #1991, *Hearing transcripts Volume 13: March 31, 2010 Daytime Community Session*, pp. 2054, 2058-59.

10.1 Inflated Projections of Economic Benefits

Jobs and revenues are positive benefits of the mine, but it is important to critically assess the Proponent's inflated claims about the "prosperity" that would be generated by the Project. By presenting *gross* rather than *net* anticipated gains to jobs and revenue throughout its EIS (and in the media) the Proponent dramatically overstates the actual economic benefits of the Project, and ignores the even greater public costs (BC Hydro, road up-grades, etc.) that would result from the Project.[328]

10.2 Improved Economic Outlook for the Cariboo

During the previous Panel review, dire economic consequences for the Cariboo Region were predicted should the mine be rejected. However, the economic situation for the Cariboo Region, while not without its challenges, is vastly improved from 2009. According to the City of Williams Lake, unemployment in the Cariboo Region is at 5% (below the provincial average of 6.4%) and business permit values are at a 5 year high.[329]

10.3 Equity of Benefits vs. Impacts

Equally important is a consideration of who would share in the benefits that would flow from the Project and who would bear the costs. The people who work and reside closest to the Project – both Native and non-Native – overwhelmingly oppose it. The closest communities to the Project (Xeni Gwet'in, Yunesit'in) would bear the most immediate and devastating cultural and environmental impacts of the Project. There is no reason to conclude that the economic benefits of the Project would reach them in any real way, and certainly not on a scale that could compensate for the loss, which to them is incalculable.

10.4 Unwelcome Long-term Liabilities Will Fall to Future Generations

Many reviewers raised concerns that the economics of operating water pumping and treatment facilities for hundreds of years, or in perpetuity, mean that the financial

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[328] CEAR #609, *Net Economic Benefits of the New Prosperity Project (Marvin Shaffer, Ph.D., June 2013)*; CEAR #1008, *Response from MiningWatch Canada to Taseko Mines Limited's Response to Undertaking 3 (see Reference Document Number 869)*; *CEAR #633, Written Hearing Submission filed by Joan Newman Kuyek (Received July 17, 2013)*; *CEAR #338, Written Hearing Submission filed by David Williams, President of Friends of the Nemaiah Valley (FONV) Board of Directors*.

[329] CEAR #933, *City of Williams Lake Submission to the Panel of the Second Quarter Economic Indicators for Williams Lake (Received August 9, 2013)*.

security required for this mine site would be unprecedented in the province. This is of serious concern given the low-grade of the copper and gold deposit.

The Tsilhqot'in are not interested in plans that place serious negative burdens and obligations on future generations. From TNG's perspective, this mine could have a negative long-term legacy on par with sites such as the Faro and Giant mines. While industry and government may believe that financial security bonding will prevent future taxpayer liabilities in the future, the TNG believe that the scale of this proposed mine, with *active* water pumping and treatment, poses a significant risk that there is no financial security large enough to ensure that active management and oversight would occur hundreds of years from now. Unlike the suggestion put forward by John McManus in Xeni Gwet'in, the TNG are not interested in the jobs at a water treatment plant and would rather avoid this negative legacy completely by leaving the ore in the ground.[330]

10.5 The Potential Cultural Impacts of Approving the Mine Project

Tsilhqot'in culture and language is remarkably vibrant and intact in Xeni Gwet'in (and the Tsilhqot'in generally) despite decades of adversity and external pressures, in large part because of a remoteness and ethic of stewardship that its leaders and membership have made tremendous sacrifices to preserve. Dropping a massive open-pit mine into the backyard of the Xeni Gwet'in people, over their objections, would be a devastating blow to a culture that is struggling for survival.[331]

10.6 No Mitigation or Financial Benefit Can Compensate for This Cultural Loss

Tsilhqot'in members and leadership have made it clear that "[n]o amount of money … will compensate for the impacts of losing such an incredibly important cultural place".[332] Tsilhqot'in youth were perhaps the most vocal in this respect: "I would guarantee that if you would ask, or even had a conversation with any of our youth they would choose our

[330] CEAR #913, Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia, p. 82 [John McManus]
[331] CEAR #714, *Written Hearing Submission filed by the Tsilhqot'in National Government expert P.M. (Patt) Larcombe, Symbion Consultants - Tsilhqot'in Current Use of Nabas Lands and Resources for Traditional Purposes: Overview and Assessment of Impacts of the Proposed New Prosperity Mine*, pp. 47-50.
[332] CEAR #964, *Hearing Transcript Volume 16: August 14, 2013 ?Esdilagh (Alexandria IR 22) Community Session*, p. 220 [Edwin Kolausok].

culture, our language as a first priority … [T]hey would choose our culture, our tradition, over these jobs any day".[333]

We ask that the Panel convey to the Federal Government that there is no mitigation or financial benefit that can compensate for the profound cultural impacts that the Project would have on the Tsilhqot'in people.

