



MACKENZIE VALLEY ENVIRONMENTAL  
IMPACT REVIEW BOARD  
and  
MACKENZIE VALLEY LAND AND WATER BOARD

JOINT TECHNICAL SESSION

De Beers Canada Inc. - Snap Lake Mine, NT

Type A Water License Amendment

Application MV2011L2-0004

ENVIRONMENTAL ASSESSMENT

EA1314-02

HELD AT:

Yellowknife Inn

Yellowknife, NT

April 16, 2014

Day 2 of 2

## 1 APPEARANCES

2

3 Alan Ehrlich (np) )MVEIRB

4 Chuck Hubert )

5 Stacey Menzies )

6 Simon Toogood )

7 Sachi DeSouza )

8 Mark Cliffe-Phillips )

9

10 Marc Casas (np) )MVLWB

11 Heather Scott (np) )

12 Kathy Racher )

13 Zabey Nevitt (np) )

14 Rosanna Nicol )

15 Lindsey Cymbalisty )

16

17 Alex Hood )De Beers Canada

18 Michelle Peters )

19 Julie L'Heureuz )

20 Erica Bonhomme )

21 Dave Putnam )

22 Houmao Liu, Dr. )Itasca

23

24 Sarah-Lacey McMillan )Environment Canada

25 Anita Li (via phone) )

	APPEARANCES (CONT'D)	
1		
2	Peter Chapman	) Golder Associates
3	Hilary Machtans	)
4	Alison Snow	)
5	Tasha Hall	)
6		
7	Wayne Langenhan	) NSMA
8	Ed Jones	)
9	Matt Hoover	)
10		
11	Sean Whitaker	) GNWT-ENR
12	Lionel Marcinkosky	)
13	Lindsay Luke	)
14	Annie Levasseur	)
15		
16	Paul Mercredi	) GNWT-Lands
17		
18	Paul Green	) GNWT-Waters
19	Rick Walbourne	)
20	Lorraine Seale (np)	) GNWT
21		
22	Todd Slack	) YKDFN
23		
24	Don Hart (via phone) (np)	) Econmetrics
25	Ian Collins (via phone)	) EcoMetrix

1 APPEARANCES (cont'd)

2

3 David Alexander (np) ) CANNOR/NPMO

4

5 Zhong Liu ) SLEMA

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1	LIST OF INFORMATION REQUESTS	
2	NO.	DESCRIPTION PAGE NO
3	15	De Beers to provide a spreadsheet
4		of all the calculations that were
5		used to develop the results of
6		Appendix A-1 in the EQC report 71
7	16	De Beers to provide information on
8		accidents and malfunctions that was
9		provided in the original 2003 EA which
10		speaks to a dam breach 122
11	17	De Beers to provide its most recent
12		AEMP Annual Report for the
13		MVEIRB record 157
14	18	De Beers to provide the grouting
15		study recently completed by De Beers
16		grouting expert 192
17	19	De Beers to provide a PDF version
18		of the Poster titled "Effect of total
19		dissolved solids on fertilization and
20		development of two salmonids";
21		alternatively, De Beers may submit the
22		meeting notes from its information
23		session in January (which contains
24		this poster) to MVEIRB for its
25		registry 201

1 --- Upon Commencing

2

3 DR. KATHY RACHER: Okay, good morning,  
4 everyone. It's Kathy Racher here for the Board. I  
5 think, just as a wrap-up to yesterday, we had a few  
6 IRs, obviously yesterday, although I still don't know  
7 what the number is. Mark's in charge of --

8 MR. MARK CASAS: Fourteen (14) --

9 DR. KATHY RACHER: Fourteen (14).  
10 Anyway, we haven't completed writing up those IRs. I  
11 think today during the day Mark might come around and  
12 ask people questions to get some specifics of things he  
13 didn't quite understand about the IR, to make sure that  
14 they're accurate.

15 And then we will send them out  
16 officially this evening. And then anyone who -- who  
17 wants to comment on, you know, whether it was or was  
18 not what you thought that -- they can do that by  
19 tomorrow at noon.

20 Did you have something to say, Paul?

21 MR. PAUL MERCREDI: Yeah, we -- we have  
22 a question whenever the wrap-up is -- is done.

23 DR. KATHY RACHER: I didn't have a lot  
24 more interesting things to say. It's Kathy Racher here  
25 for the Board.

1                   The only -- the only thing other than  
2 that is for the schedule today, so we've got the  
3 Strontium Response Plan we're going to do now, a  
4 presentation followed by question period. And then  
5 presentation and question period on the effluent  
6 quality criteria report. And then we'll -- we'll talk  
7 about the other amendments also after lunch. The other  
8 amendments that have been requested for the water  
9 licence.

10                   There -- we -- we also want to -- I  
11 believe De Beers has been referring to a presentation  
12 on this -- on -- with regards to the Supplemental  
13 Information that was submitted on Friday. I'm -- I'm  
14 actually wondering if that should be before we talk  
15 about the proposed amen -- the other proposed  
16 amendments. I don't know. It might be -- it might be  
17 better to switch that up.

18                   So after we talk about the EQC, we'll --  
19 we'll do the presentation on the supplemental  
20 information and have some questions on that, then the  
21 amendments. And then we'll wrap up today with talking  
22 about the timing of -- of submissions and the process  
23 going forward at the end of the day.

24                   So go ahead. Do you -- have you a  
25 question?



1 MR. PAUL MERCREDI: Thank you. Paul  
2 Mercredi, GNWT. I have nothing interesting to  
3 contribute either, but this is a question for the  
4 Review Board, just so it's abundantly on -- for the  
5 record. Just some off-record discussions yesterday,  
6 this particular question might still be open, and --  
7 and it's also just to -- to kind of -- so everybody's  
8 on the same page going forward, so. And I'll read it  
9 because it is kind of -- it's kind of -- it needs kind  
10 of delicate wording.

11 So is the assessment of the assimilative  
12 capacity of organisms in Snap Lake being assessed  
13 relative to the assimilative capacity in Lake 20-13?  
14 So the -- the existing environment as De Beers  
15 described in their application documents. Or is it  
16 relative to that assimilative capacity in pre-mining  
17 conditions? So basically before a development has  
18 occurred in Snap Lake.

19 So, obviously, as is the Board's  
20 prerogative, the Board scoped -- scoped the  
21 Environmental Assessment as they did, but there's that  
22 question of has -- I think on page 4 of the RFD  
23 (phonetic) that the Board submitted, they did kind of  
24 put out that question, that -- that they were thinking  
25 out loud, has -- and they were -- they were kind of

1 asking has it been assessed previously.

2                   So I guess another way to put that  
3 question is also is that totally being reopened here  
4 and is the starting point for a project-specific  
5 assessment for the assimilative capacity of organisms  
6 on Snap Lake, and -- and all oth -- all other  
7 environmental components, is that totally being  
8 reopened from pre-mining conditions? Or is this  
9 relative to a snapshot in time of late November 2013?  
10 Just because that would -- I -- that would help -- that  
11 would help at least parties that I'm aware of submit  
12 their impact predictions to the Board. Thank you.

13                   MR. ALAN EHRLICH: Thanks, Paul. It's  
14 Alan Ehrlich, with the Board. I'm trying to gulp down  
15 a little bit of coffee so that my brain is jump-started  
16 enough to keep up with the somewhat detailed nature of  
17 the request.

18                   I think what I described yesterday,  
19 although I stand by it being accurate, was probably  
20 less than clear because you and a couple of other  
21 people said that they think I might be right but they  
22 didn't really understand it, and that's never a good  
23 thing. Okay.

24                   So the clearest way I can lay it down is  
25 our Environmental Assessments include project-specific

1 stuff and cumulative stuff. For the project-specific  
2 stuff, we care about what's the world like with or  
3 without the development that's going on, right? The --  
4 the development. And in this case we're talking about  
5 the amendment, not the whole mine and everything like  
6 that. But what's the world like without it. And then  
7 if you go ahead and do it, what's going to change, and  
8 is that okay. That's basically what the assessment of  
9 the project-specific stuff looks at.

10 Yes, we're going to be focussing on  
11 certain VECs like aquatic life, and other stuff related  
12 to water quality. So you're right on that.

13 With cumulative effects we're looking at  
14 what's the world like without this project, in terms of  
15 all other human activities, past, present and  
16 reasonably foreseeable, the same way we spelled out in  
17 Appendix H of the EA Guidelines. And then what's the  
18 world like with this project thrown into it, right?

19 So, in other words, the combi -- what --  
20 the combined effects of this proposed project and all  
21 others. And in that area, because we didn't want to  
22 assess the whole mine again, the actual mining going on  
23 at Snap Lake counts as an other project. Now,  
24 fortunately, the management of this project is real  
25 close with the management of that other project, so if

1 there's opportunities to work together to make things  
2 better, I'm sure you'll figure it out.

3 But -- but the point for the cumulative  
4 stuff is we want to know the combined total of the  
5 impacts of this project and all other past, present,  
6 and reasonably foreseeable human activities. I'm using  
7 "human activities" because they don't have to be  
8 developments with a capital 'D' as the -- the MVRMA  
9 says to matter, right?

10 And for that, fortunately, you don't  
11 have to dig back too far to figure out what the area  
12 was like without, say, the Snap Lake diamond mine,  
13 which strikes me as a big project that could well  
14 interact -- the impacts of which could interact with  
15 the -- the changes caused by what's proposed. But  
16 we're going to talk more about that later.

17 So short version is for project-specific  
18 stuff: How does this project change things compared to  
19 the world without this project? And for cumulative  
20 stuff: How does this project and everything else  
21 change things together, because, ultimately, that's  
22 what's going to matter to users of the system.

23 That's the best I can -- you're still  
24 giving me a look, so I'm not sure if -- I don't know if  
25 that is the look of someone with a question well

1 answered or -- or if I missed it.

2 MR. PAUL MERCREDI: Paul Mercredi, with  
3 the GNWT. So the parties will assume that the Board  
4 has assessed up to 360 milligrams per litre, and  
5 anything above, for example, three hundred and fifty  
6 point one (350.1) and onwards has not been assessed. I  
7 guess that's my question.

8 MR. ALAN EHRLICH: Give me one (1)  
9 second to just do a quick caucus with people who know  
10 more about the specifics of this particular  
11 development.

12

13 (BRIEF PAUSE)

14

15 MR. ALAN EHRLICH: Alan Ehrlich, for  
16 the Review Board. For the project-specific stuff, yes.  
17 To -- to be clear, though, when we say that we're not  
18 reassessing projects that have already been evaluated,  
19 that means as part of what is the development in this  
20 case. But when it comes to cumulative stuff, we would  
21 be foolish to ignore projects that are there on the  
22 ground regardless of whether or not they've had  
23 environmental assessments, right? I'm hoping that  
24 people aren't getting confused by that.

25 Something that has already been assessed

1 thoroughly is going to be considered by the Board when  
2 it's assessing something, but it doesn't mean it's as  
3 if they don't exist for a cumulative effects  
4 perspective. That would be -- that would be crazy  
5 talk. Thank you.

6 MR. PAUL MERCREDI: Okay. Paul  
7 Mercredi, GNWT. So the -- up to -- the effects up to  
8 350 milligrams per litre has -- have been assessed  
9 already, and now this environmental assessment is  
10 assessing the effects past three fifty (350) and above.

11 So the three fifty (350) has already  
12 been assessed, correct, and we're assessing the  
13 assimilative capacity, in essence, from late 2013?

14 Is that correct?

15 MR. ALAN EHRLICH: I think from a  
16 project-specific basis, yeah, that's -- that's likely  
17 right. Now, if the Board gets persuasive arguments  
18 that -- that say that there's some reason why that's  
19 inadequate and it can't achieve its mandate and do  
20 that, you know, it's going to consider everything it  
21 gets from the parties, but it sounds right to me.

22 MR. PAUL MERCREDI: Okay. Paul  
23 Mercredi, GNWT. Yeah, that just gives context to -- to  
24 the number crunching and the -- and the discussion  
25 yesterday, and -- and kind of at least a starting point

1 from which everybody can go forward and it's on the  
2 record. So thank you very much.

3 MR. ALAN EHRLICH: No, thanks, Paul.  
4 And look, I mean I recognize that this is probably a  
5 pretty important question, you want everyone talking  
6 the same language here. I apologize if the description  
7 I gave yesterday was a little bit obfuscated. But,  
8 anyway, I hope -- hopefully, this is -- this is more  
9 clear.

10 MR. PAUL MERCREDI: Yes, it has. Thank  
11 you. Sorry for taking up everybody's time on that.

12 DR. KATHY RACHER: Kathy Racher, from  
13 the Board. That's quite all right. It's a good  
14 conversation.

15 So I think we're ready to begin with the  
16 Strontium Response Plan. And I need to remind myself -  
17 - Kathy Racher -- from the Board, to say my name and  
18 the same for everybody else. Thanks.

19

20 PRESENTATION - STRONTIUM RESPONSE PLAN:

21 MS. ERICA BONHOMME: Thanks for the  
22 reminder, Kathy. My name is Erica Bonhomme. I'm the  
23 environment manager with De Beers Canada, Snap Lake  
24 Mine.

25 The presentation on strontium is fairly

1 short. The current water licence required that the  
2 Strontium Response Plan be filed by December 31st,  
3 2013. The Strontium Response Plan is included as part  
4 of this application, because the information leading to  
5 the development of a water quality objective for  
6 strontium is relevant to this application as a whole.

