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No Undertakings given

Tuesday, November 12, 2013

Upon commencing at 9:30 a.m.

THE CHAIRMAN: Good morning. Welcome back to, I think it's our fourth week, the beginning of our fourth week in Winnipeg. I'm starting to lose track. And by the time we get out of here some time in the next year, I'll have completely lost track of time.

This morning, Consumers Association of Manitoba is making the first of a number of their presentations this morning. It's on cumulative effects. Once we conclude the cumulative effects presentation and cross-examination, we will return to the partnership with the terrestrial effects panel, hopefully some time today.

I don't believe there's any other preliminary business we need to take care of, so I'll turn it over to Mr. Williams.

MR. WILLIAMS: Yes, thank you. And good morning, Mr. Chair and members of the panel. I should note that at the Consumers Association table today is both Ms. DeSorcy, the Executive Director, as well as Ms. Wozny, who is co-chair of the board. And we're certainly happy to have them

here this morning.

Dr. Gunn and Dr. Noble, I'm just going to have you introduce yourselves, and then I believe Ms. Johnson will swear you in. So please proceed.

DR. GUNN: I'm Dr. Jill Gunn, I am associate professor at the University of Saskatchewan.

DR. NOBLE: Brian Noble, Professor at the University of Saskatchewan.

Jill Gunn: Sworn

Brian Noble: Sworn

MR. WILLIAMS: And Dr. Gunn, you may at times want to speak a little closer to your mic. It's sometimes hard to hear you if you're backing away from it.

The panel should have in front of it two documents. One is a powerpoint presentation and the other one is titled Supporting Material to the Oral Evidence. And we are going to get to the powerpoint in short order. But if I could just direct your attention to page 1 of the smaller document, the supporting material. And we won't spend much time on qualifications of these witnesses, but there's a few things that we do

wish to highlight.

Dr. Noble, could you confirm that you are the author of "Introduction to Environmental Impact Assessment Guide to Principles and Practices"?

DR. NOBLE: Yes, that's right.

MR. WILLIAMS: Can you provide a brief discussion of what, if any, research you have undertaken with regard to cumulative effects and watersheds and river systems?

DR. NOBLE: Sure. I have been working on a couple of projects over the past few years. One focused on cumulative effects assessment practice in the south Saskatchewan Athabasca and lower Fraser watersheds. A second project, funded by the Canadian Water Network which examines more closely how disturbance and changes on landscapes affect aquatic environmental condition, so establishing the relationships between those components.

MR. WILLIAMS: And some of the learned articles which capture your research are repeated in this statement of qualifications your work with Ball and Sheelanere; is that correct, sir?

DR. NOBLE: That's right.

MR. WILLIAMS: Just turning to page 2 of the supporting materials, Dr. Noble, can you confirm that you recently completed a review for Aboriginal Affairs and Northern Development Canada on cumulative effects assessment frameworks and practices?

DR. NOBLE: Yes, it was focused on how cumulative effects is unfolding and the different state of practice across the country.

MR. WILLIAMS: And could you confirm that you served on the Scientific Advisory Committee for the Great Sand Hills Regional Environmental Study?

DR. NOBLE: That's right.

MR. WILLIAMS: Now, directing your attention to the bottom of your page under current projects, can you confirm that you were working as a consultant with the B.C. auditor on cumulative effects practices?

DR. NOBLE: Yes, providing some direction on audit development.

MR. WILLIAMS: And just finally, could you briefly discuss the work that you are doing with Teck Coal in terms of the development of a cumulative effects framework for the Elk Valley?

DR. NOBLE: Um-hum. I had been contracted by Swanson Environmental, through Teck Coal, and we are working together with the industry and some of the communities, members of the province as well, to develop a framework for assessing and managing cumulative effects to terrestrial and aquatic systems in the Elk Valley.

MR. WILLIAMS: Thank you.

And Dr. Gunn, turning to you at page 3 of the short statement of qualifications, I am intrigued by your research project in terms of "Speak No Evil, Hear No Evil," and addressing uncertainty analysis. And I wonder if you can just briefly describe what that work entails?

DR. GUNN: That work involves characterizing the various types of uncertainties that might come up in an environmental impact assessment process, where in the process those uncertainties lie, and talking about how those are not expressed. So we are looking at a variety of resource development projects across Canada and trying to understand whether or not statements around conclusions of significance are actually warranted, given the various uncertainties that do exist in these processes.

MR. WILLIAMS: Thank you for that.

And just to turn briefly to page 4 of your, of this brief statement of qualifications, and just for the board's edification, when we see the last name Harriman, that would also be, that is your name as well?

DR. GUNN: That's one of my aliases, yes. I have more than that.

MR. WILLIAMS: Can you just confirm that you worked with Dr. Noble on the project "Characterizing Project and Strategic Approaches to Regional Cumulative Effects Assessment in Canada"?

DR. GUNN: Correct.

MR. WILLIAMS: And also confirm that you worked with Dr. Noble in terms of a number of documents related to strengthening the foundation for regional strategic assessment in Canada on a variety of contracts for the Federal and Alberta governments?

DR. GUNN: Correct.

MR. WILLIAMS: In terms of both of you, if you can individually confirm that you have a specialization in environmental assessment, cumulative effects and strategic environmental

assessment?

DR. GUNN: Yes.

DR. NOBLE: Yes.

MR. WILLIAMS: Dr. Gunn and Dr. Noble, if you'd like to take us through your powerpoint. I may interject a few times, and then certainly if the panel does. Mr. Chair?

THE CHAIRMAN: I just have one question. On Dr. Noble's abbreviated CV here, the B.C. auditor, is that an auditor general, a financial auditor or is that an environmental auditor?

DR. NOBLE: It's the B.C. provincial auditor for an environmental audit.

THE CHAIRMAN: So this auditor's office just works on environmental issues?

DR. NOBLE: No, I believe they do work on other issues as well. The particular project we are involved with is for cumulative effects assessment specifically.

THE CHAIRMAN: Okay, thank you.

DR. GUNN: So this morning we are going to present the results of a review that we performed of the Keeyask Hydropower Limited Partnership's approach to the Keeyask generation

project cumulative effects assessment.

And what we're going to cover this morning is what are cumulative effects, just give a brief overview of that. We'll talk about the approach that we took to our review. We're going to take you through a synthesis of our key findings, and then we're going to talk a little bit about the actual significance of the Keeyask decision, as we see it.

So the Environmental Impact Statement adopts a fairly standard and well-known definition of cumulative effects, that is very closely based on the definition that is provided in the Cumulative Effects Assessment Practitioner's Guide for Canada, which was published in 1999 by George Hegmann and others. So the definition that's adopted in the Keeyask EIS is:

> "That cumulative effects are incremental effects likely to result from the project on the environment when the effects are combined with the effects of other past, present and future projects or human activities."

We find that to be a sound definition.

But really what are cumulative effects

exactly? Understanding what they are is really quite important to understanding the nature of our findings and what we're recommending. So oftentimes when we speak of cumulative effects, we think of them as resulting from progressive nibbling at the environment over time, project by project. They can result from a phenomenon known globally as death by a thousand cuts, meaning the more individual insults that you have upon a receiving component of the environment, the more likelihood there is eventually of the demise of that component.

It also can result from, or they also can result from what's known at the tyranny of small decisions. And what that means is that over time, taking individual decisions about individual projects or activities, each of those decisions can seem okay within their own context, but there is a tyranny to the collective decision that's really being made in absence of thinking about what that decision might be.

So what we find happens is that it's very easy to dismiss the significance of any single action, but what may appear to be a very small disturbance at the time within that local

context can actually turn out to be cumulatively significant.

So a cumulative environmental effect then is based on understanding that each individual disturbance, regardless of its magnitude, so whether it's small or whether it's large, that is not the point. It's that each one of those disturbances can represent a high marginal cost to the environment and/or society.

So, in other words, it's this high cost of incremental decisions that's really at the heart of cumulative effects.

So let's think about this graphically, because sometimes a picture is easier to understand than words. And what we have here is a simplified diagram of a sub watershed, such as might be imagined for the Nelson River. So if we think about this example, we're going to use this to understand how cumulative effects can actually occur.

So in a watershed, or in a sub watershed, it's pretty obvious that the concern, one of the chief concerns will be around water quality. And by proxy, that means we will be concerned about levels of sedimentation in the

water, levels of nutrients in the water, fish health within that river, et cetera.

Okay. So in this diagram, you can see that there are multiple sources of stress upon that river system. Some of the examples that you might find would be run-off from agriculture, for example, perhaps run-off from forestry operations, sedimentation from forestry operations, or bank erosion caused by reservoir flooding. You might have sedimentation or run-off coming from transmission line crossings. So there are a number of sources of stress.

So now we would imagine that there is a proposal for an additional hydroelectric project in this area, or any type of project, a proposal for any type of project. The question becomes, from our perspective, what are the cumulative effects of the proposed project to water quality? So, in other words, how will that proposed project change water quality, how will it change sedimentation, fish health, et cetera. But what we need to know in order to understand the potential effects of that project, we need to know, we need to have that bigger picture in mind of what is the total pressure upon that component

of the environment from all of the rest of the projects. So we need to understand something about the accumulated state of that region. So what has happened to date, we need to understand something about the additional effects of the project being proposed, and we also need to know something about the additional effects of any other future disturbances that can happen.

Okay. And from there we would need to understand something about the actual relationships, the connection between the sources of stress and the project's additional contribution.

Okay. And finally we would need to know something about what is the acceptable level of change here? So even if we know what is causing the change, we know what we are concerned about in terms of the change, we understand the relationships between the activities of the effects. We really need to try to understand something about how much change is too much? So we have to know something about, you know, are there targets, are there benchmarks for interpreting the change that we see?

So from there, let's move to a real

world example. Let's take the Athabasca River in Alberta. So in that area, there was a really significant increase in development activity over the period between about 1966 and 1996, so about a 30-year period.

Now, in that 30-year period, we saw all kinds of development ramping up, so to speak. There were five times more pulp mills discharging into the Athabasca River in that 30-year period, you saw an increase of 5 million more acres of agricultural land being developed. The amount of water withdrawal from the river increased from about 12 million cubic metres per year all the way up to almost 600,000 cubic metres per year.

In terms of the number of operating oil sands leases, it went from two to more than 3,300 over that 30-year period. So what you then also saw on an aggregate level, you saw changes happening to the Athabasca River.

So, for example, you had a 10 percent decrease in headwater low flow over that time period, you saw a 30 percent decrease in mouth low flow over that same time period. You saw a 1.4 degrees Celsius increase in the temperature of the river, and as well you saw significant changes

to chloride, sulfate, sodium and dissolved oxygen levels in the river.

MR. WILLIAMS: Before you leave -- go ahead, sorry.

DR. GUNN: I was just going to say that, you know, the point is here, the point of this slide is to say that many, many environmental impact assessments were performed over those 30 years for all of those different individual development projects. And yet no significant adverse cumulative effects were identified in any one of them. Because presumably a large part of the reason for that was there were assumptions made that those changes would be mitigated through management measures. But in the end, after those 30 years had gone by, it's pretty difficult to argue that no significant cumulative change had actually occurred there. Because quite clearly, it did, even though the impact assessments were performed.

MR. WILLIAMS: Thank you, and I apologize for interrupting.

Before you leave this slide, given what appears to be material cumulative effects in this region, at a high level, can you give us any

sense of the type of strategic choices the Province of Alberta has made with regard to this regime?

DR. GUNN: I'll ask Bram to respond to that, only because he has done more recent research right within the Athabasca.

DR. NOBLE: Sure. I mean, right now the Province of Alberta, together with Environment Canada, are working on a regional cumulative effects assessment process, a strategic type of EA for the region. I mean, the region has been identified as obviously an industrial development zone. That's not ruling out further effort that they are taking to do this cumulative effects assessment process. I can't speak on the details of that, I haven't seen a final report, but it's just through correspondence with a colleague in Alberta Environment who has been working on this process.

MR. WILLIAMS: Okay. Thank you. And please proceed.

DR. GUNN: So the question again then is, how really does this happen? How do cumulative effects happen? And what we find is often that the effects of a single project are

said to be just a drop in the bucket compared to the effects of other projects. The magnitude of the project's impacts are often measured against, or compared to other projects, instead of focusing foremost on the total environmental effects and then the project's relative contributions to those effects. Okay. Then sometimes we see too that cumulative effects are argued to be the responsibility of somebody else, because mine's only a small piece, yours is bigger than mine, somebody did it before me, that kind of a thing. So how could it really be my responsibility? So it winds up that responsibility can get displaced. But we reemphasize that you really cannot determine the true significance of any project's effects without understanding that cumulative picture.

So how do we do this then? Well, there are many different descriptions of what a cumulative effects assessment process is. However, the Hegmann guidance, or the guidance that's provided in the Cumulative Effects Assessment Practitioner's Guide, is among the most commonly used. And generally speaking, we find that there are four main components to any good

cumulative effects assessment. And with this diagram, I really just want to direct your attention to the various stages that are indicated underneath the diagram.

So the first stage is scoping and evaluation. So scoping there, scoping is a process to determine what is going to be included in the assessment and what is going to be excluded. Okay. So at this stage, you're wanting to identify your valued ecosystem components of interest and their indicators. And you're setting the spatial and the temporal bounds for the analysis.

And once scoping is complete, then you're going to take a look back in time. You're going to perform a retrospective analysis. Okay. And in the retrospective analysis, you're examining what it was like in the past, okay. And when you're choosing that point in time in the past, you have a variety of options. But generally, you're trying to get a picture of what it used to be like pre-disturbance.

So you want to start to build a picture of what has happened from that past point through to the present day. So in other words,

you have to start establishing trends and relationships between the various stresses in the region and the changing conditions of the valued ecosystem components over time. So, for example, you might start to try to look at relationships between fragmentation on the landscape, and maybe its effects on a particular caribou population. Or maybe you want to try to establish a relationship between number of river crossings over time and how that affected aquatic habitat in that same period. So you're looking at trends and relationships. Okay.

And you're also going to want to establish your threshold or your limits for that change, because that is what allows you to understand the significance of that change later on.

So once we have our retrospective analysis characterized, you're going to skip ahead to the prospective analysis. So now we are looking to the future, and this is really what cumulative effects assessment is really all about. We are trying to put that past and current picture together with what could be happening in the future to understand whether or not we want to

proceed.

So in the prospective analysis phase, you're going to use the information that you develop in the retrospective analysis. You're going to apply that to what you know about the current proposed project. And you're going to also bring in knowledge about any other future disturbances or activities. And you're going to try to predict potential future changes to VEC conditions. Okay. Again, keeping the emphasis on understanding the individual project's contribution within the broader picture of the total effects, or the total pressures on the VEC.

The final stage on any cumulative effects assessment is management or mitigation. And in this stage, there are two main things that would happen. You're going to try to identify some sort of interventions that, if there are cumulative effects predicted, would allow you to either, A, avoid those impacts, possibly B, reduce those impacts, or possibly C, you might restore VEC conditions to actually something better than how you found it. So you're wanting to think about how can we intervene to offset those predicted impacts?

But if you can't offset or deal with everything that is predicted, then you have residual cumulative effects. So one type of effects just couldn't be mitigated fully. And with that, you would have to determine how significant those residual effects are.

So that is the basic process of cumulative effects assessment.

And what we did in our review is fairly simple and straightforward. We obviously reviewed the Environmental Impact Statement, particularly the chapter on cumulative effects assessment. We reviewed any supporting volumes that we thought were relevant. We reviewed any information requests that were relevant and on and on. So we went through a series of documentation. And we basically asked ourselves two simple questions related to the four components of the process that I just talked about. So we said to ourselves, what was done reasonably well and what could possibly have been improved in this case?

So this brings us to the synthesis of our key findings. I'm going to take you through the first part on scoping, and then I'm going to hand it off to Bram, who will do the retrospective

of the prospective analysis, and then back to me for the mitigation piece, the management piece.

So what did we find? Well, we found that the cumulative effects assessment in this case contains some good practices, and also some practices that could have been improved, ones that we felt perhaps fell a little below an acceptable standard process wise. And we're going to give you some examples of each of those for each of the four phases that we investigated. So, again, let's begin with scoping.

So there were some good practice elements with the scoping. We found that this EIS adopted a relatively broad interpretation of what the regional boundaries should be. The boundaries are ecologically based, that was good.

In the scoping, there was a fairly wide variety of past, current and future projects considered. That was good practice.

And also there was consideration given to all valued ecosystem components that were found to experience significant adverse direct effects. Those were carried forward into the CEA and that was good practice.

There were a few instances where we

felt that the scoping could have been improved a little bit. Some of it was around identifying the different future projects, the current and future projects. We felt in current cases, those weren't perhaps completely adequately captured.

I'll just run you briefly through a few of them. The first one being, regarding the existing Bipole I and II transmission right-of-way. So in the CEA, the Bipole III was identified as a relatively future project. And if that transmission line is relevant, then it would stand to reason that all other transmission lines are relevant, including the Bipole I and II, on a broad regional perspective. However, the Bipole I and II is not actually specifically named in the CEA, so it's hard for one to be sure that its effects were adequately captured in the prospective analysis. And conversely, it's hard to know whether the Bipole III, those effects might have been thought of previously in the body of the impact statement, because it was identified as a future project. And the previous treatments or analyses for impacts on VECs weren't about future projects, they were about past and current. So it's hard to know for sure in the scoping if

that was done as well as it could have been.

In terms of the Wuskwatim generation project, that particular project was identified as a past. It was put into the category of past or current. But the turbines there have only been in operation for less than a couple of years. So quite obviously, the effects will continue to unfold for many decades to come. And we felt that for that reason, those effects probably would have been better captured in the prospective analysis for the CEA.

In terms of the Conawapa generation project, in the CEA it is identified in table 7-3 that that project would potentially affect water quality. And yet it's scoped out of the cumulative effects analysis for the four fish species that are identified in the same table. So we didn't understand that completely.

Now, let's talk about temporal and spatial limits and setting those for a cumulative effects assessment.

There are a few options in terms of setting the future of temporal limit for a CEA analysis. You can try to model change through to the operation -- to the end of the operational

life of the project at a minimum. You could go further than that to try to model things through to decommissioning and reclamation. And once those had been complete, or you could go still further and you could try to look into the future as far as recovering VECs to pre-disturbance conditions. And that's a fairly tall order and probably not all that realistic in a lot of cases. Because we know that once major developments happen, it's hard to return things right back to where they were. However, the operational end of the life of the project is more common to think about the first option.

So the focus, it was emphasized by the Keeyask Hydropower Limited Partnership that the emphasis of the assessment here was on the future, so that's highlighted on the slide. VEC conditions, the vulnerabilities today and into the future, so the future is emphasized a lot. And yet the future temporal limit for the CEA in general is not stated. I couldn't find it. And when we look to some of the more specific analyses of VECs, we find that there was good practice around thinking about effects, you know, of construction, following construction, and into the

near future after construction. That kind of future change was well considered generally speaking. But it's when we go beyond that, and thinking all the way through to the end of the operational life of the project, that was the gray area or the fuzzy area. And often the temporal limits for a specific VEC analyses was not clearly stated or there.

Okay. So when you have limited temporal and spatial dimensions, what this generally means is that you wind up with a fairly narrow impact analysis, limited to immediate effects on a specific environmental attribute at an individual site. And this is we feel somewhat what happened.

So then turning our attention to truncated spatial limits. The spatial limits for good practice CEA and project based assessment by definition have to be broader than that which is necessary to capture direct effects. Because cumulative effects are of a different ilk, they are different, they are not direct effects, they are effects that are often indirect. The previous slide mentioned induced effects. They can be interactive, synergistic, of a surprised nature,

we don't really know. We have to be prepared to think about setting spatial limits that could be far beyond those that are appropriate to the direct effects assessment.

The Clean Environment Commission, in one of the information requests, had expressed concern about the truncated spatial limits of the study zone five. And part of the response they received for that, if I can direct your attention to the last part of the quote at the bottom of the slide, it says:

"The assessment evaluates the VEC populations directly affected by the Keeyask project rather than using a study area delineated by the locations of all past, current and future projects to assess those effects on VECs."

But, again, good practice CEA goes beyond just the direct effects, okay. It has to adjust boundaries to be able to assess VEC sustainability. And when we think about VEC sustainability, the spatial limits may have to be a fair bit broader.

Now, just one more example and then

I'll turn it over to Bram.

Another area where we had a bit of concern was that the Keeyask project includes, you know, infrastructure and operations that really will be regionally disruptive, possibly far beyond the project study area for the direct effects. So some of the possible indirect effects that we have thought about include such things as the ongoing indirect effects due to transmission line corridor construction or maintenance, i.e., the vegetation maintenance that would go on, on those rights of way for years and years to come. You know, how does that change things? That might be an indirect effect.

What about changes to the provincial economy or various other scales of economy that are important? Those might be some key indirect effects, and what would be the correct boundaries in that case? What about possibly changes to water flow on the Nelson River, maybe upstream impacts to Lake Winnipeg?

So we're not saying that these things are happening or that they, you know, even that they necessarily -- that there's a high likelihood of them happening, but the point is to ask these

broader questions. The CEA is the opportunity to ask those kinds of broader questions and then your spatial limits would need to reflect those broader questions.

So, the Hegmann guidance reminds us that the CEA tends to be concerned with not just the VECS that are carried forward from the direct effects assessments, but also larger scale VECs such as might be relevant to an entire watershed, not just the sub watershed but the entire watershed, or maybe, you know, VECs that are so broad as to actually talk about quality of life in a region or broader than that. And the Hegmann guidance does suggest that it is within the purview of a proponent to consider even things like trans-boundary effects and global scale effects. So these are not outside the purview of a single project proponent.

So, again, we feel that the CEA is perhaps not scoped quite broadly enough to capture those kinds of indirect cumulative impacts that might be experienced further afield or later in time.

And now I'll turn it over to Bram.

DR. NOBLE: Okay. So I'll speak

briefly to the retrospective and prospective, or the baseline component in trends analysis and the predictive part of the cumulative effects assessment.

The retrospective, or looking to the past to identify how things have changed over time, what are some of the trends, we sort of identified that earlier as an important part of cumulative effects. And the Environmental Impact Statement also identifies this as being an important part of the EA in general, identifying trends and how things and conditions have changed over time.

And this is one area in this area assessment where we thought there were some really nice examples of good practice. And one of those that we highlight as a good example is how the impact statement dealt with spatial data for terrestrial habitat conditions, which was evaluated at different periods of time in the environmental assessment, and it was examined across space in the local study area and the regional study area. Linear disturbances were identified, changes to core area habitat. We thought it was a relatively good example in the

impact statement on the baseline in terms of looking at trends.

It did stop short of identifying rates of change that we might be able to use to predict those forward into the future. But just as an example of what we thought was a reasonably good practice, that's one that we did find in terms of looking at the baseline trends analysis for habitat.

A second area that we focused on in our review was the use of thresholds. And I use thresholds broadly here because we all recognize that thresholds are difficult to identify. But I'm also referring here to benchmarks or management targets, maximum allowable effects levels.

And the environmental assessment did adopt this as a principle and it identified that, you know, it would use and identify these threshold or limits. And we found that in a few cases that was actually true, the impact statement did identify some thresholds and targets. And habitat threshold, caribou population numbers is one example where they were identified in the Environmental Impact Statement including the

technical reports, and they were carried forward in the cumulative effects assessment. And we thought that that's a really good example of how to move forward with practice.

But we also observed some other areas where thresholds or limits were identified. So total suspended solids is one area where some regulatory guidelines were identified from CCME and Manitoba Water Quality Guidelines. And the other one was benchmarks were identified for priority plans. And these management targets, if you will, thresholds, they do appear in the impact statement, but they are actually not used to assess the significance of the cumulative effects.

So unlike habitat thresholds, for example, which do find their way forward, in other areas where these threshold or limits are identified, they are not actually applied beyond identifying them for the project impacts. So they are not used in the cumulative effects assessment per se.

I want to spend most of my time looking at the future component of the cumulative effects assessment. Because, as Jill highlighted earlier, the future is really what cumulative

effects assessment is all about. That's why we look to the past and present conditions to try and identify what might happen in the future because of this project. We are not alone on this. One of the responses to the information requests is quite clear that ultimately the focus of the assessment was on the future. And that's a sound principle.

The problem that we noted is that it's the weakest part of the cumulative effects assessment, even though it adopts a very sound principle. It's an area where the cumulative effects assessment, in our view, seems to fall significantly short.

MR. WILLIAMS: Dr. Noble, before we leave this page, examining the future sounds like a daunting task. I wonder if you can explain, at least practice-wise, how one might approach that?

DR. NOBLE: Sure. So we have a crystal ball -- no, I'm just kidding. The typical approach and the recommended approach to this is to examine different alternative futures or scenarios of what might be, what's the range of possibilities, what's the range of risk associated with different types of outcomes? And this is

something that's, you know, fairly common throughout practice guidance and the literature on how we do cumulative effects assessment. You can't predict with 100 percent accuracy what's going to happen in the future, particularly when you're dealing with cumulative effects. So what we focus on is, what's the range of, you know, what's a best possible outcome, worst possible outcome, what's likely in between that?

MR. WILLIAMS: Thank you.

DR. NOBLE: So, I will focus really on three key areas in the perspective assessment that I want to highlight and just bring to your attention in terms of, you know, some of the better and less than better practice components that we observed.

The first is more of a, I guess, a general observation that emerge when looking at the impact statement. There is a principle adopted that cumulative effects is about the future and that's ultimately the focus. But we sort of found, you know, relative to other aspects of the cumulative effects assessment, it actually receives the least amount of focus. And so if you are to work your way through some of the

supporting volumes for terrestrial environments, for example, terrestrial plants, the aquatic environment, in the first two, in the terrestrial components, there is a really good description of current and past conditions. And that's where the assessment does a pretty good job in our view. But when it comes to looking toward the future, there is very little attention and no analysis of what those future conditions could be or might be under different conditions.

We found, in the aquatic environment supporting volume, when it deals with cumulative effects, it says it will deal with cumulative effects but it doesn't actually refer to cumulative effects.