10.7 Clash of Cultural Values

As stated by Tribal Chair Joe Alphonse, "I think you're looking at two different societies, two whole different value systems".[334] He explained how Tsilhqot'in people value jobs in silviculture or fisheries that comport with their cultural values, but that large-scale, open-pit mining was simply unacceptable for many Tsilhqot'in people. Again, he explained that Tsilhqot'in youth held these views most strongly.[335] Virtually every Tsilhqot'in member that presented to the Panel explained, implicitly or explicitly, how their very identity as a Tsilhqot'in person was based on respect for the land, reserving the land and, "if push came to shove",[336] defending their land and culture.[337]

In the words of Dalton Baptiste, of Xeni Gwet'in,

> *"I've learned quite a bit in my time through university and through my own people and one of the biggest teachings of my people is that we were provided with this land as Tsilhqot'in people … and should we treat these things with respect and should we take only what is needed by us, then we will be taken care of by the land and by what is given to us by our Creator. And from what I'm taught, that is*

[333] CEAR #996, *Hearing Transcript Volume 17: August 15, 2013 Tl'esqox, Toosey Reserve Community Session*, p. 66 [Peyel Laceese].
[334] CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 26-27 [Chief Alphonse].
[335] CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 43-44 [Chief Alphonse]
[336] CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 50 [Starleigh Grass].
[337] See, *e.g.*: CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 24, 26 [Michelle Myers], pp. 110, 119 [Jessica Setah-Alphonse], p. 119 [Jessica Setah-Alphonse], p. 149 [Marilyn Baptiste], pp. 224-25 [Dinah Lulua]; CEAR #939, *Hearing Transcript Volume 14: August 12, 2013 Tsi Deldel, Alexis Creek Reserve Chilanko Forks Community Session*, p. 132 [Councillor Rocky Guichon], pp. 163-64 [Geraldine Charleyboy]; CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 170 [Chilcotin Phillips]; CEAR #1019, *Hearing Transcript Volume 19: August 17, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, p. 95 [Blaine Grinder].

the way that I live my life and what I see from Taseko Mines is not what I'm taught." [338]

10.8 Social Impacts

Aside from the environmental and cultural impacts, many Tsilhqot'in people raised grave concerns about the negative social impacts of the Project, especially for a community in recovery like Xeni Gwet'in.[339] As described to the Panel by Ann Marie Sam of Nak'azdli First Nation, in relation to the newly approved Mt. Milligan mine, negative social impacts are an inevitable consequence.[340] The Community Health Nurse for Xeni Gwet'in made it clear to the previous Panel that the mental and physical impacts of the mine proceeding would "overwhelm" the Xeni Gwet'in and far exceed available resources.[341]

Despite this, the Proponent has put almost no effort into a socio-economic impact assessment or planning for such consequences. Remarkably, Mr. McManus' response to the concerns raised in Xeni Gwet'in was "[w]e've heard that the money will cause a degradation of the social fabric of the Chilcotin people and that drug use and alcohol and another issues will be on the rise because of the mine. I certainly hope that that isn't true. I don't have anything to say one way or the other".[342]

10.9 Proponent's Track Record

In this Panel's review, the Proponent has failed to provide the Panel or regulators with the information required to assess the likely impacts of the Project, despite repeated requests for this information (as reviewed above). The Proponent has refused to comply

[338] CEAR #913, *Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 201-3 [Dalton Baptiste].
[339] See, *e.g.*: CEAR #917, *Hearing Transcript Volume 12: August 7, 2013 Community Session in Nemiah Valley, British Columbia*, p. 24 [Michelle Myer]; *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, pp. 166, 170 [Alice William]; CEAR #692, *Revised Hearing Transcript Volume 2: July 23, 2013 General Hearing Session*, pp. 207-11 [PDF] [Peter Gunville]; CEAR #956, *Hearing Transcript Volume 15: August 13, 2013 Yunesit'in Reserve Community Session*, p. 94 [Chief Ross], p. 212 [Brenda Haller], CEAR #997, *Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session*, pp. 34-35 [Chief Alphonse].
[340] CEAR #692, Revised Hearing Transcript Volume 2: July 23, 2013 General Hearing Session, pp. 126-32 [PDF] [Ann Marie Sam].
[341] [Previous] CEAR #2037, *Response to questions posed by the Panel following the March 31, 2010 presentation by Shari Hughson (From Shari Hughson to Review Panel)*; See also CEAR #1091, *Exhibit - 126: Linda Smith presentation on August 21, 2013 at the Stswecem'c Xgat'tem, Dog Creek Reserve Community Hearing Session*, p. 24.
[342] CEAR #922, *Hearing Transcript Volume 13: August 8, 2013 Community Session in Nemiah Valley, British Columbia*, p. 233 [John McManus].

with direct information requests from the Panel. The Proponent has refused to conduct a community-specific human health risk assessment, as required by the EIS Guidelines. In each instance, rather than complying, the Proponent's response has been to disagree with the need for the requested information and deny its relevance.