7                   Around ninety (90) -- strontium  
8 originates at the mine from mined granite, which is our  
9 waste rock, metavolcanics, and kimberlite. Around 91  
10 percent of the strontium loading at Snap Lake Mine is  
11 from underground, with the remainder from the water  
12 management system, including the north pile. So recall  
13 the north pile takes our waste rock that we mine from  
14 underground.

15                   Site-specific water quality modelling  
16 and toxicity studies have concluded that the strontium  
17 loading to Snap Lake, now and into the future, will not  
18 present a risk to aquatic life, and therefore there is  
19 no mitigation proposed in the Strontium Response Plan  
20 at this time. That being said, ongoing monitoring and  
21 reference against the Aquatic Effects Monitoring  
22 Program response framework will identify whether  
23 actions may be required in the future in regards to  
24 strontium.

25                   I'm going to hand it over to Dr. Peter



1 Chapman who is going to talk about the development of -  
2 - of the benchmark for strontium.

3 DR. PETER CHAPMAN: Hi. Peter Chapman  
4 here. Thanks, Erica. Just to give you a little bit of  
5 background. Some of you are aware of the background,  
6 some of you aren't. Strontium first came to light  
7 during the technical session ahead of the last water  
8 licence renewal, and it was pointed out the strontium  
9 concentrations were increasing and we should look at  
10 that. So we did a literature review, went through the  
11 literature, and everything except for two (2) studies  
12 indicated that strontium was not toxic at very high  
13 concentrations.

14 In fact, it was interesting because  
15 strontium is used in fish hatcheries, very high  
16 concentrations, with young fish to mark the adolescence,  
17 so they can do aging later on. There were two (2)  
18 studies, one (1) by Wes Burge (phonetic) from West  
19 Virginia in the 1970s, published in book chapter, not  
20 in journals. And that one showed that rainbow trout  
21 were particularly sensitive to strontium. It was  
22 totally opposed to other studies that showed the  
23 opposite.

24 And there was a study by Uwe Bergman  
25 (phonetic) at Alpha Environment Canada (phonetic), now

1 retired, where they looked at sixty-three (63)  
2 chemicals. And they did the testing. And that testing  
3 was fine but the concentrations they used with sixty-  
4 three (63) chemicals was so wide they didn't really  
5 focus on what the real endpoint was.

6                   So we set out to repeat those two (2)  
7 tests, which were repeated. When they were repeated we  
8 got the same high numbers we got with everything else.  
9 The paper repeating those is now in press in the  
10 journal Environment -- not press -- it's in review in  
11 the journal Environmental Toxicology and Chemistry.  
12 And then we used those data along with other data to  
13 develop a species sensitivity distribution, which I  
14 described yesterday.

15                   But again, going through it up here on  
16 the vertical axis, zero to a hundred percent. Along  
17 the bottom: strontium concentrations, microgram per  
18 litre you can see very high concentrations. And then  
19 what you do is you draw a line.

20                   I'm showing in this case several lines,  
21 because when I showed fluoride yesterday it was pretty  
22 easy drawing the line. Sometimes it's not that easy.  
23 So what you do -- and it's Environment Canada's  
24 guidance -- you use different methods: normal,  
25 logistic, Gompertz, Weibull, Fitz -- Fisher-Tippett.

1 Those are the standard ones. And then you use a method  
2 to fig -- figure out which is the best fit.

3 And from this we've got this one, this  
4 curve, with the confidence limits: pretty good fit.  
5 Now, some of you may remember that when we first  
6 submitted our technical memorandum we had a higher  
7 level for -- a higher benchmark for strontium of 14,130  
8 micrograms per litre.

9 When we came to prepare this for  
10 publication what we like to do is get other people to  
11 review it that are outside, and literally get some  
12 outside peer review on this. And the outside peer  
13 reviewers said, Okay, that's fine, but you know,  
14 really, you look at three (3) of those papers, two (2)  
15 of them were from earlier, and they -- one (1) of them  
16 had an unbounded endpoint, and remember for TDS we were  
17 talking about the fact that it's hard with an unbounded  
18 to put it in and we were right -- and we were wrong to  
19 put that in.

20 And then two (2) others from earlier on,  
21 they said, Well, you know, they could be considered  
22 chronic endpoints, but you're better off sending it in  
23 to a journal to pull them out, because the studies  
24 don't fully define them as long-term, chronic  
25 endpoints.

1                   So we pull those three (3) out and we  
2 end up with somewhat lower, an HC5 of 10,680 micrograms  
3 per litre strontium, which is below the -- the lowest  
4 point here, so it's protective.

5                   And just to put it in context, two (2)  
6 like slides, the maximum strontium concentration  
7 diffuser stations are .85 milligrams per litre versus  
8 ten (10). Updated modelling show the upper bound will  
9 get to four (4). Chronic effects benchmark now is  
10 lowered from fourteen (14) to ten point seven (10.7).

11                  We've looked at tissue burdens. You've  
12 got that in the memo, and so on. The toxicology of  
13 strontium: We don't see this as an issue at all.

14                  And just to show you a last slide, this  
15 is near the diffuser. Total strontium up the vertical  
16 access micrograms per litre. The ten thousand seven  
17 hundred (10,700) line here is the benchmark. And here  
18 the predictions right through 2028 well below the  
19 benchmark.

20                  Thanks very much. That's the end of the  
21 presentation.

22

23 QUESTION PERIOD:

24                  DR. KATHY RACHER: Kathy Racher, for  
25 the Board. Thank you for that.

1 Do we have some questions in the room  
2 about -- about strontium? Go ahead, Rick.

3 MR. RICK WALBOURNE: Rick Walbourne,  
4 GNWT. You did make some mention that although there  
5 would be no adaptive management per se that it would  
6 continue to be monitored in the AEMP to see if there  
7 were any issues.

8 We had raised some concerns previously  
9 that you were looking at strontium merely in tissue,  
10 and with strontium replacing calcium in -- in bones and  
11 structural, that it might be inappropriate to be doing  
12 tissue samples for strontium as opposed to some other  
13 methods.

14 Can someone speak to that, by any  
15 chance? Thanks.

16

17 (BRIEF PAUSE)

18

19 MS. HILARY MACHTANS: Hilary Machtans,  
20 for Golder. Could you just clarify the question, Rick?  
21 I think I know what you're asking, but if you don't  
22 mind clarifying.

23 MR. RICK WALBOURNE: Yeah. Rick  
24 Walbourne, GNWT. The question was: We had raised  
25 concerns previously that the tissue samples for

1 strontium may not be the best method to determine the  
2 impacts to fish, as strontium is known to replace  
3 calcium in the skeletons of fish. So they've noticed  
4 bone deformities based on strontium. So our concern is  
5 that merely tissue sampling may not show any impacts of  
6 strontium on the -- on fish species.

7 MS. HILARY MACHTANS: Hilary Machtans,  
8 for Golder. That -- that is correct. And we did hear  
9 -- hear those previous comments. So what the plan is  
10 for 2014 is there will be sampling in the downstream  
11 lakes for fish, and so they will start to collect bone  
12 at that time to determine. So you do have a -- an  
13 issue of how to interpret that data. You don't just  
14 start from zero and try to understand those strontium  
15 concentrations in bone.

16 In 2013, in Snap Lake and its two (2)  
17 reference lakes, they did collect muscle and kidney and  
18 liver, so -- as a attempt to understand those three (3)  
19 tissue types. And then I said we're considering for  
20 2014 looking into it -- the use of bone.

21 But at a minimum, I believe what we plan  
22 to do is at least archive it as we research it to  
23 figure out how to interpret it. But at least the  
24 tissue -- the bone would be available for further use.

25 MR. RICK WALBOURNE: Rick Walbourne,

1 GNWT. Okay. No, that's fine. Thanks for that. I  
2 just -- again, we had raised it previously, so I was  
3 curious to know what the company was doing in that  
4 regard. So, thank you.

5 DR. KATHY RACHER: Kathy Racher for the  
6 Board. Any further questions about this? Go ahead.

7 MR. SEAN WHITAKER: Sean Whitaker,  
8 Environment and Natural Resources. So the critical  
9 effect benchmark that you've proposed with that lack of  
10 information on the bone structure, is that still an  
11 appropriate number, or should we be holding off? And  
12 I'm just questioning whether that number could change  
13 with that increased knowledge. Is that possible?

14 DR. PETER CHAPMAN: Peter Chapman. We  
15 don't expect it to. If you look at, you know, all the  
16 data that we have in terms of effects from water on  
17 organisms, it's well below. You know, what we're  
18 seeing is well below that.

19 We will look at the bone data again.  
20 There's the issue of interpreting it. And strontium in  
21 bone is not necessarily a negative thing. So at this  
22 point we're proposing going forward with this one and  
23 taking a look at bone and trying to interpret what's  
24 happening there, and also watching trends in the AEMP  
25 and water as well.

1 DR. KATHY RACHER: Kathy Racher, for  
2 the Board. You look relatively happy there at the end  
3 of the table. Yeah, they -- maybe they need more  
4 strontium.

5 Any other questions in the room? If  
6 not, I'll go to the phone. Is -- from Econometrics,  
7 does anyone have a question for De Beers?

8 MR. DON HART: This is Don Hart from  
9 Econometrics. Just one (1) question. I notice that  
10 strontium has been accumulating in the sediments of  
11 Snap Lake as well as the water, and I'm wondering if  
12 there's any information on the implications of this,  
13 effects on sediment dwelling organisms, or even the  
14 permanence of this?

15 Do we expect it to be a long-lasting  
16 effect after closure? Any comment on that?

17 DR. PETER CHAPMAN: Peter Chapman here.  
18 Yeah, it is accumulating in sediments, which is what  
19 you'd expect. As you're well aware, bioavailability  
20 tends to be higher in the water than in the sediments,  
21 because you have a number of factors that will bind  
22 metals and make them less bioavailable. Although, they  
23 are then there where the benthic organisms are.

24 We are watching what's happening in the  
25 sediments. There are no data -- published studies that



1 we are aware of indicating that there are strontium  
2 levels of concern anywhere near what we've got in the  
3 sediments, but we'll keep watching the literature and  
4 keep monitoring what's going on.

5 MR. DON HART: Don Hart, for  
6 Econometrics. Okay, thanks.

7 DR. KATHY RACHER: Kathy Racher, for  
8 the Board. Any further questions, Don?

9 MR. DON HART: Don Hart, for  
10 Econometrics. Well, I guess there was a second part to  
11 my initial comment, and that was persistence in the  
12 sediments. Do you have any thoughts on -- on sort of  
13 flushing after mine closure?

14 DR. PETER CHAPMAN: Peter Chapman here.  
15 Sorry, I didn't catch that last one. What after mine  
16 closure?

17 MR. DON HART: Flushing from the  
18 sediments after mine closure.

19 DR. PETER CHAPMAN: Okay. Peter  
20 Chapman. Could you explain what you mean by  
21 "flushing"?

22 MR. DON HART: I'm wondering how long  
23 the strontium is going to remain elevated in sediments  
24 after closure.

25 DR. PETER CHAPMAN: Peter Chapman. I'm

1 not sure I've -- hmm, that's an interesting question.  
2 A better question, though, would be is strontium  
3 presently bioavailable in sediments, or is it likely to  
4 become bioavailable in sediments in future? Because,  
5 of course, in terms of hazard or risk, the issue isn't  
6 whether something is present, but -- but whether  
7 something is present in a form and amount that could  
8 cause adverse effects.

9 So as strontium will persist, I'm not  
10 sure -- I'm going to check with the team now to see if  
11 we have any information on how long it might persist.  
12 But again, if it persists, but it's inert and it's not  
13 going to cause an adverse effects, it isn't an issue.  
14 So give me a second just to check with the team.

15

16 (BRIEF PAUSE)

17

18 DR. PETER CHAPMAN: Yeah. Don, Peter  
19 Chapman here. Nothing to add to the answer I gave you.

20 MR. DON HART: Okay. Thanks.

21 DR. KATHY RACHER: Kathy Racher, for  
22 the Board. I don't know if our friend Anita is on the  
23 line. Anita, do you have any questions for us today --

24 MS. ANITA LI: I don't have --

25 DR. KATHY RACHER: -- or this morning?

1 MS. ANITA LI: -- any questions on  
2 strontium. But I was wondering is there presentations  
3 that I can get, or are they just talking and there's no  
4 presentation?

5

6 (BRIEF PAUSE)

7

8 MR. SIMON TOOGOOD: Hi. It's Simon  
9 Toogood with the Board.

10

11 (BRIEF PAUSE)

12

13 MR. SIMON TOOGOOD: Hi, yeah, we're  
14 just conferring here. It's Simon Toogood with the  
15 Review Board. All the presentations are on the  
16 registry. They're not individually labelled. They're  
17 combined into...

18

19 (BRIEF PAUSE)

20

21 MR. CHUCK HUBERT: Chuck -- Chuck  
22 Hubert, Review Board. On the public registry this  
23 presentation is labelled "Nitrogen Response Plan" I  
24 believe, and all of the presentations today follow from  
25 that document.

1 MS. ANITA LI: Anita Li, from  
2 Environment Canada. Thank you.

3

4 (BRIEF PAUSE)

5

6 DR. KATHY RACHER: Kathy Racher, for  
7 the Board. Are there any other questions I can drum up  
8 on strontium? Oh, there we go. Thanks, Matt.