Now, you know, you might wonder how many pages is necessary for it to be good? Well, that's not really the point. The point is that, you know, the impact statement adopts this principle of looking at cumulative effects in the future as being key. And we agree with that. That's ultimately what cumulative effects assessment is about. It doesn't tend to do that in the application. The analysis of those future conditions is really the weakest part of the

assessment.

And I just use these as examples to show the principle versus the relative amount of attention these components actually receive.

A second area that I will sort of draw attention to, there are some of the assumptions and analyses that are presented to support those areas where there is attention given to future impacts and future conditions. And the environmental assessment scoping document is clear that it is going to identify the methods used, the assumptions, the data, the limitations and so on.

So I'll just focus on a couple of examples here. One is what we observe to be a good practice example from the cumulative effects in terms of how it was approached, and one that I'm focusing on is a weaker practice example, and we'll look at water quality and sedimentation in particular.

So with regard to intactness, this is one, an example that we flagged as a really good approach in terms of how we do this and looking to future cumulative effects. The terrestrial environment supporting volume is where this information comes from. It looks at, you know,

the density of features on the landscape, core area effects, fragmentation effects, it identifies various metrics or indicators such as the total kilometres or road density, if you want, the change in core area habitat. Management targets are identified for each of these. And the changes in those into the future are actually related to summer caribou habitat conditions.

So, process-wise this is, we thought, a good example of how this cumulative effects assessment approaches a futures analysis, to some extent, and provide the evidence behind the conclusions that they are presenting. You can certainly follow through the logic on this example.

An example where we really struggled in terms of making some sense of what the conclusions are about cumulative effects, when we went back and looked at the evidence that was presented for future effects, concerns and issues around water quality. And particularly the issues around sedimentation and how, you know, other processes are contributing to sedimentation, not necessarily in-stream, but from the landscape, and how that's linked to health or reproductive

spawning habitat for sturgeon, as an example, so we got that connection.

So there are two issues that we identified here as -- we sort of explored. Whether and how cumulative effects of other disturbances in the watershed, such as disturbances on the landscape from forestry lease sites or other projects type disturbances, vegetation clearing, how are those processes contributing to sedimentation and how are those cumulative effects considered on top of the project?

And the second is the conclusion that sedimentation levels will be elevated for 10 to 15 years, and that's identified as being an issue in the impact statement of concern, but there are no adverse cumulative effects to the sturgeon. And so it's something that caught our attention. We tried to fit these pieces together where we are a little unsure as to how the conclusions, that I'll get to in just a minute, were made in these particular areas.

So just again by way of illustration, what we're getting at is how these other activities and disturbances, or whether they were

considered or not considered when looking at cumulative effects due to sedimentation levels? Because there's more than just the project happening in the watershed, there's more than just in-stream and bank erosion that contributes to sedimentation in a watershed. So how are those other stressors or sources considered when making conclusions about the cumulative effects of sedimentation, and then the risk to sturgeon and sturgeon habitat.

So there are three concerns that we have identified and we'd just like to draw your attention to. The first, and I'm sort of repeating this one, but sedimentation caused by terrestrial disturbances in the watershed receives little to no attention beyond the project itself.

So what we sort of saw missing there was how these other activities in the watershed, which are identified in the Environmental Impact Statement, they are included, they are mentioned in the impact statement, how is sedimentation rates and processes from those types of disturbances considered, or is it even considered in the cumulative effects assessment? And if you do consider those, how then does that measure up

against the water quality guidelines that were identified in the impact statement, which, as I mentioned earlier, they were identified but not used to actually compare or evaluate the cumulative effects of sedimentation. It might change the significance determination.

The second point is the lack of models that we could find, the lack of maybe just more straightforward correlational analysis, or even looking to other watersheds, looking to what's been happening in the Saskatchewan, the Fraser, the Grand River, some of our northern watersheds. There's been some work done on this in the Yukon, as well in northern B.C., about changes to cleared areas, linear feature densities and sedimentation rates to aquatic environments, and the risk it poses to fish and fish habitat. So the Province of B.C. has some older guidelines in terms of future density and so on, where you see a cumulative risk occurring. So that's another area where we were looking for that information to help support the conclusion, but we weren't able to find or make that connection between those two things.

The third component, and I guess third

concern under this topic that we identified, and neither Jill nor myself are fish experts or fish biologists. But we noticed that in the table of VECs in chapter 7, sturgeon is not identified. And there may be various reasons for that, but I guess our concern is the connection wasn't made between sedimentation due to project activities and bank erosion. There was a model that was used for bank erosion, but sedimentation from other activities happening on the landscape and how that cumulatively could affect or pose a risk to sturgeon and sturgeon habitat. That's the connection that we were missing. Again, we're not fish biologists, but we're just looking to other studies and several other watersheds where this type of work occurred. And we do know that there were connections between disturbance, run-off, cleared vegetation, bank erosion, sedimentation, fish habitat and fish health. So, again, it's not something that's new, but we were looking for evidence from other watersheds, if not models, to support the conclusions that were being made.

So those were two areas that we identified.

A third area concerns the soundness of

the conclusions about cumulative effects. And this was an interesting one in the sense that there are a couple of cases where things just doesn't seem to add up, but I'll talk more about that toward the end of the presentation. I'll point us to a couple of examples here.

There were also some issues around precision and confidence in conclusions where it seemed that the analysis or some statements in the impact assessment seemed to suggest the opposite.

And just again, a few examples to illustrate what we mean by that. One concern, beaver population, and I don't know anything about beavers, beaver population, I just found it quite interesting that there was a lot of discussion in the impact statement, and as well as some of the information requests, the specific numbers escape me at the moment, but around the uncertainty around beaver populations, not knowing what's happening in the watershed, or even being able to compare it to other watersheds. And it was scientifically uncertain, and that's fine. You don't have data on everything all of the time, that's not the concern. The concern is that the conclusion is very confident, that there are no

measurable residual cumulative effects when we're dealing with beaver populations. And it just seems that, I'm not sure if that adds up to express so much uncertainty, yet make such a sound conclusion, implying that there has been something measured, when you say there is no measurable effect occurring. So that was one concern that we identified with the nature of the conclusions.

Another example, and a simpler one, I suppose, concerns wetlands and wetland habitat. And there was a fair bit of work done in the physical environment supporting volume, I believe, on wetland habitat, looking at how it's changed over time. But it did look into future, you know, probability modeling, let's say, of wetland change over time, which has been done in other areas. But our concern here is that, you know, the conclusion is fairly vague. And that's fine if there's some uncertainty involved, but I guess what we were looking for is, how was that conclusion reached? And we weren't able to go back into the technical volumes and find what we needed to support that conclusion.

A third example seems at odds to what cumulative effects are all about. It's looking at

intactness. And intactness was one example I highlighted earlier as being good. But the conclusion on it seems not in line with what cumulative effects are all about, where the project effects on regional intactness are adverse but small because the project footprint is an area where intactness is already low. So the reasoning being that intactness is already low, so a component is already degraded, we're going to have a small effect on that. But because it's already degraded, it's not cumulatively significant. That's just at odds with the principles that Jill had raised earlier about what cumulative effects are supposed to be focused on.

A final example that I'll raise here goes back to this diagram of the watershed and this notion of spatial separation. And I found that to be an interesting concept, especially when you're dealing with a watershed. Because if it's spatially separated, it's almost irrelevant if it's contributing to the same process. So you may have multiple projects or disturbances in a river system or in a watershed. The fact that their physical footprints don't overlap or they are spatially separated doesn't really mean anything,

if they are all causing, or if it's all a pathway leading to sedimentation in the river system. Whether they are two feet apart or two miles apart doesn't really matter, it's the process of accumulation. In this case, the sedimentation example that's being given.

So those were, I guess, some examples of the concerns that we had around the soundness of some of the conclusions around the futures part of this.

MR. WILLIAMS: Dr. Noble, before you leave this slide, you flagged what appear to be some limitations in the prospective analysis of the cumulative effects analysis. Are there specialized models and/or specialized teams who can carry out this type of analysis with regard to watersheds and river systems?

DR. NOBLE: There are groups that do this type of work. I mean, there's been some work done under -- and many of the panel members may be familiar with some of the LC's (ph) work. They have applied their models in the Ghost River watershed in Alberta, they have applied work in the northern Yukon, northern B.C., looking at how these types of disturbances affect sedimentation

and then sediment rates.

There was a graduate student of ours a couple of years ago that used very simple regression modeling to look at these types of disturbances on the landscape and how they affect water quality. A gentleman, Hans Schreier, in the lower Fraser has a series of models that look at changes in surface disturbance and run-off changes in sedimentation loading to river systems. I mean, it's work that has been done. And, you know, models are available, they are not cause effect. It's information that we can use to identify potential change and a range of future conditions, which is really what we're looking for in a cumulative effects assessment.

MR. WILLIAMS: Okay. Thank you.

DR. GUNN: So now I'll just briefly run through our key findings with respect to the management phase of cumulative effects assessment before I turn it back over to Bram to talk about the significance of the Keeyask decision.

So just as a reminder, following then the prospective analysis of cumulative effects, we would turn our attention to management. And this would involve two steps, the identification of

mitigation strategies, and then trying to characterize the significance of any residual cumulative effects. So the Keeyask Hydropower Limited Partnership concludes that there will be no significant adverse residual effects following some proposed mitigation for socio-economic effects. But ultimately the determination is there are no significant adverse effects.

The Hegmann guidance suggests that significance may appear to decrease as the perceived effectiveness of mitigation measures increases. So the more we believe in our mitigation measures and that they will be effective, the more temptation there is to believe that the significance of predicted effects is smaller.

And so we are kind of left to wonder, is too much confidence being placed in the proposed mitigation strategies for the direct effects of this project, given the highly disturbed state of the region to date.

And we have to ask that question within the context of statements made within the impact statement itself, then right within the cumulative effects portion of that statement. So

there are a number of statements made that suggest that not all predicted cumulative effects in the region will actually be minor.

So if we look at ecosystem diversity, what was said is that losses for all priority habitat types could be in the moderate magnitude range. For priority plant species, mosses are predicted possibly in the moderate range. For fish, members of the KCNs have stated that they expect a larger spatial and temporal effects than indicated in the technical reports.

So these kind of statements, you have to ask yourself, how then are there no significant adverse cumulative effects? And again, the Hegmann guidance says that good practice requires that we make conservative conclusions about significance. So we want to err on the side of caution if we can. We want to assume that an effect is going to be more or greater, or more significant than less.

The past record of development and resulting regional environmental disturbance in this region seriously challenges the notion that this project will not contribute to processes of adverse cumulative environmental change already in

motion, and that the incremental effects of the project would not be cumulatively significant. So just common sense. And then some of the statements that are made in the impact statement, all of that together suggests otherwise.

So we want to talk a little bit about masking or minimizing cumulative effects from a significance perspective. And again, there are two common ways that this happens. The first being by comparing the effects of one project to the effects of other projects and saying that, well, these effects are not as big as those, therefore they are relatively insignificant. And that mistake, or that occurrence happened quite a bit in the Bipole III case. And we have to remind the Commission that the focus really has to remain on the total effects, not my effects versus your effects, but what's the total effect.

There is another way that cumulative effects, the significance of them can be masked or minimized, and that's by broadening out the geographic scale of reference, such that local effects are -- the local significance is de-emphasized by emphasizing that they are regionally insignificant. So that does happen in

the Keeyask case where we say, we acknowledge that these more local or project specific effects are significant, yes, they are, but when we look to their regional scale, now they seem insignificant. But it doesn't actually mean that they are cumulatively insignificant.

And just some statements to support that observation with regard to moose, the statement in the CEA is that small changes in habitat are expected compared to regional availability of that habitat. With regard to caribou for summer residence, the cumulative reduction in intactness is small compared to the regional study area. For beaver, it says -- I'll take the last portion of that statement first -- it says the population will most likely continue to be depressed on the Nelson River and that that population is unlikely to successfully recolonize the shoreline, but the regional populations are highly likely to remain viable. So they probably won't remain viable in the short term or in the close range, but regionally they are viable so therefore those impacts are not significant.

So what does all of this mean? So if we look now broadly across all of the key findings

we just presented to you, we find that Keeyask is relatively sound in terms of CEA principles, but comparatively weak on substance.

And we also find that the conclusions about no significant adverse cumulative effects is suspicious based on the following: That we find future temporal -- that the temporal future of CEA, those limits are often vague or unspecified. We found that the prospective analysis is often weak with little or no futures assessment. There at times is limited data or reasoning to support certain conclusions. We find that although data uncertainties are generally made explicit, which is good, there are conclusions that perhaps are overconfident and they imply that there was some sort of measurable prediction made. We found that some threshold are identified but then not used to assess cumulative effects significance. We find that at times, the regional study area seems to be used as justification to minimize cumulative effects. And we also find several statements in the impact statement and supporting volumes that indicate that there has been and will be effects, yet the overall conclusion is no significant adverse cumulative effects.

So our recommendation in this case is exactly the same as the Clean Environment Commission's recommendation for the Bipole III project, and that is that good CEA is needed prior to Keeyask approval.

And just to elaborate more on the significance of the Keeyask decision, Bram will conclude our presentation.

DR. NOBLE: Okay. This is the last part of our presentation. Maybe you're happy to hear that. We were asked to look at process and, you know, the process and the practice of cumulative effects assessment in this case.

This deviates a little from the process, but it's something that after looking at process, we sort of stepped back and thought, that's interesting. And we think it's really important. And maybe if what we have said so far is not considered important, I think this is really important.

This is something that's beyond process that was followed, and this really speaks to, what does this mean in terms of any decision that we make about the Keeyask project when we're dealing with cumulative effects?

And there are two things that really stood out to us after we had gone through everything and after we had drafted our report, and two things were really set out. One is that the regional environment in which Keeyask is being proposed has already been substantially altered by past development. So it's an environment that has already undergone some significant change.

The second point that stood out to us is that the Keeyask project will be superimposed on an already disrupted environment.

A third point which is not on the powerpoint is that these are not our statements. Okay. The impact statement says it's a substantially altered environment. The impact statement says the project will be superimposed on an already disrupted environment.

So in looking through the impact statement and some of the technical volumes and some of the information in response to information requests, we just observed this, and these are just our observations in terms of the statements that were presented.

The first one concerns aquatic environments. And the impact statement identifies

several places and on several occasions that the aquatic environment in this region has been substantially altered. Those effects are continuing today, still being experienced.

And the second point, you know, the Nelson River where the project is being constructed has been substantially altered by hydroelectric development project, effects of the Keeyask project will be superimposed on this disrupted environment. It mentions about the impacts of water quality and that the proposed Keeyask project will affect water quality.

The EIS is also quite clear on effects to the terrestrial environment. It states in chapter 7, the terrestrial environment to be affected by the project has already been substantially altered and the area continues to experience those effects today.

It also makes reference to priority habitat types that occur along the Nelson River, and makes a statement that it's been disproportionately affected by development along the Nelson River.

We also observe a number of statements about effects to the socio-economic environment

that are identified in the EIS, that the socio-economic environment in the area to be affected by the project has been substantially altered and that it continues to experience those effects today.

And the second point, saying a similar thing, that communities had been greatly affected and that it's been a profound effect on the socio-economic environment of those communities, changing way of life and culture.

A fourth area that we identified that again sort of pulled a number of these pieces together concerns effects to traditional use and culture. And the EIS identifies that, you know, people living in the area are no longer able to sustain their traditional ways of life due to alterations of hydroelectric development, effects to traditional territories, life altering changes. When we look at these impacts, these projects of the past taken together, it substantially adversely affected land, water and traditional way of life. So these are all statements that speak to substantial environmental and socio-economic and cultural effects that have already happened in the area. And the impact statement is quite

forthcoming in saying that there is another project being superimposed on this environment.

So I step back and we ask the question, what does that mean? What does substantial mean? Well, it's synonymous with significant, okay. So whether that's what was meant in the EIS or not, I don't know, but the words mean the same thing.

But I guess the point is that notwithstanding that the environment has been substantially altered, substantially changed, disproportionately affected and substantially adversely affected, the overall conclusion is that there is not going to be any cumulative effects here with regard to regulatory significance.

What it does, I was sort of left like this guy sitting on the question mark.

At another place in the EIS, it says, based on a regulatory assessment, adverse effects of the Keeyask are expected for all terrestrial VECs and expected to overlap with other future projects and activities.

So in my reading of this, it's simply a state of, I guess confusion is the word that were used, or it's all pointing towards

significant adverse environmental effects.

Now, I don't want to get caught in arguing that substantial or significant and regulatory significant have different meanings. There's a lot of people in the room who could argue that for a long time. But if we step back from that and let's think, okay, ecologically, what's being said here? It's being said that significant adverse effects have occurred. Okay.

No matter how you define regulatory significance, significant, substantially altered, it doesn't change these three things. The environment has been significantly affected. The Environmental Impact Statement confirms that. It continues to be affected today. The Environmental Impact Assessment confirms that. And the Keeyask project will be superimposed on this environment. The Environmental Impact Statement, based on just these observations, makes a pretty strong case for cumulative environmental effects.

Now, the challenge is that the analysis isn't there to support it one way or the other. But the conclusions and the statements that are made all point toward significant adverse effects, in our view.

MR. WILLIAMS: Before you leave this page, at the bottom of the page, you've got a citation from Duinker and Greig:

"Continuing the kinds and qualities of CEA currently undertaken may be doing more harm than good."

I wonder if you can elaborate on that?

DR. NOBLE: Sure. That comes from a paper by Peter Duinker and Lloyd Greig, who have been active in practice and research on cumulative effects assessments for some time. And they were speaking to how the cumulative effects assessment is playing out, how it's happening across the country. And I guess I put that statement in there to really bring this point up. We do these environmental assessments and we do these cumulative effects assessments all the time, and we never find anything significant. We never find any significant adverse environmental change happening. I'm generalizing in saying that. The typical outcome is, we can manage or mitigate this.

Hindsight is 20/20, and when you look back and see the change that has occurred, you really have to question, did we make the wrong

decisions? Was the process simply not done well, or do cumulative effects not matter? And I think somewhere we're sitting on one of those, or more than one of those three points.

And I put it there to emphasize, you know, the statements that are being made in this impact statement that it is a substantially altered environment. Will you equate that with significantly altered? Well, the words mean the same thing, so it's been substantially altered.

Impacts will occur. The EIS doesn't deny that. So we will make a conclusion, or the EIS will make a conclusion there are no cumulative effects occurring from this project.

So no cumulative effects have occurred from previous ones either, I guess, based on the previous assessments that had been done. It's just interesting how we end up with the current state each time.

So that's really what, you know, that's part of what Duinker and Greig are referring to in their, in that statement they make.

I'll conclude with this, and there's no scientific answer for this, it's a

philosophical question. I think it's an extremely important question. And I think for the panel, for the Commission, I think it's the key question. There are two views on this, and I think there are two polarized views. One is that we have experienced a lot of change in the Nelson sub watershed. And it's been substantially altered. Hydrologic alteration has already occurred. So any further incremental change, no matter how small or how large, it's already substantially altered. That's it. It doesn't matter, we'll just move forward with that. Okay. It's not a concern anymore. We have already altered it, not going to reverse it. We'll use this as a region designated for hydroelectric development.

So I'll be cynical and say, let's not do any more environmental assessments for these things, let's just do them, approve the projects.

Or the region has already been substantially altered, the EIS seems to suggest that very directly. They have been significant alterations. So anything else that happens, no matter how small must, therefore, be significant as well if it's already been significant. And let's really think carefully about the decisions

we make in terms of approving projects before we do, you know, a regional cumulative effects assessment, or unless we can really assure that this project will have some overall net positive contributions, and that means undoing some of what has been done in terms of substantial alterations.

So, two views, and I think really it comes down to these choices, regardless of what we think about the quality, the process, the number of maps, whether there were models or not, at the end of the day I think it comes to two key choices for Nelson with regards to cumulative effects. Thanks.

MR. WILLIAMS: Thank you. Before we close our direct, in the supporting material to the oral evidence, if you could turn to the very last page? And this question can go to either Dr. Gunn or Dr. Noble, or perhaps the tag team.

Drs. Gunn and Noble, you are aware that during the course of this proceeding, there has been some criticism of the VEC-centred approach stemming from the Cree worldview. You are aware of that fact?

DR. GUNN: Yes.

MR. WILLIAMS: Yes. And you don't

have to directly refer to this excerpt, but I want you, I want certainly to direct your attention to this excerpt and ask you to elaborate upon it, while keeping in mind the tension between the Cree worldview and its criticism of a VEC-centred approach.

DR. GUNN: Well, a VEC-centred approach is standard good practice in impact assessment today in Canada and internationally. There is nothing wrong with taking the VEC-centred approach. It's there for a very good reason. It was put in place to focus attention on the actual stress that is being experienced by the environment, or environmental component. Rather than always focusing just on the source of change, it's putting our attention on the component that is undergoing the change or the stress. And it's also put into place to focus the assessment. Because we can't focus on everything. So the VEC-centred approach is good practice and will continue to be.

But that is not exclusive of the type of worldview or the ecosystem worldview that is espoused by the First Nations. Those two things are not incompatible. It's how the VEC approach

is used.

And in the case of cumulative effects assessment, when we're looking at a region and the types of changes that are going on there and the things we want to focus on, yes, it is definitely good practice to focus on any valued ecosystem component that is going to experience significant adverse direct effects of the project, absolutely. That should be then carried forward to the CEA, and those VECs should appear in the CEA process.

But, additionally, you can identify valued ecosystem components that are representative of an ecosystem more broadly. So perhaps you would identify as components of concern different types of ecosystem relationships or processes or functions. Those kind of things can also be designated as VECs.

And in the case of a large region and, you know, in the case of the Keeyask, you know, that could have also been done. Those things aren't mutually exclusive.

MR. WILLIAMS: Okay. Dr. Noble, do you have anything you want to add?

DR. NOBLE: No.

MR. WILLIAMS: I'm not sure what the

time is, Mr. Chair, but it might be opportune for a brief break.

THE CHAIRMAN: In a couple of minutes. I have a couple questions of clarification before we leave this presentation, and two of them I think are just words that are missing. On slide 46, the second, view 2 says:

"Given that the region has already been substantially..."

Should the word "altered" be in there? When you read it out, you had the word altered.

DR. NOBLE: Yes.

THE CHAIRMAN: Okay. And earlier on, there's another one, either there's a word missing or I don't quite understand it. And this is on page 29. I think this was also you, Dr. Noble. The second bullet at the top of the page:

"Precision and confidence are presented in some conclusions that is supported by the analysis presented in the EIS."

DR. NOBLE: Apologies, that is not supported.

THE CHAIRMAN: I thought that might be the case.

DR. NOBLE: That makes a significant difference. Thank you.

THE CHAIRMAN: It does. And the other one is on page 18, and this was Dr. Gunn. When you talked about changes to the provincial economy, what do you mean?

DR. GUNN: I don't mean anything in particular. It's just that when you go to the Hegmann guidance and you think about how VECs could be defined more broadly, or how indirect effects could be thought about, that's one of the examples that appears there. So I'm simply repeating what's in the guidance.

THE CHAIRMAN: So this is just from Hegmann?

DR. GUNN: Yes.

THE CHAIRMAN: So you weren't making any specific reference to what that --

DR. GUNN: No, I was just sort of imaging what some of these other indirect effects could look like.

THE CHAIRMAN: Okay. Thank you very much.

Now, Mr. Williams, are you ready for other participants to begin the cross-examination?

MR. WILLIAMS: As ready as we'll ever be, Mr. Chair.

THE CHAIRMAN: As ready as you'll ever be. Well, at least you are not in the hot seat.

MR. WILLIAMS: Thank goodness.

THE CHAIRMAN: We'll take a 15 minute break. But just give me a moment here, I'm trying to remember the order.

Okay. So the proponent, the Partnership will begin the cross-examination, and then among the participants we'll start with Concerned Fox Lake Citizens, and then go down and back up to the top of the list. So first up after the proponent will be Fox Lake, and then Pimicikamak, and then to the top of the list.

So back in 15 minutes, which will be about ten after.

(Proceedings recessed at 10:56 a.m. and reconvened at 11:15 a.m.)

THE CHAIRMAN: Okay. We'll reconvene. Over to the partnership, whoever is taking the lead there.

MS. ROSENBERG: That will be me.

THE CHAIRMAN: Ms. Rosenberg?

MS. ROSENBERG: Thank you,

Mr. Sargeant.

Dr. Gunn -- Dr. Harriman/Dr. Gunn, and Dr. Noble, my name is Cheryl Rosenberg and I provide environmental law advice generally to folks in this province, and I am here this morning on behalf of the Keeyask Hydropower Limited Partnership.

Dr. Noble, I'd like to start with you and explore some of the comments that you made about significance.

I think we all understand that to achieve regulatory approval, a proponent is supposed to assess the environmental effects, including the cumulative effects of a proposed project, right? We are all in agreement on that?

DR. NOBLE: That's right.

MS. ROSENBERG: And if an effect is positive, well, that's great. And sometimes there are positive effects, right?

DR. NOBLE: Absolutely.

MS. ROSENBERG: But if the effects are adverse, the proponent is supposed to anticipate them and find ways to either avoid, minimize or offset them, correct?

DR. NOBLE: That's right.

MS. ROSENBERG: We have all agreed on that. And if there is any adverse effect remaining after the mitigation is applied, that's what we called a residual adverse effect. I think Dr. Gunn covered that this morning.

DR. NOBLE: Yes.

MS. ROSENBERG: And then we have to determine whether this residual adverse effect is significant, correct?

DR. NOBLE: Perhaps, yes, depending on the process that's followed, but often that's the case.

MS. ROSENBERG: I started out by talking about the achievement of regulatory approval, so what we're discussing here is the regulatory framework. Agreed?

DR. NOBLE: Agreed, yeah.

MS. ROSENBERG: So within that context, you are agreeing with me?

DR. NOBLE: Yes.

MS. ROSENBERG: Dr. Noble, I read your book.

DR. NOBLE: Thanks.

MS. ROSENBERG: And I bought it too, even better. And I think my friend Mr. Williams

gave the name of the book, but it is the text on environmental impact assessment that I am referring to.