This is a pattern the Tsilhqot'in Nation has experienced over and over again in its relationship with the Proponent. The refusal of the Proponent to undertake a human health risk assessment in response to ?Esdilagh's concerns, despite over a decade of requests, is another example of this pattern.

There is no reason to expect that this pattern of conduct would change if the Project were approved. We ask the Panel convey this pattern of conduct to the Federal Government, including the resistance of the Proponent to the Panel's review process, and caution the Federal Government that this undermines confidence in the Proponent's commitments for monitoring, adaptive management, engagement with First Nations, etc.

10.10 Overwhelming Tsilhqot'in Opposition to the Project

Any community will have differences of opinion – unanimity is seldom reached in any community process. Accordingly, the degree of opposition to this Project in the Tsilhqot'in communities is truly remarkable: each and every presenter in the six Tsilhqot'in communities spoke out against the Project. This opposition is supported by resolutions of the Assembly of First Nations, the Union of BC Indian Chiefs, the First Nations Summit and the personal commitment of National Chief Shawn Atleo.[343]

We ask that the Panel convey the full magnitude and extent of Tsilhqot'in and First Nations' opposition to this Project to the Federal Government in its Report.

10.11 Alternative Vision for These Lands

Xeni Gwet'in and the Tsilhqot'in have an alternative vision for these lands that is incompatible with a large-scale mining development. Xeni Gwet'in has invested considerable effort developing eco-system based planning and economic development that is consistent with its cultural values and a sustainable future for its community.[344]

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[343] CEAR #890, *Letter to the Review Panel from the Office of the National Chief, Assembly of First Nations supporting the Tsilhqot'in National Government;* CEAR #197, *Union of BC Indian Chiefs - Application for Interested Party Status*.

[344] CEAR #550, *Written Hearing Submission filed by the Friends of the Nemaiah Valley (FONV);* CEAR #908, *Jay Nelson submission to the Panel of Response to Undertaking 15 (U-015): Provide an ecosystem based planning report of the Xeni Gwet'in First Nations Government;* CEAR #905, *Exhibit - 77: Nancy Oppermann*

The notion that Xeni Gwet'in should abandon this vision for their future, along with their core values and beliefs, for marginal and short-term economic benefits from the proposed mine is, in TNG's submission, an offensive relic of colonialism.

10.12 Proven Aboriginal Rights

The Project falls within an area that is subject to one of the few court declarations of Aboriginal hunting and trapping rights. By definition, the exercise of these Aboriginal rights is integral to the culture of the Tsilhqot'in people. In the words of the trial judge, such rights "must have some meaning".[345] As confirmed by the B.C. Court of Appeal, "[t]he recognition of such rights will serve to prevent incompatible uses of the land".[346] First Nations across Canada are closely monitoring this review to see whether proven Aboriginal rights will finally be taken seriously, or whether they will be compromised once again in the face of demands for short-term economic gain by others.

10.13 Xeni Gwet'in at the Cross-roads

As described in the quote from Ms. Hughson at the start of this section, Xeni Gwet'in is a community in recovery that could be a model First Nations community in Canada. By virtue of its remoteness and unwavering commitment to its cultural values, Xeni Gwet'in has maintained a strong culture, a vibrant language, a traditional diet, and a pristine and beautiful land base that supports its chosen way of life. This is an exceptional rarity in British Columbia and Canada. Xeni Gwet'in stands poised for success on its own terms and is enthusiastic about sharing its culture and territory with the world.

This puts a stark choice before the Panel and the Federal Government: supporting the Xeni Gwet'in in its recovery and its drive to be a model to the world, or delivering yet another devastating blow to the community by imposing, over its objections, a massive industrial development that will transform its community against its will, largely for the short-term benefit of others. As Chief Russell Myers Ross explained in Yunesit'in, this is an old story that the Tsilhqot'in (and other First Nations) have seen again and again throughout their history. We submit it is time to make a different choice.

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presentation on Xeni Gwet'in Economic Development Planning at the Xeni Gwet'in Community Hearing Session; CEAR #913*, Hearing Transcript Volume 11: August 6, 2013 Community Session in Nemiah Valley, British Columbia*, p. 178 [Rick Holmes]; CEAR #748, *Written Hearing Submission filed by Richard Holmes on behalf of the Tsilhqot'in National Government*.