9 MR. MATT HOOVER: Matt Hoover, North  
10 Slave Metis Alliance. Sorry to disappoint but this is  
11 a general request. Could folks please speak as clearly  
12 as they can into the microphone and try and stay close  
13 to the mic. That would be great. Thank you.

14 DR. KATHY RACHER: Kathy Racher, for  
15 the Board. Of course. Thank you for the reminder.

16 My only question is: Do you expect the  
17 -- if you -- you use something like reverse osmosis for  
18 a portion of your effluent, would -- would we expect to  
19 see a reduction in strontium in that portion as well?

20 MS. ERICA BONHOMME: Erica Bonhomme.  
21 Yes, we would. That would be -- that would be part and  
22 parcel of -- of what would be treated if we used RO in  
23 particular, yeah.

24 DR. KATHY RACHER: Kathy Racher. Okay.  
25 There's a follow-up from Sean.

1 MR. SEAN WHITAKER: Sean Whitaker,  
2 Environment and Natural Resources. This is sort of a  
3 general question, whether it's for Don on the phone or  
4 to Golder, I guess it would -- I don't know that much  
5 about strontium, I'm going to freely admit that, but is  
6 this a biomagnifying element? Is it like mercury?  
7 Because it is replacing calcium in bones. I -- I don't  
8 know the answer. I -- just a curiosity, because it  
9 could cause deformity.

10 DR. PETER CHAPMAN: Peter Chapman. No,  
11 biomagnification is something that's fairly rare. It's  
12 associated with substances that are in the organic  
13 form. So mercury bio -- biomagnifies. And  
14 biomagnification is defined as accumulating through  
15 three (3) or more trophic levels through food only.  
16 Okay. So it's increasing concentrations going up and  
17 it goes up through the lipids.

18 Selenium, the same thing.  
19 Selenometalathi -- methi -- methionine. Oh, I need  
20 coffee too this morning. Sorry. And, of course, we  
21 have PCPs, DTT and so on. So strontium isn't a classic  
22 biomagnifier.

23 But, Don, do you want to comment?

24 MR. DON HART: Sure. Don Hart from  
25 Econometrics. Peter is right, we don't expect strontium

1 to biomagnify through the food chain. That doesn't  
2 mean that it won't get into the organism and get into  
3 bones. It could bioaccumulate and I think that would  
4 be the purpose of the monitoring of bones that was  
5 mentioned, to see whether it's accumulating there. So  
6 it won't biomagnify, but it would likely get into the  
7 organism.

8 MR. SEAN WHITAKER: Sean Whitaker,  
9 Environment and Natural Resources. Thank you both for  
10 those answers. It's greatly appreciated. I appreciate  
11 the bioaccumulation, I just wasn't sure, 'cause it's  
12 SR2 positive so I was just wondering if it's the same  
13 general area in the periodic table. So I was just  
14 questioning that.

15 My other question is with respect to not  
16 having an EQC, and this could be saved for the EQC  
17 portion of today. But in terms of a regulatory  
18 instrument, just to set an EQC so that the inspector  
19 has something to measure against. And that's sort of a  
20 position. I can wait until we get to the EQC portion  
21 if you want me to hold off on that.

22 DR. KATHY RACHER: Kathy Racher, for  
23 the Board. Yeah, we might as well wait till then. And  
24 -- and again, it could be something that, you know, you  
25 just want to present to the Board about whe -- whether

1 and why you think an EQC would -- would be necessary if  
2 you accept the water quality objective. That's great.

3 MS. ERICA BONHOMME: Erica Bonhomme.

4 Just to comment on that, we do -- remember, we do  
5 monitor for strontium through the Aquatics Effects  
6 Monitoring Program, and there would be action  
7 thresholds that would be triggered if we did achieve  
8 certain levels.

9 DR. KATHY RACHER: Okay. I think we've  
10 -- we're done with that subject for the moment, so  
11 we'll move on to the Effluent Quality Criteria Report.  
12 We're just looking the registry just to check for those  
13 on the phone especially. So the -- the presentation  
14 for the EQC Report is within the -- the file that's  
15 labelled on the registry at "Nitrogen Response Plan."  
16 So sorry about that, but hopefully you can -- you can  
17 find it. If you have any concerns, let -- let us know.  
18 So when you're ready, De Beers.

19

20 (BRIEF PAUSE)

21

22 PRESENTATION - EFFLUENT QUALITY CRITERIA REPORT:

23 MS. TASHA HALL: Okay. Good morning.

24 I'm Tasha Hall with Golder Associates. I'm going to be  
25 presenting on effluent quality criteria, or EQC.

1                   So just to give you a road map of the  
2 presentation this morning, I'm going to go through some  
3 terminology. There -- Anita mentioned it yesterday,  
4 just about the difference about site -- between site-  
5 specific water quality objectives, EQC, we've got --  
6 got several terms. Criteria benchmarks, I just kind of  
7 want to walk through that again, just as a reminder,  
8 this morning.

9                   And then I'll talk about the two (2)  
10 different types of EQC that are generally specified in  
11 water licence, and what's currently in the water  
12 licence. Review the method that was used to derive the  
13 EQC as part of the draft EQC Evaluation Report  
14 submitted as part of the submission in December. I'll  
15 run through the proposed EQC as they were presented and  
16 then provide a bit of time for questions.

17                   Just in terms of terminology, effluent  
18 quality criteria are limits, obviously, we talked about  
19 this yesterday, that apply end -- at end-of-pipe. So  
20 they're what are regulated under the water licence and  
21 what provides De Beers' operational control when --  
22 when they manage their mine.

23                   We also have a term called 'aquatic  
24 effects monitoring program benchmarks' that was used in  
25 the report. And this -- this is just for ease of



1 reference, because we do have criteria gui -- generic  
2 guidelines, site-specific water quality objectives.  
3 There's different terminology for a number of in-lake  
4 objectives that we want to meet moving forward. So for  
5 just ease of reference and a term to refer to that list  
6 we call them AEMP benchmarks. It can include site-  
7 specific water quality objectives. So just a reminder  
8 that those apply in-lake and EQC apply at the end-of-  
9 pipe.

10                   The site-specific water quality  
11 objectives take into account local conditions biota and  
12 they can include some of the work that Dr. Chapman was  
13 talking about, some of -- and include additional test  
14 work. But they could also just be as simple as  
15 adjusting a CCME Guideline for the pH and temperature  
16 in the lake. It doesn't have to be something developed  
17 outside of -- of the system.

18                   Just for -- for reference, so this is  
19 Snap Lake. This is the main basin when we refer to it.  
20 This isn't -- what is called the Northwest Arm and it's  
21 somewhat hydraulically cal -- isolated from the main  
22 basin; it's just connected by what's called the  
23 Narrows. This is the water intake facility that John  
24 was asking about yesterday.

25                   The main basin is becoming fairly well

1 mixed. The site-specific objectives, the AEMP  
2 benchmarks, would apply in the lake itself. The EQC  
3 apply at the discharge location, which is here.

4                   And I've highlighted an arc around this  
5 area. That's called the mixing zone boundary, and  
6 that's approximately 200 metres out from the diffuser.  
7 So I'll just -- if we were to zoom in on that area,  
8 there are four (4) -- you can't really see the text  
9 here; I apologize for that -- but you can see that  
10 there's four (4) monitoring stations located  
11 approximately 200 metres from the two (2) diffusers.  
12 And that's where the -- the goal is to achieve the in-  
13 lake benchmarks by those stations. Those are monitored  
14 monthly; they're reported in the SNP reports and they  
15 are sort of the early warning stations.

16                   In the original assessment the mixing  
17 zone was assessed to be about 200 metres, and that some  
18 chronic toxicity would occur in that area, but outside  
19 of that area it wouldn't. So the response framework  
20 for the AEMP is actually set up such that monitoring at  
21 this -- at these locations are early warning moving  
22 forward for action levels.

23                   There's two (2) types of effluent  
24 quality criteria. There's an average monthly limit and  
25 a maximum daily limit. In terms of management long

1 term, it's the goal that the average monthly limit  
2 would be achieved routinely, because it's a consecutive  
3 -- it's a rolling average based on samples, six (6)  
4 consecutive samples. De Beers currently monitors every  
5 six (6) days for parameters with EQC.

6                   Then there's a maximum daily limit, and  
7 that's more so something unexpected might happen, but  
8 that if they were to go over their average monthly  
9 limit and see something along those lines, that  
10 adjustments would be -- would need to be made in order  
11 to achieve their average monthly limit.

12                   Currently the water licence regulates --  
13 includes these parameters: so total suspended solids,  
14 which speaks to the clear water/dirty water. There's  
15 ammonia -- there's nitrogen parameter -- ammonia,  
16 nitrite, nitrate -- resulting from explosive use.  
17 Chloride, fluoride, sulphate, which are ions related to  
18 TDS, total dissolved solids. Several metals: aluminum,  
19 arsenic, chromium, copper, lead, nickel, and zinc.  
20 Extractable petroleum hydrocarbons. There's an annual  
21 loading limit for total phosphorus to maintain the  
22 trophic status in the lake, and the -- the effluent is  
23 pH regulated.

24                   To calculate the EQC, the Board has a  
25 water and effluent quality management policy, but it

1 doesn't, you know, specify specifically how the EQC  
2 should be calculated, realizing that every project is  
3 different and has different variables and that things  
4 need to be assessed for each project.

5                   But we used the same process that was  
6 applied in the 2003 report during the original  
7 licensing process. It was updated based on new  
8 information and new assumptions and all of the years of  
9 information that we now have. But it's based on  
10 manuals from other jurisdictions; so the United States  
11 Environmental Protection Agency and the AEM -- AEP,  
12 Alberta Environment Protection.

13                   And the process includes basically four  
14 (4) main steps. So you consider what parameters to  
15 assess, and then you select a benchmark that's  
16 appropriate for each one (1) of those parameters to be  
17 met at the 200 metre mixing zone boundary. And then a  
18 key part is determining the assimilative capacity of  
19 the lake during sort of a reasonable worst-case  
20 scenario. In this case that's late operations as  
21 concentrations increase through time.

22                   And then you calculate a waste load  
23 allocation. Once you know what the AEMP benchmark is  
24 at the site specif -- at the mixing zone boundary, you  
25 back calculate what the loading to the lake can be in

1 order to maintain below that level.

2                   Parameter identification. So we started  
3 kind of with the list that is already regulated under  
4 the water licence, and we split it out under required  
5 parameters and remaining parameters, thinking this  
6 might -- this might help, in terms of process.

7                   So for required parameters, the water  
8 licence itself asked that TDS chlor -- so what wasn't  
9 mentioned on the previous slide is that there's a whole  
10 lake average limit of 350 milligrams per litre right  
11 now for TDS. So in the TDS and Nitrogen Response  
12 Plans, it was specifically asked that the EQC for TDS,  
13 chloride, fluoride, ammonia, and nitrate be ev --  
14 reevaluated. And if required, if necessary, provide  
15 new values.

16                   The remaining parameters -- nitrite,  
17 sulphate, aluminum, arsenic, chromium, copper, metals -  
18 - those were reassessed just based on operational  
19 changes for the mine. So in 2003 the EQC were derived  
20 based on a lower flow. We've -- we've talked about  
21 what has caused the -- the increase in the -- in the  
22 discharge rate. So we felt it prudent to revisit those  
23 param -- parameters simply based on changes.

24                   This is a list that we were -- was  
25 reassessed, and then the AEMP benchmark that was

1 selected. So total -- for total dissolved solids, it's  
2 the six eighty-four (684) that we've been talking  
3 about. For chloride, the three eighty-eight (388)  
4 which is the site-specific water quality objective that  
5 Peter discussed, as well as fluoride and nitrate.  
6 Those are all hardness based.

7 For ammonia, the -- we used CCME for  
8 chronic and USEPA to protect against acute. And then  
9 for the sulphate, the hardness -- hardness based  
10 benchmark by BCMOE. And the remain -- for the metals  
11 it was mostly CCME or values that were derived as part  
12 of the EAR process.

13 And then -- whoops -- where did I go?  
14 Sorry, sorry, I apologize for that.

15 For total phosphorus, a value of zero  
16 point zero-one (0.01). So that's an -- an approved --  
17 that was proposed in the response framework document  
18 and study design as a benchmark and was recently  
19 approved. And that is to maintain Snap Lake trophic  
20 status within the oligotrophic range.

21 So this is -- this is the main driver  
22 for why -- why the EQCs are the levels that they are.  
23 And I think there's some confusion, because normally  
24 when you have an EQC in -- in other projects that I've  
25 worked on, the EQC at end-of-pipe tend to be higher

1 than the site-specific water quality objectives in the  
2 lake. And that's because you get some dilution in  
3 mixing.

4                   This plot shows is -- this is just  
5 simply so we have a hydrodynamic model and a parameter,  
6 just a generic parameter, run through there as a  
7 tracer, run through the model to see what proportion of  
8 the lake will become effluent late in -- in operations.  
9 And as you can see, under the lower bound flows, 90  
10 percent of the lake will be made up of effluent.

11                   So to protect at that -- under that  
12 scenario, for some parameters, essentially, the EQC is  
13 essentially the same as the site-specific water quality  
14 objective. Realizing there is -- I mean, there is some  
15 assimilative capacity -- like, it's a steady-state  
16 assessment, so it's done sort of a worst-case  
17 situation. And then we have -- we have confidence in  
18 that because when we ran six eighty-four (684) through  
19 the hydrodynamic model, it does then validate that  
20 concentrations will remain below six eighty-four (684)  
21 through operations.