Now, one of the things you point out in your book, Dr. Noble, is that one of the outcomes of environmental assessment should be the planning of what you call mitigation to the point of acceptability. And that's a quote that I pulled out from page 5, because I really enjoyed that turn of phrase. "Mitigation to the point of acceptability." Correct?

DR. NOBLE: I don't -- yes, if it's in there.

MS. ROSENBERG: It's in there. Do you have a copy of the book with you?

DR. NOBLE: I don't, no.

MS. ROSENBERG: Because I asked Mr. Williams to see if you would bring one. But if at any point you disagree with me, I'll hand you my copy.

DR. NOBLE: Okay.

MS. ROSENBERG: So I found that a very clear characterization also of what the partnership is trying to do, mitigation to the point of acceptability. And I wanted you to just

go with me on that.

So when we say a residual adverse effect, a residual adverse cumulative effect is not significant. What we mean I think, Dr. Noble, is that we have met that test, that we have mitigated to the point of acceptability. But my opinion is worthless, I'm looking for your comment on that.

DR. NOBLE: So was there --

MS. ROSENBERG: Do you want me to say it again?

DR. NOBLE: Was there a question or just looking for an opinion?

MS. ROSENBERG: Yes, I'm asking you to confirm that if the goal of the process is mitigation to the point of acceptability, as you put it in the book --

DR. NOBLE: Yes.

MS. ROSENBERG: -- when we say that the residual adverse cumulative effect that's left is not significant, that's precisely what we mean, we have mitigated to the point of acceptability?

DR. NOBLE: Okay.

MS. ROSENBERG: Are you agreeing with that?

DR. NOBLE: I'm not sure if you're asking me to agree with that's what you mean. If that's what you mean, then I agree with what you mean, certainly.

MS. ROSENBERG: Is that a correct implication from the principle you stated, mitigation to the point of acceptability?

DR. NOBLE: Yes, they seem to be saying the same thing.

MS. ROSENBERG: And it's a correct use of the words that are used in the EA process that's particular to the regulatory framework?

DR. NOBLE: Yes.

MS. ROSENBERG: Because Dr. Gunn did a very good job of explaining them. She explained a residual adverse cumulative impact, I think.

DR. NOBLE: Okay.

MS. ROSENBERG: And offsetting adverse effects to an acceptable point is a good thing. Agreed?

DR. NOBLE: Agreed.

MS. ROSENBERG: And the legal test for significance is about the residual adverse cumulative effects of the project by itself and in combination with past, existing and reasonably

foreseeable future projects. Correct?

DR. NOBLE: That's typically the approach, yes.

MS. ROSENBERG: I'm glad to hear you say that, because that's legal advice I have been giving for a long time. It's nothing more philosophical than that, correct?

And when regulators review the results of the EA, that's what they turn their mind to. Agreed?

DR. NOBLE: Agreed.

MS. ROSENBERG: Are the residual adverse cumulative effects within the range of acceptability? And I think I understood from things that people have been trying to teach me for a lot of years now, but I also read it in your book, that some people feel that the most important result of all of environmental impact assessment in the project specific reference is the planning that the proponent does to make the project environmentally acceptable?

DR. NOBLE: That's right.

MS. ROSENBERG: Because having these rules and requirements means that we do things in a careful way. We plan, and we prevent if we can?

DR. NOBLE: Ideally, yes.

MS. ROSENBERG: Because as you say on page 4 of your book, EIA, or environmental impact assessment should not be seen merely as a mechanism for preventing development that might generate potentially negative environmental effects. If this were the case, few developments would actually take place. Correct?

DR. NOBLE: That's absolutely correct.

MS. ROSENBERG: So will you agree with me then that the work that we are doing in the regulatory process isn't intended to set technical and procedural analyses aside, correct? Because you suggest that on page 17 of your report.

DR. NOBLE: Yes.

MS. ROSENBERG: We're not trying to set them aside, far from it. Because if that's the test, we don't need to have dozens of water resource engineers and aquatic biologists and toxicologists, and wildlife experts, and geoscientists, and terrestrial ecologists, and botanists, and social scientists, and traditional knowledge holders from four First Nations applying traditional knowledge, all of them spending a decade doing Environmental Impact Assessment,

correct? We don't do that just so set it all aside. Agreed?

DR. NOBLE: If you say so, sure. I can't see why I would disagree.

MS. ROSENBERG: Thank you.

All right. Let's move on to the subject of mitigation. I don't know which one of you wants to take that subject. I want to go -- actually, you didn't refer to your paper, but I want to go to the fourth element, and you talked about it this morning as well, something that you said should be in a cumulative effects assessment. It's the fourth bullet on page 9 of your paper. You mentioned it this morning. In passing, you said, well, if you come to an affected environment -- I'll let you go to page 9 of your paper.

MR. WILLIAMS: Ms. Rosenberg, is it of the powerpoint or of their written --

MS. ROSENBERG: The paper.

MR. WILLIAMS: Okay.

MS. ROSENBERG: Which one of you wants to take the question?

DR. GUNN: What is the question?

MS. ROSENBERG: On mitigation.

DR. GUNN: We'll decide once we hear the question.

MS. ROSENBERG: I'm looking at the fourth bullet on page 9. It starts out saying:

"Management designed to identify appropriate mitigation and monitoring actions for those components subject to cumulative effects."

And that, I take it, is something you consider to be a key element?

DR. GUNN: Yes.

MS. ROSENBERG: And then I got to page 35 of your report. I don't know if you want to go there, I can read you the section. And you say:

"According to chapter 7, the Keeyask Hydropower Limited Partnership does not anticipate any cumulative effects of the project. And that is presumably why both mitigation strategies for cumulative effects and the significance determination specific to CEA are absent from the EIS."

There is a lot of content in that sentence, but right now I want to focus on the mitigation strategies.

DR. GUNN: Okay.

MS. ROSENBERG: Are you still taking the questions?

DR. GUNN: I think so. I'll see what you ask next I guess.

MS. ROSENBERG: So after reading the EIS, you concluded that the Keeyask cumulative effects assessment does not provide for mitigation strategies?

DR. GUNN: No. The Keeyask Environmental Impact Statement clearly provides plenty of mitigation and management strategies for direct effects that are anticipated to the VECs.

MS. ROSENBERG: For direct effects?

DR. GUNN: Correct, for direct effects, yes.

MS. ROSENBERG: Because that's your position, that we didn't do, or the partnership didn't do something other than a direct effects assessment?

DR. GUNN: Well, there is no discussion at all in chapter 7 of any management plans for cumulative effects, other than related to the socio-economic cumulative effects that are anticipated. And then once those management

measures were discussed, the eventual conclusion was that there would not be significant adverse socio-economic cumulative effects either.

MS. ROSENBERG: So I think I understand you. You're talking about content you read in chapter 7. And if it wasn't in chapter 7, you concluded that there were no management --

DR. GUNN: I'm talking about your question about whether or not there were mitigation measures proposed.

MS. ROSENBERG: For cumulative effects?

DR. GUNN: For cumulative effects, there were none discussed in the chapter 7 CEA, which there probably should have been if that was the chapter that talked about the CEA process.

MS. ROSENBERG: It's like you turn your attention to information request CEC round 1, CAC 8. It was a Consumers Association question.

DR. GUNN: Okay. I don't have that in front of me.

MS. ROSENBERG: I'd be glad to put a copy in front of you.

DR. GUNN: Sure.

MS. ROSENBERG: Now, I don't know who

wrote this question, but it was a Consumers Association question. So, I don't know, do you need a moment?

DR. GUNN: This was Bram's question.

MS. ROSENBERG: Why don't I give you a moment then to read it through. I don't think it's fair. I'm going to ask you a series of questions about it and I think you need time.

DR. GUNN: Okay. Well, I probably wouldn't answer questions about an information request that my partner wrote.

MS. ROSENBERG: I'd be glad for you to switch the mic.

DR. GUNN: Bram would respond to his own work.

MS. ROSENBERG: Let me know when you're ready.

DR. NOBLE: Okay.

MS. ROSENBERG: Okay. So your question was about cumulative impacts to water quality, and with a particular reference to sedimentation in the regional study area caused by Keeyask, in combination with other terrestrial disturbances. And some of the ones you listed were forestry, correct, stream crossings, for

example, Bipole III, access roads and trails.

And it was your question, Dr. Noble?

DR. NOBLE: I believe so.

MS. ROSENBERG: So your question pointed out that some of these disturbances are outside the study area but they could affect the same aquatic processes. That was the premise of your question?

DR. NOBLE: Um-hum.

MS. ROSENBERG: Okay. Now I'm going to read you portions of the answer, and it's pretty long, so if you want to follow along, I think I highlighted some copies but I don't think you actually got the copy that I highlighted, for which I apologize. But the paragraph that I am looking at is in the middle of page 2, and it starts with the sentence, "The Keeyask project." Do you see that?

DR. NOBLE: Yes, I do.

MS. ROSENBERG: Okay.

"The Keeyask project will include comprehensive erosion and sediment control measures to minimize the erosion of terrestrial areas where project activities occur."

And then it goes on and tells you that the point of that is to minimize and prevent sediment laden run-off from entering the water courses; correct?

DR. NOBLE: That's right.

MS. ROSENBERG: And then the answer goes on to refer to the draft environmental protection plans, and it talks about plans for the construction of the generating station and the south access road, and that these specifically address erosion and sediment control. And refers you to section 5.11 in each of those plans, correct?

DR. NOBLE: Correct.

MS. ROSENBERG: And they go on and describe the regular inspection and the maintenance of control measures, and a reference to site specific conditions. And it lists all of the basic erosion and sediment control measures that are standard to be taken and that could be taken, correct?

DR. NOBLE: Correct.

MS. ROSENBERG: And then it says:

"With the implementation of erosion and sediment control measures, the impact of land based project

activities are not anticipated to affect sedimentation in the Nelson River in addition to the predicted construction and operation effects discussed in the response to EIS guidelines regarding in-stream work and reservoir creation."

And that refers you to section 6.3.8 of the report, correct?

DR. NOBLE: That's correct.

MS. ROSENBERG: So if you wanted to know more than what was in chapter 7, you needed to go look at chapter 6, correct?

DR. NOBLE: I did read chapter 6.

MS. ROSENBERG: Okay, I'm glad to hear it.

DR. NOBLE: And then can I comment?

MS. ROSENBERG: Go ahead, comment.

DR. NOBLE: I did read chapter 6, and I did read chapter 7, and I did read the in-stream erosion model technical document, and I did read the aquatic and terrestrial habitat supporting volumes around sedimentation. And my comment in the presentation and the question about cumulative effects is, I agree that there are mitigation and

management measures put in place. We hope they are going to be. One would expect and anticipate them to be effective for the project source terrestrial disturbance activity.

The EIS also identifies elevated sedimentation levels within the river system for 10 to 15 years above guidelines. My question about cumulative effects was processes of other activities happening on a landscape, not necessarily the projects, but other disturbances affecting the same aquatic component. That was my question around cumulative effects and whether that affects significance.

MS. ROSENBERG: And you would expect that all of the other activities that are occurring now, or are likely to occur in the future, because that's the test, likely, reasonably foreseeable; right?

DR. NOBLE: That would affect the same component, yes.

MS. ROSENBERG: That would affect the same component, and you would expect all of those to have been taken into account, correct?

DR. NOBLE: Yes. And there is methodologically a way to do so, because it's not

about understanding the particular operations of let's say forestry or a mine, it's simply looking at a disturbed area. And this is where a scenario-based approach to cumulative effects comes into play. We may not know exactly whether the forest industry or road and trails will increase by zero percent or 500 percent, but we can use some pretty basic metrics. The EIS contains those metric, linear disturbance, core area habitat, were identified in the physical environment supporting volume.

We know the relationship between those disturbance patterns and sediment loading and watersheds. So it's those types of stressor-based metrics which are identified, that we are suggesting those are the types of things that need to be considered in order to understand the cumulative effects of sedimentation.

MS. ROSENBERG: So let me drop back for a minute, because I think what you heard you saying was that you understood that there were appropriate mitigation measures planned for the project activities; correct? You reviewed those and you found them satisfactory?

DR. NOBLE: Yes. I mean, let me back

that up. Whether these are appropriate, I'm not -- I can't speak to the specifics of the engineering design, that's not my field of expertise. But, yes, I did read that mitigation measures are proposed and they are expected to minimize any potential for erosion or additional sedimentation from land-based activities associated with the project.

MS. ROSENBERG: And you understand those same engineers who have studied the effects of erosion and understand what happens in the waterways, and proposed those mitigation measures and have applied those mitigation measures in other projects, you would think then that they understand also the success of them and the impact of them as they proceed through the management of the various projects that Manitoba Hydro operates; correct? You're not questioning their judgment?

DR. NOBLE: No, I'm not questioning their judgment on the successfulness of the mitigation measures for the terrestrial components of the Keeyask project that's being identified. I don't think anywhere we question their qualifications or the reasonableness of the mitigation measures. What we're questioning is

the conclusion around cumulative effects with regard to sedimentation without considering the other activities that are not associated with Keeyask on the landscape that are affecting the same component.

MS. ROSENBERG: What would those activities be, sir?

DR. NOBLE: Any other type of surface disturbance.

MS. ROSENBERG: Did you identify some?

DR. NOBLE: Road and trail densities, cleared areas, other types of disturbances to riparian habitat or buffer zones. They may not be associated with particular development activity, but the changes that occur on the landscape, some of them may be associated with particular types of industries, but this is where the retrospective and trend analysis identifies how those components have changed over time. We know that based on the EIS, and I guess concern we had was why was that not projected forward into the future to help understand the additional cumulative effects of sediment loading? So we're not questioning the mitigation measures or the effectiveness, we're just questioning the conclusion that's made about

it when that part of the cumulative effects assessment wasn't done.

MS. ROSENBERG: Are you suggesting then that there were projects in the past, or projects in the present, or projects in the future, that should have been contemplated, that their effects should have been contemplated in combination with the sedimentation that you could expect as a result of this project?

DR. NOBLE: What I'm saying is that there are disturbances that should have been considered. And they may be projects, they may simply be disturbances not associated with regulatory decisions. But what I am saying is that information is available in the EIS, it wasn't applied in a futures analysis for the cumulative effects assessment.

MS. ROSENBERG: And if I tell you, sir, that the engineers who performed this analysis and the aquatic biologists who performed this analysis absolutely, absolutely believe that their analysis took into effect the possible contributions to sedimentation of every single feature that actually exists today, that has existed and contributed to the historical

conditions on sedimentation, and that is likely to exist in the future affecting the quality in the Nelson River, would you accept then that that is outside your area of expertise?

DR. NOBLE: I mean, certainly sediment modeling is outside my area of expertise.

MS. ROSENBERG: Thank you. I'm going to move on then.

DR. NOBLE: Is it okay if I continue to answer the question?

THE CHAIRMAN: Yes.

DR. NOBLE: Sediment modeling is outside my area of expertise, and we weren't looking for examining or critiquing the sheer erosion model that was presented in the technical report. I don't understand the sheer erosion model as presented in the tech report, it's not something I know a whole lot about. But we were looking for what's been done in other watersheds that's looking at these types of disturbance and activities for cumulative effects. And it's those types of models and processes where we can make those conclusions. We simply weren't able to find them. I am not saying they weren't done or they don't exist, but we weren't able to find them in

terms of supporting evidence for the cumulative effects assessment or future development in those scenarios.

MS. ROSENBERG: You continue to talk about disturbances, and I hear you, but I haven't heard you name them. So I'm going to move on.

DR. NOBLE: I think I did name.

MS. ROSENBERG: You named forestry.

DR. NOBLE: And I named linear features, transmission lines. Well, we were here not too long ago for the Bipole, so we talked about types of terrestrial disturbances there as well, and river crossings. I mean, again, the metrics are in the EIS.

MS. ROSENBERG: Do you agree with me, sir, that in order for any of those projects to contribute to sedimentation that is relevant in this reach of the river affected by the Keeyask project, that there would have to be some pathway for interaction?

DR. NOBLE: That's right.

MS. ROSENBERG: You put up a pathways analysis slide at the top, right, and you looked at the various pathways. What pathway are you positing?

DR. NOBLE: Sorry?

MS. ROSENBERG: What pathway are you positing for this interaction?

DR. NOBLE: Just using the watershed diagram?

MS. ROSENBERG: Yes, the watershed diagram.

DR. NOBLE: It is sort of a hypothetical example of surface run-off.

MS. ROSENBERG: Sure. So you would think surface run-off has to be taken into account?

DR. NOBLE: That would be one variable, yeah.

MS. ROSENBERG: And you would think that the run-off or the contributions of small streams into the main stem of the Nelson would have to be taken into account?

DR. NOBLE: Sure.

MS. ROSENBERG: And you would think that sediment travelling from say the contributions of projects upstream of Keeyask would have to be taken into account?

DR. NOBLE: Sure.

MS. ROSENBERG: And you would think

that downstream of Keeyask, you'd have to know what's the impact further downstream of any contributions by the accumulated effect at that point and further downstream, correct?

DR. NOBLE: Okay.

MS. ROSENBERG: Agreed?

DR. NOBLE: Agreed.

MS. ROSENBERG: Are there any other pathways that you could think of?

DR. NOBLE: No.

MS. ROSENBERG: Those would be it?

DR. NOBLE: Yeah, I was only thinking of types of disturbance on the landscape where it would result in increased sediment loading. And the primary pathway is through surface run-off, yes.

MS. ROSENBERG: Well, just as an example, I know you have conceded a point, but I'm going to have a copy of the DFO operational statement for working in water around T lines. I don't know if you're familiar with that. Do you have it? Is it in the package you were just handed?

DR. NOBLE: No, I don't have it.

MS. COLE: It was attached to the IR.

MS. ROSENBERG: Would you like to take a look at it?

DR. NOBLE: Okay, I see it.

MS. ROSENBERG: Because we're talking about contributions of sediment and such. Do you see that statement? Are you familiar with it?

DR. NOBLE: It doesn't look familiar.

MS. ROSENBERG: No? Okay. Well, let me help you out then. That's the operational statement that the Department of Fisheries and Oceans hands out to people, and they say if you follow this statement, this is one place where you don't have to come to us for what people in the business call a HADD permit. A HADD permit, sir, is not easy to get, but this is a place where you don't need a HADD permit.

DR. NOBLE: Okay.

MS. ROSENBERG: If you follow these rules and you comply with them, then you don't need the HADD permit. And do you see what the rules are about?

DR. NOBLE: In this shaded box?

MS. ROSENBERG: Yeah, what are they about?

DR. NOBLE: Okay, yes.

MS. ROSENBERG: They are all about working around water when you are building things like T lines, right.

DR. NOBLE: Yes, for overhead lines.

MS. ROSENBERG: Sure, and there are similar statements for other things too.

DR. NOBLE: Um-hum.

MS. ROSENBERG: I thought as well it would be instructive here to just look at a photograph, and this is in one of our project files. If we can tee up a photograph and you can see a photograph of what happens when a T line is built and maintained with regard to these rules.

Really, what you're concerned about is the interactions of all these other projects with this project, and I think it's helpful to look. We're just going to take a look.

And what our engineers want you to see from this, sir, can you see clearly?

DR. NOBLE: I can see, yes.

MS. ROSENBERG: You can barely see the T line itself, but the poles for it are on either side, and I think what they'd like you to see is the way the vegetation is maintained right down to the waters edge.

DR. NOBLE: Um-hum.

MS. ROSENBERG: And they'd also like you to see how wide this river is and how different it is from the rivers in Ontario and some of the ones you are familiar with in B.C. where you've been studying the effects of forestry, quite a different environment. Point taken?

DR. NOBLE: Yeah. I can certainly see from that section that it's, I don't know the scale of that diagram, but it correlates with the movement of water from --

MS. ROSENBERG: That's a fair comment. That's a fair comment.

All right. I just want to take a few minutes on understanding the document, understanding the EIS, because I appreciate that, you know, when you have had a project team working on something for 10 years, and then they try to take 10 years worth of analysis and sometimes much longer than that, and distill it down into a document, and then you folks come and try to read the document, there could be some difficulties in that understanding process.

So let's take a few minutes on that.

And I wonder if you have had a chance to review CEC round 1 CEC 20? And that is a summary of all of the cumulative effects that the Commission asked us to put together because the Commission needed help too.

Are you familiar with that or do you want us to give you a copy?

DR. NOBLE: I would have reviewed it.

MS. ROSENBERG: I'm sorry?

DR. NOBLE: I would have reviewed it, but I don't have a copy.

MS. ROSENBERG: But you don't have a copy in your hand. I'm going to have one handed to you.

DR. NOBLE: Okay, sure. Thanks.

MS. ROSENBERG: It's actually page 6, if you don't mind?

DR. NOBLE: Okay.

MS. ROSENBERG: All right. And on page 6, it tells you that chapter 6 of the EIS provides you with an assessment of the effects of building and operating the Keeyask generation project, in combination with the effects of the past and current projects and activities.

And chapter 6 identifies the key

mitigation measures, and it assesses the regulatory significance of identified residual adverse cumulative effects on each VEC as a result of the project. Correct? All of that was in chapter 6?

DR. NOBLE: That's right, yes.

MS. ROSENBERG: Chapter 7 simply adds in the additional interactions that would have to be taken into account in contemplation of future activities?

DR. NOBLE: That's right, yes.

MS. ROSENBERG: And I wondered if you'd take a look at the concluding statement in chapter 10?

DR. NOBLE: Sorry, in which?

MS. ROSENBERG: Chapter 10 of the EIS. That is not in front of you. I'll just read it to you. Okay. It says:

"The Keeyask generation project will cause numerous and widespread environmental and social effects, some of which would have had the potential to be significant. However, using past experience, Aboriginal traditional knowledge, and leading

scientific and engineering techniques, the Keeyask Hydropower Limited Partnership has mitigated, remediated, and/or compensated for these effects such that the partnership is confident the project should proceed."

And do you agree with me that was the final statement?

DR. NOBLE: I agree.

MS. ROSENBERG: And some of those effects were taken into account with the sorts of mitigation, the successful mitigation, the proven mitigation such as I showed you in the DFO operational statement. And some of it was as complicated as set out in the adverse effects agreements that were negotiated with each of the Cree Nations. Agreed?

DR. NOBLE: Okay.

MS. ROSENBERG: So I'd like an acknowledgment from you, sir, that the partnership did anticipate adverse cumulative effects?

DR. NOBLE: It's written throughout the EIS.

MS. ROSENBERG: So we are agreed on that.

DR. NOBLE: Let me phrase it carefully. I do agree the partnership does identify in numerous places adverse cumulative effects throughout the impact statement, in addition to in chapter 10.

MS. ROSENBERG: And they did provide for mitigation strategies.

DR. NOBLE: As is required, yes.

MS. ROSENBERG: Many many many mitigation strategies.

DR. NOBLE: Multiple.

MS. ROSENBERG: And they did come to a conclusion.

DR. NOBLE: Somehow for some effects, they did. Our concern on the future prospective analysis was how they got there.

MS. ROSENBERG: Dr. Noble, at this point, I think we're talking about two completely different things. You're talking about future prospective analysis, correct?

DR. NOBLE: Yes, which is what a cumulative effects assessment is really all about.

MS. ROSENBERG: I agree with you.

DR. NOBLE: Okay.

MS. ROSENBERG: Not that my opinion is

relevant.

DR. NOBLE: It's just nice that you agree.

MS. ROSENBERG: But Mr. Hegmann agrees with you, too.

So did you think that you were going to find all of that in chapter 7?

DR. NOBLE: No, which is why I read the technical reports in chapter 6 and other chapters of the EIS.

MS. ROSENBERG: All right, that's a relief.

DR. NOBLE: Okay.

MS. ROSENBERG: So then I'd like to actually, at this point, revisit the conclusion you state on page 35 of your report, and I'd like you actually to go there now, please. And I'm looking at the second paragraph under D, Cumulative Effects Management Measures, and here are your words:

"According to chapter 7, the KHLP does not anticipate any cumulative effects of the project. And that is presumably why both mitigation strategies for cumulative effects and

a significance determination specific to CEA are absent from the EIS."

Those were your words, sir.

DR. GUNN: Those were my words.

MS. ROSENBERG: Those are your words, ma'am?

DR. GUNN: Yes, those are my words, ma'am.

MS. ROSENBERG: Are you willing now to take them back?

DR. GUNN: I do think that there were significant effects anticipated for the project, yes. But when you step back and look at that from the perspective of a cumulative effects assessment process, it seemed to me that it was clear that no significant adverse cumulative effects were anticipated for terrestrial or for aquatic. They were anticipated in chapter 7, yes, for socio-economic, but then there were further mitigation measures proposed that would have accounted for those. And so the final conclusion there as well was no significant cumulative adverse effects. That was my interpretation of the material provided in the EIS. That was my best interpretation.

MS. ROSENBERG: Let's start with the last thing you said, that the conclusion at the end of the day was no significant residual adverse cumulative effects.

DR. GUNN: Yes.

MS. ROSENBERG: We are agreed on that?

DR. GUNN: Yes.

MS. ROSENBERG: Now I want to look back again at the sentence on page 35 because, ma'am, that's not what it says.

DR. GUNN: Perhaps I was tired writing the sentence and maybe there's a word missing or something, because I'm not -- like the conclusion that I drew is what I just explained to you. So the concern that you have is that it says it doesn't anticipate any cumulative effects to the project, well --

MS. ROSENBERG: That's clearly wrong, isn't it?

DR. GUNN: I suppose that statement is not clearly stated. I would say that it's not clearly stated, correct.

MS. ROSENBERG: And it's clearly wrong, that there are no mitigation strategies proposed for cumulative effects.

DR. GUNN: But it's the ordering of those things in the process. So if you didn't find that there were going to be any significant adverse cumulative effects, then there is no reason to propose management or mitigation strategies for those, because there are none. And there is no need then to revisit significance determination because you didn't find any. So that is what I was postulating. Because none were ultimately anticipated, then therefore there weren't any further management or mitigation strategies proposed and there was no repeat of the significance exercise for cumulative effects. That's what I was talking about.

