

**CONFIDENTIAL MINUTES**  
**COLLIERY DAMS TECHNICAL COMMITTEE**  
**THURSDAY, 2014-APR-10 AT 10:30 A.M.**  
**BOARD ROOM, SERVICE & RESOURCE CENTRE, 411 DUNSMUIR STREET**

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**PRESENT:**

*Snuneymuxw First Nation:*  
Chris Good, Lands & Resource Coordinator  
Raymond Lamont

*Colliery Dam Park Preservation Society:*  
Jeff Solomon  
Geraldine Collins  
Lorne Gale  
Leon Cake

*City of Nanaimo:*  
Toby Seward, Director, Social & Protective Services  
Holly Pirozzini, Recording Secretary

Katherine Gordon, Facilitator

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1. Call to Order

The meeting was called to order at 10:30 a.m.

2. Debriefing of Risk Assessment Workshop with Golder Associates held 2014-Apr-04:

City confirmed that information given at 2014-Mar-12 Technical Committee meeting and recorded in the minutes (Item 3.) is not correct and Golder Associates is proceeding with application for reclassification of the dams.

Discussion occurred respecting whether it would be beneficial for the Committee to have a discussion, prior to phoning Golder Associates (GA).

**Agreed: The Committee will have a group discussion and summarize its position before phoning Bruce Downing, Golder Associates.**

City provided comments on the risk assessment workshop:

- Morning session – Bill Roberds presented risk analysis approach (information already provided to the Technical Committee).
- Afternoon session – Bill Roberds discussed new information and provided new slides (internationally used graph on fatality rates), which was debated about its accuracy.
- Others present commented on the overtopping and that leading to failure is clearly a longer time period than the 3 minutes originally believed, which is a benefit to the overall process.
- A GA hydrologist stated that this is a very small reservoir and therefore the failure rates and volume of water could run itself down so that there would be less concern with the downstream inundation.
- A GA computer programming specialist stated that a model has been created to use information/inputs from the workshop to determine the seismic capabilities of the Lower Dam.
- Ability for classification of the dams to be reviewed due to updated information on construction and overtopping option. GA stated that they are discussing this with Dam Safety Section (DSS).
- Clarified CDA Guidelines and how they are used.

- Discussion about Middle Dam and the approach of GA to deal with the Lower Dam may not be deliverable unless know the conditions of the Middle Dam (seismic and spillway capacity). GA stated that they could build this into their risk approach which may eliminate the need for any physical work to be done to the Middle Dam. DSS appeared to want to discuss the Lower and Middle Dams as a system, instead of individually.
- GA will come up with an approach to deal with the Middle Dam in the next two weeks and will provide developed options by early May.

Question: Was everyone comfortable with the inputs in the risk analysis? City responded yes, other than the fatality graph which was not fully understood.

Question: Has the seismic analysis been completed? City responded no, a fracture analysis needs to be done on the Lower Dam.

Question: Was there any conversation afterwards with DSS? City responded yes, DSS said they would need GA to provide technical information in order to decrease the classification of the dams, but didn't discuss what level the dams' classification could be brought down to.

Colliery Dam Park Preservation Society (CDPPS) provided comments on the risk assessment workshop:

- The workshop wasn't so much a working meeting as a presentation to the Technical Committee representatives and DSS.
- The CDPPS have concerns about transparency of the process.

Facilitator - suggested that the Committee discuss the issue of communication after the debriefing of the risk assessment workshop has occurred.

Snuneymuxw First Nation (SFN) stated that the risk assessment workshop was helpful and is satisfied with the process.

CDPPS continued with its comments about the risk assessment workshop:

- Phase 2 of the model was presented by GA with well-defined inputs and feedback was requested.
- Received very few comments from DSS.
- GA was frustrated because the goal posts have moved. A month has passed and now DSS stated that Middle Dam improvements may be required. I heard them say they won't accept doing nothing at the Middle Dam, which conflicts with the City's understanding.
- Provincial Guidelines are mandated to follow the CDA Guidelines, but there is still some discretion there. GA stated their solution is satisfactory to the CDA Guidelines. If it was known that DSS had concerns about the Middle Dam needing to be addressed, then GA should have been made aware of this.
- There may not be as much pressure from DSS to deal with the dams because they may not see them as being as big a threat as they were a year ago.
- DSS has witnessed the risk assessment approach, so may need to step up and recognize that the threat is less than originally thought and allow more time to deal with this issue.
- GA stated that they need to regroup and address the new goal posts.