22                   There is some assimilative capacity. I  
23 mean, if you look at the TDS concentrations in the  
24 effluent thus far, they have been over six hundred and  
25 eighty-four (684). In 2005 and 2006, they were upwards

1 of a thousand milligrams per litre. But the  
2 concentrations in the lake were low, so there was more  
3 assimilative capacity. So as it increases, that's why  
4 the effluent quality criteria has to come lower.

5                   So for TDS, it's proposed that the whole  
6 lake average value of 350 milligrams per litre be  
7 removed from the licence, and a more operat -- like a -  
8 - an effluent quality criteria apply at end-of-pipe to  
9 give De Beers a bit more operational control. And  
10 it's suggested that a site-specific water quality  
11 objective of six eighty-four (684) apply in the lake,  
12 which, when you run it through the -- the model and the  
13 assessment, results in an AML of 684 milligrams per  
14 litre and a MDL of a thous -- of a 1,003 milligrams per  
15 litre.

16                   For other parameters, for nitrate -- so  
17 what isn't specified here is that currently in the 2000  
18 -- up until the end of January 2000 -- the end of 2014,  
19 the AML for nitrate is twenty-two (22) and the MDL is  
20 forty-four (44).

21                   When the licence was issued, starting  
22 January 1st, 2015, the Board set fairly restrictive EQC  
23 that were based on CCME guidelines. But since that  
24 process, the site-specific water quality objectives --  
25 so what you're seeing here is a reflection of moving



1 towards still conservative, but site-specific water  
2 quality objectives. So the AML for nitrate of fourteen  
3 (14) and an MDL of thirty-two (32).

4 For chloride, moving from an AML of one-  
5 sixty (160) to three seventy-eight (378) and an MDL of  
6 three twenty (320) to six-o-seven (607). And for  
7 fluoride an increase as well. For ammonia, no changes  
8 to the EQC are proposed. A slight increase for nitrite  
9 from zero point five (0.5) to one (1), and for the MDL  
10 of one (1) to three (3).

11 No change to TSS. The -- the system  
12 seems to be working well and it's maintaining a clear  
13 receiving environment. Sulphate, also an increase due  
14 to site specific, moving towards site-specific  
15 benchmarks. And then for metals proposed retaining the  
16 value for aluminum, but removing EQC for other metals.

17 This -- this stems from a -- a comment  
18 in the reasons for decision in the last water licence.  
19 I'll just -- I'd just like to read the text, if I  
20 could. So it was stated in Appendix C, Section 5.5 --  
21 5.1 of the reasons that:

22 "Based on effluent AP -- AEMP data  
23 since mine construction, EQC for  
24 arsenic, cadmium, lead, and zinc may  
25 lo -- no longer be necessary.

1                   However, no party requested removing  
2                   these regulated parameters in the  
3                   renewal."

4                   So at that time, the Board actually  
5                   eliminated a cadmium EQC on that -- on that basis. So  
6                   this is sort of in line with that, that even in the  
7                   effluent, the concentrations predicted through  
8                   operations are so low compared to the site -- the  
9                   objectives that would apply in the lake that it -- it  
10                  just -- it seemed not relevant to have them, but...

11                  For total phosphorus, to maintain below  
12                  a li -- so a long-term average of 0.01 milligrams  
13                  phosphorus per litre. And that results in a -- a lower  
14                  annual loading limit than they currently have. They  
15                  have 256 kilograms per year. This, I think, results in  
16                  about two hundred and twenty-nine (229). And that  
17                  extractable petroleum hydrocarbons be eliminated, but  
18                  that the discharge continue to be pH regulated and,  
19                  obviously, non-acutely toxic.

20                  And just to summarize the proposed EQC  
21                  moving forward, these are -- these are the values. And  
22                  I think I've walked -- I've walked through each one (1)  
23                  of those. And that's -- that's it. So I'd hap -- be  
24                  happy to take questions.

25

1 (BRIEF PAUSE)

2

3 QUESTION PERIOD:

4 DR. KATHY RACHER: Kathy Racher, for  
5 the Board. Thanks for that, Tasha. Who would like to  
6 start with some questions?

7 Sean is smiling and happy, let's go with  
8 him.

9 MR. SEAN WHITAKER: Sean Whitaker,  
10 Environment and Natural Resources. I was told to go  
11 first because I'm the tallest and I'm closest to  
12 Nathen's height, so. I'm on the spot.

13 If we go back to slide 11, the  
14 assimilative capacity of Snap Lake. So this is what I  
15 was hinting at yesterday, and it's about the ionic  
16 composition of mine water that's being added, because  
17 you're going to be adding more mine water each year and  
18 reaching -- reducing the assimilative capacity of Snap  
19 Lake.

20 And because of that, your ionic  
21 composition is going to be changing. I appreciate the  
22 SSWQO are -- we can agree to disagree on certain  
23 aspects of it. But there's going to be more mine water  
24 that's chloride intensive. And my -- my personal  
25 opinion, that's not the position of the department, is

1 that the chloride is going to be the most toxic factor  
2 in this.

3 The chloride ion is -- has been shown to  
4 be lethal, and that was my position yesterday. And  
5 I'll be providing the primary references early next  
6 week so that you guys can have -- for the Information  
7 Request that will come out of that from yesterday.

8 But I'm concerned because you're redu --  
9 2015 might not -- we're only at 50 percent assimilative  
10 capacity. So there still is a buffering capacity in  
11 Snap Lake. But by 2019, you're up at 80 percent, and  
12 that composition of effluent that's being discharged  
13 may have further impacts on the lake. So you have  
14 shown -- you've stated that certain areas of Snap Lake  
15 will be higher than a thousand parts per million. And  
16 that's sort of where I was coming from yesterday, and  
17 that's what my concern is.

18 And if -- are you going to be higher  
19 than the thousand proposed in Snap Lake once the  
20 assimilative capacity is reached? And that's -- for --  
21 on a mass perspective, a mass load perspective.

22

23 (BRIEF PAUSE)

24

25 MS. ERICA BONHOMME: Erica Bonhomme.

1 Just -- just a point of clarification again. We show  
2 this as -- as a unfiltered, unfettered, unmitigated  
3 scenario, right? So we are still confident that the --  
4 this will not reflect conditions once we have  
5 mitigation in place. Tasha, I don't know if you want  
6 to add anything to that. But -- but just keep in mind  
7 that we do present these in that -- in that context.

8 MR. SEAN WHITAKER: Sean Whitaker,  
9 Environment and Natural Resources. The reason that I'm  
10 stating this now is because there is uncertainty in  
11 what that mitigation is, and we're assessing it based  
12 on what you've proposed. And you say, "mitigation,"  
13 but we don't know what that mitigation is, the  
14 percentage, all those things. That's an uncertainty.  
15 And I appreciate the project's position that you don't  
16 know until you get there. So I do appreciate that.

17 But we also have to assess it -- I'm  
18 assessing it as if it's unmitigated, because we don't  
19 know what mitigation is. So we know it's going to be  
20 impacted if you do nothing. And as of right now, you  
21 have options, but right -- I'd have to assume that  
22 nothing is going to happen and this is what the  
23 assimilative capacity of Snap Lake is.

24 So that's where this question's coming  
25 from, and that's where is -- a lot of the concerns are

1 coming from. If you would have said, We are going to  
2 mitigate and this is what we're proposing, then we  
3 would have known what the number that you'll reach and  
4 then we could have went from there. But that's where  
5 this question is coming from.

6 MS. ERICA BONHOMME: Erica Bonhomme.  
7 Again, I -- I just want to emphasize that we are  
8 committed to staying below the site-specific water  
9 quality objectives. You know, I think we demonstrated  
10 yesterday that we've got the steps in place that will -  
11 - will, you know, a time line to get us to where --  
12 where we want to go.

13 I -- I don't think, honestly, it's  
14 realistic to -- to look at scenarios where we -- where  
15 there's absolutely no mitigation that's put into place.  
16 We may not have the details of that figured out, but --  
17 but we -- we realize, even with the -- the information  
18 we provided yesterday, that if we exceed a certain  
19 site-specific water quality objective in the lake, we  
20 should be concerned. Not necessarily over a short  
21 term, but -- but we wouldn't -- we wouldn't want that  
22 to persist over the long term.

23 So I just want to re-emphasize that --  
24 that we -- we do have the steps in place to make sure  
25 that we will not achieve the site-specific water

1 quality objectives that we propose, either the six  
2 eighty-four (684) that we propose for TDS yesterday or  
3 the chloride site-specific water quality objective, or  
4 a combination of both, or -- or any that are based on  
5 new evidence that we provide.

6 MR. SEAN WHITAKER: Sean Whitaker,  
7 Environment and Natural Resources. So would De Beers  
8 be satisfied, if that became the measure, that  
9 mitigation would have to be in place so that you did  
10 not reach the SSW -- did not exceed the SSWQO? Like,  
11 if we were -- were to remove the three fifty (350) and  
12 say -- give you a -- like, not put a number, but  
13 mitigation must be met to achieve the SSWQOs for site,  
14 would that be something that De Beers would consider  
15 appropriate?

16 Because we don't want to not have  
17 anything and then it exceed. So if that's what you're  
18 looking at and you're committing to it, would that be  
19 an appropriate measure from the CEA? So I'm just  
20 trying to figure out where we're going down the road.  
21 This is where this line of questioning is coming from.

22 MS. ERICA BONHOMME: Erica Bonhomme.  
23 So two (2) points for the Board to consider, I think,  
24 on that. One (1) is: Is the site-specific water  
25 quality objective appropriate? Is there flexibility to

1 change that water quality objective with new evidence?

2 And the second is that, you know, is --  
3 is it necessary to require De Beers to provide  
4 mitigation if there is an -- an associated EQC that is  
5 -- becomes a compliance limit. Obviously, if we have a  
6 compliance limit, we have to meet that limit.

7 MR. SEAN WHITAKER: Sean Whitaker,  
8 Environment and Natural Resources. So then if the  
9 SSWQO that was presented by Golder yesterday, the  
10 maximum that was allowed would be a thousand. So --  
11 but are we actually assessing a thousand instead of the  
12 six eighty-four (684), or are we assessing the six  
13 eighty-four (684) number right now? And then we're not  
14 going to be in the future moving the goalpost.

15 MS. ERICA BONHOMME: Erica Bonhomme.  
16 The proposal before the Board right now is a site-  
17 specific water quality objective for TDS, let's be  
18 clear, of -- of six eighty-four (684), with an  
19 associated EQC AML of six eighty-four (684). That is  
20 our proposal -- proposal before the Board right now.

21 We did, in response to some requests, do  
22 additional studies. The additional studies, if nothing  
23 else, confirm that six eighty-four (684) is protective,  
24 you know. The fact that we can use the geometric mean  
25 to obtain a different site-specific water quality



1 objective, I think, is something that we should be  
2 allowed to present and have taken into consideration in  
3 the regulatory process. But truth is, we believe that  
4 the evidence supports our proposal, which is that a  
5 site-specific water quality objective of six eighty-  
6 four (684).

7 DR. KATHY RACHER: Kathy Racher for the  
8 Board. I just wanted to add a comment here that when  
9 you're thinking about how to present, you know, what --  
10 what you want for the -- for MVEIRB, for example, and  
11 then eventually the Land and Water Board, the whole  
12 idea of the -- the numbers thing, you know, we've --  
13 we've kind of run into a snag there. And -- and we're  
14 not sure that that's the right way to go.

15 And I would point out that although, you  
16 know, De Beers may in future come back and say, We have  
17 additional evidence that water quality objective could  
18 be higher; someone else could come back and say, We  
19 have additional evidence that water quality objective  
20 should be lower.

21 And having a number in the EA kind of,  
22 you know, if it's -- if it's high -- if it turns out  
23 that it's -- the numbers actually really should be  
24 lower, having it in the EA say, You can go up to this  
25 point, is kind of like -- it can be dangerous. So it -

1 - it works -- it cuts both ways.

2                   So just in your recommendations, you'll  
3 have to be a little creative about how we can ensure  
4 the protection of Snap Lake that everybody wants and --  
5 and, you know, or whatever mitigations are necessary to  
6 -- to ensure that protection without hamstringing us  
7 either way in the future.

8                   MR. SEAN WHITAKER:   Sean Whitaker,  
9 Environment and Natural Resources. Thank you, Kathy.  
10 I do appreciate that. And that's where I was coming,  
11 where if we're going to have the measure of mitigation,  
12 if that becomes the measure, that could be -- remove a  
13 number. And that's where I'm coming from with that.

14                   And that's just for -- we -- we have no  
15 set on what we're going to do. This is -- we're -- I'm  
16 just discussing it in terms of the technical piece of  
17 this, just trying to figure it out so when we go back  
18 and do write our technical intervention, we have  
19 something to go on. So this is where this is coming  
20 from.

21                   I have more questions, but if you guys  
22 want to respond in anything, feel free. And I -- or I  
23 could keep going, like Nathen normally does.

24                   DR. KATHY RACHER:   We'd -- Kathy  
25 Racher, for the Board. We don't you to get in any --

1 into any bad habits, tall or not. I think Peter has a  
2 response, and then -- and then we'll go back to your  
3 questions.