MS. ROSENBERG: I'm glad you used the word postulating. Because the work of the Partnership wasn't based on postulating, it was based on their actual assessment of both the adverse cumulative effects and the likely success of the mitigation measures that they were proposing, agreed? It wasn't a matter of postulation.

DR. GUNN: I don't know what they were doing, but I would agree, yeah.

MS. ROSENBERG: All right. Now before

we leave the point of mitigation, you made a statement this morning, and it was actually in the report too, and it's another aspect of what you said in point 4. I'm back to page -- forgive me, help me out. Where are those four principles that you say have to be included? Page 9, thank you. I'm still on point D. There's a middle sentence in there about understanding how much more change in an effective environmental component is tolerable or acceptable and that being key to the significance determination. I'm not going to ask you questions about that because that is the Partnership's position exactly. Okay?

DR. NOBLE: Um-hum.

MS. ROSENBERG: Now, let's go on and look at the last premise. You say:

"If a VEC is already unhealthy or regional conditions are already unsustainable, the management efforts must focus on rectification or restoration of conditions."

Now, I know that was Dr. Noble who talked about that. So do you want me to ask him these questions?

DR. GUNN: Just go ahead and ask the

question.

MS. ROSENBERG: Just as a clarification, you say must, but I think that's a statement of your opinion, correct? You're not saying that's a regulatory criteria.

DR. NOBLE: No, it's not a regulatory criteria.

MS. ROSENBERG: I'm just wondering whether Mr. Williams sent you the slides on sturgeon management that Shelley Matkowski presented here two weeks ago.

DR. NOBLE: Yes, I believe so. I did receive something on sturgeon management. Whether it was that exact presentation, I'm not 100 percent sure.

MS. ROSENBERG: Okay, cool.

MR. WILLIAMS: Ms. Rosenberg, I have no objection if you want to show him the slide and see if he's familiar with it.

MS. ROSENBERG: You know, I don't think that's necessary. If you are familiar with just the arc of what was presented, I think that's enough. I'm going to give you some of the facts. I'll just give you these facts. And you don't have to accept them now, you can accept them just

subject to check.

DR. NOBLE: Okay.

MS. ROSENBERG: You can just assume that I'm talking of them correctly as they were and then afterwards if we find out your answer doesn't stick --

DR. NOBLE: I'll believe you.

MS. ROSENBERG: Awesome. All right. So I think some of what was demonstrated in that presentation is that it's clear today, right now, without Keeyask, that sturgeon are already at low levels in the region. Do you remember that?

DR. NOBLE: I remember that.

MS. ROSENBERG: And they are already unsustainable in some areas, like Stephens Lake. Do you recall what that --

DR. NOBLE: Yes.

MS. ROSENBERG: Okay. And the "management" proposed by the Partnership is actually about delivering net positive contributions to sturgeon in the reach of the river that will be affected by Keeyask. That's what the management is aimed at.

DR. NOBLE: Okay.

MS. ROSENBERG: Okay. But the

Partnership is also proposing measures relating to sturgeon in parts of the river that will not be affected by Keeyask. Did you recall that from the presentation notes?

DR. NOBLE: I don't recall exactly but fair enough.

MS. ROSENBERG: If I tell you that that's what it says, you are okay with that?

DR. NOBLE: I'm okay with that.

MS. ROSENBERG: All I want you to do then is comment if all of those facts I just gave you are true, does that meet the criterion?

DR. NOBLE: Provided the mitigation is sound and known to be effective, again not knowing the detailed biology of sturgeon, but providing the mitigation is sound, the mitigation is effective, it's proven effective, I would consider that to be a positive contribution.

MS. ROSENBERG: Thank you. All right. Now I want to look at section 4 of your report, the first bullet on page 13. Actually, I take that back. I think it's the second bullet on page 13. And it talks about regional ecological boundaries adopted for the direct effects assessment. I apologize, this is under where

improvements are needed. Didn't focus on the places where you said we did a good job. And it is the first bullet, so I totally confused myself and you too. It's in section 4.2.

DR. NOBLE: Okay.

MS. ROSENBERG: So the sentence says: "Although regional ecological boundaries are adopted for the direct effects assessment..."

And then you go on to talk about other things. But you refer to it as the direct effects assessment. And you refer to it that way today here in your discussions, correct?

DR. GUNN: Yes.

MS. ROSENBERG: So that's what you understood was done of direct effects assessment.

DR. GUNN: There is always a direct effects assessment done initially, yes, and then you move on to a cumulative effects assessment.

MS. ROSENBERG: And direct effects would be those effects within a project footprint, the limited area directly affected.

DR. GUNN: Within the project study area as designated, yes.

MS. ROSENBERG: Which project study

area?

DR. GUNN: It would depend upon the project.

MS. ROSENBERG: How would you figure out the limit of the direct effects?

DR. GUNN: I wouldn't, the proponent would.

MS. ROSENBERG: Ah, all right. Now do you have a copy of -- you don't have a copy of the response to EIS guidelines with you, you didn't bring those materials, okay. I want you to look at section 5.3.1. And so I'm going to have a copy of that handed to you. I'm looking at page 5-4. I think we'll wait for the Commission to get a copy as well. Is it still you, Dr. Gunn?

DR. GUNN: I don't know. What's the question?

MS. ROSENBERG: This is a scoping question perhaps.

DR. GUNN: Go ahead.

MS. ROSENBERG: You see step 2, Scope of assessment on that page.

DR. GUNN: Um-hum.

MS. ROSENBERG: And do you see where it says in the second sentence that:

"The study area for each environmental component is defined by the geographic extent of the direct and indirect effects of the project."

DR. GUNN: Okay.

MS. ROSENBERG: And that some study areas are extended beyond the zone of impact to provide context for the studies. Do you see that?

DR. GUNN: Yes.

MS. ROSENBERG: And that was the method that the proponent chose to scope for both indirect and direct effects, correct?

DR. GUNN: Yes.

MS. ROSENBERG: And now is a question for Dr. Noble because this is something I got from your book.

One of the principles for spatial scoping that you talk about in the cumulative effects chapter of your book is called, it's a heading called "Maximum zones of detectable influence." Do you recall writing that? It's on page 207 of your book.

DR. NOBLE: Yeah.

MS. ROSENBERG: And what you say is that:

"Boundaries for cumulative effects assessment at a project specific level should be established where the impacts of that project are no longer detectable."

DR. NOBLE: That's right.

MS. ROSENBERG: Do you recall writing that?

DR. NOBLE: Yeah.

MS. ROSENBERG: And that would take account of both direct and indirect effects, correct? But your boundary would stop at the maximum zone of detectable influence for that project.

DR. NOBLE: Yes, for the particular VEC of concern, yeah.

MS. ROSENBERG: Right. And you have identified those VECs because those are the VECs that you expect this project to adversely affect. That's the point of your assessment, to figure out in advance what parts of the -- what valued environmental components your project will affect.

DR. NOBLE: That's right.

MS. ROSENBERG: And you want to scope so that you get the maximum zone of detectable

influence. And you do that VEC by VEC, correct?

DR. NOBLE: Correct.

MS. ROSENBERG: Because the maximum zone of detectable influence for one VEC may be smaller or bigger than the maximum zone for another?

DR. NOBLE: Um-hum, that's right.

MS. ROSENBERG: All right. So I put it to you then that characterizing the assessment done by this proponent, not the others that I know you have seen lots of, but this proponent as a direct effects assessment wouldn't be accurate, would it?

DR. GUNN: Can you repeat that?

MS. ROSENBERG: Well, you have characterized this assessment as a direct effects assessment.

DR. GUNN: Would I characterize this assessment as a direct effects assessment?

MS. ROSENBERG: No. You have done that. You have called it a direct effects assessment.

DR. GUNN: Well, yes, there is a direct effects assessment, yes. That is the initial part of any environmental impact

assessment process, yes.

MS. ROSENBERG: But I ask you again then. When you said in the direct effects assessment, what were you referring to then?

DR. GUNN: The direct effects assessment.

MS. ROSENBERG: Where did you find that?

DR. GUNN: I'm sorry, I'm not following what you're asking.

MS. ROSENBERG: I'm asking you about the words you wrote. And you referred to the assessment. You said, I'll read it to you again.

DR. GUNN: Yes.

MS. ROSENBERG:

"Although regional ecological boundaries are adopted for the direct effects assessment, these are not broad enough."

And you go on and make some comments.

DR. GUNN: Yeah. Well, I guess the reason why I was talking about that is in a direct effects assessment, and it was very clearly stated, that that pertained to understanding past and current projects. But it's the futures piece

that is the most important to cumulative effects assessment. So that's what I was referring to. It's not broad enough to capture other existing and future developments. And I was talking about a concern that the panel had had about developments in the northeast to study zone 5. So I was basing those comments off concerns that were stated by the panel.

They also had concerns that it wasn't scoped broadly enough to capture those other developments outside of that zone.

MS. ROSENBERG: Well, now we have introduced a whole lot of points. But let's start on --

DR. GUNN: That's the context of the comments that are made there.

MS. ROSENBERG: Fine. Let's start with the first point, okay. Are we clear then that the assessment captures both direct and indirect effects, because we're not talking now about futures, we're talking about direct and indirect effects.

DR. GUNN: I mean that's the statement that's made, that's presented here, yes. But the particulars of that are pretty hard to discuss

because there are loads and loads of effects that were looked at.

MS. ROSENBERG: I agree with you.

DR. GUNN: Yes.

MS. ROSENBERG: So when you say in the direct effects assessment, were you referring to a particular chapter or a particular volume?

DR. GUNN: No, I was referring to just the exercise of predicting environmental impacts of the development.

MS. ROSENBERG: And when you say futures analysis, are you talking about looking prospectively at the future with the project and without the project?

DR. NOBLE: Can I answer that?

MS. ROSENBERG: Sure.

DR. NOBLE: When we talk about futures analysis, yes, we're talking about looking at the future with and without the project, given the data that was generated during the baseline trends analysis, projecting those forward under different conditions and then examining those futures under, by adding in other things in addition to with and without the future.

MS. ROSENBERG: With and without the

project.

DR. NOBLE: Sorry, with and without the project. The future will always be there.

MS. ROSENBERG: We hope.

DR. NOBLE: Yeah.

MS. ROSENBERG: We have the things on the landscape today, we have the things that we are building, and then we have the things other people might add.

DR. NOBLE: That's right.

MS. ROSENBERG: So we have talked about scoping but we have a lot of different types of scope there, right? We are scoping in and out one of the future projects that you are considering, correct?

DR. NOBLE: Yes.

MS. ROSENBERG: And that was done under regulatory guidance, correct?

DR. NOBLE: Correct.

MS. ROSENBERG: And it's very clear, I think the Canadian Environmental Assessment Agency, I read on your resumé, they have asked you for some advice. And they have issued a new operational statement on how you do that very thing.

DR. NOBLE: That's right, yes.

MS. ROSENBERG: Did they take your advice by the way?

DR. NOBLE: Some.

MS. ROSENBERG: All right. So when we scope in the future projects then, let's apply just what was in the old statement, not the new one because the new one's a little more restrictive, agreed?

DR. NOBLE: Yeah.

MS. ROSENBERG: It's more restrictive, yeah. So what are we scoping in?

DR. NOBLE: In terms of future projects?

MS. ROSENBERG: Yeah.

DR. NOBLE: The traditional approach has been what's known, what may happen and what's hypothetical. But I mean we normally restrict ourselves to known developments in terms of scoping and other types of future projects and activities.

MS. ROSENBERG: And I believe the legal criterion in the 2009 operational statement is reasonably foreseeable, correct?

DR. NOBLE: That's correct. I don't

know if that's a legal criterion

MS. ROSENBERG: Did you look at the list of future projects that were scoped in for this project?

DR. NOBLE: Yes, I did.

MS. ROSENBERG: And those were the ones that the proponent saw to be reasonably foreseeable, correct?

DR. NOBLE: Fair enough.

MS. ROSENBERG: And those were the ones taken into account?

DR. NOBLE: Yes.

MS. ROSENBERG: Not other ones, not other hypothetical ones or theoretical ones.

DR. NOBLE: That's right.

MS. ROSENBERG: Forestry or mining or any of the things that weren't on that list.

DR. NOBLE: No, they weren't included.

MS. ROSENBERG: Because they weren't reasonably foreseeable in the proponent's view.

DR. NOBLE: Well, this brings us back to the practice of doing cumulative effects versus this notion of what project do we include or not include. And I want to go back to just the example I have been using because we seem to keep

going back to it and maybe we just fundamentally disagree on it. And then that's okay. But in the EIS when they are using these, they do identify various types of metrics. And the issue in cumulative effects assessment is really I mean, if you are caribou, does it matter what's affecting you in terms of the type of project, or does it matter that habitat's being lost? It matters that habitat's being lost, right? It doesn't matter whether it's from mining activity or a hydro project or reservoir flooding, it doesn't matter from the caribou's perspective.

And what I'm getting at in terms of the scope of the future and what's in and what's out is not necessarily this notion of saying okay, project A, we know that it's -- they have applied for development, it's been approved, it's a likely activity, fine. But we can look to the changes that has occurred in the region and some of these parameters and use those that project forward.

We may or may not be able to identify particular projects to let's say habitat loss or river crossings or linear disturbances. That's not really the point. The point is using that baseline data, projecting it forward into a

futures analysis to identify what's the effect of the VEC.

You know, scoping in a particular mining project or a particular forestry operation, they could or could not happen, who knows. But we can certainly use the trends and the data that we do have to project forward to understand what the cumulative effects might be.

And I think that's a difference in fundamental in terms of what we are talking about here versus what projects were scoped in versus what trends were known and examined in the EIS in the baseline which did a pretty good job, weren't brought forward into the future to examine those future conditions. So I think we are -- I think we're talking across each other on this issue.

MS. ROSENBERG: I think we're talking about two different things, Dr. Noble.

DR. NOBLE: I think so.

MS. ROSENBERG: I think we're talking about projecting forward the trends on all of the variables that were carefully analyzed and thinking what will happen with those trends 30 years in the future, and thinking about what's reasonably likely to appear on the landscape

during that 30 year horizon and taking that all into account versus some sort of prospective thinking about what are the future options for other sorts of development.

DR. NOBLE: Yes, okay.

MS. ROSENBERG: We're talking about two very different things.

DR. NOBLE: Somewhat, somewhat two different things. Because really talking about what those future developments might be, those future projects is nice to know. It's nice to know. But it's not that useful unless you take those trends and disturbance information and push them forward into the future. Because you have a change that has occurred for whatever reason, but that's your futures analysis. If you assume this rate of change continues to occur or maybe it doesn't continue to occur, maybe it slows down, but then we have something we can take those future projects and introduce them into the picture.

And so again, it's not that it's a mining project. It's that if you're using kilometres per kilometre squared of roads, which is one of the metrics. It's not whether it's a

mining project that you scope in, it's a disturbance that's going to contribute to an increase in road density. And so it's examining then what's the range of futures under those conditions.

So I agree they are two different things but they are two very much related things if you want to understand what the cumulative effects are.

MS. ROSENBERG: Let me see if I can put our thoughts together here. I think what you're saying, you need to know kilometre by kilometre squared, the linear disturbances, how much more is going to happen in any likely horizon, right? So that you'll know whether the impact on the caribou or the moose or the beaver would change. Correct?

DR. NOBLE: We never know how much is going to happen. I think this is why we talk about scenarios or future.

MS. ROSENBERG: Fair.

DR. NOBLE: Let's take the change and push it forward.

MS. ROSENBERG: Fair, I take your point on that. You will never know, you will just

be projecting and planning.

DR. NOBLE: Exactly.

MS. ROSENBERG: And you are doing that projecting and planning so that you can take full account and mitigate forward if you can or maybe it will be so bad that the project shouldn't be approved, right? Those are your two options.

DR. NOBLE: Or maybe trends will improve.

MS. ROSENBERG: Maybe trends will improve.

DR. NOBLE: I think that's one of the scenarios as well.

MS. ROSENBERG: Let's take a specific example and use the one you gave, which is linear disturbances kilometre by kilometre squared. And I think what your point is that you need to know the trend into the future of what has happened with that linear disturbance metric, and I think you need to know how close you are to any sort of threshold, because you talked about that this morning, too. Correct?

DR. NOBLE: I wouldn't say -- I mean, I was careful with my choice of words and used benchmarks or management --

MS. ROSENBERG: Benchmarks, fair enough. Let's go with that. Benchmarks or management targets. You need to know how close the project you are adding is to that benchmark or management point. And then you need to know over the next 30 years if, say, how much more development happens, you don't know what it will be specifically, but there could be quite a bit more linear disturbance, maybe even a third again as much as exists today. What will happen? Will my VEC still be okay, right? Those are the questions you needed to ask. And you're pointing that out.

DR. NOBLE: Yeah. We would want to know, we'd take that, let's say that trend that you identified, look at it forward into the future and examine what might be the possible response in VECs or VEC conditions and then ask some tough questions in terms of is that acceptable or not acceptable.

MS. ROSENBERG: And that is it acceptable or not acceptable will be based on the the benchmarks that you arrived at, that you proposed. And I understand it's not definite.

DR. NOBLE: That's right. Benchmarks

management targets.

MS. ROSENBERG: You're talking about ranges.

DR. NOBLE: Absolutely, ranges, yeah.

MS. ROSENBERG: Okay. And you have already commented that the assessment employs an ecosystem-based approach. You noticed that?

DR. NOBLE: Sorry, can you repeat that?

MS. ROSENBERG: Ecosystem-based approach.

DR. NOBLE: It's mentioned in the assessment document, yes.

MS. ROSENBERG: And it's not only mentioned, it's applied, isn't it?

DR. NOBLE: In some of the technical supporting volumes, it's evident it's taken in the baseline assessment, for sure.

MS. ROSENBERG: All right. I'd just like you to look at page 5-4 again. And I think you'll see in the second paragraph, you'll see that study areas vary between environmental components to appropriately reflect the extent of project effects on that component, for example, the study area for socio-economic effects is

larger than the study area for physical effects. And that's the appropriate way to do it, agreed?

DR. NOBLE: Agreed.

MS. ROSENBERG: And similarly, the study areas for the individual VECs and also all of the supporting topics within each of the environmental components also vary, correct?

DR. GUNN: Um-hum.

MS. ROSENBERG: Because a species with a large home range, the study area needs to be larger than the study area for a more sedentary species. And you'll agree with that, in principle?

DR. NOBLE: Yes.

MS. ROSENBERG: And the last sentence says:

"Study areas selected are large enough to capture the effects of the project but not so large as to mask the effects of the project by making the effects of the project as a percent of the area appear as reasonably small."

And I know you agree with that because you talked about it at length in your paper.

DR. NOBLE: Absolutely.

MS. ROSENBERG: And so for different VECs and different VEC processes, they all operate at different spatial scales, correct? And therefore, the boundaries for the assessment have to reflect those spatial variations, correct?

DR. GUNN: Correct.

MS. ROSENBERG: Now, I want you to look, just turn over the page and look at 1.2.2.5 under Spatial Scope and you will see the principles stated at the top of that paragraph. And this is the Partnership's statement on the principle that was applied throughout the assessment.

"The spatial extent of the assessment was determined through, 1, identifying where the project could directly affect environmental components of interest. And 2, identifying where the project could result in indirect effects."

And one of the examples given is downstream transport of sediment in water. And another example is movement of fish. Correct?

DR. GUNN: Yes.

MS. ROSENBERG: And this is an example

given from the aquatic section of the report. And so it goes on and it talks about all the various nested zones that relate to those criteria, correct?

DR. GUNN: Um-hum, um-hum.

MS. ROSENBERG: And is that relevant, by the way, you're talking about the downstream transport sediment, correct?

DR. GUNN: Yes.

MS. ROSENBERG: Because that's where the project effects will go, downstream.

DR. GUNN: Yes, yes, yes.

MS. ROSENBERG: Okay. Now I'd like to turn to the life of the project which you also discussed this morning. And I'd like you to turn to page 13 of your report, and the second bullet. I'm only focusing on 4.2. The second bullet says:

"The future temporal limit for the CEA is unclear."

And we'll come back to that. But the second sentence says:

"The anticipated life of the project is not stated and nature and timing of decommissioning and reclamation activities are unclear."

Do you see where you said that?

DR. GUNN: Yes.

MS. ROSENBERG: Was that you, Dr. Gunn?

DR. GUNN: Yes.

MS. ROSENBERG: I would have thought that there's a general understanding that a generating station like Highway 1 is intended to be a permanent feature on the environment.

DR. GUNN: Yes, it can be. Yes, it can, um-hum.

MS. ROSENBERG: And even if it's not intuitive, the EIS says so in section 4.8 of the response to EIS guidelines. Do you recall reading that section?

DR. GUNN: No.

MS. ROSENBERG: Well, I'll tell you what it says.

DR. GUNN: Sure.

MS. ROSENBERG: It says:

"A hydroelectric generating station may operate almost in perpetuity."

And it says:

"If decommissioning is required at some future date, it will be

undertaken, according to the legislative requirements, existing agreements, and industry standards prevalent at the time."

Correct?

DR. GUNN: Yes.

MS. ROSENBERG: Is that a passage you overlooked when you wrote that the anticipated life of the project is not stated?

DR. GUNN: Possibly. I think the reasoning about talking about the life of the project was relating to the distance out into the future prospective modeling exercises, where they existed, were done. So what we were saying was that there is some weakness around how long or how far into the future some of the prospective analysis was done. If it was a project that would exist in perpetuity, then you would expect, and we have dams that have existed for decades upon decades upon decades. And you can see the effects of those over time. They are demonstrated and there are examples of what happens over those decade and decades, that then you might have seen a more extensive set of predictions around some of the prospective --

MS. ROSENBERG: So that would be the first point. That's your comment around the temporal limit for the CEA?

DR. GUNN: Pardon me?

MS. ROSENBERG: I'm just going back to your statement.

DR. GUNN: I didn't hear you.

MS. ROSENBERG: Okay. I'll say it again. I'll read you the first sentence, and that bullet says:

"The future temporal limit for the CEA is unclear."

DR. GUNN: Yes, it's unclear.

MS. ROSENBERG: That was point 1.

DR. GUNN: Yes.

MS. ROSENBERG: And that's the point you're making now?

DR. GUNN: Yes. It's unclear.

MS. ROSENBERG: But your second sentence, Dr. Gunn, says:

"The anticipated life of the project is not stated."

DR. GUNN: It's not. It could be in perpetuity but it may not be. We don't know. We don't know. It's not -- I didn't find anywhere

that it was stated definitely what the anticipated life of the project would be.

MS. ROSENBERG: I'll read it to you again.

"A hydroelectric generating station may operate almost in perpetuity."

DR. GUNN: May, may operate. That's not a definite statement that's --

MS. ROSENBERG: Does that tell you that from the proponent's perspective, then this generating station is not intended to come out of existence, it's intended to be there for any time frame. And in fact, in other places it says a hundred years. Are we arguing over whether the generating station has a life, a lifetime, and then it will be taken out? It's not a mine, it's not a forestry project.

DR. NOBLE: Can I --

MS. ROSENBERG: Are we arguing over that?

DR. NOBLE: Yes, we are.

MS. ROSENBERG: Go ahead then, make your point.

DR. NOBLE: Okay. The statement that's written there is the anticipated life of

the project is not stated, and it isn't. It says that it may be forever. It might very well be forever. And yes, as you say, hydroelectric projects are typically there for a very long time. And so if that is the case, if this is a project that is there for 150 years, then boy did the futures analysis come up short.

And I think that's something that -- and you know, the point that Jill makes is these things are related in terms of the temporal analysis of the CEA. I know you're separating them as two different things, but they are closely related. The temporal limit for the CEA is unclear and the anticipated life of the project is not explicitly stated.

If the life -- if the project is intended to last a hundred years plus or in perpetuity, then the temporal limit for the CEA should be exploring some of those broad futures. Now we're looking into even, you know, very uncertain futures, and maybe even hypothetical conditions in a cumulative effects analysis. So I don't think you can separate those two points.

MS. ROSENBERG: I'm going to separate the two points because you made two separate

statements, okay. And on the futures analysis, we'll come back to that. That's point number 1, okay.

Point number 2, the anticipated life of the project is not stated. You have said what you have said about it and I want to also call your attention to one of the IRs and I'm going to ask that you be given a copy of it right now. Because you have said you have read the relevant IRs, and it might not be in front of you. And this deals with the ultimate time frame in horizon for the projects on the waterway. I'll give you a moment to read it. Are you with me, because this comes directly back to your futures analysis.

DR. NOBLE: Okay.

MS. ROSENBERG: And what I have given you is a copy of TAC public round 2, Aboriginal or public comments.

-0001 for the record, madam secretary.

And that talks about the long-term future. And it talks about that future from the point of view of the First Nations who live around this river and are affected by the projects that are existing on it today.

And what I'm asking you is whether you

can see from the answer to that IR that Manitoba Hydro is not free to commission the Churchill River Diversion or Lake Winnipeg Regulation or any of the other structures that are in the waterway. Do you see that?

DR. NOBLE: Sorry, they are not free to?

MS. ROSENBERG: Decommission. Manitoba Hydro, in fact, is contractually bound to maintain the water regime that was created in 1977 and continues to apply today. That's the future, sir, the long-term future.

DR. NOBLE: Okay.

MS. ROSENBERG: And could it be that the First Nations asked for that term because they expected environmental equilibrium to be maintained? And that equilibrium is maintained in perpetuity into the future. I see you're not understanding exactly what I'm getting at.

DR. NOBLE: No, I'm not.

MS. ROSENBERG: The waterway is a regulated waterway.

DR. NOBLE: I understand that.

MS. ROSENBERG: It's the waterway that Manitoba Hydro and the First Nations have been

living with for many decades.

DR. NOBLE: I understand that.

MS. ROSENBERG: And the substance of what happens in the future is controlled by things that happen upstream in that waterway.

DR. NOBLE: Um-hum.

MS. ROSENBERG: What this IR is showing you is that there is no decommissioning of those projects. Manitoba Hydro is contractually bound to maintain the water regime. Are you with me?

DR. NOBLE: I am.