[345] *Tsilhqot'in Nation v British Columbia*, 2007 BCSC 1700, para. 1294

[346] *Tsilhqot'in Nation v British Columbia*, 2012 BCCA 285, para. 233.

10.14 Wrong Project, Wrong Place

The Panel has heard and seen the substantial toll that this second review has taken on the Tsilhqot'in communities. We submit that the Proponent should have known clearly from what it heard in the previous review, and the findings of the previous Panel, that "New" Prosperity does not address the serious cultural and environmental impacts that are inherent in developing a massive open-pit mine in such an ecologically and culturally sensitive area.

We respectfully ask that the Panel do its part to put this unacceptable Project to bed, once and for all. It can do so by making factual findings and recommendations that, in no uncertain terms, convey the full magnitude of the likely impacts of this Project and the fact that no amount of "tinkering at the edges" in the future is likely to mitigate these fundamental significant adverse environmental effects. We ask that the Panel also communicate the heavy psycho-social toll of each review process on the Tsilhqot'in communities.

10.15 International Human Rights

The unilateral destruction of such a critically important "Cultural Keystone Place", over the overwhelming objections of the community, would violate the human rights of the Xeni Gwet'in and Tsilhqot'in as guaranteed by the U.N. *Declaration on the Rights of Indigenous Peoples* and other international instruments.

In this respect, we fully adopt the submissions of Amnesty International.[347] We ask that the Panel expressly caution the Federal Government as to this potential violation of international human rights.

10.16 Implications for Environmental Assessment and the Mining Industry

Rejection of this mine proposal is a gesture that 'modern' mining means having rigorous environmental assessment processes which should prevent harmful projects from proceeding.

Contrary to statements made by industry lobby groups such as the Mining Association of BC and others, the rejection of this mine will not have dire consequences for the region

[347] CEAR #1002, *Written Hearing Submission from Craig Benjamin on behalf of Amnesty International*; CEAR #629, *Written Hearing Submission filed by Craig Benjamin, Amnesty International Canada (Received July 15, 2013)*.

or the industry.[348] In fact, the first version of this Project was *already* rejected in 2010, and we are told that in 2012 mineral exploration activity in British Columbia was at an all-time high.[349] Further to that, there are 4 other projects in the environmental assessment process in the region and many other ore deposits, which can bring the promised job creation.[350] This project may have been approved 60 years ago, but is unacceptable today.

Instead, rejection of this mine proposal will encourage companies and the industry to focus on projects without the unacceptably high environmental and cultural costs of this proposal.

[348] CEAR #634, *Written Hearing Submission (Presentation) filed by Mining Association of BC*, July 17, 2013
[349] CEAR #669, *Written Hearing Submission filed by the Association for Mineral Exploration BC*, July 22, 2013
[350] CEAR #931, *Email to the Panel Secretariat from Zoe Younger, Mining Association of British Columbia*, August 9, 2013

11. CONCLUSION

> *… all of the these issues that we have to deal with, residential school, Chilcotin War, old tribal warfares we've had, even those issues haven't been dealt with. The layers of issues that we have to contend with, and what's going to get us there is going back to our culture, not getting away from our culture … For happiness to get past residential schools and past the Chilcotin War, get past the old tribal warfares, we need our spirituality back, our culture back …*
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> *The all night ceremonies they have in places like Fish Lake and medicine camp out in Xeni, there's more and more people are showing up. That's the journey our nation is on and that's what this company is talking about, disrupting that. That's a huge impact. We're not ready for a mega-project like that.*
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> - Tribal Chair, Chief Joe Alphonse[351]

For all the complexities in this Panel process, TNG submits that the Panel's primary duty is relatively simple: the Panel has to determine whether the Project is likely to have significant residual environmental effects.

In our respectful submission, the record before the Panel is clear on this point. The cultural impacts of the Project alone are significant, immitigable and of tremendous consequence for the long-term mental and physical health of the Tsilhqot'in communities and the survival of the distinctive way of life that they have maintained through generations of resolute commitment and sacrifice. The ecological risks are also of an unacceptably high magnitude: the plan to "preserve" Teztan Biny is unproven, unprecedented and almost certain to fail, with dire environmental consequences.

This Project cannot be "justified in the circumstances". The Tsilhqot'in Nation needs to see respect for the hopes and dreams they have for their culture and for their traditional lands. They respectfully ask this Panel to communicate to the Federal Government the significant and immitigable impacts of this proposed Project for the environment and for the Tsilhqot'in people.

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[351] CEAR #997, Hearing Transcript Volume 18: August 16, 2013 Tl'etinqox-t'in, Anaham Reserve Community Session, pp. 34-35 [Chief Alphonse].