4 DR. PETER CHAPMAN: Hi, Sean. Peter  
5 Chapman here. Yeah, I just wanted to hold you up a  
6 little bit. What the heck. Just a point of  
7 clarification, just to remind you, I certainly agree  
8 that chloride is a substance of concern. But just to  
9 remind you that while we did develop a site-specific  
10 water quality objective for chloride, we also tested  
11 TDS including chloride. So it was a whole thing up to  
12 a fairly high level with -- aside from, you know, the  
13 daphnids -- no effects at very high levels. So you  
14 need to consider that as well.

15 MR. SEAN WHITAKER: Sean Whitaker,  
16 Environment and Natural Resources. I do appreciate  
17 that, but in some of the references I will be  
18 providing, there has been instances, especially because  
19 the assimilative capacity of Snap Lake, if unmitigated,  
20 is reached, you would be discharging chlorides into  
21 downstream environment. And that poten -- there is  
22 evidence that chloride can affect certain marshen --  
23 marsh wetlands and cause significant adverse effects.

24 So if we start discharging from Snap  
25 Lake -- if we consider Snap Lake as entirely affected,

1 or a new unmitigated, it becomes a number that's quite  
2 high. You're essentially discharging from Snap Lake's  
3 outlet into the receiving environment. And that's sort  
4 -- what we obviously want to avoid, everybody. And I  
5 appreciate the Proponent wants to mitigate and -- and  
6 everything.

7 But if -- on the unmitigated scenario,  
8 we would be discharging. And chlorides can affect  
9 things like cat and loon tails (phonetic). There's a  
10 whole bunch of studies done on chloride. And if 48  
11 percent of all of Snap Lake is chlorides, which is  
12 what's been shown in the mine effluent. And if you --  
13 I'm just -- rough math, that is potentially a concern  
14 later on in the future. So that's where -- especially  
15 at 2029. That's -- I'm thinking at 2029, and an  
16 unmitigated scenario. So that's where this is coming  
17 from.

18 MS. ERICA BONHOMME: Erica Bonhomme.  
19 Let me just -- let me just, I think, summarize what I -  
20 - what I've heard around the table here today. You  
21 know, from -- from our perspective, De Beers will meet  
22 a site-specific water quality objective that we hope  
23 will be determined by the Board.

24 MR. SEAN WHITAKER: Sean Whitaker,  
25 Environment and Natural Resources. Yes, thank you.

1 And I -- I -- we'll -- we'll discuss the -- what that  
2 number will be, but that -- I get that. And if anyone  
3 else wants to chime in, I have other questions, but I  
4 can wait.

5 DR. KATHY RACHER: Kathy Racher, for  
6 the Board. I think you should go ahead with the other  
7 questions.

8 MR. SEAN WHITAKER: Sean Whitaker,  
9 Environment and Natural Resources. Could we go on to  
10 slide 14? I'm going to zero in on that a little. It's  
11 ENR's position that we would like to retain the metals,  
12 especially the MMER metals that you're proposing to  
13 remove: arsenic, copper, nickel, lead, zinc. Those are  
14 -- it's a regulatory instrument.

15 And our position is it's not an extra  
16 additive cost for the Proponent, for De Beers. You do  
17 have to do that analysis through your ICPMS analysis  
18 for metals. That data exists. So our position is that  
19 we would like to retain those numbers at those EQCs and  
20 possibly add additional EQCs based on our position. I  
21 -- I'm not going to give you which ones, because I  
22 don't know off the top of my head.

23 But our position was you have that data.  
24 It provides a regulatory instrument. And I appreciate  
25 you may never reach it, but there's no harm in

1 reporting the data. And if you do become part of the  
2 MMER which is proposed, you'll have to retain those  
3 numbers anyway. And we pro -- appreciate to continue  
4 to have that data available as a trend analysis, if not  
5 anything else.

6 MS. ERICA BONHOMME: Erica Bonhomme.  
7 We do monitor and report on those numbers. We have no  
8 intention of discontinuing that. We currently monitor  
9 every six (6) days. We test those numbers every six  
10 (6) days at the SNP stations. The only thing we would  
11 suggest is that we might reduce the frequency of that  
12 monitoring, given how low some of those numbers are.  
13 That we would -- we -- we would continue to monitor and  
14 continue to report, but a -- a lesser frequency.

15 MR. SEAN WHITAKER: Sean Whitaker,  
16 Environment and Natural Resources. But you're going to  
17 have to retain aluminum anyway. So it's just a matter  
18 of a couple extra graphs, like I believe it would be  
19 five (5) extra graphs in reporting that number.

20

21 (BRIEF PAUSE)

22

23 MS. ERICA BONHOMME: Erica Bonhomme.  
24 Yeah, again, you know, we -- we don't have any  
25 intention of discontinuing monitoring whatsoever. We -

1 - we just think it would be helpful to, you know, to  
2 reduce the frequency of that, given that.

3                   You know, we still would respond if we -  
4 - everyone would have the information available,  
5 including ourselves, including the regulators,  
6 including everyone who -- who reads the SNP reports, to  
7 review the results of those and raise any alarms,  
8 should we - should we have any -- any higher-than-  
9 expected values. Again, but rather than monitoring  
10 every six (6) days for all of the metals, we would like  
11 to reduce that to monthly.

12                   MR. SEAN WHITAKER: Sean Whitaker,  
13 Environment and Natural Resources. Does that include  
14 aluminum as well? Or is that all parameters that  
15 you're providing the EQCs for?

16                   MS. ERICA BONHOMME: Correct. Erica  
17 Bonhomme. Correct. It includes aluminum.

18                   MR. SEAN WHITAKER: Sean Whitaker,  
19 Environment and Natural Resources. We'll agree to  
20 disagree, just in terms of a regulatory instrument.  
21 But we'll -- well, I won't continue on that line of  
22 questioning, but thank you. I don't really have  
23 anything else, so I'll let -- open it up to the floor.  
24 I'll go...

25                   DR. KATHY RACHER: Kathy Racher, for

1 the Board. It's Todd's turn. Go ahead.

2 MR. TODD SLACK: Thanks, Kathy. Todd,  
3 with the Yellowknives. I'm just wondering for that  
4 last slide, slide 11, the assimilative capacity of Snap  
5 Lake.

6 If this is not going to happen, can we  
7 see what is going to happen, should mitigation be  
8 successful? Can the project provide that, a -- a graph  
9 that shows the buffering capacity?

10

11 (BRIEF PAUSE)

12

13 DR. KATHY RACHER: Kathy Racher, for  
14 the Board. I guess my understanding of this particular  
15 graph, since it's generic, is that this -- this won't  
16 change because this is based on volume of discharge.  
17 But the concentrations that -- of -- of the individual  
18 parameters that this represents will be different  
19 because the concentration coming out the end-of-pipe  
20 would be different, so. That's my understanding, if  
21 that...

22 MS. TASHA HALL: That's correct, Kathy.  
23 Tasha Hall, with Golder.

24 MR. TODD SLACK: Todd Slack, with the  
25 Yellowknives. What? I thought this was the six-eighty



1 (680) -- this was the uncontrolled TDS assimilative  
2 capacity of Snap Lake, which isn't going to happen. So  
3 in my mind, what I'm understanding is there should be a  
4 squiggly line underneath this one (1) that represents  
5 the six eighty-four (684).

6 That -- if you can straighten me out and  
7 explain why that's not what we're looking at, that  
8 would be great.

9 MS. ALISON SNOW: Alison Snow, from  
10 Golder. So this figure does not depend on the  
11 concentration of any constituents that are discharged  
12 to Snap Lake. So what this figure depends on is just  
13 the volume of effluent that is discharged. So in this  
14 case, under the lower bound scenario, the treated  
15 effluent discharge approaches almost 60,000 cubic  
16 metres per day. So that's what this figure depends on.

17 DR. KATHY RACHER: Kathy Racher, for  
18 the Board. So this is just an aid of -- of calculating  
19 what an EQC would have to be to keep the -- the water  
20 quality objective below a certain level. The diagrams  
21 we saw yesterday which had the concentration of TDS on  
22 one (1) side versus -- this isn't a concentration on --  
23 on the 'X' -- on the Y-axis. So that's the -- that's  
24 the problem there.

25 MR. TODD SLACK: Okay. I

1 misunderstood.

2 DR. KATHY RACHER: Kathy Racher, for  
3 the Board. I -- I think when we go through the  
4 supplemental material later, we'll go -- we'll revisit  
5 the graphs. Will we with -- or -- that you -- we had a  
6 cup -- we had a -- it was yesterday that you went  
7 through some of the supplemental information with the -  
8 - what -- what the concentration of TDS would be if the  
9 -- in the lake if the EQC were held at six eighty-four  
10 (684). And maybe that's what Todd is referring to.

11 MS. ERICA BONHOMME: Yeah, correct. So  
12 as we -- we showed yesterday from the modelling, the  
13 unmitigated graphs and then followed that with the  
14 modelling as it -- as if there were mitigation in place  
15 to attain the site-specific water quality objective.

16 Do you want to pull those up now?

17 MR. SEAN WHITAKER: Sean Whitaker,  
18 Environment and Natural Resources. I'm just going to  
19 add into this.

20 So when -- Todd, what I was talking  
21 about was a mass perspective. So if you thought of the  
22 assimilative capacity, if De Beers was sending a  
23 hundred percent mass of something out, and then if you  
24 were to mitigate it you would cut that down by the  
25 percentage that it was mitigated by. So you'd have

1 more assimilative capacity remaining on a mass  
2 perspective. So you wouldn't be increasing the  
3 concentration as high. You would have more capacity  
4 before you reached the total mixed volume of Snap Lake.

5

6 (BRIEF PAUSE)

7

8 DR. KATHY RACHER: Thanks, Sean. Kathy  
9 Racher, for the Board. Maybe we'll go to the phones at  
10 the moment.

11 Anita, do you have any questions at this  
12 time?

13 MS. ANITA LI: I do have a couple of  
14 questions. On page -- oh, sorry, slide -- Anita Li,  
15 from Environment Canada. Slide 12, you indicated that  
16 you had -- you would like an MDL of 1,003 milligrams  
17 per litre.

18 How often do you expect your effluent to  
19 reach that level?

20

21 (BRIEF PAUSE)

22

23 MS. ERICA BONHOMME: Erica Bonhomme.  
24 Again, I -- I -- we're just pulling some data to just  
25 show what our -- what our historical MDLs have been.

1 (BRIEF PAUSE)

2

3 MS. ERICA BONHOMME: Okay. So I've  
4 just got the -- all the data plotted. Oh, Erica  
5 Bonhomme.

6

7 (BRIEF PAUSE)

8

9 MS. ERICA BONHOMME: So my colleagues  
10 tell me -- Erica Bonhomme -- that the highest MDL we've  
11 had is around nine forty-one (941) -- not 'around';  
12 nine forty-one (941), that's pretty specific. And  
13 again, you know, the -- those values, you know, do go -  
14 - do go up and down, but that's, in the last year, the  
15 highest value we've had.

16 MS. ANITA LI: Anita Li from  
17 Environment Canada. Thank you. But of those data, how  
18 many goes above the six eighty-four (684)? Just a  
19 rough percentage.

20 MS. ERICA BONHOMME: Erica Bonhomme. I  
21 -- I don't think I have that number to offer you, but  
22 we do measure on a -- on a monthly average basis. So  
23 our -- our monthly average does not go above six  
24 eighty-four (684). To give you a count of how many are  
25 above that value and how many are below that value I

1 can't provide that number to you right now.

2 MS. ANITA LI: Okay. I would  
3 appreciate -- Anita Li, from Environment Canada -- I  
4 would really like to see how many times it goes above  
5 the six eighty-four (684).

6 I understand you measure -- you monitor  
7 every six (6) days, right? You take measurements every  
8 six (6) days? So it -- I would appreciate seeing how  
9 many times you go over the six eighty-four (684)  
10 currently.

11 MS. ERICA BONHOMME: Erica Bonhomme.  
12 That information is -- is in our SNP reports that we  
13 provide monthly to the Board. So I'm just trying to  
14 get some clarification if there's something else that  
15 we don't currently report on that you're looking for.

16 MS. ANITA LI: No. An -- Anita Li,  
17 from Environment Canada. Thank you. I just don't have  
18 copies of those reports, so I'd be interested in seeing  
19 those reports. I'll talk with Sarah-Lacey to see if I  
20 can get them.

21 DR. KATHY RACHER: Kathy --

22 MS. ANITA LI: Another question I have  
23 --

24 DR. KATHY RACHER: -- sorry, Anita,  
25 just a point of clarification on that. What kind of

1 time period were you looking to see Like, if you were  
2 looking for a trend over time for those numbers, what -  
3 - like a -- a year's worth of data?

4 MS. ANITA LI: A year or two (2) worth  
5 of data. That would be nice.

6 DR. KATHY RACHER: Kathy Racher, for  
7 the Board. I can't remember in your SNP if that's a  
8 regular requirement in the SNP is a -- is a running  
9 average or running -- running assessment of trend over  
10 a year.

11 MS. ALEX HOOD: So it's actually  
12 summarized -- oh, sorry. Alex Hood, for De Beers.  
13 It's actually summarized, Anita Li, in the 2013 water  
14 licence annual report, which has a table. And I just  
15 did a quick count, and there's been twelve (12) times  
16 we've gone over six eighty-four (684) in the last year.  
17 And that's on the six (6) day samples, not the average.

18 MS. ANITA LI: Anita Li, from  
19 Environment Canada. Thank you. Another question I  
20 have is-- so you're asking for a site-specific water  
21 quality objective of 684 milligrams per litre.