- Asked DSS (Glenn Davidson) how do we justify spending money on something that won't have a net gain to the community at risk (i.e. do work at the Middle Dam.) He said it's a regulation and there's a minimum standard that has to be done for every dam. CDPPS feels GA is doing an extra step (addressing the Middle Dam) to placate DSS.
- Discussed with DSS reclassification of the Middle Dam to *significant* or possibly *Low* (zero fatalities), but there is a drawback to *low* because if there was a release of water it would equate to a 50-year flood and what would be the consequence downstream during spawning season.
- Discussed with DSS reclassification of the Lower Dam to *Very High* or *High*.
- DSS stated that there are grounds for reducing the classification.
- Nothing will need to be done to the Middle Dam if we can reduce the classification to *Low*.
- Need to tell GA to pursue the lowest classification possible.

#### Communication issues:

The Committee discussed concerns about transparency and the need for trust amongst each other in order to get to a solution that meets their objectives. Concerns were raised about the perception that Committee members are having direct discussions with DSS or GA without informing other Committee members about the nature or content of those discussions.

CDPPS expressed concern that they may not have not been privy to all substantive discussions between other Technical Committee members with GA. In the early stages in this process, it was decided that there would not be any individual discussions with GA or DSS without Technical Committee involvement.

This is seen as a trust issue by all parties that must be addressed.

SFN believes that the process has been transparent and that DSS has a legitimate role in the process. GA has a role to provide professional engineering and other advice. SFN / City / DSS are the decision makers in this process, but none are bound by conclusions reached by GA. SFN has a Treaty (1854) where there is a potential to impact aboriginal and treaty rights, DSS has a constitutional obligation to consult and accommodate SFN. SFN Council will make a decision based on information provided to them.

Facilitator – Reassured SFN that there has been very clear support and understanding by the Technical Committee that SFN has a formal relationship with DSS and that they will be having separate conversations with them, DFO and others in the context of that relationship. SFN is not constrained in that regard. The only agreement made by the Technical Committee was that matters directly part of the Committee's work would be discussed together as a Committee. It is understood that the City also has a formal relationship with DSS as dam owner and will need to communicate directly in that context in due course. It is also understood that City staff need to discuss certain matters directly with GA (e.g. budget and administrative matters).

CDPPS does not share SFN's faith in DSS. Want to reach reasonable solutions, but not on the whim of an authority that it feels has been "off base" at times.

City stated:

- It's important to have a solid relationship with DSS. There is a higher level of trust now between the Technical Committee and DSS because of all the work that has gone into bringing them along with the potential solutions.
- Assured the Committee that the City has not been having separate discussions with DSS or Golder on substantive Technical Committee work. The intent is always to report back to the Committee on any issues discussed with DSS or GA that may come up while discussing budget or consultant administration issues.
- DSS mentioned in a break at the workshop that the Middle Dam may need to be addressed, so Toby put it on the table for discussion at the workshop.
- Bruce O'Neil is the DSS technical expert and he has been away for a month, so he just now raised the issue about addressing the Middle Dam. Addressing the Middle Dam is not moving the goal posts, as it was raised at the last Committee meeting by Scott Morgan. GA was frustrated hearing this, but stated that they would have to deal with it.
- I think we're 4 – 6 weeks away from a potential recommendation, which is a shared goal of the Technical Committee members.

Question: Are we on the right track to report to the Executive Committee (EC) in relation to the SFN Treaty and fisheries concerns? DSS being involved in the process at Technical Committee meetings has allowed them to understand it more. SFN responded that it is committed to participate in the process. There are two concerns: SFN Treaty (1854) rights / interests and public safety. They have not reached any final conclusions about how to mitigate the risk, but will rely on a combination of things, including the advice from GA and other experts. Repeated that DSS and SFN have a constitutional obligation to engage with each other, but will make the Technical Committee members aware of issues that affect them.

Facilitator – It's important to have this discussion about communication. Despite having to overcome history and trust issues, the Committee members have worked hard together to focus on finding satisfactory solutions that will meet the requirements of its mandate. Despite coming to the Committee with different interests and drivers, at the first meeting the Technical Committee was able to set an overall objective to find a collective solution respecting public safety requirements, satisfying DSS, addressing SFN's interests, minimally evasive, cost effectiveness, etc. It is very important to stay focused on that common objective and work together towards it. If anyone has any concerns respecting communication, they need to be raised immediately so that a discussion can be held at a Technical Committee meeting. Don't want this to affect the Technical Committee's work.