MS. ROSENBERG: And in terms of the life of the project, I think you would find in other points in the EIS, it's projected for the analysis out to a hundred years. And that's what I want to go to now. That's point 1 in your bullet Temporal Scope. And for that, I want you to look at section 5.3.1 of the response to EIS Guidelines. And that refers you then to just other sections of the individual terrestrial, aquatic and physical environment volumes.

And so rather than going to the general, I think this time we need to do an example, okay.

So do you have in front of you, Ms. Cole, did you hand? Okay, I'm going to ask Ms. Cole to give you a copy of the part that I want to read to you from just in fairness. And it is the terrestrial environment supporting volume. It's volume 1, section 1.3.6. And I am at page 1-21.

Now the temporal scope, general approach, is set out there. Agreed?

DR. NOBLE: Yes.

MS. ROSENBERG: And if you will look further down the page, do you see a bullet point called "For future with and without project conditions"?

DR. GUNN: Um-hum.

MS. ROSENBERG: Do you see that?

DR. NOBLE: I see that.

MS. ROSENBERG: Do you want to read it to me?

DR. NOBLE: Yeah, I've read this before. This is an example from one of the really good parts of the environmental impact statement.

"For the future with and without project conditions is as far into the future as needed to capture potential

project effects but no less than 100 years after project operation commences and this is the assumed life of the project."

MS. ROSENBERG: And do you recall, if you read further into that terrestrial environment volume, you would understand that the first 30 years of that analysis is quantitative and that after that, the assessment is qualitative?

DR. NOBLE: That's right, yeah.

MS. ROSENBERG: So is the temporal scope unclear?

DR. NOBLE: Certainly not for the analysis in the terrestrial environment supporting volume.

MS. ROSENBERG: And if I tell you that there's a similar section in the aquatic volume?

DR. NOBLE: I'll believe you.

MS. ROSENBERG: Thank you. Now let's do some spatial scoping examples.

THE CHAIRMAN: Ms. Rosenberg.

MS. ROSENBERG: Sorry, are we ready for a break?

THE CHAIRMAN: I think it's time for lunch. And rather than start into a new section

and break in a minute or two, let's break right now and we'll come back at 1:30.

MS. ROSENBERG: Thank you very much. I appreciate it. I apologize for not looking at the time.

THE CHAIRMAN: No, it's okay.

(Proceedings recessed at 12:28 p.m. and reconvened at 1:30 p.m.)

THE CHAIRMAN: We will reconvene now.

Just one note before we get going, just as we broke for lunch, our recorder asked me to point out to both the questioners and the answerers, please wait until one is finished before jumping in with your response or your next question, because it can be a little confusing with the transcriber. Aside from that, no problems. Over to you, Ms. Rosenberg.

MS. ROSENBERG: Just on thing that I left out, I neglected to introduce Mr. George Hegmann, who is sitting one chair over to the right of me. I know that you know him, but it was pointed out to me that other people in the room might not know him, and just so we are clear on who is sitting with us, by way of being in the background.

THE CHAIRMAN: Thank you.

MS. ROSENBERG: Now I want to go to page 19 of your report where you begin a discussion about scoping. And I will just let you get there. It is a spot where you say:

"Cumulative effects assessment scoping must be sufficiently spatially temporally broad."

Do you see that?

MS. GUNN: Yes.

MS. ROSENBERG: So must be sufficiently spatially temporally broad to not only capture the direct effects of a project, but also its subsequent, indirect or ripple effects; correct?

MS. GUNN: Yes.

MS. ROSENBERG: And that's what we mean by including both direct and indirect effects?

MS. GUNN: Yes.

MS. ROSENBERG: On page 20 you talk about Wuskwatim, so you might want to turn to that?

MS. GUNN: Yes.

MS. ROSENBERG: I think what you are

arguing there is that the future operation of Wuskwatim was scoped out. You called it a scoping error?

MS. GUNN: The future of Wuskwatim was scoped out?

MS. ROSENBERG: The future operation? You say, yes, it was improperly characterized?

MS. GUNN: It was characterized as a past or current project, and it is current in the sense that it does exist. The turbines are in operation. But the point being that the effects that would unfold from that development would extend far into the future, and because it was characterized as past or current, it may not have been adequately captured in the prospective analysis, the additional ongoing effects.

MS. ROSENBERG: And one of those effects that you were concerned about was sediment loading to the aquatic system?

MS. GUNN: I personally didn't state any specific effects that I was concerned about.

MS. ROSENBERG: Well, I'm looking at paragraph 2 on page 20?

MS. GUNN: Paragraph 2 on page 20?

MS. ROSENBERG: Yes, that's the

paragraph before, and you were talking about all of the various concerns that flow from inadequate scoping, and you gave some examples. And one of the examples that you gave was sediment loading to the aquatic system, right?

MS. GUNN: I'm sorry, I don't see the line that you are referring to?

MS. ROSENBERG: I'm in the middle of page 20.

MS. GUNN: Yes. In that case the context of that statement was with reference to the Bipole I and II, the future Bipole III, et cetera, et cetera. And in that sentence sedimentation is mentioned.

MS. ROSENBERG: And then on page 21 you state, I think, your overall conclusion about the impact of this improper scoping, right? And I'm looking at the sentence that says:

"Since the future effects of the Wuskwatim Generation Project are largely unknown, and the Keeyask Generation Station is not yet built, it stands to reason that there could be a very significant effect...",

and you say combined effect, it was just a word

out, you meant a very significant combined effect on water quality and fish VECs?

MS. GUNN: Could be.

MS. ROSENBERG: That's what you said.

MS. GUNN: Yes.

MS. ROSENBERG: And your concern was that because Wuskwatim had been scoped as a current project, not a future project, that those would have been overlooked?

MS. GUNN: Yes, probably then the extended effects far into the future were probably not captured in the prospective analysis since it wasn't identified as a prospective project.

MS. ROSENBERG: Dr. Gunn, I looked at the list of documents you reviewed for your work, you repeated those today. And I see 29 references at the end of your report. And you don't have to count, I mean approximately 29 references, and almost half of those are on how to do cumulative effects assessment, correct?

MS. GUNN: I will accept that.

MS. ROSENBERG: Some are about regional or strategic effects assessment, but about half are focused on the theory of cumulative effects.

MS. GUNN: I wouldn't know unless I went back to judge if it was half or not, but I will accept that.

MS. ROSENBERG: Approximately?

MS. GUNN: Sure.

MS. ROSENBERG: What I don't see on that list is the Wuskwatim EIS, correct?

MS. GUNN: No.

MS. ROSENBERG: And I don't see transcripts from the CEC hearing on Wuskwatim where Mr. Rempel gave a presentation on that very issue?

MS. GUNN: No. But I do recall seeing something, though, about the focus on Wuskwatim and it saying very clearly that the focus with Wuskwatim was on direct effects.

MS. ROSENBERG: Where did you see that?

MS. GUNN: Somewhere in this stack of paper, it is in here somewhere. But anyway, continue, sorry.

MS. ROSENBERG: Well, let's just go on the theory that you are correct and that future impact of Wuskwatim of the operation phase is scoped out.

MS. GUNN: Okay.

MS. ROSENBERG: Because that's what you said in your paper?

MS. GUNN: That's what I imagine happened based on the logic of what was considered a past, current or future project, yes.

MS. ROSENBERG: Okay. Let's go on with the stuff you didn't review. You didn't review the Wuskwatim environmental licences and permits?

MS. GUNN: I don't think that I needed to in order to make the point that it wasn't scoped as a prospective future project, or that the effects were --

MS. ROSENBERG: You didn't read that project, though?

MS. GUNN: Well, I didn't think that I needed to read the Environmental Impact Statement to be able to make that point.

MS. ROSENBERG: Did you consider that those documents, as well as the annual environmental monitoring reports on the Wuskwatim project might contain information about the expected impacts of the operation of Wuskwatim on sedimentation and fish quality downstream?

MS. GUNN: I'm not seeing the connection to how that -- what does that have to do with the Keeyask CEA? I was asked to review the Keeyask CEA --

MS. ROSENBERG: Sorry, I apologize, I have done it again. I'm sorry. You didn't see the relevance of that material?

MS. GUNN: Not to make the point that I was making in the report.

MS. ROSENBERG: Which was scoping?

MS. GUNN: Which was simply that it was characterized as a past or current project, and I'm agreeing that it is, it is a current project. But what I'm saying is that that current project will obviously continue to result in environmental effects far into the future. So that was the point.

MS. ROSENBERG: And what you said then is that those environmental effects far into the future were not taken into account?

MS. GUNN: They did not appear to be, no, they didn't appear to be taken into account. It wouldn't stand to reason that they were taken into account in the prospective analysis because it wasn't identified as a future project.

MS. ROSENBERG: And so you are suggesting that the engineers and the aquatic biologists who had to scope their assessment missed, they overlooked a potential pathway or connection?

MS. GUNN: I didn't suggest that.

MS. ROSENBERG: You didn't mean to suggest that?

MS. GUNN: I didn't suggest that.

MS. ROSENBERG: You are suggesting the assessment is deficient?

MS. GUNN: I'm not suggesting that either.

MS. ROSENBERG: Good. Because Wuskwatim was incorrectly scoped?

MS. GUNN: I didn't suggest that. I didn't make that statement. I think perhaps you made that statement.

MS. ROSENBERG: I want to go back to what you actually said.

"In other words, the potential cumulative effects..."

MS. GUNN: If it helps to clarify, I said a couple of times that I agree it is a current project, it is a current project. What I

was trying to point out is that the effects far into the future probably were not captured in the prospective analysis. So I'm not disagreeing that it is a current project.

MS. ROSENBERG: And then you go on and say:

"Past and future current effects have to be modelled together so that you understand the cumulative effects together with this project."

MS. GUNN: Well, that's what a retrospective analysis is.

MS. ROSENBERG: And you say:

"Since the future effects of the Wuskwatim generation project are largely unknown, and the Keeyask generation station is not yet built, it stands to reason that there could be a very significant combined effect..."

MS. GUNN: Yes.

MS. ROSENBERG: "...on water quality and fish VECs."

MS. GUNN: There could be.

MS. ROSENBERG: There could be?

MS. GUNN: There could be, but we don't know because it wasn't talked about.

MS. ROSENBERG: You are suggesting it wasn't talked about?

MS. GUNN: I'm suggesting that I stand behind my statement that there could be, it is not a statement saying there will be, it is saying there could be.

MS. ROSENBERG: And the error that you say has been made is a scoping error?

MS. GUNN: I think what I was just trying to suggest is perhaps it would have been better placed in the category of being a future project because so much of its effects were yet to unfold. So I'm not disagreeing that technically it is a current project.

MS. ROSENBERG: Dr. Gunn, you have made a statement that the future effects are largely unknown.

MS. GUNN: Well, they are because the future hasn't happened, so we don't know.

MS. ROSENBERG: And the only way we know future effects is by the future happening?

MS. GUNN: Well, definitely in terms of a definite knowing, yes. In terms of modeling

prospective scenarios, you could do that but those have their uncertainties.

MS. ROSENBERG: And are you suggesting there was a realistic possibility of impacts from Wuskwatim combining with impacts from Keeyask that were scoped out or not taken into account?

MS. GUNN: I didn't say that. I just said that there could be. There could be.

MS. ROSENBERG: Could be or there were?

MS. GUNN: I don't have the expertise to be able to say with confidence what will be. I don't know, I'm saying there could be.

MS. ROSENBERG: Dr. Gunn --

MS. GUNN: We wouldn't know because those future effects probably were not taken into account because it was in the category of past and current.

MS. ROSENBERG: Dr. Gunn, my question to you is not about the actual effects, I realize we are not talking about effects. What I'm suggesting to you is that you said that the people who were responsible for this assessment didn't take those effects into account.

THE CHAIRMAN: Ms. Rosenberg, I think

you have beaten this point to death.

MS. ROSENBERG: All right.

Well, Dr. Gunn, I put it to you that those effects were taken into account and that it was not scoped out. And I would like to read to you from the response --

THE CHAIRMAN: You are giving evidence now?

MS. ROSENBERG: I would like to read to you from the response to EIS guidelines which will be handed out ---can you get a copy of that please? Section 7, page 716, are you there?

MS. GUNN: Page 716, yes.

MS. ROSENBERG: And what it says there is:

"The most recent additions and alterations to existing hydroelectric developments are the construction of the Wuskwatim GS on the Burntwood River and the rerunning of the Kelsey GS on the Nelson River, both of which are directly upstream of Split Lake."

Then it goes on to say:

"The technical assessment of spatial extent of effects of the Keeyask

project indicates that there is no overlap with these recent developments."

MS. GUNN: But I think we established earlier that there doesn't have to be a physical overlap in order for there to be a cumulative effect.

MS. ROSENBERG: Dr. Gunn, does there have to be overlap of effects?

MS. GUNN: Well, yes, there would have to be an overlap, or an accumulation of effects is perhaps a more accurate way to say that. It would have to be an accumulation of effect experienced by a VEC, so that doesn't necessarily imply that there would be an overlap of effects, but an accumulation.

MS. ROSENBERG: And how would that accumulation occur between one generating station and another?

MS. GUNN: Well, when you have the various disturbances in the watershed, those kinds of things may eventually affect, let's say water quality, which may affect fish viability or health or those kinds of things. That is not my area of technical expertise to know exactly how those

things link together. I'm not a technical expert on fish or water quality.

MS. ROSENBERG: But for your statement to be correct, there would still have to be a realistic pathway by which an effect could occur?

MS. GUNN: I think it is fairly realistic to expect that multiple generating stations as part of the --

MS. ROSENBERG: Sorry, I didn't finish. There would have to be a realistic pathway for an effect to be generated at Wuskwatim and end up combining with or accumulating with a Keeyask effect, right?

MS. GUNN: I think the piece that's missing is understanding that the concern or the focus is for the river itself. And so when you are looking at the health of the river itself, from a cumulative perspective, if you have multiple generating stations all along that river, adding one more, whether or not their effects exactly overlap, all of it is still affecting the health of the river, from my perspective. As I said, I'm not a technical expert in terms of river systems and water quality and the like.

MS. ROSENBERG: I'm going to suggest

to you again that there has to be a realistic pathway by which the effect of Wuskwatim on sedimentation, because that's what we are talking about, could combine with or accumulate with effects of Keeyask?

MS. GUNN: Well, they are both affecting the same river so that's -- to me that's the potential for accumulation, or a cumulative effect.

MS. ROSENBERG: And I agree with you about the potential. And I'm suggesting to you that the words that I just read to you indicated that the project team considered the potential and ruled it out?

MS. GUNN: Okay. Thank you.

MS. ROSENBERG: Agreed?

MS. GUNN: That's what it says, yes.

MS. ROSENBERG: So it wasn't scoped out, it was ruled out?

MS. GUNN: Thank you.

MS. ROSENBERG: And in the process of ruling that out, we are not talking about the philosophy of cumulative effects assessment or how spatial scoping should be done, agreed?

MS. GUNN: Can you restate that,

please?

MS. ROSENBERG: I will start it with a statement. The project team agrees that if there is a pathway by which the effects of Wuskwatim could combine with or accumulate with Keeyask, that scoped in -- and I think we have just established that, correct?

MS. GUNN: All right, yes.

MS. ROSENBERG: So the question of whether that did or didn't happen, or can happen, is a technical question, correct?

MS. GUNN: Sure, yes.

MS. ROSENBERG: And that technical assessment is carried out by people who are trained experts in their area of expertise, correct?

MS. GUNN: Well, I would assume that is true, yes.

MS. ROSENBERG: And so your conclusion about the effects of Wuskwatim being unknown might have been based on incomplete information, correct?

MS. GUNN: I really don't know. I guess I'm just not understanding what you are trying to get at with this, because it is -- that

wasn't the point of making the statement. It just wasn't the point that I was trying to get across.

MS. ROSENBERG: Were you trying to get across a scoping error, because that's what you put it in your report?

MS. GUNN: We felt that, yes, it would have been better characterized as a future project, but it wasn't, and that's okay, we agree that technically it was current. We were just suggesting that you might have seen some more illuminating results had those future effects been considered in the prospective analysis.

MS. ROSENBERG: At the risk of beating a dead horse, I'm going to take you back to --

MR. WILLIAMS: Mr. Chair, if I might, I think the dead horse has been beat repeatedly. I have tried to show considerable respect to my learned friend. The witnesses for CAC Manitoba have repeatedly pointed out that there is a challenge in the EIS in terms of the failure to model in the prospective analysis the great uncertainty of Wuskwatim, a brand new project, in collaboration with Keeyask. The very section that we are speaking on now, or have been, again has been on past and current project effects and

activities. I think this issue has been answered in a variety of ways, and I think it is doing a disservice to the process to continue.

MS. ROSENBERG: Mr. Sargeant, my friend has repeated the allegation. And the allegation is that there are effects for which there was a realistic potential impact and that they were not modelled. He has repeated the allegation.

THE CHAIRMAN: I don't want to get into making a decision that we shouldn't be making for a number of months. But I seem to see a little bit of disconnect here. The witness is talking about unknown future effects not being included. You are referring to this document, which we were just handed which talks about past and current projects and effects.

So, I think I'm inclined to agree with Mr. Williams, that as far as questioning the witness about the inclusion of future effects, I think it has been asked and answered a number of times just since lunch time.

MS. ROSENBERG: Mr. Sargeant, at the risk of disagreeing with the Chair, I think we talked about whether to categorize it as a future

or past or current project. And I'm suggesting to the witness that that's not the point. The point is whether the future impacts of Wuskwatim were taken into account and were modelled. And she has suggested that they haven't been.

THE CHAIRMAN: Yes, and she has suggested that. And I don't see anything at least in this document that contradicts her statement, which is I think the point that Mr. Williams was making.

MS. ROSENBERG: I guess I would leave that with the fact that it was a technical assessment and that technical assessment was done.

THE CHAIRMAN: Okay. Shall we move on then?

MS. ROSENBERG: Now, that conclusion that you made about potential future effects on water quality being unknown were dependent on the correctness of your thinking that the future effects of Wuskwatim were unknown?

MS. GUNN: I didn't make a conclusion, I just suggested that we probably don't know what they are, because the future hasn't happened.

MS. ROSENBERG: Dr. Gunn, why do you do environmental impact assessments?

MS. GUNN: Pardon me?

MS. ROSENBERG: Why would you do an environmental impact assessment?

MS. GUNN: To predict the environmental consequences of development and to try to mitigate them.

MS. ROSENBERG: All right. I'm going to ask you to look at some slides about the aquatic environment and think about whether these environmental impacts have been taken into account. And the slide deck is slide 15, and I would like to look the other way -- number 1, sorry -- because you have suggested that there are some impacts in combination with Conawapa as well downstream; correct?

MS. GUNN: I don't think -- I just suggested there could be is what I suggested, I didn't say that there are, I said that there could be.

MS. ROSENBERG: Well, shall we leave it at this; that if there could be, and you didn't find that analysis, but that analysis exists, you would agree with me that your conclusion is incorrect?

MS. GUNN: I think that's a very vague

statement, so I would have a hard time agreeing with it. But if you could be more specific, I might be able to answer.

MS. ROSENBERG: You've said that the effects downstream in combination with Conawapa are equally unknown?

MS. GUNN: Well, they would be unknown because they haven't happened, correct.

MS. ROSENBERG: And are you suggesting that the assessment should have taken those into account and didn't?

MS. GUNN: Well, I don't know. I'm honestly getting a little bit confused by what you are getting at?

MS. ROSENBERG: Are you saying that the assessment should have taken something into account that it didn't?

MS. GUNN: We are getting like far away from, I feel, the original point, which was the statement about whether Wuskwatim was improperly or properly characterized. So I feel like, I don't know that I can comment specifically on what you are asking.

MS. ROSENBERG: Are you aware that chapter 6 includes predictions about the future

effects of current projects?

MS. GUNN: Yes, I am aware of that, yes.

MS. ROSENBERG: And that includes both construction and operation phases of those projects?

MS. GUNN: Yes, I am aware of that.

MS. ROSENBERG: And you've connected it up as well to impacts downstream from the future Conawapa. Correct?

MS. GUNN: That's a fragmented sentence. I'm not sure -- if you could restate it please?

MS. ROSENBERG: I want to go back to your conclusion then.

MS. GUNN: That's a good idea, what page were you looking on?

MS. ROSENBERG: Back at page 21.

MS. GUNN: Yes. What I said there was the potential cumulative effects of the Conawapa project are scoped out of the cumulative analysis for fish. I'm simply repeating what is shown in table 7-3. So the Conawapa is scoped in, in terms of, if I remember correctly scoped in, in terms of affecting water quality, but then not in terms of

affecting perhaps fish.

MS. ROSENBERG: So that's what I want to go to right now, and I think we have our first slide up.

MS. GUNN: Um-hum.

MS. ROSENBERG: And this slide shows you a summary of the results of the assessment about the impacts?

MS. GUNN: Okay, yes.

MS. ROSENBERG: The impacts of Keeyask on sedimentation.

MS. GUNN: Okay.

MS. ROSENBERG: And that assessment was based on the use of models in comparison to guidelines and existing conditions. And the slide goes through the management measures, and the conclusion is that most effects are only measurable near the construction site. Did you see that in the assessment?

MS. GUNN: Yes, I believe I did.

MS. ROSENBERG: And elevated total suspended solids extend further downstream than the construction site during periods of intensive in-stream work, for one to three months in each of two years?

MS. GUNN: Yes.

MS. ROSENBERG: Then the increases downstream of Kettle GS will be small?

MS. GUNN: Yes, I see that.

MS. ROSENBERG: Let's go to the next slide.

And that slide shows you the reach of the river, downstream, and it summarizes the effects during the operation phase. Do you see that?

MS. GUNN: Um-hum, yes.

MS. ROSENBERG: So that contributions to TSS, which is what we are talking about, during the operation phase is only in the flooded areas which is shown in light blue. Do you see that?

MS. GUNN: Yes.

MS. ROSENBERG: And the prediction is that in the main stem TSS will actually go down. Do you see that?

MS. GUNN: Yes.

MS. ROSENBERG: Let's go to the next slide. And there we get to the fish assessment.

MS. GUNN: Um-hum.

MS. ROSENBERG: And that fish assessment is based on the long-term cumulative

effect of Keeyask downstream?

MS. GUNN: Okay, yes.

MS. ROSENBERG: And the prediction is no adverse effects outside of the Keeyask reservoir in Stephens Lake, correct?

MS. GUNN: Yes.

MS. ROSENBERG: And all of that prediction was based on the work on water quality in the preceding sections; correct?

MS. GUNN: Yes, I will accept that, yes.

MS. ROSENBERG: And that work showed that the adverse effects in the Keeyask reservoirs and Stephens Lake are expected to occur during construction and the first few years of operation, correct?

MS. GUNN: Yes.

MS. ROSENBERG: While the long-term effects are either neutral or slightly positive, right?

MS. GUNN: Okay.

MS. ROSENBERG: And the assessment concluded that there is no overlap with other projects; correct?

MS. GUNN: Correct.

MS. ROSENBERG: And that was the technical assessment, agreed?

MS. GUNN: Yes.

MS. ROSENBERG: So it is not a question of scoping, it is a question of the technical judgment of technical experts, both about the potential for Wuskwatim and the potential for Conawapa to combine, agreed?

MS. GUNN: I still don't think that the prospective analysis included distant futures for those other two projects.

MS. ROSENBERG: Would the distant futures be different from the near future in terms of the contribution of sedimentation to a river?

MS. GUNN: They may be. You would have to perform the exercise to know for sure. It is a -- you know, if these dams are going to be in existence for perpetuity, or for 100 years or more, we are just suggesting that good practice would take a look at that, would also just take a look at that.

MS. ROSENBERG: And you concluded that that hadn't been done based on common sense, or your thinking about what might or might not have been taken into account by those technical

experts?

MS. GUNN: I'm not sure I understand the question. Based on common sense?

MS. ROSENBERG: You end with a comment, and I'm looking at page 21 of your report, fourth line from the top. And we can go as well to page 6 of the CEA summary. You say:

"Somehow not any of the four fish species named as VECs will experience significant adverse effects from the construction or operation of the Keeyask generating station."

And you say that because you believe that there has been a scoping error?

MS. GUNN: I'm sorry, I'm really having a hard time following your reasoning.

MS. ROSENBERG: Dr. Gunn, you say "somehow," and I suggest to you that it is not somehow, it is the conclusion of the analysis that is summarized in chapters 6 and 7 of the report, in relation to water quality, in relation to effects on fish, and taking into account the realistic potential interactions between the effects of Wuskwatim and Keeyask and Conawapa. That's what I'm putting to you.

MS. GUNN: The statement in the report was simply referring to table 7-3 and what is indicated there in terms of Conawapa being scoped into the CEA.

MS. ROSENBERG: And I put it to you that it was scoped in and that interaction was ruled out?

MS. GUNN: I will accept that.

MS. ROSENBERG: On a technical basis?

MS. GUNN: I will accept that.

MS. ROSENBERG: And when you drew your conclusion, did you send off an IR, did you ask Mr. Williams to write to the proponent asking why then those conclusions hadn't been drawn?

MS. GUNN: I didn't draw a conclusion, I simply pointed out that the eventual conclusion of the proponent is that the four fish species will not experience significant adverse effects. I didn't conclude that, I just pointed that out, that that was the conclusion.

MS. ROSENBERG: Indeed, that is the conclusion.

MS. GUNN: Um-hum.

MS. ROSENBERG: So where you stated that the potential -- these are your words,

Dr. Gunn.

"In other words, the potential cumulative effects of the Conawapa project are scoped out of the cumulative effects analysis for fish."

What you meant to say was ruled out on the basis of technical judgments?

MS. GUNN: I was simply referring to the content of table 7-3, and it is not -- Conawapa does not appear in that table, that's what I was referring to.

MS. ROSENBERG: And I put it to you that table 7-3 is not a table representing scoping, but a table representing rather the results of the technical analysis that followed from the scoping?

MS. GUNN: Okay, I will accept that.

MS. ROSENBERG: And the basis of your own conclusion that there could be a very significant effect combined on water quality and fish VECs were based on conceptual concepts about scoping, not on that technical analysis, correct?