22 And you did the back calculation to get  
23 the AML of 684 milligrams per litre as well?

24 MS. TASHA HALL: That is correct,  
25 Anita.

1 MS. ANITA LI: Right. So if that --

2 MS. TASHA HALL: Tasha Hall, with  
3 Golder Associates.

4 MS. ANITA LI: Anita Li, from  
5 Environment Canada. So does that indicate that there  
6 are actually no assimilative capacity?

7 MS. TASHA HALL: Tasha Hall, with  
8 Golder Associates. To be on the conservative side,  
9 yes, it means late in operations there's not much  
10 assimilative capacity for the lake if you -- if you  
11 discharged over six eighty-four (684).

12 MS. ANITA LI: So in essence the --  
13 Anita Li, from Environment Canada. In essence then,  
14 Snap Lake then becomes more or less a part of the  
15 treatment system of De Beers.

16 Is -- is that not correct?

17 MS. ERICA BONHOMME: Erica Bonhomme.  
18 Sorry, we -- we're -- I see some puzzled faces around  
19 the table here. Maybe, Anita, could you repeat that  
20 question in a -- maybe in a different way?

21 MS. ANITA LI: I -- I was just saying  
22 if the assimilative capacity -- sorry, if the site-  
23 specific water quality objective of six eighty-four  
24 (684) in the lake is the same as the end-of-pipe  
25 discharge number, would -- that would show no

1 assimilative capacity in the lake. So in a way it's  
2 more of just a discharging pond for De Beers. There's  
3 no dilution any more in this pond.

4 So it's sort of become just part of your  
5 operation, does it not?

6 MS. ERICA BONHOMME: Erica Bonhomme.

7 Well, I -- I guess I'd go back a little bit to the  
8 graphs we -- we provided yesterday. It doesn't -- the  
9 level doesn't in fact level off at six eighty-four  
10 (684). The lake doesn't achieve six eighty-four (684).

11 As the -- as the values go up and down  
12 throughout the year, there may be times of the year  
13 during the under-ice period where -- where we come  
14 close to that six eighty-four (684). But at different  
15 times of the year, there's -- there's a -- a recharge  
16 into the lake that -- that causes -- and -- and during  
17 the ice-free period which causes those levels to go  
18 down.

19 MS. ANITA LI: Anita Li, from  
20 Environment Canada. Okay. Then -- okay. I'll leave  
21 it at that. I just want to share with the Board that  
22 I'm based in Ontario, so we also have a diamond mine  
23 here in Ontario, the Victor Diamond Mine. And what we  
24 notice is that the chloride concentration has increased  
25 annually to the point where it's currently at over



1 1,000 milligrams per litre. So I just want to mention  
2 that to the Board. I'll leave it -- I'll leave my  
3 questions at that for now. Thank you.

4 DR. KATHY RACHER: Kathy Racher, for  
5 the Board. Thank you, Anita. And so any -- any  
6 relevant information or any relationship to -- of that  
7 to the -- the present case, it would be good to see in  
8 Environment Canada's technical report.

9 Econometrics, Don or Ian, do you have any  
10 questions for De Beers?

11 MR. IAN COLLINS: This is Ian Collins,  
12 from EcoMetrix. My first question is based on slide 6.

13 Tasha, when you -- you presented this  
14 slide, you indicated that there may be six (6) samples  
15 collected over the thirty (30) day period, which would  
16 go -- be averaged to compare to the AML. I just wanted  
17 to clarify.

18 In the derivation of the AML in the --  
19 the effluent quality criteria report that you  
20 presented, in the derivation itself you assumed that  
21 there would be four (4) samples that went into each  
22 average.

23 Are you planning to -- to still use the  
24 four (4) -- a four (4) sample running average rather  
25 than a six (6), or -- can you clarify that, please?

1 (BRIEF PAUSE)

2

3 MS. TASHA HALL: Tasha Hall, with  
4 Golder Associates. So I think it's a matter of -- of  
5 timing, like if you were to get four (4) samples  
6 starting on the first of the month versus every six (6)  
7 days. But truthfully, we didn't test if we were to  
8 play with that parameter at all over the averaging  
9 period. So...

10

11 (BRIEF PAUSE)

12

13 MS. TASHA HALL: Tasha Hall, with  
14 Golder Associates. If you increase it, the EQC goes  
15 higher. So we're being conservative by using the value  
16 of four (4).

17 MR. IAN COLLINS: Ian Collins, from  
18 EcoMetrix. Okay. My -- my interest was just purely in  
19 if the -- if you were going to be -- keep to the -- the  
20 strict definition of the AML. I am aware that the four  
21 (4) is a default input to that equation, but that  
22 answered my question.

23 I also have two (2) more questions, and  
24 I have to -- to maybe apologize in advance for this,  
25 but they get into the details of the map. So I -- I'm

1 not sure if -- if you want to answer them now or maybe  
2 provide answers later, but I -- I do -- would like some  
3 -- some clarification a couple of places.

4 The first is to do, in your EQC report,  
5 with Appendix 1. I've -- I've taken the liberty of --  
6 of going through your report and -- and doing some  
7 verification of the calculations. And I'm curious to  
8 know in Appendix 1 of your report, where you present  
9 several tables of possible MDLs and AMLs according to  
10 hardness of Snap -- in Snap Lake.

11 I'm curious to know how those  
12 calculations were done.

13 MS. TASHA HALL: Tasha Hall, with  
14 Golder Associates. Just give us one (1) moment while  
15 we pull the report and the -- that appendix.

16 MR. IAN COLLINS: Ian Collins. Thanks.

17

18 (BRIEF PAUSE)

19

20 MS. TASHA HALL: It's Tasha Hall --  
21 sorry.

22

23 (BRIEF PAUSE)

24

25 MS. TASHA HALL: Tasha Hall, with

1 Golder Associates. So we have it up, if you want to  
2 ask a specific question --

3 MR. IAN COLLINS: Sure, I can --

4 MS. TASHA HALL: -- we're happy to try  
5 and answer it now, and if we can't, we'll get back to  
6 you.

7 MR. IAN COLLINS: Okay. Ian Collins  
8 here. Thank you. More specifically then, in each of  
9 these tables, I was able to verify the line that you  
10 had highlighted, because you had the -- the selected  
11 inputs that you used to derive the final MDL and AML  
12 highlighted on those tables.

13 I was able to derive the lines that you  
14 highlighted. I don't know exactly what you varied in  
15 order to look at the other MDLs and AMLs in the table.

16 So my specific question is: What was  
17 the parameter that you varied in order to -- to get  
18 these results?

19 MS. TASHA HALL: Tasha Hall, with  
20 Golder Associates. So we have a plot from the  
21 modelling that varies where hardness is correlated with  
22 the proportion of treated effluent. So we essentially  
23 pull the hardness values from that plot and then  
24 calculate at the various -- and I don't believe that  
25 that plot is...

1

2

(BRIEF PAUSE)

3

4

MS. TASHA HALL: The plot might be  
there but the equation isn't, so that's how we  
calculate that.

7

MR. IAN COLLINS: Ian Collins. Thank  
you for -- for clarifying that. I have -- or if -- if  
we could turn maybe -- do you have a table for  
sulphate? I -- I believe it's Table I -- or I-3.

11

My confusion largely lies in the fact  
that you have -- and you have basically two (2) AEMP  
benchmarks listed in the table. You have a three-o-  
nine (309) and four twenty-nine (429). As I see it,  
the calculation of the MDL and AML depends on that  
benchmark.

17

If you only have two (2) benchmarks in  
the table, how are you getting completely different  
MDLs and AMLs out of that calculation?

20

MS. TASHA HALL: Tasha Hall, with  
Golder Associates. So the AEMP benchmarks that are  
provided are from BCMOE, which says at a certain  
hardness level, the AEMP benchmark would be three  
hundred and nine (309), and then at the next grouping  
of hardness, it's four hundred and twenty-nine (429).

1 So it's not as linear as some of the other ones.

2 So this is basically a sensitivity test  
3 to just find out at what hardness the most restrictive  
4 AEM -- the most restrictive EQC would be calculated.

5 So if the proportion of treated effluent  
6 is low and the hardness is low and the AEMP benchmark  
7 is low, would that provide the most restrictive case?  
8 Or would it be when the proportion of effluent is high  
9 and the AEMP benchmark is high?

10 And then from that test, reading from  
11 the hardnesses on Figure A-2, that's where we pulled  
12 the hardness values from, from that, that's what  
13 becomes the AML and DML.

14 MR. IAN COLLINS: Okay. Ian Collins  
15 here. I -- I appreciate that, but I don't see how the  
16 hardness plays into the actual calculation, because the  
17 formulas that you presented that take the reader from  
18 the -- the SSWQO, or the benchmark, all the way through  
19 to MDL and AML do not have a term in there for  
20 hardness. So that -- that's my question.

21 I suppose I could rephrase it as: What  
22 -- what parameter are you varying, if not the AEMP  
23 benchmark, in those equations in order to generate  
24 these MDLs and AMLs?

25 DR. KATHY RACHER: Kathy -- Kathy

1 Racher, for the Board. I'm wondering if you could  
2 provide like a -- even an Excel spreadsheet of one (1)  
3 of those, and then, you know, geeky scientists like us  
4 could actually look through and -- and follow what --  
5 what things varied?

6 Ian, would that be helpful if they could  
7 do that?

8 MR. IAN COLLINS: Ian Collins. That  
9 would be very helpful. Thank you.

10 MS. TASHA HALL: Tasha Hall, with  
11 Golder Associates. Absolutely, yeah, we'll provide  
12 that for you.

13 MS. ERICA BONHOMME: Erica Bonhomme.  
14 Just so I'm clear of what we've committed to. So we're  
15 providing a spreadsheet of all the calculations that  
16 were pro -- were -- were -- that were used to develop  
17 the results of Appendix A-1 in the EQC report. Right?  
18 Everyone agrees to that?

19 DR. KATHY RACHER: I believe so. Ian,  
20 is that to your understanding?

21 MR. IAN COLLINS: Ian Collins. Yes.  
22 Thank you. That would be very helpful.

23

24 --- INFORMATION REQUEST NO. 15: De Beers to provide a  
25 spreadsheet of all

1 the calculations that  
2 were used to develop  
3 the results of  
4 Appendix A-1 in the  
5 EQC report  
6

7 DR. KATHY RACHER: Great. Ian, do you  
8 have some other questions?

9 MR. IAN COLLINS: Ian Collins. I have  
10 one (1) more. And again, I apologize for the -- the --  
11 if this goes needlessly mathematical. It's to do with  
12 this dilution factor quantity in the EQC report. What  
13 I'm basically looking for is some more information on -  
14 - on its definition, and I'll -- I'll give the reason  
15 why.

16 When you derived the waste load  
17 allocation in the EQC report, you assumed steady-state  
18 conditions, and you've identified that those are the  
19 worst possible case conditions, which -- which I  
20 appreciate. The par -- other parameters that you put  
21 into these equations all appear to be based on these  
22 worst-case conditions except for the dilution factor,  
23 which appears to be based on current conditions.

24 You present an argument about using a  
25 dilution factor of twelve (12), based on ice-covered



1 conditions in 2012 and 2013. So I -- actually I'm --  
2 I'm just a little bit confused, that's all, about --  
3 about the actual definition of the dilution factor,  
4 because as we've seen from -- what slide was it --  
5 slide 11, with the assimilative capacity of Snap Lake,  
6 a dilution factor taking twelve (12) volumes of clean  
7 water for every volume of affluent doesn't seem, you  
8 know, intuitively likely once the system reaches steady  
9 state in the -- in the 2020s.

10                   So to that effect, I'm specifically  
11 interested in knowing if this dilution factor is based  
12 on clean water -- quote/unquote, "clean water." So  
13 lake water that has not -- that has not been impacted.  
14 Or is the dilution factor defined strictly  
15 hydrodynamically, in terms of volumes of lake water, no  
16 matter what the concentrations are in it, being mixed  
17 with effluent? If that's clear.

18                   MS. TASHA HALL: Tasha Hall, with  
19 Golder Associates. So far there's been lots of  
20 questions on dilution factor, and we've provided quite  
21 a lot of information. I'll refer you to the Mackenzie  
22 Valley Land and Water Board IR response number 3 in  
23 particular, and to the derivation in Mackenzie Valley  
24 Land and Water Board number 9.

25                   If that still doesn't provide the

1 information that you have -- particularly, we adjusted  
2 the dilution factors to a range outside of twelve (12)  
3 just to see what effect that would have on the EQC,  
4 because we do recognize that there is some uncertainty  
5 around the dilution factor. And that is highlighted  
6 and -- and recognized in the report.

7                   There is a plume characterization study  
8 planned for the spring to try to revise those, but the  
9 effect of playing with that dilution factor really  
10 doesn't have that notable of an effect on the EQCs  
11 themselves. It's really that point nine (.9)  
12 proportion of lake that's the largest driver of -- of  
13 developing those.

14                   DR. KATHY RACHER: Kathy Racher, for  
15 the Board. When you're talking about those IR  
16 requests, which -- which ones -- from -- from this  
17 process that you've provided that information? Okay, I  
18 just wanted to be clear. IR 3 and 9.