**Agreed: Communication can be assisted by emailing Technical Committee members with information if an individual conversation occurs with GA or DSS that directly relates to the Committee's work.**

#### Classification and other matters

CDPPS stated:

- Reducing the classification will determine what improvements need to be made.
- The two preliminary options for the Lower Dam are overtopping and the labyrinth weir.
- Overtopping option – amount of work can't be reduced by doing something at the Middle Dam, but there is the added benefit of adding a low level outlet.
- Labyrinth option – can reduce the design parameters and spend less money by doing something at the Middle Dam and can add a low level outlet.

- Goal is to do the least work necessary at the Middle Dam to satisfy DSS requirements (upgrade spillway or provide overflowing protection) or seismically (place reinforcement on upstream side of the dam).
- DSS will be satisfied if some improvements are made to the Middle Dam.
- The 175 flow rate was derived from the PMF but it was a number to begin with; now we can reduce the number to 120 or less and then reduce the design parameters and cost.
- Depending on improvements to the Middle Dam and the classification that can be achieved, it won't change the cost of the overtopping option, but may change the cost of the labyrinth option.

City stated that GA needs to advise whether a combination of work can be done, such as small improvements at the Middle Dam (buttressing) and if this will decrease the amount of improvements required at the Lower Dam? GA has advised that it will take two weeks to consider a combination of improvements to Middle and Lower Dams.

Question: If the classification is reduced, can some of the Lower Dam work be modified? CDPPS responded that a lower classification will only affect the labyrinth option because the overtopping option is a holistic solution.

CDPPS stated that the overtopping solution will pass any flood, but the labyrinth solution will always be limited to a certain value and a small risk for overtopping the dam.

#### Telephone Call to Bruce Downing, Golder Associates - Questions & Answers (11:45 a.m.)

GA stated that the purpose of the risk assessment workshop was to present more recent analysis (remediating the Lower Dam only) and the impact and overall risk. The presentation will be revised and provided to the Technical Committee. The afternoon was spent on inputs to the risk assessments, the process and acceptance of the results. One of the key risk inputs is the mortality curve and findings which are being revised.

DSS's view on how the risk assessment fits into making a determination on what the remediation options are. Cannot ignore the dam classification, but GA's approach has been to meet the CDA Guidelines and satisfy the risk criteria (Frequency vs # of fatalities). Dam classification is something additional to be considered and doesn't affect the Lower Dam because we will be meeting the consequence classification, but does affect the Middle Dam.

DSS believes the risk assessment is relevant; it sets the consequence classification. Once consequence classification has been made, then have to meet certain seismic resistance and flood passage requirements. GA's approach is to use the risk assessment instead of the strict requirements in the CDA Guidelines. Will be having a meeting with DSS to discuss the dams classification and what work is required based on the consequence classification.

DSS stated that we should present a case with rationale for the classification and selection of remediation based on the risk assessment. Select a remediation for the Middle Dam based on the greatest reduction in risk for minimum expenditure. Would prefer if only minor improvements were required to the Middle Dam. The tables in the CDA Guidelines will help to understand what might have to be done to the Middle Dam. DSS still feels that the dam classification is important and some adherence to it will be expected.

**Q:** Has dam safety asked you to provide your own classification based on your expert opinion? Are they willing to reduce the classification of both the Middle and Lower Dams, would this effectively provide the relief that you're talking about?

**A:** No, lowering the classification is one part, but it is also necessary to ask for relief from meeting the strict standards associated with the lower classification.

**Q:** Is GA preparing a document with DSS that would explain the correct classification for the dams?

**A:** Yes.

CDPPS read a statement from the *Hazard Risk and Vulnerability Analysis from VI Health Authority (2005)*. In 1975, Jump Creek Dam had an erosion problem caused by human error by an inexperienced operator doing a dam inspection in 1975. Dam was immediately closed and repaired but if it had failed, areas of the Vancouver Island Highway south and east would have been under 40 feet of water with no warning. Jump Creek Dam has 16 million m<sup>3</sup> of water compared to 110,000 m<sup>3</sup> at the Middle Dam. Jump Creek is classified as *Very High*. To put things into perspective, part of your proposal should reference this event and that there isn't any immediate urgency considered at the Middle Dam.