MS. GUNN: I think that you are reading something into the sentence structure that wasn't intended to be there. I simply was

reflecting what I saw written in 7-3. I was not intending to draw my own conclusion about the effects on fish. That's not what the sentence is meant to say.

MS. ROSENBERG: All right. Now, that we have established that it is, 7-3 is representing the results of the technical analysis and not a scoping decision, you have confirmed that, I think we can leave it at that.

Now, on page 24 and 25 of your report, on page 24 and 25 you are talking about trend analysis; correct?

MR. NOBLE: Correct.

MS. ROSENBERG: I will give you a moment to reread your words, but it seems to me that what you are saying is that the project assessment indicated that they couldn't do adequate trend analysis because they don't have enough information from before CRD and LWR?

MR. NOBLE: Could you just point out exactly where that is on page 24, just so I'm sure?

MS. ROSENBERG: You say:

"It is reported in the EIS that technical information is limited

regarding Nelson River water quality pre-hydro development, and in the aquatic assessment supporting volume, section 5.3, it is reported that methodological differences preclude the analysis of historic data to establish a clear trend..."

And the sentence goes on,

"...a clear trend of the effects of CRD and LWR to the fish communities."

So you are characterizing what the proponent said as lack of data, meaning lack of ability to do trend analysis?

MR. NOBLE: Sorry, I'm saying that's what is stated in the aquatic environment report.

MS. ROSENBERG: And I would put to you, Dr. Noble, that what that report is saying is exactly the opposite. And in the aquatic environment supporting volume, volume 1, section 2, page 2-9, and all of the pages following, what you see is a reflection of the trend analysis that the proponent did do, and the data that they did have. And what they are saying is exactly the opposite of what you concluded, that in fact they do understand and are able to quantify what is

happening and has happened in the river?

MR. NOBLE: I didn't conclude anything. I simply said the report says methodological differences include the analysis of historic data to establish a key trend. And I acknowledge that in the next line, that that's often the case, that's not an anomaly, it is not unusual for this particular watershed.

MS. ROSENBERG: And I would put it to you that that sentence is acknowledging that after 50 years of hydro development, CRD and LWR has permanently changed some of the aquatic environment, including the conversion of riverine habitat to lake like habitat? They have acknowledged that?

MR. NOBLE: Yes.

MS. ROSENBERG: And they have gone on to say, though, that they have more than adequate data and more than adequate trend analysis to determine what has happened in the stabilization of conditions in the waterways?

MR. NOBLE: Yes.

MS. ROSENBERG: And the question today is whether water quality has stabilized, what is it like, what does it support, correct? And they

have answered those questions.

MR. NOBLE: Yes, this part of the EIS is, I mean, one that we identify as good. I mean, I agree with what you are saying.

MS. ROSENBERG: And did you understand then that unlike the terrestrial environment, which is largely in tact, the Nelson River is regulated and the change is permanent; correct?

MR. NOBLE: Yes.

MS. ROSENBERG: And that the adaptation to it is what's important?

MR. NOBLE: For what?

MS. ROSENBERG: Water quality, fish, understanding the conditions as they have been, and are, and will be; agreed?

MR. NOBLE: I'm not sure what I'm agreeing to, sorry?

MS. ROSENBERG: I'm going to give you the proponent's view of what is in that section of the EIS and you tell me whether you agree or disagree.

The trend analysis described in the aquatic environment supporting volume used two decades of data to see whether the water conditions at a long-term monitoring site

immediately upstream of the project are stable, and described a trend analysis conducted by experts from the Government of Manitoba looking at water entering the Nelson River. Agreed?

MR. NOBLE: Okay.

MS. ROSENBERG: And that Manitoba's water quality index and whether it has changed in the last decades, they looked at that as well. Agreed?

MR. NOBLE: Okay.

MS. ROSENBERG: And the conclusion they drew is that water quality conditions are stable, it has taken time, but they are stable?

MR. NOBLE: Good.

MS. ROSENBERG: All right. Let's go to two errors that you say the proponent makes in the assessment of significance. Firstly, you say that the Partnership masks the significance of incremental effects by saying that they are small compared to bigger previous disturbances. Agreed? That's one of your points?

MS. GUNN: Could you point out the page?

MS. ROSENBERG: You are really passionate about it, because you say it four times

as a general concept, it is page 15, page 18, page 35, and page 37 of your report.

You say on page 35, for example, we also note in chapter 7 that the incremental impacts of the project are often traded off against the significance of all other disturbances of activities in the project region. Agreed? You said that four times?

MS. GUNN: Yes, there it is at page 35.

MS. ROSENBERG: All right. Dr. Gunn, the only example of this error that I could find in the 41 pages of your paper was the terrestrial VEC called intactness. And you gave that example on page 18.

Before we go to that example, I just want to keep in mind that the intactness assessment was something that you thought was done well in this report, correct?

MR. NOBLE: Reasonably well in terms of the approach adopted.

MS. ROSENBERG: And at page 18 you quoted chapter 7, page 728, are you with me?

MS. GUNN: I think we see it.

MS. ROSENBERG: And the quote you

picked out from chapter 7 says these words:

"Overall the likely residual project effects on regional intactness are expected to be adverse but small, because the project footprint is located in an area where intactness is already low due to past human activities."

And you offered that as an example of an attempt to minimize the significance of an effect by saying that it is small compared to worse effects, correct?

MR. NOBLE: Okay.

MS. ROSENBERG: But in chapter 7, the part that you are quoting is itself a summary of what is in chapter 6. Did you follow that?

MR. NOBLE: If you say so, I can't confirm that right here but --

MS. ROSENBERG: Well, I say so, Dr. Noble, because it is extremely important in understanding what is being said in the document, and it does say so. And I'm asking whether you understood that?

MR. NOBLE: I did understand what? Sorry?

MS. ROSENBERG: Did you understand that those words that you quoted are simply a brief summary of what is in chapter 6 of the document?

MR. NOBLE: I'm pretty sure I would have understood what it was saying. I mean, I used the example based on my reading of the technical report, chapter 6 and chapter 7, and provided it as an example.

MS. ROSENBERG: Can you look with me at section 6.5.3.3.5 -- that's a lot of numbers. I will give you a minute to go there. Section 6.5.3.3.5. That's where you see the summary of the conclusion about residual effects on intactness taking into account Keeyask and existing cumulative effects; right?

MR. NOBLE: Yes.

MS. ROSENBERG: And one of the measures of intactness is linear featured density, correct?

MR. NOBLE: Correct.

MS. ROSENBERG: And the other is the extent to which core area remains untouched?

MR. NOBLE: Correct.

MS. ROSENBERG: I'm going to ask you

to look at the core area example in the slides that Dr. Ehnes presented two weeks ago. We are going to put up those slides now. It was slides, starting with slide 45 in Dr. Ehnes's original presentation.

MR. WILLIAMS: I hate to interrupt, would you mind if I just provided -- you have only given part of one page of that section -- would you mind if I approach and just provided --

MS. ROSENBERG: I believe that Dr. Gunn has it in front of her. Help yourself, of course. I want to go through this example, and I think it is important to see how your conclusion compares to the example. We are taking a look at the intactness slide, and you see that the cumulative effects are assessed starting with a pre-development condition. Agreed?

MR. NOBLE: Agreed.

MS. ROSENBERG: Then the existing cumulative effects are added. Agreed?

MR. NOBLE: Agreed.

MS. ROSENBERG: And if we go to the next slide, we see the addition of Keeyask to those existing cumulative effects. Correct?

MR. NOBLE: Correct.

MS. ROSENBERG: And the measurement is against the historic pre-development condition. Correct?

MR. NOBLE: That's correct.

MS. ROSENBERG: What remains is 82 per cent of the original historic pre-development condition. And then if we go forward to the next slide, we see Keeyask plus future projects; correct?

MR. NOBLE: Correct.

MS. ROSENBERG: Again, the measure is against the historic reference condition, correct?

MR. NOBLE: That's correct.

MS. ROSENBERG: So I would suggest to you that that analysis is the very opposite of a trade-off?

MR. NOBLE: Okay.

MS. ROSENBERG: Agreed?

MR. NOBLE: I'm not sure I agree why you say it is the opposite of a trade-off.

MS. ROSENBERG: Well, tell me again what a trade-off is?

MR. NOBLE: What we are looking at in this particular example is the contribution of the project to loss of intactness or core area over

time, its contribution versus the contribution of all other actions and activities that have happened. So if we look at from 99 per cent to 81 per cent, whether that's a significant change or not I guess is up to the people who make the decisions on this. But if you are to look at that change and say, add in Keeyask, plus existing cumulative effects, so there is a one per cent difference between Keeyask existing cumulative effects and Keeyask existing and future projects, so Keeyask seems to be adding a very small contribution to that.

MS. ROSENBERG: Agreed.

MR. NOBLE: Relative to the other effects that are occurring, it is small. The very definition of a cumulative effect is what we see on that graph, moving from 99 per cent to 81 per cent. So it is less, the 83, to 82, to 81. But what we are concerned about in looking at this is, Keeyask existing in future projects is somewhat restrictive in terms of the types of future projects considered. So if we add those scenarios into the equation, I don't know what that 81 per cent would look like. The cumulative effects we are seeing here is a shift from 99 per cent to 81

per cent to whatever that might be in the future. If Keeyask added only 0.2 per cent of that change, it is extremely small compared to the rest of the change that's being identified. But that's not the point that we are making. The point we are making is overall that's not sort of the way that you approach the cumulative effects. It is whether the magnitude of the total change from past to present and going into the future is significant at all. So I agree in part, but the point that we are making is how this is interpreted in terms of what a cumulative effect is. And maybe we just disagree on that.

MS. ROSENBERG: Well, Dr. Noble, the point you made in your paper and the point you made in the presentation was that it is a mistake --

MR. NOBLE: No, I didn't say it was a mistake.

MS. ROSENBERG: Let me finish the question -- that it is a mistake to assess significance by comparing a small effect to a bigger effect of the past, and you called that a trade-off?

MR. NOBLE: I said no matter how small

the effect, when we add it to effects that have already occurred, they are cumulative effects. And the statement that's being made in this document in the summary is that it is occurring in a portion of the regional study area where intactness is already low due to past and current human development. And I'm not debating the technical analysis that was performed, I'm debating the principle of adopting a cumulative effects assessment approach or view on this, and making the statement. And so if this is not what was meant, it sure is what was said. And so I think that's sort of the challenge. If it wasn't meant, I mean, it sure says that, regardless of what the powerpoint slides show. This is the statement of the summary of the cumulative effects. And so that's what my comment in here was based on, not Dr. Peake's powerpoint per se. So I guess I just tend to see it differently.

MS. ROSENBERG: Well, I would suggest to you, sir, that you took a single sentence of the report, and out of that you said that a mistake was made by using a trade-off. And I would -- I would like to finish -- I would like to suggest to you that the true measure of how the

proponent assessed significance of this effect is represented on that slide, and that slide is a bar graph that takes the technical data that was in the report, and in one of the IR answers, and it puts it in a visual form so that you can see the thinking made transparent.

And I further suggest to you that if you look at that slide, you will see that the assessment of significance is not a comparison of we are only adding one per cent, it is a comparison to the historic benchmark and using a threshold benchmark analysis of intactness that remains when you add these effects. Agreed?

MR. NOBLE: I will just -- I mean, I did read the technical report. I did read all of the information. And so I didn't make my conclusion based on one sentence, and I stand by my statement in terms of the principle of cumulative effects. Thank you.

MS. ROSENBERG: What was the measure of significance that was applied in this intactness assessment?

MR. NOBLE: In this particular intactness assessment -- I'm going here from recall -- they had a core area percentage change,

I believe, and a density feature. And I think they were using, connecting that, if I remember correctly, to caribou habitat guidelines for Environment Canada. I'm not 100 per cent certain on that, I'm just recalling that.

MS. ROSENBERG: Well, right now we are just talking about intactness. How was the measure of significance of the intactness measure determined?

MR. NOBLE: Based on the benchmark shown in this diagram.

MS. ROSENBERG: Based on the benchmark, thank you.

And it is just a fact that if new development is built largely within the footprint of an existing development, it doesn't take up much more of the untouched area, correct?

MR. NOBLE: Sorry, could you restate that?

MS. ROSENBERG: It is just a simple fact that when you build new development, and you build it within an area that's already impacted, you don't diminish the core area any more?

MR. NOBLE: Yes, if it is being built in an area where there is no core area, yeah, you

are not taking away core area.

MS. ROSENBERG: And that's a good thing.

MR. NOBLE: That's relative.

MS. ROSENBERG: Dr. Noble, is it relative to that benchmark?

MR. NOBLE: Is what relative to that benchmark?

MS. ROSENBERG: Is it a good thing not to go closer to the benchmark?

MR. NOBLE: It is a good thing not to go closer to the benchmark, yes. Is it a good thing that we move from 99 per cent to 81 per cent? No. I mean, I'm not sure what else to say.

MS. ROSENBERG: Let's go to slide 38 -- sorry, the next slide in the deck. And that slide shows the total terrestrial habitat effects from past, current and future projects, including Keeyask, and it shows that those impacts are less than 7 per cent of the pre-development area; correct?

MR. NOBLE: Sorry, are less than?

MS. ROSENBERG: 7 per cent?

MR. NOBLE: Yes.

MS. ROSENBERG: Would you say that

that slide is an example of assessing significance against a benchmark?

MR. NOBLE: It appears to be.

MS. ROSENBERG: And I would suggest to you, sir, that nowhere in this entire assessment has the proponent ever suggested that an adverse effect is not significant because it is small compared to an existing impact. And in fact, what has been said is that it is small compared to the per cent of area remaining in the region?

MR. NOBLE: Okay.

MS. ROSENBERG: Agreed?

MR. NOBLE: I can't offhand without double checking, but I will.

MS. ROSENBERG: Subject to check, agreed?

MR. NOBLE: Subject to check, agreed.

MS. ROSENBERG: Let's look at the other error that you say the proponent made.

MR. NOBLE: I didn't say that was an error, by the way, I just said in terms of the interpretation and approach to how cumulative effects are defined. I just wanted to make sure that's clear.

MS. ROSENBERG: Let's go on. On page

37 you say that cumulative effects can be masked or minimized by broadening the geographic scale of reference. Do you see that?

MS. GUNN: Are you talking about the presentation?

MS. ROSENBERG: Page 37 of your report?

MS. GUNN: Of the report.

MS. ROSENBERG: And again you use intactness as an example and you quote again a sentence out of chapter 7 of the report. Do you see that?

MS. GUNN: You are in where, the last paragraph?

MS. ROSENBERG: Page 37 of your report.

MS. GUNN: The last paragraph?

MS. ROSENBERG: Correct. And you are quoting on intactness, a section from chapter 7 of the report. Okay, are you there?

MS. GUNN: Well, I don't see a quote in that paragraph.

MS. ROSENBERG: Forgive me, it is on page 38, turn over the page, intactness is an example.

MS. GUNN: Yes.

MS. ROSENBERG: And you quoted chapter 7 again.

MS. GUNN: Yes.

MS. ROSENBERG: You said:

"Although total core area would decline by approximately 135 square kilometres, the percentage of the regional study area in core area is expected to remain higher than 80 per cent of land area, which is well within the range for low magnitude core area effects."

And I would suggest to you that is an example of the assessment of significance against benchmarks. Agreed?

MS. GUNN: Yes.

MS. ROSENBERG: And against a historical reference condition?

MS. GUNN: Yes.

MS. ROSENBERG: And the benchmark gives you the health of the environment going forward. Correct?

MS. GUNN: Yes.

MS. ROSENBERG: And the historical

reference condition gives you, where did we come from in the past?

MS. GUNN: That's right.

MS. ROSENBERG: Now, Dr. Gunn, do you recall your testimony at the Bipole III hearing?

MS. GUNN: I'm not sure which piece.

MS. ROSENBERG: You won't have it, but I would like to read to you a little bit of what you said, if that's okay.

MS. GUNN: All right. Sure.

MS. ROSENBERG: "The point is that unless you have some established threshold, you can't really identify or comment on the significance of the cumulative effect..."

MS. GUNN: Um-hum.

MS. ROSENBERG: "...threshold."

MS. GUNN: Okay. Yes.

MS. ROSENBERG: Now, those thresholds could be ecological limits. And when you look up that slide and you see the benchmark, and you see the benchmark referred to in the section of chapter 7 that you just quoted, isn't that exactly what we are talking about?

MS. GUNN: Well, on this page of the

report, the point that's being made is that a second way, another way that cumulative effects can sometimes be masked or minimized is to broaden the scale of geographic reference, that's the point. And so that quote with respect to intactness was one example of a statement whereby you are comparing the effects locally to the effects more broadly in a regional study area. And in that sense those more localized effects could be made to seem less significant. So that's what the context is about there. It is not about thresholds and benchmarks, it is about broadening out the geographic scale of reference.

MS. ROSENBERG: Isn't it the case that you noticed as a positive that the terrestrial assessment, which is what we are talking about here, used eco-system boundaries as the measure for where to set those regional project --

MS. GUNN: Yes.

MS. ROSENBERG: They did that?

MS. GUNN: Yes.

MS. ROSENBERG: So that's an appropriate measure?

MS. GUNN: Yes, it is an appropriate measure, yes.

MS. ROSENBERG: And you said actually in your Bipole III testimony that there are different ways to set those thresholds, but they could be ecological limits?

MS. GUNN: Yes.

MS. ROSENBERG: And you said part of what one does is determine minimum viable population levels?

MS. GUNN: Yes, that was done.

MS. ROSENBERG: Then you look to see the minimum habitat needed to support those population levels?

MS. GUNN: Yes. And that was done.

MS. ROSENBERG: Correct?

MS. GUNN: Yes.

MS. ROSENBERG: Then you went on to say that thresholds can be ecological or they could be benchmarks, which is an acceptable amount of change. Correct?

MS. GUNN: Yes.

MS. ROSENBERG: Or they could be --

MS. GUNN: Yes, we thought that was an element of good practice here.

MS. ROSENBERG: And I'm going to suggest to you then that what you see displayed on

the slide and in this assessment is actually an example of the method you advocated at the Bipole III hearings?

MS. GUNN: Absolutely, but it is not what this piece of this report was about, that wasn't the point that was being made in using this quote.

MS. ROSENBERG: When the regional boundaries were set for this assessment, it was done based on a set of criteria. Agreed?

MS. GUNN: Yes.

MS. ROSENBERG: And you actually commented that those were appropriate criteria?

MS. GUNN: Yes, I'm not disagreeing with that.

MS. ROSENBERG: So the comparison to the regional study area is the appropriate comparison?

MS. GUNN: Yes, and I'm not disagreeing with that. What we are trying to say is that sometimes when the significance effects are reported in environmental impact statements, the way that it is characterized, the way that it is described can have a masking or minimizing effect. And I draw some examples, some other

examples of that on slide number 36. Again, with respect to moose the statement is:

> "Small changes in habitat are expected compared to regional availability."

Okay. So that can have a bit of a masking or minimizing effect to state it that way. That's the point. Another example of a statement like that related to caribou:

> "For summer residents the cumulative reduction in intactness is one per cent; small compared to the regional study area."

But the regional study area, although we make our best attempt to set the right boundaries and it is good practice to say ecologically, it is still rather subjective, the setting of boundaries. So if you are stating what the significance of effects are compared to a boundary, that can have a minimizing or masking effect, and that's the point of this area of the report. It is not to contest what is on the slides. It is appropriate to use benchmarks and past reference conditions and all of that. That's not what this is about.

MS. ROSENBERG: So the comparison to a region, a study region which was selected on

ecological criteria then, in your view, is correct? That's the best that we can do?

MS. GUNN: It is considered good practice, yes.

MS. ROSENBERG: All right. Thank you.

Just one more point on intactness and then we will move on. If you go back to page 13, we are going back to the comment where you remarked that the study region didn't include the footprint of other future projects. And I will just take a moment and help you with what paragraph it is at.

And the comment you make there is, spatial values in CEA scoping should be VEC centred and not project centred. And then you comment that the regional ecological boundaries, which you say are adopted for the direct assessment, but I think we established that it is both direct and indirect effects. Correct?

MS. GUNN: Yes.

MS. ROSENBERG: You are suggesting those aren't broad enough to capture other existing and future developments.

Now I'm going to ask you again whether it is your position that in order to be accurate

you need to capture the footprints of those other projects?

MS. GUNN: Yes. What I was thinking about there, you know, when I wrote this, I was echoing the concerns of the CEC at the time about the study zone five, and perhaps those boundaries should be extended for assessment. But I was also thinking of projects like the Bipole III, which is identified as a future project. And so the study zones, the study areas that are designated for the direct and indirect effects assessment do capture a portion of the Bipole III, but they don't capture all of Bipole III. And the point is, when you are thinking about effects in the future of the project, there could be effects for the Bipole III operation and vegetation maintenance long term that wouldn't have been captured within the study zone areas for the Keeyask as it stands. So that would be one example.

MS. ROSENBERG: So are you suggesting then that the whole length of the Bipole III should be scoped in to say an assessment of terrestrial habitat?

MS. GUNN: It certainly could conceivably be scoped in. According to the

Hegmann guidance, it is within the purview of a proponent to scope in -- you could be scoping in stuff that is trans-boundary and global in terms of scale, if there is some reason to believe that the project effects will have changes on that scale. So that is why I'm saying that it is possible that the study boundaries, as they are defined, don't necessarily capture all of the indirect effects that could come. And yes, you know the Bipole III, that's a very long transmission line, that's 1,300 kilometres of transmission line traveling down to the south. So a piece of that is definitely captured within the study zone boundaries as designated, but clearly the operation and maintenance of the Bipole III for the next 100 years outside of that could also have indirect effects that are of concern to people, and some of those indirect effects can be, you know, things like opening up -- leading to more hunting pressures, inducing more hunting pressures in those areas because there are no access roads, because of the transmission right-of-way itself allows access that wasn't there before. So these kinds of indirect effects are real, are connected to the project, but don't

necessarily -- aren't necessarily captured within the ecological boundaries, even though ecological boundary setting is good practice. So that's what this is about.

MS. ROSENBERG: What your comment went to was the spatial boundaries for the cumulative effects assessment. That was your comment?

MS. GUNN: Um-hum.

MS. ROSENBERG: And you were commenting that spatial boundaries --

MS. GUNN: Yes, that's what I was just talking about.

MS. ROSENBERG: And in the comment you made on page 13, you suggested that the spatial boundaries were too small, just in short, right?

MS. GUNN: Well, I was just suggesting that they, yes, they could possibly be too limited to capture the full range of indirect or induced effects of the project, yes.

MS. ROSENBERG: And if you want to go all the way down the length of the Bipole III, the study region could be all the way to Winnipeg and beyond?

MS. GUNN: Yes, it could be. But it has to be based on the issue at hand, on the

valued ecosystem component concerned and the scale of the issue. Within good practice guidance it is conceivable that you would have to set global boundaries or national boundaries or trans-national boundaries. So it is possible that you may scope in the whole Bipole III, you may do that if there was reason to be concerned.

MS. ROSENBERG: And VEC by VEC, it would be the judgment of the professional who did that assessment, what was the proper scope for the regional boundaries, taking full account of the impacts from this project in combination with other projects?

MS. GUNN: Yes, we are not disagreeing that the ecological boundary setting approach was incorrect, that is good practice. It is just when you are thinking of things from a cumulative effects assessment, you have to then rethink again if those boundaries may need to adjust to be able to tell you what you need to know about VEC sustainability. That's all.

MS. ROSENBERG: And if I told you those regional boundaries were set precisely to measure VEC sustainability and they were set precisely to counter the maximum total detectable

influence on the population, that was judged to be the population, population by population affected by Keeyask?

MS. GUNN: Yes.

MS. ROSENBERG: That would be good practice?

MS. GUNN: It would be. We think that's a good practice element of this particular impact assessment.

MS. ROSENBERG: All right. So the suggestion that an area is too small, you will agree, would contradict with an implication that the area is too big; correct?

MS. GUNN: I am sorry, can you restate that?

MS. ROSENBERG: You complained on page 13 --

MS. GUNN: I would like to think I don't complain.

MS. ROSENBERG: You suggested on page 13 that the spatial boundaries were short of what they should have been, that they should have been bigger; correct?

MS. GUNN: I said they are not broad enough to capture other existing and future

developments to the northeast of study zone five, echoing at the time the concern of the panel.

MS. ROSENBERG: And the concern of the panel was taken into account, do you recall?

MS. GUNN: Yes, that's right. And that's great. And then I went on to say also not scoped broadly enough necessarily to talk about potential indirect cumulative impacts, which is what I was just explaining to the panel.

MS. ROSENBERG: And when that concern was taken into account, and intactness was recalculated taking into account study zone six, what was the result?

MS. GUNN: I don't recall.

MS. ROSENBERG: I will remind you of the result. And the result was that the impact of Keeyask looked smaller than under the original assessment.

MS. GUNN: Perhaps because the study zone was larger, yes.

MS. ROSENBERG: Because the area was larger.

MS. GUNN: Um-hum.

MS. ROSENBERG: And I would suggest to you that you can't have it both ways, you can't

have a study zone that's too small and too big all on the same VEC measure?

MR. NOBLE: Can I respond?

MS. ROSENBERG: Sure.

MR. NOBLE: You are right, you can't have it both ways, but that's not the point. The point is making the comparison to, you can make the comparison to a very small area, make the comparison to a very large area. The point that we are making is not to make the comparison to, that's the principle that we have identified. You can pick the continent as our study area and look at intactness and, boy, would Keeyask look very small. And we could say on the continental scale, this is not an issue. And that's the principle that Jill was getting at in terms of re-examining what those ecological boundaries are when you make these sorts of decisions. Because there are two different things at play here. One is the process of how you select boundaries for your cumulative effects assessment. The other one is the principles on which you make decisions about what is or isn't significant. They are two different processes. And I think that's the point that we are trying to make.

Can you have it both ways? I mean, that's the issue. You can't have it both ways and we are not -- I don't think that we are asking for it both ways. But we are asking to make sure that, you know, boundary setting and determinations of significance aren't affected or tempered by the scale which is used. That's the point that we are making. We agree with this, and the approach and the trends analysis and the benchmarks, and that's an extremely positive feature of the environmental assessment in terms of its practice.