19

20                   (BRIEF PAUSE)

21

22                   DR. KATHY RACHER: Oh, review comments  
23 --

24                   MS. TASHA HALL: Response to --

25                   DR. KATHY RACHER: -- okay.

1 MS. TASHA HALL: -- review comments.

2 DR. KATHY RACHER: Sorry --

3 MS. TASHA HALL: Sorry, I called them --

4 DR. KATHY RACHER: -- I got confused.

5 MS. TASHA HALL: -- the wrong thing.

6 Yeah.

7 DR. KATHY RACHER: Okay.

8 MS. TASHA HALL: Sorry. Ian, do you  
9 have anything to follow up?

10 MR. IAN COLLINS: Ian Collins. Thanks  
11 -- thanks for the response there. I'm -- I'm mostly  
12 interested in -- in the -- the applicability and  
13 correctness of the approach, which is why -- which is  
14 why I bring it up at this time. I will certainly go  
15 back to those -- those responses and -- and read them  
16 over again and -- and check to see if -- if my question  
17 is answered there.

18 MS. TASHA HALL: Tasha Hall, with  
19 Golder. Thank you very much for going through it so  
20 thoroughly. We appreciate the -- the comments on the  
21 approach.

22 DR. KATHY RACHER: Kathy Racher, for  
23 the Board. Any more questions from -- from Ian at this  
24 time?

25 MR. IAN COLLINS: Ian Collins. No,

1 thanks. That's it.

2 DR. KATHY RACHER: Do you mind, Todd,  
3 if we take a break? I have a -- I have a follow-up --  
4 unless it's -- it follows up directly? Okay, go ahead,  
5 Todd.

6 MR. TODD SLACK: Todd with the  
7 Yellowknives. I'm just wondering if Ian can make -- or  
8 commit to putting a response somewhere public on the  
9 record as to what happens there? It's just relevant  
10 for another process, as well.

11 DR. KATHY RACHER: Kathy Racher, for  
12 the Board. So -- so the -- EcoMetrix will be providing  
13 a report on May 8th, I believe, so I -- I expect that  
14 there'll be a -- there'll be a discussion in there on  
15 that.

16 Am -- am I -- am I correct on that, Ian?

17 MR. IAN COLLINS: Ian Collins. Yes,  
18 that's correct.

19 DR. KATHY RACHER: Okay. Kathy Racher,  
20 for the Board. So that'll be publically available for  
21 you. Okay. I have another question for you, but let's  
22 take a break right now. And -- since everyone's been  
23 so well behaved, I'll give you fifteen (15) minutes.  
24 If people have -- if you talk among -- amongst  
25 yourselves on the break and have more questions on the

1 EQC report, that -- that'll be fine. So we'll come  
2 back at -- in fifteen (15) minutes, at five (5) minutes  
3 to 11:00.

4

5 --- Upon recessing at 10:40 a.m.

6 --- Upon resuming at 10:55 a.m.

7

8 DR. KATHY RACHER: Okay, everyone. If  
9 -- oh, Erica says one (1) minute, and I have a question  
10 I...

11

12 (BRIEF PAUSE)

13

14 DR. KATHY RACHER: Kathy -- Kathy  
15 Racher, for the Board. So I just have a question on  
16 nitrite EQC. I -- I just didn't quite understand how  
17 the nitrite EQC came out so high. So it came -- I  
18 mean, when you did the water quality based one, it came  
19 out at one point four (1.4). And I think you -- your  
20 proposed EQC is lower than that, but still double what  
21 it has been in the past.

22 And I -- I just wasn't sure, like the --  
23 the one point four (1.4), that's -- that's quite a big  
24 dilution to get down to the water quality objective of  
25 point zero-six (.06), and I didn't see a lot of

1 information about the modelling. I assume there's some  
2 decay factor in there somewhere.

3 If you could describe that a little  
4 better, that -- I would appreciate it.

5

6 (BRIEF PAUSE)

7

8 MS. TASHA HALL: Tasha Hall, with  
9 Golder Associates. So the equation difference is  
10 outlined in the report, but it's basically because  
11 nitrite is treated as a non-conservative parameter.  
12 We've got historical monitoring data to show that. So  
13 it, unlike chloride and sulphite and TDS, is rapidly  
14 converted.

15 We don't actually -- Allison mentioned  
16 that yesterday; we don't have any modelling for  
17 nitrite. It just has never been modelled because it's  
18 a difficult process to model that conversion. So  
19 because it is so rapidly converted, when you back  
20 calculate it, that's what makes it a bit higher.

21 DR. KATHY RACHER: Kathy Racher, for  
22 the Board. Could you just point me in -- in the report  
23 to where that's discussed? I -- I may have missed it.

24

25 (BRIEF PAUSE)

1 DR. KATHY RACHER: Sorry, Kathy Racher,  
2 for the Board. Lindsey just reminded me that maybe it  
3 was in the Nitrogen Response Plan, and that's why I  
4 missed it. I don't know.

5 MS. TASHA HALL: Tasha Hall, with  
6 Golder Associates. So it's equations 5 and 6 on page  
7 2-11 of the draft EQC evaluation report.

8

9 (BRIEF PAUSE)

10

11 DR. KATHY RACHER: Kathy Racher, for  
12 the Board. Okay, that's fine. I'll -- I'll take  
13 another look at that. I -- I missed that in all the  
14 equations. I just missed it.

15 Does anyone have any further questions,  
16 besides Sean? No. Go ahead, Sean.

17 MR. SEAN WHITAKER: Sean Whitaker,  
18 Environment and Natural Resources. This is actually a  
19 question directed to the Board, and it's with respect  
20 to Board policy. It's specifically the water and  
21 effluent quality management policy.

22 And it's ENR's understanding that the  
23 Board policy does not appear to recognize the concept  
24 of using the entire lake as a mixing zone like such  
25 that water quality objectives would only need to be met

1 on or for a lake as a whole, or the whole lake average  
2 concentration would be com -- compared to the SSWQO.  
3 This is for the TDS, the six eighty-four (684) -- six  
4 eighty-four (684), which Anita was mentioning earlier.

5 We understand it's based on the  
6 protective number, but we're just trying to get an  
7 understanding of how the Board policy will apply,  
8 because essentially Snap Lake will be entirely infect -  
9 - affected and that there won't be a mixing zone if the  
10 SSWQO and the EQC are the same.

11 DR. KATHY RACHER: Kathy Racher, for  
12 the Board. I think that during the renewal of the Snap  
13 Lake water licence, the Board kind of recognized that  
14 already, that because -- because there's such -- I  
15 mean, the concentration difference between the edge of  
16 the mixing zone and the outlet of the lake already is  
17 not very -- very big difference between those two (2)  
18 things. So it was kind of recognized.

19 The Board hasn't made an official ruling  
20 either way. The -- the policy is -- is purposely vague  
21 on -- on the mixing zone, and -- and the desire to  
22 minimize it is always there, as it is to -- to minimize  
23 waste. But I think there was just a recognition that  
24 things have gone the way they've gone. They weren't  
25 necessarily predicted to be -- for this situation to



1 occur initially. But it was hard to tell from the  
2 Board's reasons of decision for the initial water  
3 licence of what was intended at the start of the  
4 project anyway.

5                   So again, you know, you basically have  
6 to bring up to -- to the Board what you -- what your  
7 assessment of that is and how the policy might apply.  
8 And -- and the Board will make a decision, recognizing  
9 that we are where we are right now with -- with Snap  
10 Lake.

11                   Okay. Well, not hearing any other  
12 questions, we'll proceed with the next presentation  
13 from De Beers on -- so this will be on the supplemental  
14 information submitted on April 11th.

15                   MS. ERICA BONHOMME:   Erica Bonhomme.  
16 Just before we move on, could we just get clarification  
17 that we added one (1) IR there on providing the  
18 calculations for Appendix 1 of the EQC report? Fifteen  
19 (15)? Thank you.

20

21                   (BRIEF PAUSE)

22

23                   MS. ERICA BONHOMME:   Erica Bonhomme.  
24 I'm just going to introduce Hilary Machtans, from  
25 Golder Associates. She'll be delivering the

1 presentation on the supplemental filing that was  
2 provided on Friday, April 11th. I realize it's a big  
3 submission. However, we -- we recognize that after the  
4 Board had issued its reasons for decision on the scope  
5 of the EA, that this is supplemental information they  
6 need to consider, and which is why it wasn't provided  
7 with the original submission.

8

9 PRESENTATION - ACCIDENTS AND MALFUNCTIONS:

10 MS. HILARY MACHTANS: Hilary Machtans,  
11 from Golder. Thanks, Erica. So just to clarify, the  
12 supplemental filing had a number of attachments and --  
13 of water quality material. So right now, this  
14 presentation is intended just to cover the more EA  
15 specific material. So water quality modelling updates  
16 and downstream lake water quality were provided  
17 yesterday throughout the day, and this is just going to  
18 focus on accidents and malfunctions, cumulative  
19 effects, and alternatives to development.

20 So the regional study area, as was noted  
21 in the response to comments, is -- does include the  
22 whole Lockhart River watershed. So that goes from --  
23 Snap Lake is one (1) of the headwater areas, and it  
24 goes down through MacKay Lake and then down eventually  
25 into Great Slave Lake. So this entire watershed, this

1 is sort of considered the Upper Lockhart and the Lower  
2 Lockhart, is the assessment area. Next slide.

3 Slide 4. So for -- if we're going to  
4 focus on accidents and malfunctions -- and this again  
5 is in relation to Section 117 of the Mackenzie Valley  
6 Resource Management Act, which asks the Proponent to  
7 talk about accidents and malfunctions in relation to  
8 the development.

9 So again, if we're focussing the  
10 development on changes in TDS level and water quality,  
11 we did not perform a -- to what is a more traditional  
12 accident and malfunction assessment of -- you know, of  
13 the risk of -- of a -- the risk of a specific accident  
14 occurring on site.

15 This is an assessment of if an accident  
16 occurs and there's an upset and additional TDS-laden  
17 water is released from the site above a licensed limit.  
18 So that's what we're terming the 'accident'. So the  
19 question is, you know: What -- what effect does this  
20 accident, this release have on the environment? Next.

21 So we've done four (4) sort of generic  
22 steps. Step 1 is to devise the case. What -- what  
23 type of accident or malfunction could occur, and what  
24 might those TDS concentrations look like? Next step is  
25 to say, A priori defined. Well, what would we

1 determine the environment consequence of that release  
2 to be? Step 3 is to then model it. So if there was a  
3 release how does that mix and where does it go, and  
4 what do those concentrations look like? And step 4 is  
5 then to assess the environmental consequence. Next  
6 slide.

7                   So in terms of step 1, we devised eight  
8 (8) cases, if you will, which sounds overwhelming, but  
9 it's not too bad. We have -- we're assuming, let's  
10 say, two (2) types of scenarios. Scenario 1 is we have  
11 an accident in the near term, so let's say within two  
12 (2) -- a couple of years. So it's 2017. So the lake  
13 is not at its assimilative capacity or it's, you know,  
14 midway through. We're not at any change in the TDS  
15 from now. And we have a release.

16                   And then the next -- and we do that at  
17 the upper bound flow and the lower bound flow, since  
18 we're not sure which one may occur. And then we'll do  
19 that again for late operations, when the lake is at --  
20 let's say it is at the site-specific water quality  
21 objective of -- of six (6). Then we will do that. So  
22 we'll -- we picked a year, 2025. Next slide.

23                   So this -- this table is a short summary  
24 of that. So again a scenario in 2017. Upper bound and  
25 lower bound flow. And we chose two (2) concentrations.

1 What if a TDS of one thousand (1,000) was released, or  
2 what if TDS of two thousand (2,000) was released? We  
3 chose one thousand (1,000) again because that's the  
4 maximum daily limit and so kind of leading toward what  
5 Anita was talking about: If -- if -- what if you had  
6 an upset and you stayed at your maximum daily limit for  
7 a while?

8 And so we've -- we've made each scenario  
9 seven (7) days. So we say that it's -- let's say that  
10 it's a full week before whatever changes they make on  
11 operation are -- you know, are effective. So let's say  
12 it's a seven (7) day upset at 1,000 milligrams per  
13 litre.

14 And then another scenario is where it's  
15 2,000 milligrams per litre. And that number came from  
16 the December submission to the Water Board, which was  
17 the maximum predicted concentration of TDS underground  
18 in the combined flow. So that's -- that's what we  
19 think is sort of a real -- a real number. That's what  
20 that was used.

21 And again, those are modelled at the  
22 upper bound and the lower bound in 2017, and then again  
23 in 2020 -- 2025, when there's already more TDS in the  
24 lake. So that was step 1, devising those eight (8)  
25 cases.

1                   Step 2 is to say, Okay, well what would  
2 -- how would we assess the consequence, the  
3 environmental consequence of that upset? And the -- we  
4 went back to sort of the original principles that were  
5 used in the original assessment in 2002 and 2003. And,  
6 so that was based on the percentage of the volume of  
7 the lake. So this plot is just to give you a sense of  
8 where that is. So where would a toxic effect occur  
9 with the release? We assess that by -- by volume.

10                   So if -- if we say 1 percent of the lake  
11 is sort of right -- just around a -- even less than  
12 that around the diffuser, 5 percent is just out, 10  
13 percent gets a little wider, and 20 percent there. So  
14 that's the limit of -- just to give you a flavour of  
15 where the volume is. Next.

16                   So we used the original assessment  
17 criteria. There's no intent for you to read every line  
18 on this table, but just to draw your attention to the  
19 blue across the top. So the criteria are based similar  
20 to what was presented in the '02 EA, and then we  
21 updated it based on the TDS benchmark study numbers,  
22 the site-specific testing.