**Q:** What is your timeline? What physical remediation options are proposed, given the new information?

**A:** Will have a meeting with DSS within the next 2 weeks. Before the meeting, we will develop logic to classify the dams. We'll need to be able to convince DSS that there is new information that strongly supports reclassification. Also, as part of that meeting and before the classification is developed, we'll set out a case for relief to have to comply with the strict standards associated with the Middle Dam. We'll have to make a case for the risk analysis and prepare a conceptual design for increasing the spillway or upgrading the dam for a seismic event. We'll discuss classification, outline the approach to remediation based on that classification, and outline the design of the remediation proposed in the meeting with DSS. We don't want to have the meeting with DSS until the case to support this approach has been built up.

City requested that Technical Committee representatives be included in the meeting with DSS.

**Q:** Originally removal of the dams was based on a cascading failure in 3 minutes of both dams at the same time. Time parameters have changed from 10 minutes to 30 minutes to 60 minutes, so do we have a very good case now for reclassification?

**A:** Yes, the range we see in the level of flooding is much less now than what was assumed in the previous classification because this has been a thorough process and we have a high level of confidence in the inputs. We have a very strong case. CDA Guidelines set out the approach to be taken to classify the dams and GA has reviewed that as part of the risk assessment.

**Q:** When you are setting out the rationale for lowering the classification, can you state the failure rate being in much lower terms and also address the concern about the environmental impact of a failure of the Middle Dam?

**A:** Yes, there are three components to the classification: life safety, environmental and property damage. We'll look at all three.

**Q:** Is the next step to come up with justification for declassification by running a risk model just for the Middle Dam?

**A:** We've probably done enough, but DSS has asked for a review of the inputs for the fatality curves.

**Q:** In the next two weeks are you creating a rationale for DSS for a reduction in the dam classification?

**A:** Yes.

**Q:** Is GA seeking a separate classification for each dam?

**A:** Yes.

**Q:** What is the timeline for reaching a firm decision for a new classification and how soon will there be recommendations for specific options for mitigating the risk?

**A:** We won't get full acceptance of a new classification at the meeting with DSS in two weeks. We want to ensure at the meeting that we are on the same page as DSS; otherwise, it could be a longer process. We will be prepared for the meeting and go into it with enough information to hopefully reach an agreement about reclassification. If we have an agreed path forward from the meeting with DSS, then we'll have a conceptual level of design and cost estimates to present to the Technical Committee in May.

SFN expressed concern that there is some finality to this process as they don't intend to be doing this next year. GA responded that this is understood.

**Q:** Are you aware that both dams were built at the same time, same company and same building methods?

**A:** Yes.

**Q:** In the next two weeks going through the process are we still in a position to do improvements to the Lower Dam as outlined in the March meeting?

**A:** This has not changed, but possibly could resize the improvements to the Lower Dam. The size of the Lower Dam spillway was just a guess and we always thought it could be reduced.

**Q:** Before meeting with DSS, will you be providing evidence for a reclassification for the Middle Dam to a lower classification?

**A:** Yes, to *significant* or *High* classification.

**Q:** Will the same people be welcome to attend the meeting with DSS as attended the risk assessment meeting?

**A:** Yes.

City stated that the meeting with DSS can be held in Vancouver, if more expedient and easier for DSS to attend, but would like it to occur two weeks from tomorrow.

GA responded that if DSS has a strong opinion on the meeting format and attendees, then we need to take that into account so we have the greatest likelihood of success at the meeting.

**Q:** Can it be encouraged that the Technical Committee may be able to listen in to the meeting?

**A:** Yes.

**Q:** We are leaving declassification in your hands over the next period and want you to achieve the lowest classification as possible, which will reduce the amount of cost and effort further on. For the Middle Dam, a *Low* classification is possible, but DSS expressed concern about how the fisheries would be affected under a flood event.

**A:** The dam will be classified on the effect of flooding (Chase River between the Lower and Middle Dam) and on consequences of recreational users on the Lower Dam reservoir, as well as subsequent flooding downstream of the Lower Dam. This consequence of Lower Dam has populations at risk and this will drive the classification decision for DSS. From inundation scenarios run, (ignore the presence of the Lower Dam) PMF plus a breach of the Middle Dam can lead to flooding. The CDA Guidelines state that if there is permanent habitation and populations at risk, means a *High* classification. To achieve *Low* or *Significant*, there is only temporary population. The CDA Guidelines table is different from the Dam Safety requirements because they've been revised to include recreational users. We have to do more on this and we can discuss this again once we've gone through the classification. If there are flooded areas with permanent buildings and residences, it will be difficult for the classification to be anything other than *Significant* or *High*. To design the dams to fit into the *High* classification will be a lot less onerous than the *Extreme classification*.