MS. ROSENBERG: And you agree as well that taking into account natural boundaries, ecological boundaries, is the right way to do the delineation of your study area, correct?

MR. NOBLE: As Jill mentioned, yes, you start there by using those boundaries, and then you may need to revisit issues as you go along if the VECs are being affected. So, I mean, the challenge is you delineate the boundary at the outset, and one would hope in an environmental assessment there is some learning as we go along and collect data and analyze trends and disturbance. There isn't a rule that when you

define the boundary at the start of your environmental assessment, that's it, you are locked into that.

If, as Jill mentioned, there is reason to believe that ecological boundary as designated, which is fuzzy, as is in terms of the concept, isn't big enough to capture the real issues of concern, then you will want to extend that to make sure you do capture the stressors that are affecting the VEC of concern.

MS. ROSENBERG: I'm glad to hear that, because adjustment of boundaries is exactly what occurred in this assessment. And I wonder if you would turn your minds to an example of when it came to the point where the adverse effects agreements were negotiated. Did you notice that part in the assessment? That there were indirect effects on wildlife as a result of those adverse effects agreements and the activities that provided for them?

MR. NOBLE: I don't recall that.

MS. ROSENBERG: You don't recall that spatial boundaries were, in fact, adjusted to take account of that. All right.

I want to go to page 26 of your

report, and you are commenting on reference to the use of benchmarks for assessing plants. And I'm looking at the sentence that starts, "One of the citations."

"One of the citations provided supporting these benchmarks for priority plants is Hegmann et al."

And that's the guide, the cumulative effects assessment guide, correct?

MR. NOBLE: I can't find that on page 26, I am sorry.

MS. ROSENBERG: All right. Give it a moment.

MR. NOBLE: Sorry, it is page 25, I do see it.

MS. ROSENBERG: My apologies. You are right, it starts on page 25 and it moves to page 26. What you have said is:

"One of the citations provided supporting these benchmarks for priority plants is Hegmann, leading one to believe that the Practitioner's Guide on CEA has established such benchmarks. And nowhere in the Hegmann guide is there recommended

benchmarks for plants of any kind."

And you finish that paragraph with:

"This is misleading."

Do you happen to have a copy of the guide in front of you?

MS. GUNN: Yes, we do.

MS. ROSENBERG: Would you turn to page 42? We have copies for the Commission.

Did you see page 42 under biological VECs?

MR. NOBLE: Yes, I did.

MS. ROSENBERG: Do you see the first question?

MR. NOBLE: How much of the population may have their reproductive capacity and/or survival of individuals affected, or for habitat, how much of their productive capacity of their habitat may be affected.

MS. ROSENBERG: Would you agree that that's a suggestion of one method to do this by using percentage loss of productive habitat as a benchmark for biological VECs?

MR. NOBLE: I do agree that it provides suggestion for using benchmarks for biological VECs.

MS. ROSENBERG: Not the specific benchmarks, but the idea of benchmarks and the percentages?

MR. NOBLE: Yes, the idea and some suggested percentages.

MS. ROSENBERG: And I take it that you agree that plants are a biological VEC?

MR. NOBLE: Yes, I do. But Hegmann doesn't refer to priority plants, it is a minor point overall, but I do agree with you, it could be interpreted that way. I found it misleading personally when I was reading it.

MS. ROSENBERG: But you do agree that Hegmann is the authority for the general principle?

MR. NOBLE: Is authority?

MS. ROSENBERG: Is authority for the general principle?

MR. NOBLE: Yes, I do.

MS. ROSENBERG: Sure. And the citation doesn't stop with Hegmann, does it, it provides another source which you yourself mention in your text?

MR. NOBLE: Yes.

MS. ROSENBERG: So I suggest to you

that the cite is far from being misleading, it is actually complete because it is giving you the general and then the specific reference, both.

MR. NOBLE: Okay. Fair enough. I will go, I mean, my reading of it was I found it misleading personally. I mean, the issue is how the benchmarks are used. But I will agree.

MS. ROSENBERG: Now, I want to deal with the suggestion that the terrestrial assessment didn't consider Bipoles I and II. And you say that on page 19, last paragraph. Do you see that?

MS. GUNN: Yes.

MS. ROSENBERG: I would like you to look at a map that was in the materials in the EIS. And it is response to EIS guidelines map 630. And we are going to put it up on the screen for you. Sorry, we only have hard copies, we will pass out the hard copies, it will take us a bit longer.

And I'm going to show you another map as well. It is the terrestrial environment supporting volume map 212, and 213. And this is a map, 6-30, it is marked on the bottom. Do you see it?

MS. GUNN: Yes, we see it.

MS. ROSENBERG: It shows linear features and core areas?

MS. GUNN: Yes, we see that.

MS. ROSENBERG: And I want you to confirm for me that the routes of Bipoles I, II and III are all accounted for in that map?

MS. GUNN: Sorry, what did you say was accounted for, the routes I, II, and III?

MS. ROSENBERG: I and II.

MS. GUNN: The quality --

MR. NOBLE: We are having trouble seeing them.

MS. GUNN: The quality of the map doesn't allow us to see the line.

MS. ROSENBERG: Would you like somebody to point it out for you?

MS. GUNN: Sure.

MS. ROSENBERG: Dr. Ehnes is going to come up here and show you where it is. It might help you as well to look at the linear features map which is marked Mac212.

MS. GUNN: That's much clearer. Thank you.

MS. ROSENBERG: And map 213 has the

core areas. Agreed?

MS. GUNN: Could you repeat the question?

MS. ROSENBERG: I'm asking you to confirm that the routes are in, not out?

MS. GUNN: A part of the route is in.

MS. ROSENBERG: The part of the route that's in the regional study area, correct?

MS. GUNN: The part of the route that is in the study area is in the study area, yes.

MS. ROSENBERG: And we are back to the question of whether the study area is broad enough?

MS. GUNN: Well, it doesn't capture the entire line.

MS. ROSENBERG: It doesn't capture the entire route of Bipoles I, II and III, I agree.

MS. GUNN: No.

MR. WILLIAMS: Mr. Chair, I'm just mindful of the physical comforts of my witnesses. I don't want to interfere with Ms. Rosenberg's cross, but I would suggest as we approach 3:00 o'clock, if she can find a time that doesn't interfere with the direction -- I apologize for interrupting, Ms. Rosenberg, I just want to make

sure I get some mental health or physical breaks for our witnesses.

THE CHAIRMAN: You are trying to take over my job.

MS. ROSENBERG: I think if we are at where we are at, I think I'm almost done with one more question.

THE CHAIRMAN: Okay. Let's conclude and then we will take our break.

MS. ROSENBERG: Would you agree that the effects of Bipoles I, II and III on each of the terrestrial VECs were taken account of fully and properly within the regional study boundaries that were set?

MS. GUNN: I can't recall with certainty, you know, the evidence that would support that. But I would, if you are asserting that was true, I would accept that assertion.

MS. ROSENBERG: You are not challenging it?

MS. GUNN: No, I won't challenge it, I can't recall.

MR. NOBLE: Within the study area that's defined, and within the boundaries that are drawn, then my recollection is based on the

intactness and core area habitat that it was included within the boundaries that are shown.

MS. ROSENBERG: Past, present and future?

MR. NOBLE: I know for sure past and present. I would only be -- yeah.

MS. ROSENBERG: Look at the slides, sir, past, present and future?

MR. NOBLE: Past, present and future, sure, within the regional boundary that is identified.

MS. ROSENBERG: Significance assessed against benchmarks.

MR. NOBLE: Within the context of the study area, yes.

MS. ROSENBERG: Within the context of the regional study area for every VEC?

MR. NOBLE: Yeah, I can't answer that.

MS. ROSENBERG: You are not challenging it?

MR. NOBLE: No, I'm not challenging because I don't know.

MS. ROSENBERG: We can take our break.

MR. NOBLE: Thank you.

THE CHAIRMAN: Thank you,

Ms. Rosenberg. We will take a break for 15 minutes, so come back just after 3:15, please.

(Proceedings recessed at 3:02 p.m. and reconvened at 3:15 p.m.)

THE CHAIRMAN: I would like to reconvene, please. Okay, Ms. Rosenberg.

MS. ROSENBERG: Thank you, Mr. Sargeant. You will be glad to know that I have two more maps to show you, and then we are almost done. And one is going to come up on the screen and you are going to find it very familiar, because it is taken from a report that I think you rely on in one of the references. And just so that we identify it correctly, it is I think -- we have a copy of the ---it is from Squires et al, it is one of your references, I think it is yours, Dr. Noble, because you use that information in a further report that you actually contributed to, and your name is on that other one. It is called "An Approach for assessing cumulative effects in a model river, the Athabaska River basin."

MR. NOBLE: That's Squires, Westbrook --

MS. ROSENBERG: Squires, Westbrook and Dube. And I think the information in here is what

you were using this morning in your presentation when you were talking about the Athabaska River as an example.

MR. NOBLE: Yes, it was from there and from Alison Squires PhD thesis.

MS. ROSENBERG: Great. Okay. And I read those articles, and I enjoyed them very much. And I looked at that map and when I looked at it -- and that map just for the Commission, why don't you explain what that map shows, because it may not be as obvious to them as it is to me. Do you want to explain it or shall I do it and you can tell me if I'm right?

MR. NOBLE: Go ahead.

MS. ROSENBERG: I see the hatched area is agriculture, and I take it that's agricultural impacts on the river, and then you have all of the Xs represent oil and gas wells, and then the diamonds represent point source sewage discharge into the river, and then you have some cities and also pulp mills, and you show all of those things as they affect the Athabaska River. Have I fairly represented it?

MR. NOBLE: That's right.

MS. ROSENBERG: Now, I have to tell

you that when I saw that map particularly, a light bulb went on in my head, and I realized that there was exactly the death by a thousand cuts, almost literally, the tyranny of small decisions that you have been talking about. It is an example of a process of environmental degradation caused by small and repetitive insults, and the Athabaska is an example of that in your view, correct?

MR. NOBLE: Yes, some of them small and some of them large.

MS. ROSENBERG: But a lot of them.

MR. NOBLE: Quite a few.

MS. ROSENBERG: And then I thought about that quite a bit, and I thought that point of view that you espoused makes sense with those many, many small decisions. And now I want you to look at the map that was just put in front of you. And that would be a map of the Keeyask region and you see on it -- I think you see the Manitoba Hydro infrastructure, and what that is displaying as well as the resource management areas of the four First Nations who -- yes, and you won't know what those boundaries are, but they are a maze, resource management areas where resources are managed by a First Nation together with Manitoba,

and the boundaries you see there are the boundaries that are shown on the map. And the First Nations who are partners with Manitoba Hydro particularly wanted me to ask you to take note of the fact that what they see in that map, when they look at it, is Manitoba Hydro and those four First Nations. And I'm wondering if you can see that?

MR. NOBLE: I can see Manitoba Hydro and the four First Nations, is that --

MS. ROSENBERG: That's what I want you to see. Agreed?

MR. NOBLE: Yes, I can see that.

MS. ROSENBERG: And that's all they see when they look at that map.

MR. NOBLE: That's all that appears to be labeled on it.

MS. ROSENBERG: That's all that's on it.

MR. NOBLE: Okay.

MS. ROSENBERG: I want to return to your book before I close, because I found the discussion of the topic about a broad spectrum of philosophies that apply to environmental assessment, I don't know if you recall this exactly, if you have a copy of your book, the

discussion is on page 4 and 5.

MR. NOBLE: About Matt Cashmore's work I believe.

MS. ROSENBERG: Exactly, precisely. And it was Dr. Cashmore that you were bringing into your thinking?

MR. NOBLE: Yes.

MS. ROSENBERG: And it is good thinking, I take it, or you wouldn't have brought it in. And you talk about at one end of the spectrum of EA philosophies, you have scientific method with hypothesis and quantifications, all of the instances of empirical thinking, right?

MR. NOBLE: Yes.

MS. ROSENBERG: Applied by scientists?

MR. NOBLE: Yep.

MS. ROSENBERG: And all the way to the other end of the spectrum, and I want to quote these words because I think they are really material. You say some people view EIA as a decision tool used to empower stakeholders, and promote a egalitarian society with a strong green interpretation of sustainability. And in that regard EIA must be deliberative, promote social justice, and help to realize community

self-governance.

MR. NOBLE: Yes. I don't know if the panel members have a copy of that --

MS. ROSENBERG: They don't.

MR. NOBLE: Could I just explain?

MS. ROSENBERG: I would love you to.

MR. NOBLE: Okay. What is being referred to is a diagram in a text book that synthesizes the different views on environmental assessment, different philosophies and theories, and making the point at one end of the spectrum there is people who approach EIA as an applied science to do experimental design and so on. At the other far end are those that approach EIA as a way of empowerment of stakeholders and communities for, as you say, egalitarian purposes, deliberative democracy. And that's not mine -- that's authored by Matt Cashmore who is smarter. But he -- and he suggested that these are sort of the polar views and sometimes can cause a lot of tension in the EIA. And then we have sort of the middle, if you want, the middle for lack of a better way of putting it, 50 per cent, I think it is more, I am just generalizing, that folks that would see the environmental assessment as working

somewhere in the middle of information provision and participation to help inform decision making. And so that's the diagram, the extent of the views on environmental assessment.

MS. ROSENBERG: Thank you for that, it was much better than I did. And that view at the far -- you have to speak it is as left and right, but at that far left end it is a wonderful view that promotes social justice and participatory democracy all wrapped up with environmental thinking, and it is a lovely thing.

MR. NOBLE: Some would say it is.

MS. ROSENBERG: I would like to tell you who said it is right now, and ask you if you are aware that the four First Nations who are partners in this venture carried out their own environmental assessment reviews, and they did that from the point of view of their worldview, and then they came to their own conclusions. Are you aware of that?

MR. NOBLE: Yes.

MS. ROSENBERG: And they did that over a long period of time and years of dialogue with each other and Manitoba Hydro in their communities, and with society generally. And they

put those decisions in the context of the environment, but the environment from the point of view of the Cree worldview. I don't know whether you -- you are nodding.

MR. NOBLE: Yes, sorry.

MS. ROSENBERG: I wonder if you might think that the process they used as exactly an example of that deliberative process promoting community involvement and using EA for the purpose of advancing community self governance and their realization as communities?

MR. NOBLE: That's a big question. I would -- I don't know if I can answer that on the spot without thinking about it further, whether that's the model that it represents. I guess it is just my gut reaction, I would see it as being situating in that participatory, or participation view of environmental assessment, but typically much stronger than conventional practice, because the First Nations are actually involved, much more hand in it. Would I put it in that far category? I'm not sure if I would, but again I would really need to, you know, sit back in my office and pull the blinds and think about it.

MS. ROSENBERG: I will leave you to do

that. And I would suggest to you that using that participatory democracy process to do EA and then arrive at a pro-development decision is just as valid as arriving at a non-development decision. Agreed?

MR. NOBLE: I agree in, you know, the decision that comes out at the end of an assessment is validated by the quality of the information that's considered, the different parties involved, weighing all of those options, so I agree. You know, a positive decision for development coming out of an EA, that's fine, if it respects the process.

MS. ROSENBERG: I'm going to finish and put up on the screen for you a quote from one of our First Nation partners that I would like to leave you with to think about in our office. Oh, we don't have it. I will just read it. This is a quote from Elder William Beardy, and this is what he says at the conclusion of their deliberative community process.

"The lands, the waters and the resources have provided for us in the past. We can't exercise our traditional pursuits as in the past

because the waters have changed. And yet these waters and their power could once again help to provide for our people."

MR. NOBLE: Do you want me to -- or can I respond?

MS. ROSENBERG: You can respond or you can just acknowledge that's the point of view expressed by these four First Nations.

MR. NOBLE: I would like to respond, because it is one sentence that came from a larger context of an assessment or document, so I would need to see the rest of it. Yes, it is a very powerful statement. And I don't recall these offhand, but I do know there are other places in the assessment where the First Nations' view on the technical assessment disagree on certain things as well, so I think it is important for us to, you know, acknowledge both of those viewpoints. And really when you come back to Cashmore's spectrum, that's exactly what he is talking about, is there are these different viewpoints, there is one, and the EIS technical analysis present another one, and then sometimes in the middle there are some clashes between

these. So -- but thank you for this.

MS. ROSENBERG: At the end of the day when the people who clashed come together and make one decision, is that a good thing?

MR. NOBLE: It can -- I mean that's a very big question because sometimes in natural resource management in general we undertake collaborative processes, and we assume that because there was collaboration the decision made was a good one, because we based it on we have collaborated. So generally speaking, collaboration and agreement on a direction is a good thing, but we do have to be careful in terms of not mistaking collaboration with a good decision or good outcome at the end of the day. So, I do agree it is a good thing. I just think we have to exercise some caution in how we view that, I do agree.

MS. ROSENBERG: Thank you. Before I finish, I wanted to cover one more thing and that is that when you reviewed these documents, I think in the course of that review my client offered you an option to come to Winnipeg and sit down with our technical experts, Dr. Schneider Vieira sitting on one side and Dr. Ehnes is sitting on

the other, and there is a whole pile of water resource engineers who aren't in the room, but I think it is a good thing as well in these processes for experts who might think they disagree to talk to one another and see if actually they are at consensus. And we issued that invitation, you decided not to come, but I want to tell you that my client has instructed me to re-issue the invitation, and right now today to give you at any time an open door and come and sit down, we will schedule all of the experts who did all of these technical assessments, the full cumulative effects assessment, we will put them in the room with you and you can go through in detail every aspect of it and talk it over with them.

MR. NOBLE: That would be great. I think if I can, we --

MS. ROSENBERG: Do you accept?

MR. NOBLE: We do accept that. And we really -- we appreciated the invitation initially. And just so we are clear I'm not sure how the message came back, it wasn't because we were deeply offended. For us it was a matter of being able to conduct just our review independently, but more so, a timing issue with both of us, the

timing of the year and just being one thing that we do in our academic careers. So that, you know, we did appreciate the invitation.

MS. ROSENBERG: Fair enough, and you have other lives. And this leads to, if I might Mr. Sargeant, a non-licensing recommendation for the future which we can talk to you about another day. Those are my questions. Thank you, Mr. Sargeant for your patience and for the patience of the panel. I know I was very long.

THE CHAIRMAN: Thank you, Ms. Rosenberg. I'm a little worried if you do this with all of the witnesses, you will put us out of work.

MS. ROSENBERG: Would that be a good thing, Mr. Sargeant?

THE CHAIRMAN: Not particularly, personally speaking. Mr. Williams.

MR. WILLIAMS: If I might, if I could just ask Ms. Rosenberg when she renewed her conversation with Dr. Noble and Dr. Gunn, she was referring to a map, and if she could just confirm the map. I believe it was 6-42, but that would just be --

MS. ROSENBERG: Mr. Williams, could I

just check my notes and make sure we have identified it correctly? Because I honestly think for you all of these things that we have talked about today, what we should give the secretary is the number of the document as it appeared in the original evidence. And I apologize for my being fuzzy about that. That was not well prepared on my part. It was 6-42 -- from what volume? Sorry, it was from the map folio volume of the EIS, and it was actually from the socio-economic assessment.

MR. WILLIAMS: Thank you.

THE CHAIRMAN: Thank you. I think now we turn to the participants and cross-examination. First up on our revolving list is Concerned Fox Lake Citizens.

MS. PAWLOWSKA: Good afternoon, I only have a few questions this time, I promise.

THE CHAIRMAN: Just introduce yourself for the witnesses, please.

MS. PAWLOWSKA: My name is Agnes Pawlowska-Mainville, and I'm asking just a few questions on behalf of the Concerned Fox Lake Grassroots Citizens. And I wanted to thank you for your presentation this morning. And my first

question is more so a clarification. In regards to the map that we were given -- well, I guess that you were given of linear features, and your discussion about including Bipole III and other linear features in the cumulative assessment, would you say or --

THE CHAIRMAN: Which map? The numbers are on the bottom.

MS. PAWLOWSKA: Linear features map 212.

THE CHAIRMAN: Thank you.

MS. PAWLOWSKA: Would you say that linear features like Bipole III, as you mentioned, but others like the transmission lines connecting Keeyask and the south access road should be one of the features on such a linear map as you were given today that would compose the cumulative assessment?

MS. GUNN: Yes, we would expect that this is a map showing linear features within the study area, so we would assume and expect that all of them are there.

MS. PAWLOWSKA: Okay. Thank you. So my next question is -- well, you stated on one of your slides, I think number 10, that you reviewed

the First Nations environmental report. You don't have to refer to it, I'm just -- so if you could discuss briefly about how or what you understand the First Nations understanding to be of the cumulative effects? What did you get from the report in terms of the cumulative effects that they see?

MR. NOBLE: That is a big one. I think the key message I took away from reviewing that was the importance of connectivity, between understanding connectivity and relationships between VECs and these components within the assessment area. And what -- whether it was a key message or not, what is set out to me is just some of the observations that were made about the relationship between land and how ecological change translated into social and cultural change, and the ability to use the land as was traditionally done. So that combined with the holistic interpretation of these was probably what stood out most to me.

MS. PAWLOWSKA: Okay. Thank you. And, Dr. Gunn, do you have any brief inputs of what you took from the reports?

MS. GUNN: That echos my impression as

well, it is very similar to what I would have said.

MS. PAWLOWSKA: Thank you. So the second question I have, you spoke briefly on the traditional impacts that will be affected, you mentioned them in your report, and my question is in regards to traditional subsistence economy of the Cree and why you would view this as a pretty important aspect of the cumulative effects of Keeyask, and how do you see them as being part of that cumulative effects?

MS. GUNN: Can you refer us to where in the report that --

MS. PAWLOWSKA: You mentioned it on your slides. That's page 47 I think. No, sorry. 43. That's it.

MS. GUNN: 43.

MS. PAWLOWSKA: So here you use examples of the EIS that talks about the adverse effects of traditional use and culture. I was just wondering if you could discuss a little bit briefly why you think that traditional economy and subsistence economy would be considered to be an aspect of the cumulative effects in the Keeyask project?

MR. NOBLE: I mean -- I think in general in cumulative effects assessment social, particularly socio-economics, so employment issues, issues around health care and access are typically considered, and we have some fairly well accepted indicators for using those sorts of things. You see less common practice, including more of the socio-culture aspects in cumulative effects assessment. And most of the CEA work that we do is largely biophysical, in practice what is written about is largely biophysical. And when you get to an area where, you know, an important part of society is dependent on the land or the connection to the land, that's not only a connection for, you know, for let's say hunting and fishing, but also a cultural connection. And I think it is in those cases where that more holistic view is considered. So I mean, I think in an area like this regional assessment, this environmental assessment study area, it sort of goes without saying that, you know, the connection to the land and traditional use and culture is an extremely valuable part of the cumulative effects assessment that would be carried out. And I would echo that in, you know, in other regions as well

where you have any communities that are dependent, whether it be spiritually or culturally, not necessarily to separate those, but also in terms of just dependent on the land as a traditional practice. Cumulative effects assessment obviously interact with the way that those communities interact with the land. That was a relatively broad response, but --

MS. PAWLOWSKA: Thank you. And then you did mention that communities are dependent on the land and it is important to look at the cumulative effects. So if I bring you back to the same map, map 212, do you see any other transmission lines crossing south of the proposed Keeyask project that you think should be included in the linear features?

MR. NOBLE: It is hard for me to identify them on the map whether they are there or not without knowing the specifics. But my general comment would be, you know, any of these linear features or disturbances that would affect, you know, habitat, priority plants, caribou, moose, core area, regardless of whether they are Keeyask projects or not, and whether they are past or potentially future projects should be included.

And that's necessary in order to understand what that total cumulative effect might be on traditional use and culture. So I don't know whether they appear here or not, but my general statement is that if this is the regional study area, then all linear disturbances in there should be included in the assessment.

MS. PAWLOWSKA: Thank you. If I were to ask you that if an elder, one of the elders that is with the CFLGC would look at this map, and his trapline is south of the proposed Keeyask project, and he were to look at it and think that this is the map that it is, since there are no transmission lines connecting Keeyask project any where, and the south access road is not included, would you say that's a bit misleading?

MS. GUNN: I don't think it would be fair to characterize it as misleading, because we don't know how and why exactly the features that are represented there are or are not, so that's probably something that we couldn't comment on. But we would probably just go back to reiterating the same point that we would probably expect to see that all of the linear features would be put on that map, if this is a map of linear features.

So whether we could call that misleading or not, we probably couldn't say such a thing.

MS. PAWLOWSKA: Thank you so much. That's all of the questions that I have.

THE CHAIRMAN: Thank you. Ms. Kearns.

MS. KEARNS: Hi, my name is Stephanie Kearns, legal counsel for Pimicikamak. I will start at page 4 of your report, and the very first paragraph. Page 4 of the report, not the slides. And it says, in our view undertaking a regional CEA in the Nelson River sub watershed that considers the potential cumulative effects of all Manitoba Hydro projects and associated infrastructure is a prerequisite to effective CEA and to understanding the managing of the potential cumulative effects of hydroelectric development in the region.

And my question is why do you recommend a RCA for the Nelson River sub watershed as opposed to a smaller area? So, I guess I'm wondering if you can just explain to me how you arrived at the Nelson River sub watershed being a good area to do a RCA for?

MS. GUNN: I don't think -- I think we were just trying to get across the point that

doing a good, full, proper regional cumulative effects assessment is a prerequisite to doing a good cumulative effects assessment at the project level.

MR. NOBLE: And that there has been increasingly more work done on watershed and sub watershed scale assessment. So it is -- to us it was, you know, a clear choice and we were also following, based on the panel's report from Bipole III in terms of echoing some of the statements and conclusions and recommendations made in that report as well that we support and agree with.

MS. KEARNS: Do you think if it was a RCA that included the watersheds affected by the LWR and CRD, that would be a good prerequisite to an effective CEA?