**Q:** Is the breach from the Middle Dam less than a 50-year flood, according to the flood map, so it doesn't approach any homes?

**A:** Yes it does (a sunny day failure) earthquake induced for the Middle Dam is probably less than a 50-year flood, but it is critical when there is a storm and a breach of the Middle dam on top of that.

**Q:** Are the next steps that a meeting will be arranged with DSS in two weeks or earlier, including observers from the Technical Committee, then the Technical Committee will have a meeting a few days afterwards to debrief? Will solid options and recommendations be provided by GA in early May?

**A:** yes.

Facilitator – requested that GA keep the Technical Committee informed about the meeting with DSS and any other pertinent information on the work being done.

Facilitator – requested the Technical Committee review the last three sets of minutes from 2014-Mar-04, 2014-Mar-05, and 2014-Mar-12 and provide comments/changes by email to the Recording Secretary (and copy the facilitator) by Friday, April 18.

Facilitator – Is there any other work that the Technical Committee can be doing? City responded that there are four items that could be done during May and June:

- Approval – from DSS, SFN, Executive and Policy Groups and Council review / approval for funding in May;
- Permitting – DSS, DFO, MoE, Archaeological Branch pursue both Options #3 and #4 with these groups.
- Design – can GA do the construction management of this to expedite these processes in May and June?
- Tendering

**Q:** Can these items be pursued concurrently?

**A:** Yes. The design may be able to continue while the approvals' process is occurring.



City stated that to run concurrent processes, assurance will need to be provided by the key people that we are all on the same page and well entrenched in an agreed solution. Permitting, design, costing and approval processes will be handled by the City, together with GA.

**Q:** Can the permits be updated that were in place when the tender was called to remove the dams?

**A:** City responded that the Archaeological Branch approval will need to be modified, but it is in place to the end of the year. DSS has stated that they will process the permit quickly; DFO has stated that they can start processing a broad application and modify it as we go along. There was no previous DFO application and one may not be required.

**Q:** Will the total be \$2.5 million, which includes past and present work?

**A:** City responded that \$2.5 million is currently budgeted for design and construction work.

**Q:** How do we request more money from Council?

**A:** City responded that GA will develop the options with costs by the early May. The Technical Committee will make a recommendation to the EC, the EC will recommend to the Policy Group, the Policy Group will recommend to Council for approval of the option and cost.

SFN stated that the goal is to achieve a consensus and support the conclusion for remediation which will be a shorter process.

**Agreed: The City will ensure that the Technical Committee is kept up to date respecting the permitting process (applications and content, correspondence sent and received).**

GA stated that a detailed report of all the investigative findings from the Lower and Middle Dams is being compiled and questioned whether it should be provided to the Technical Committee in draft, prior to giving it to DSS?

**Agreed: GA to provide a final report electronically to everyone; no draft report will be provided to the Technical Committee first.**

The telephone call with GA ended at 12:35 p.m.

City advised that Katherine Gordon has been requested to assist with identification of necessary permits and gathering information on the application processes involved for the information of the parties. Katherine Gordon stated that she is happy to assist if all members of the Committee are comfortable for her to do so. The Committee indicated she could proceed.

Question: Does SFN feel that the Technical Committee is on the right track because we want to reach a solution here before going to the next level? SFN responded that it's too early to reach any conclusions, but we have made progress. The process is designed so that the Technical Committee makes recommendations to the EC and then to Councils (final decision makers). We will follow that process, but can't commit in advance to any solution. If a consensus is reached, the Crown still has an obligation to consult and we can expedite that. If there is no consensus, then there is the potential to be a long process, but we want to work at this level to reach a consensus.

CDPPS stated that at a previous meeting we agreed to put forward one option if possible, and if not, then two options. Facilitator stated that the preference is to agree on one viable recommendation, but it's possible that the final report to the EC will state that the Technical Committee is split between two options. The report must reflect the accurate views of the parties involved.

City stated that the EC (Ted Swabey/Ian Howat) will identify options for Council's consideration to finance the solution outside of the \$2.5 million, but it can't be pre-judged at this point when there are still several uncertainties.

Facilitator – A lot of good work has been done here and if you keep working on the goals set in the beginning, there is optimism that the Technical Committee will work out a promising way to move forward from here in May or June.

3. Next Meeting:

Possibly early May.

Agenda item:

- Selection of a preferred option.

4. Conclusion:

The meeting concluded at 12:45 p.m.