MS. GUNN: I think potentially -- I think that those kind of decisions would have to be taken at the time that that kind of exercise would be considered. So what would be the exact appropriate boundaries for this broader regional cumulative effects assessment, that is something that would need to be debated. So it is possible.

MS. KEARNS: Okay. So then now turning to your recommendation, which is on slide

37, so your recommendation is that a good CEA is needed prior to Keeyask approval. So my question is am I right to read into that recommendation, the statement from your report, so that a good CEA includes as a prerequisite a regional cumulative effects assessment on a watershed level?

MS. GUNN: Yes.

MS. KEARNS: Then I just have a couple of questions to clarify some of the back and forth during your cross-examination. I got a bit confused about how I had read the report. So one was there was talk about mitigation measures. And am I correct that the point that you made in your report was that there is a difference between mitigation measures done in the initial assessment of direct and indirect effects, but the point that you made was that there are no mitigation measures to deal with cumulative effects?

MS. GUNN: Well, kind of, that's sort of -- okay. So the thing is that the conclusion was that there were going to be no cumulative effects significant in adverse, so when you conclude that, then there is no need to propose further mitigation measures, because it would -- there is no need for it. But there were some

cumulative effects anticipated socio-economically and then mitigation was proposed for that such that there were no significant adverse residual effects. I hope that -- it is kind of a technical explanation. But it is just that you would have your mitigation proposed for the direct effects assessment and you may need to go further than that if you are going to anticipate residual cumulative effects.

MS. KEARNS: So other than the socio-economic, there were no mitigation measures proposed?

MS. GUNN: No, because they weren't expected.

MS. KEARNS: And then there was discussion this afternoon about the spatial limit for assessing the VECs. And am I correct that the point that you make in your report is that the study area for the cumulative effects assessment doesn't have to be the same as the study area used for the direct assessment?

MS. GUNN: Correct.

MS. KEARNS: It could be a broader area used for a cumulative effects assessment?

MS. GUNN: Yes, you may need to adjust

it, yes.

MS. KEARNS: That's it. Thank you.

THE CHAIRMAN: I want to test the water a little bit. It is 10 to 4:00. Ms. Whelan Enns, do you have any idea how long you might be?

MS. WHELAN ENNS: I would hope about half an hour.

THE CHAIRMAN: Okay. Come forward.

MS. WHELAN ENNS: Thank you. Mr. Chair. I have about ten or a dozen questions. They are short, and they are in relation to the presentation from the experts, and a couple that are from the cross-examination period. So the first question then for Dr. Noble and Dr. Gunn, came as a result of page 15, and it is from a non-scientific expert for sure. Would you tell us if it is a usual or best practice for the temporal limit or temporal scope for different VECs to vary to the degree that they do in this EIS?

MS. GUNN: That's a fairly general question and hard to answer specifically. But it is normal for it to vary. But the best practice or the good practice approach is to try to extend out your modeling or scenario analysis as far into the long term future as you can, yes.

MS. WHELAN ENNS: Thank you. Do either or both of you have advice for the participants, advice for the parties here about the parameters of a watershed that would have captured all cumulative effects? Now, the reason for the question is because there was some discussion, this was around page 18, in your presentation, about watersheds. So do you in fact have advice in terms of, again, the scale or scope, I'm not the best on terminology, the temporal scale, in terms of watershed that would be best for the CEA?

MS. GUNN: The spatial scale for the watershed that would be best for the CEA, again that is something that would need to be debated, those kinds of decisions depend upon the context of the development of the decisions that are being taken and that sort of thing. So it would be very hard for us to make a solid recommendation in the absence of knowing what the is project that you are looking at.

MR. NOBLE: But I think, and I agree, I think it is good to hear, one of the things I would add to that is in the map that was shown from Alberta, which is a nice example where they

took a watershed and broke it into river reach, so it is sort of a separate analysis within the context of different levels of development intensity and different types of effects. So effects were being analyzed within the context of what I guess was more closely matching what was happening on the landscape as opposed to simply taking one section of a river and then comparing it to the entire watershed, like in the Athabaska example, they selected reaches and did separate analysis there so it was context specific, and then looked at the broader cumulative context for the entire watershed, so a multi-scaled approach.

MS. WHELAN ENNS: Thank you. Looking for page number 22, and again this has to do with listening to your presentation and the questions that came up.

You made comments about the cumulative effects analysis provided to us being weak. So the climate change question comes forward from our perspective. And could you let us know whether or not you feel that the cumulative effects assessment that we have been provided with adequately responds to projections on climate change?

MS. GUNN: I don't think anything that I reviewed was with direct relevance to climate change. I don't know about you.

MR. NOBLE: Not sure I could give you a certain answer on that right now. You know, whether or how much reference was given to climate change and future development or future scenarios in forecasting, I'm sorry.

MS. WHELAN ENNS: Thank you. Did you have occasion in the analysis and study that you were doing to use the EIS guidelines in your analysis in terms of what is required in the EIS guidelines and what you were doing in looking at the cumulative effects?

MR. NOBLE: Sorry, is the question whether we used those?

MS. WHELAN ENNS: Did you use the EIS guidelines for the Keeyask Generation Project in your analysis and your study?

MR. NOBLE: Well, we used them, I guess we reviewed the guidelines and the principles that were stated for doing the assessment, and then identified our own principles and standards as well to examine the assessment. So we used both, both sets.

MS. WHELAN ENNS: Thank you. Are there examples, and this is about priority plants, so we are on page 23, are there examples in cumulative effects assessments done elsewhere in Canada where First Nations are affected and where medicinal plants are considered priority plants?

MR. NOBLE: Yes. And I mean, I can't speak broadly to all environmental assessments but I can proudly speak to one that I was involved with, where we did involve First Nations in doing traditional ceremonies within the area, and there was a series of sweats and ceremony procedures, and then we did traditional use mapping with the elders to identify areas of medicinal plants. And they decided that the most appropriate approach was to group medicinal plants with other priority or culturally significant or spiritually significant plants, so as not to identify or reveal where medicinal plants were located specifically. So that information was then overlain within the spatial analysis of the cumulative effects assessment. There wasn't any technical, you know, field based analysis by ecologists let's say to identify the plants. We relied 100 per cent on the mapped information

provided following the ceremonies.

MS. WHELAN ENNS: Thank you very much. Again, a question if I may about spatial separation, and this follows approximately page 31. And it is a similar kind of question in terms of cumulative effects assessment practice in Canada. And that is have you, and this probably applies to both of you, but up to you in terms of best way to answer the question and who to answer, and that is have you been involved in either the effects assessment of other projects or the review of effects assessment and cumulative effects assessment of other projects where spatial separation is used as a basis for the conclusion of no significance?

MS. GUNN: I think that we are kind of thinking about the Bipole III review that we did last year, and there was certainly a lot of discussion at that time around the connection between those two, you know, the perceived or actual connections between those two transmission rights of way on the same landscape. So there was that example.

MS. WHELAN ENNS: Okay. Thank you.

MS. GUNN: We do have another one.

MR. NOBLE: I was thinking I had another example of a particular unnamed mining company that I'm currently doing some work for. And in their previous assessments they had identified spatial separations of their tailing sites. They were spatially separated so they are not seen as having any adverse effect because of the distance between them. They are rethinking that right now and looking more at the watershed and runoff from those, what is accumulating downstream in terms of how that is affecting the health of fish populations. So there are examples of where that comes up, and again we wouldn't want to generalize, it is something that really varies from one case to the next, but there are certainly cases where that does happen.

MS. WHELAN ENNS: Was our understanding accurate in terms of your presentation today and your answers in cross-examination, that spatial separation, as a basis for an ingredient in arriving at insignificant or no significant effects conclusion, is less than best practice?

MS. GUNN: I think what we are saying is that you can have spatial separation and there

can still be cumulative effects that result.

MS. WHELAN ENNS: Thank you.

Page 40 there is a reference to the initial amount of flooding predicted at 45 square kilometres. Would the EIS or portions of it and the cumulative effects assessment need to be updated or reviewed for a range of VECs if flooding after operation of Keeyask is more than 45 square kilometres?

MR. NOBLE: I'm not sure the EIS itself would need to be updated, but I think that's where, I mean, the proponents' monitoring and adaptive management strategies would be most important, or at least it would trigger new management and mitigation measures and revisit the effectiveness of those proposed in the EIS. You know, the thing is that, I mean, we had a discussion earlier about the soundness of mitigation. And some mitigation efforts are well proven in practice, and that's fine. Others are, there are some uncertainties involved with them, and if there are uncertainties in the impact predictions, there are also uncertainties in whether the mitigation practices will work.

So I wouldn't say that you would

revisit the EIS per se, but I think that's something that would need to be carefully planned for and thought of in adaptive management programs.

MS. WHELAN ENNS: Connected question, and I was myself trying to identify instances in terms of Hydro generation projects in Canada, going outside of Manitoba, where the predicted amount of flooding was exceeded. And again, I'm a generalist, so I did not, other than concluding that's probably happened in Quebec, I didn't get any further in terms of trying to identify it. But I would like to ask you whether in the provinces in Canada where there is a lot of hydroelectric generation projects, whether either of you have been involved in the kind of steps that you are identifying, Dr. Noble, in terms of, okay, this is more than we predicted, and how do we go back to the cumulative effects and the adaptive management and the changes that we need to make? Have either of you worked on something of that sort?

MS. GUNN: I haven't, no.

MR. NOBLE: I was involved in, as a consultant for Nalcor Energy on their

hydroelectric development project for the lower Churchill. And it was something that was discussed there as well in terms of, you know, just, I guess in general, the certainty around the predicted impacts and the certainty around mitigation measures. So it is -- I couldn't really talk beyond that specific example where I had some direct involvement with, but it was a part of the mitigation planning parameters for the lower Churchill hydro project, and that was in Labrador.

MS. WHELAN ENNS: Thank you.

In your reading, your review and your study in terms of cumulative effects assessment, did you find -- and I remember what you've said in terms of the VECs approach and the compliments and also the best practices in Canada in terms of VECs approach, did you, though, in your review and your analysis identify any potential VECs, or VECs that you would have expected to see in the EIS and this CEA?

MS. GUNN: I don't think that we could comment on that because it wasn't part of the review framework that we were employing. That wasn't, you know, a piece of the work that we sort

of undertook. Again, if we had some time to reflect upon that, we might be able to suggest -- so probably not at this time.

MS. WHELAN ENNS: Thank you.

I have a couple of questions left, Mr. Chair, that came from the cross-examination period.

The legal counsel for Manitoba Hydro and the Partnership has made references, made a few references to 30 years into the future in the questions that you were hearing today. And we also heard some discussion about length of life of the project from legal counsel. So the question is whether -- and I know this is general again, so it may be different by VEC, and also different at perhaps one point in time or another in the life of a project. But the references to 30 years is what the question is about, and that is, is 30 years into the future sufficient to determine cumulative effects?

MS. GUNN: That really has to be considered on a VEC by VEC basis. And even then, what is ideal in terms of a length of time for prospective analysis, that can't always be accomplished because of limitations to data or

modeling or the like.

MR. NOBLE: And I think earlier I referred to some of the work that has been done in some other watersheds on more than modeling future scenario based analysis. And really you can run these things quite far into the future. The level of uncertainty obviously increases, but I think it is that balance between your temporal analysis, what is going to be useful to help inform decision making, and at what point are you exploring hypothetical. And I think it is trying to find that balance in general that will work. And again, this is a very general statement, but it is, as Jill said, it is something that varies VEC by VEC. And you know, I have been involved in assessments where 25 to 30 years has not been uncommon, 50 years has been modelled. If you are looking at things like climate change, obviously you tend to deal with longer term futures. It is quite variable in practice and it really depends on what information you want to get, what is the time frame that you are concerned about for decision making, when is the decommissioning of the project happening and so forth?

MS. WHELAN ENNS: Thank you.

The EIS guidelines for the generation project include a decommissioning plan. Would having a decommissioning plan have helped you in terms of thinking about lifeline for the project and for the VECs that you were tracking for cumulative effects assessment?

MS. GUNN: I don't know that it would have helped us. It is just that it is something that would have been good information, we would have suggested it was actually considered in the cumulative effects assessment.

MS. WHELAN ENNS: Thank you. One question left, Mr. Chair.

There have been also a fair number of references today during the cross-examination of the ten years of work that Manitoba Hydro and the Cree Nation partners have put into all of the steps to arrive to where we are at today. Is there any pattern in terms of the significance of this project in a long-standing 50 year old hydro system on this kind of river system, is there any kind of a pattern, anything that you can point to in terms of environmental assessment and cumulative assessments on those projects in Canada that points to how long it takes? Is ten years a

usual kind of pattern to work something up for this?

MR. NOBLE: For doing a cumulative effects assessment?

MS. WHELAN ENNS: To get to EIS, to include the cumulative effects assessment?

MR. NOBLE: Wow, I mean, I know of some projects that have been a lot longer and some that have been much shorter. It really, it is something that varies, I think, by the complexity, not only the complexity of the project, but I think the complexity of the parties involved, in terms of, you know, how well they work together and share the common views and values and so on. So I think that, you know, there has been some work done on the normal amount of time it takes to do environmental assessment, but that's something that is so variable. There have been some good regional cumulative effects assessments done for watersheds that have been done, provided useful information, these have been outside the regulatory process, but have provided useful information for decision making in a year. Some even less. But you have to appreciate that the type of data and the approach that's being used is

very different there than looking at long-term trends and benchmark modeling and so on.

So I think that's something that really varies based on practice. I mean, there are cumulative effects monitoring programs that have been ongoing for a number of years across Canada.

MS. WHELAN ENNS: Thank you very much, both of you.

THE CHAIRMAN: Thank you, Ms. Whelan-Enns. Ms. Guirguis?

MS. GUIRGUIS: Good afternoon. I'm Cathy Guirguis, I'm legal counsel for Peguis First Nation. I'm going to just take you through a few questions, hopefully it won't take too long, maybe not longer than 15 minutes.

I want to start off talking about scope and the evidence that you have already provided about scope, and just ask you a few more questions clarifying also what we heard this afternoon, and also what we heard this morning in your evidence.

So what I understand you to be saying is that geographically and temporally, scope shouldn't be limited to a specific area but it

should be defined in accordance with VEC sustainability. Is that correct?

MS. GUNN: Yes, that sounds right.

MS. GUIRGUIS: Okay. So that would also include what you are talking about earlier for what came out during cross about the regional study area and how things may have been assessed adequately in that regional study area, but maybe not necessarily in terms of VEC sustainability. Would that be fair to say?

Like, I guess I'm trying to -- I'm having a bit of difficulty understanding what comes first, is it VEC sustainability or the area that you define?

MS. GUNN: Well, it is the VEC first, and then the area that would respond best to understanding the condition of the VEC, yes.

MS. GUIRGUIS: Great. Thank you.

And so then it would be fair to say that the CEA, the cumulative effects assessment should just basically follow the effects on the VEC?

MS. GUNN: Yes. The study area should, as best as possible, represent an area that would be sufficient to be able to evaluate

the sustainability of the VEC. And so I think we talked about earlier, that's why it varies from VEC to VEC. So, yeah, you may see quite a bit of variance.

MS. GUIRGUIS: Great, thank you.

So when it comes to specific project, and I guess I will take you to slide 18, because you made mention of something that is particularly relevant for my client is that if there is the potential for let's say impacts from this project or the cumulative effects that it is going to add to that is going to change the water flow to the Nelson River and there is going to be upstream impacts to Lake Winnipeg, then the environmental assessment is the time, or the cumulative environmental assessment is the time to ask those questions and to see whether those impacts -- whether those impacts do have potential to take place; is that correct?

MS. GUNN: I would agree.

MS. GUIRGUIS: Okay. Great.

So would it also then be fair to say, and I think you may have alluded to this, that is for good CEA to take place, it is required to broadly define VECs, so to take a broad approach

to defining what a VEC is?

MS. GUNN: I think what we suggested is that you would take those VECs forward that needed to be carried forward from the direct effects assessment, but you might also include some valued eco-system components that are regionally significant.

MS. GUIRGUIS: Would you be able to maybe walk me through how that's identified? How is a VEC identified?

MS. GUNN: There is a wide variety of ways that VECs are identified. Lots of times it is through conversations with key stakeholders around what is important. Sometimes it comes directly out of the science as to what is known to be important scientifically for eco-system function. It is sort of a multi-layered process by which that VEC list is defined.

MS. GUIRGUIS: So, earlier on in this process, and it has been discussed on the transcripts that from my client's perspective, Peguis First Nations who have reserve lands on Lake Winnipeg, they have raised concerns and they have been very open and on the record about the fact that they believe that water management in

the north has impacts on Lake Winnipeg on yearly flooding and so on. So is that something that should be considered in defining a VEC?

MS. GUNN: It could be.

MS. GUIRGUIS: Great. Thank you.

So I wanted to relate this to the discussion about threshold analysis, and I think what Ms. Rosenberg had brought up about the maximum zone of detectable influence. I think she was talking about it a bit in the context of whether mitigation measures were sufficient to bring down that -- bring down the detectable influence. But what I understood from your evidence is that it is more so about the assessment approach than the questions that you ask to determine what that zone is; would that be correct?

MR. NOBLE: I think it is a combination of those two things. And I think it is something that's examined at different stages of the assessment process in terms of, you know, if a project is having a potential effect on a VEC, then you want to make sure that, yes, you are examining to the maximum extent to which you can actually detect or understand or analyze an

effect. And I think you revisit that again when you look at mitigation measures in terms of what is the spatial or temporal limit of a detectable effect from the project. And then you can add to that, of course, other future projects and developments as well.

So I think it is something that occurs not just once in the process, but in defining the VEC and the spatial scale of the assessment, but also then looking at the effectiveness of the mitigation measures that are being proposed.

MS. GUIRGUIS: Thank you.

I guess flowing from that, this might be a fairly obvious question, but I will ask it anyways. If we then fail to, or if there is a failure to identify a relevant or significant VEC, then we would have like -- we would have then a flawed picture of what the zone of influence of a particular project, or what the zone of influence of cumulative effects might be. Is that fair to say?

MR. NOBLE: I'm going to, I guess it comes back to -- it is fair to say, yes, I think it comes back to what Jill was saying about how those VECs are determined. And I think it really

hinges on that process in terms of, maybe at the end of a cumulative effects assessment a VEC was missing that was deemed important to a particular group or community or region, I think that reflects on how VECs were selected up front, and maybe in terms of how the assessment process was adapted as new information was gained as it moved along.

So, you know, I guess whether it was unsuccessful or a shortcoming would vary depending on, if it was your VEC and you wanted it in there and it wasn't, then it was obviously a shortcoming but it may not have been to other participants. But, you know, that's part of the open process of scoping and including VECs in an EIA, and just making sure that the new information that you do learn as you move along in assessment is integrated, because you don't want to come up missing important VECs. At the end of the day you can't address everything, so I think it is finding that balance, that's just keeping it practical.

MS. GUIRGUIS: Okay. So then, I mean, do you have an opinion, or in your opinion, given the context of the fact that we are talking about a river system, that we are talking about

management of water flow, would it have been appropriate to identify a VEC as being, as one of them being the water flow and the water levels upstream of the project as far as Lake Winnipeg?

MS. GUNN: It certainly could have been, but you would need to have expert advice to know that for sure, and that's not our area of expertise. Yes. But it certainly could have been, it could have been.

MS. GUIRGUIS: Great.

I think those are all of my questions, thank you.

THE CHAIRMAN: Thank you, Ms. Guirguis. Canvass the panel? Do you have any?

MR. YEE: I just have one question, because I'm still having a problem with the temporal and spatial, how you establish this with specific VECs. Can you just give me a quick generalization on how that's done?

MS. GUNN: So you are asking --

MR. YEE: I'm trying to figure out, in terms of your cumulative effects assessment, how do you establish spatially and temporally with respect to the VECs? It depends on the individual

VECs and it will vary. I'm wondering what is that process, can you give me a brief overview?

MS. GUNN: Well, I guess it is just a matter of considering, you want to understand the condition of that VEC at the present, and you are going to want to understand the condition of it in the future with the proposed project and any other proposed projects. So if you take your temporal scale, then you are going to have to figure out, you know, what are those other, the project and the other proposed projects. And at least you would have to try and push that temporal scale out to capture the discernible effects from those. So it would be -- you would have to have that specific information to know, but you would consider that sort of thing. And then in terms of your spatial limit, again, it would be -- it would need to be broad enough to capture anything that's going to influence the overall survival or sustainability of that VEC. So, again, the process is very VEC specific on how you would obtain that information. Whether you are obtaining that information through established scientific, you know, boundaries or borders that already exist, or maybe that isn't there, so you

have to consult with experts and they are making their best judgments, so you might do that. You might look to previous cases where the same type of work for the same type of VEC has been done, so there are some standards to follow in that sense. So I think it is, I think it is a matter of feeling your way through each of those VECs and drawing on as much expertise as you can.

I don't think in the end it is ever going to be perfect. I think all of these things are still debatable, and we have to still accept that we can only do what we can do based on our modeling capabilities, or data and what we want out of that process. I hope that doesn't confuse you more, but there is no hard and fast way that is done for each one.

Bram, do you want to add to that? I hope that's helpful.

MR. YEE: Thank you, that's a little bit helpful. Thank you.

THE CHAIRMAN: Is that it?

I don't have any questions for you, although you raised one or two questions that I may need to put to the proponent before we are finished, but nothing for you today.

Mr. Williams, any re-direct?

MR. WILLIAMS: No re-direct, Mr. Chair.

THE CHAIRMAN: Thank you.

Well, I'm actually a little amazed, I didn't think we were going to wrap this up today, but it looks like we have. So thank you all for your participation today.

Madam secretary, we have any number of documents to put on the record.

MS. JOHNSON: Yes, we do, as well as a correction from last week. I had mistakenly numbered CAC 005 as the Northern Flood Agreement that Ms. Craft had put on the record. It is actually 006, and the TLE document will be 007. CAC 008 is the submissions of October 7 from CAC, with their submission outline and CVs; 009 is today's presentation on cumulative effects assessment; number 10 is Drs. Gunn and Noble's report; and number 11 was the supplement that was handed out with today's information.

Now, KHLP 51 is an excerpt from the EIS, section 1.4, assessment methods; 52 is section 5.3.1, assistant framework steps; KHLP 53 is section 7.5.1, aquatic environment; KHLP 54 is

CEC round 1, CAC 0008; 55 is TAC public round 2, 0001; 56 is section 6.5.3.3.4, residual effects of operation. Number 57 is Cumulative Effects Assessment Practitioner's guide; 58 is map number 630, linear features and core areas; 59 is map 212, linear features; 60 is map 213, core areas; 61 is map 642, resource use local and regional study areas; and 62 is the quote from Elder William Beardy.

(EXHIBIT CAC006: Northern Flood Agreement entered by Ms. Craft)

(EXHIBIT CAC 007: TLE document)

(EXHIBIT CAC 008: Submissions of October 7 from CAC, submission outline and CVs)

(EXHIBIT CAC 009: Presentation on cumulative effects assessment)

(EXHIBIT CAC 010: Drs. Gunn and Noble's report)

(EXHIBIT CAC 011: Supplement handed out with today's information)

(EXHIBIT KHLP 51: Excerpt from the EIS, section 1.4, assessment methods)

(EXHIBIT KHLP 52: Section 5.3.1, assistant framework steps)

(EXHIBIT KHLP 53: Section 7.5.1, aquatic environment)

(EXHIBIT KHLP 54: CEC round 1, CAC 0008)

(EXHIBIT KHLP 55: TAC public round 2, 0001)

(EXHIBIT KHLP 56: Section 6.5.3.3.4, residual effects of operation)

(EXHIBIT KHLP 57: Cumulative Effects Assessment Practitioner's Guide)

(EXHIBIT KHLP 58: Map number 630, linear features and core areas)

(EXHIBIT KHLP 59: Map 212, linear features)

(EXHIBIT KHLP 60: Map 213, core areas)

(EXHIBIT KHLP 61: Map 642, resource use local and regional study areas)

(EXHIBIT KHLP 62: Quote from Elder William Beardy)

THE CHAIRMAN: Thank you.

I would like to thank Dr. Gunn and Dr. Noble for their presentations here today and for the work that you did for your -- not your

client, but your whatever he is, for the Consumers Association of Manitoba.

Safe travels home, and who knows, we will be doing another one of these next year, we may see you again.

Not only did we conclude, but we are about five minutes ahead of schedule. So did you want to add something? I saw you pointing, I thought you might want to keep us going a while longer, Mr. Williams?

MR. WILLIAMS: Just seeking direction from the board. In terms of the terrestrial panel from Manitoba Hydro, and I haven't thought this full through and I'm not sure -- is it anticipated that they will be available tomorrow, or I'm just seeking guidance from the Commission.

THE CHAIRMAN: My understanding of the schedule is that we have two of your witnesses up tomorrow, do we not?

MR. WILLIAMS: We do. Normally we would let Hydro finish their record before we --

THE CHAIRMAN: That would be the normal process, but are these witnesses able to carry over for a day or two or three, or come back?

MR. WILLIAMS: Well, I think there is no issue with Dr. Peake. What I will do, perhaps, Mr. Chair, is just go reflect whether in any way Dr. Schaefer's evidence would be impaired if we changed the normal course of business. So certainly Dr. Peake, who I believe is scheduled for tomorrow morning, there should not be any problem with that.

THE CHAIRMAN: Okay. I mean, we would like to move the schedule along as best we can, but we are running a bit behind schedule, and I'm not exactly certain when we can get that panel in. But we will talk with you some more after, but Dr. Peake tomorrow morning is good to go, okay, and then we will consider it tomorrow morning.

So I guess maybe we are not that much ahead of schedule. Thank you all, and we will reconvene tomorrow morning at 9:30.

(Adjourned at 4:26 p.m.)

OFFICIAL EXAMINER'S CERTIFICATE

Cecelia Reid and Debra Kot, duly appointed Official Examiners in the Province of Manitoba, do hereby certify the foregoing pages are a true and correct transcript of my Stenotype notes as taken by us at the time and place hereinbefore stated to the best of our skill and ability.

Cecelia Reid

Official Examiner, Q.B.

Debra Kot

Official Examiner Q.B.