23                   So in 2002 we assessed environmental  
24 consequence. So is it negligible, low, moderate, or  
25 high? We assessed the portion of the aquatic community

1 affected. So is that fish, is that plankton, is it  
2 other species?

3 The magnitude -- and magnitude at that  
4 time was determined as it's not toxic; it's sublethally  
5 toxic, so affecting a growth or reproduction of an  
6 organism; or it's lethal. And that's the magnitude I'm  
7 just presenting here in this example, sublethal.

8 But the spatial extent, and that's  
9 determined by the -- the volume of the lake. So how  
10 far out does the toxic effect occur, or a potential  
11 toxic effect?

12 Duration; how long does it last? The  
13 original assessment, including -- you know, if it was a  
14 spill it would happen for one (1) day and it's quickly  
15 cleaned up. This is a little bit different because the  
16 durations a little bit longer. So we're looking at the  
17 duration of the toxic effect. So how long until the --  
18 is the organism still facing that effect, and is it  
19 reversible? Next slide.

20 So again, then the third step is now to  
21 actually model this. So the same models as were  
22 presented yesterday were used to -- to calculate this.  
23 So we've used the water quality model to do that. And  
24 remember it's -- again, it's modelled for the seven (7)  
25 day upset, if you will. And it's modelled again at

1 this lower bound flow around the sixty thousand  
2 (60,000), which is what's, sort of, I guess, the  
3 expected case, and then the upper bound flow. Next  
4 slide, please.

5                   So here are the results. So this would  
6 be the -- the low flow case or the base flow case in --  
7 in 2017. So if this happened in the next couple years  
8 and they put out 1,000 milligrams per litre, that's  
9 this blue line here. So this graph, this upper plot is  
10 showing you TDS along the Y-axis by year.

11                   So here's the little -- I know, sorry --  
12 the small blip you can see there is what -- is how that  
13 TDS shows up over time according to the model.

14                   So the red line here is the -- is the  
15 proposed site-specific water quality objective, and  
16 here you can see what's happening.

17                   And then this is focussed in. So this  
18 is just showing those few months in 2017 and what that  
19 would look like. So this blue dotted line is the 1,000  
20 milligrams and the green dotted line is the two  
21 thousand (2,000).

22                   So what this shows is in both cases, we  
23 don't exceed six eighty-four (684), the site-specific  
24 water objective. So that's assumed to be negligible.  
25 It occurs for -- in a very -- for just a couple months.



1 It does not exceed six eighty-four (684) for either one  
2 thousand (1,000) or two thousand (2,000) for seven (7)  
3 days. And so that's -- that's proposed as negligible -  
4 - assessed as negligible. Next slide.

5                   So here again we're in this low flow or  
6 base flow case. And it's 2025, when there is already a  
7 higher TDS in the lake. The same -- same plots. This  
8 is the plot over time; so now we're in year 2025. You  
9 can see there is an exceedance here of the site-  
10 specific water quality objective. And I might add, the  
11 -- the assumption in -- in all of this assessment is  
12 that mitigation is applied. So this is all -- this is  
13 assuming that De Beers has applied mitigation. This is  
14 not assuming an unmitigated case.

15                   So this is -- here again, if -- we're  
16 just focussing in on what's happening. And again, this  
17 is under ice. There's no other dilution going, on for  
18 seven (7) days. Here the 1,000 milligrams per litre,  
19 we do not exceed. You can see it lasts a little while  
20 from April -- it's predicted to last a little while.  
21 It happens at late March, and it sticks around for the  
22 open-water season until it's -- dissipates.

23                   At 2,000 milligrams per litre, you start  
24 -- you -- it exceeds the site-specific water quality  
25 objective. And we -- this plot over here on the left

1 is the volume of the lake. So the -- suggesting -- the  
2 calculation is that 2 percent of the lake, so right  
3 when the upset occurs, 2 percent of the lake, so just a  
4 little bit outside the diffuser, gets the high  
5 concentration of TDS. And that becomes more focussed  
6 just around the diffuser, but you can see it lasts for  
7 a couple of months.

8                   So based on the criteria, that's still  
9 rated as a negligible, because it's a very small area,  
10 short -- relatively short duration, reversible, and the  
11 concentration of TDS is not high relative to what the  
12 benchmark study shows us or when we start to see  
13 effects. Next slide.

14                   So now we're getting into the upper flow  
15 cases, so if -- if flows were higher. And the year is  
16 2017. Same plots. Here we go -- there you can see  
17 again the little blip is showing that's when the upset  
18 occurs.

19                   Here's the close-up. The blue line is  
20 showing us at 1,000 milligrams per litre in the low  
21 flow case. We do not exceed six eighty-four (684). In  
22 the upper flow case we do, so concentrations are  
23 getting towards seven fifty (750). And the volume of  
24 the lake that that occurs right around there again is -  
25 - is about 2 percent of the lake, and then that drops

1 off to about, you know, point -- .1 percent of the  
2 lake. So again, that's rated as negligible for the  
3 same reasons. It's a small volume of the lake. It's  
4 short duration. It's reversible. Next slide, please.

5                   And this is the upper flow case, so that  
6 there are higher flows. And -- and it's 2025. There's  
7 already some TDS in the lake. So here, you can see  
8 it's showing up here. And in this case, both the 1,000  
9 milligrams per litre and the 2,000 milligrams per litre  
10 exceed the site-specific water quality objective.

11                   If you look down here on the volume  
12 plot, so this is just showing you volume of the lake.  
13 At 1,000 milligrams per litre put out in 2025, about --  
14 that shows up in about 2 percent of the lake; so just a  
15 little bit wider than the diffuser area. But at 2,000  
16 milligrams per litre, it's showing up in about 14  
17 percent of the lake, so a por -- a small portion of the  
18 main basin. So we've rated that as a low, because it's  
19 -- it's affecting a large -- a larger portion of the  
20 lake.

21                   So the results are showing us that they  
22 are -- it is -- those two (2) scenarios of upsets at  
23 the flows assuming mitigation is in place. Next --  
24 next -- these are the summaries that you do exceed the  
25 site-specific water quality objective in a number of

1 these cases, but the overall environmental consequence  
2 is -- is relatively low because it does not move very  
3 far out into the lake, nor does it move downstream.

4 Next slide.

5                   So the conclusion is, on the basis again  
6 with the assumptions given, that mitigation is in  
7 place, that this is negligible to low, and that all  
8 those effects that we're seeing those -- because of the  
9 concentrations are hovering around that -- or below or  
10 just above the site-specific water quality objective on  
11 the basis of the updated site-specific TDS studies,  
12 that -- that those effects are restricted to  
13 cladocerans. So there's some effect to a small portion  
14 of the zooplankton community, but no other organisms in  
15 the lake are affected by that, according to this  
16 assessment.

17                   So we're not -- not seeing effects to  
18 fisheries, and we're not seeing acute effects, and it's  
19 all sublethal. So there may be a small amount of an  
20 effect to the reproduction or growth of a few types of  
21 plankton in a small area of the lake. So that is the  
22 basis for saying it is a negligible to low effect, and  
23 it's reversible. Next.

24                   That's the end of the accident and  
25 malfunction assessment. So the cumulative effects

1 assessment has a -- again...

2

3 (BRIEF PAUSE)

4

5 QUESTION PERIOD:

6 DR. KATHY RACHER: Kathy Racher, from  
7 the Board. Although you are clearly on a roll, we've  
8 been -- Allan was just asking if maybe it would be --  
9 because that was a lot of information, maybe we should  
10 stop and just ask for any questions at the moment.  
11 And, there you go.

12 Sean, please...?

13 MR. SEAN WHITAKER: Sean Whitaker,  
14 Environment Natural Resources. I guess my one (1)  
15 question, mostly a comment, it's the same that we just  
16 talked about. Because we don't what the mitigation is,  
17 we don't know what failure that could look like. So  
18 we're -- just want to highlight that there is still an  
19 uncertainty, and we don't know what that mit -- what  
20 miti -- what's going to fail, how is it going to fail,  
21 and what that consequence could be. So I just wanted  
22 to highlight that.

23 MR. TODD SLACK: Todd Slack, with  
24 Yellowknives. I -- I'd like to add onto that. It's a  
25 little dis -- not disturbing, somewhere between

1 concerning and disturbing, that we actually don't have  
2 more information, in terms of the mitigation.  
3 Eventually, it seems like there's going to be some sort  
4 of brine product coming out of this, which may -- may  
5 or may not be very high volumes. In terms of accidents  
6 and malfunctions, you know, what happens then? Just  
7 using this example.

8                   Yeah, if the purpose of this  
9 environmental assessment is to consider the impacts  
10 assoc -- excuse me -- associated with moving away from  
11 this three fifty (350) limit, it seems to me that the  
12 impacts associated with mitigation should be front and  
13 centre within this.

14

15                   (BRIEF PAUSE)

16

17                   MS. ERICA BONHOMME: Erica Bonhomme.  
18 You know, you've seen on our time line that -- that,  
19 you know, we -- we can't, at this time, predict what  
20 our treatment technology will -- will look like. We --  
21 we don't know if -- if there will be, for example,  
22 brine generation.

23                   If we do have a waste -- an additional  
24 waste stream, we will have to make that known and make  
25 sure that we have the approval to trans -- to store,

1 transport, and dispose of that -- of that waste stream.  
2 It may be brine. It may be a combination of brine and  
3 -- and crystal product, or it may just be crystal  
4 product.

5 I think that the Board could look at our  
6 proposal as being unmitigated. But what we've proposed  
7 is a site-specific water quality objective, which we  
8 believe will be protective of aquatic life. And the --  
9 the effects that are being assessed here are in  
10 relation to discharging the water, so that it doesn't  
11 meet that site-specific water quality objective.  
12 That's the proposal under consideration, from our  
13 perspective anyway right now.

14 DR. KATHY RACHER: Kathy Racher, for  
15 the Board. Todd, is there any -- any kind of  
16 Information Request you foresee at this time that would  
17 help you when you're drafting recommendations to the  
18 Board?

19 MR. TODD SLACK: Todd Slack, for the  
20 Yellowknives. No, I don't think that there is, because  
21 the position is we're going to get from here to there  
22 and we don't know how, whether it be by reverse  
23 osmosis, or another -- who knows, magic. We'll decide  
24 that at a later date. It'll be reviewed at a later  
25 date. And we are going to continue to look at these

1 different issues in isolation.

2                   So the response that obviously we'll be  
3 looking at is what measures goes to the Review Board,  
4 or what our recommended measure to the Review Board is,  
5 because it's clear the project wants to treat this as a  
6 six eighty-four (684) issue. We think it should be  
7 seen in a more holistic and integrated fashion and  
8 we'll, I'm sure, try to come up with some ideas.

9

10                   (BRIEF PAUSE)

11

12                   DR. KATHY RACHER: Kathy Racher, for  
13 the Board. Are there additional questions in the room,  
14 or comments? Sean, go ahead.

15                   MR. SEAN WHITAKER: Sean Whitaker,  
16 Environment and Natural Resources. I guess, just to  
17 clarify, it's that parties are trying to assess the  
18 effi -- efficacy -- I can never say that word; I'm  
19 tongue-tied -- of what the mitigation is and how this  
20 is going to affect the project and how it'll be --  
21 impacts will be mitigated, and we just don't. And  
22 that's the problem in our assessment, is how are we  
23 going to assess something we don't know?

24                   And I appreciate that you can't do it  
25 until you have a number, so that -- it -- it's cart



1 before the horse. Or I -- I don't -- I don't know how  
2 to do this one yet. I'm still -- we're still trying to  
3 figure it out. But it's hard to assess this at this  
4 stage.

5 MS. ERICA BONHOMME: Erica Bonhomme. I  
6 mean, I -- I'm just trying to go back to fundamentals  
7 here, which is, you know, we were asked by the Board in  
8 our water licence -- we were required by the Board in  
9 our water licence to put forward recommended site-  
10 specific water quality objectives and EQCs, and we've  
11 done that.

12 In doing so, we have asked that we get  
13 away from one (1) particular way of measuring those  
14 things. We have not -- you know, what -- what we're --  
15 anyway, to boil it back down to that -- that  
16 fundamental issues, we've -- we've provided the  
17 information the Board has required us to provide. And,  
18 you know, we're hoping that the -- the proposal we've  
19 put forward which matches those requirements is what's  
20 under review here.

21 DR. KATHY RACHER: Kathy Racher, for  
22 the Board. Yeah, I would also acknowledge that it's a  
23 bit of a mind-bender in terms of how we assess what in  
24 -- in -- and in what process. And -- and I often, when  
25 looking at the materials, of course, I normally work

1 for the Land and Water Board, so I think, Well, if, you  
2 know, the company was to suggest a new mitigation  
3 during the -- the term of the licence, it wouldn't go  
4 back to EA necessarily. We would just evaluate it in  
5 that context as -- as best we can.

6 And so I think that's something to  
7 consider, you know, that the MVEIRB has to tell us  
8 about the acceptability of -- of what's, you know,  
9 potentially on the table here to the extent that it  
10 can. But I would imagine we're all going to have to be  
11 a bit creative going forward in -- in dealing with  
12 this, so.

13 Were there any other further comments or  
14 questions, Alan or Simon, or...?

15 MR. ALAN EHRLICH: So if -- on behalf  
16 of the Review Board, we have questions from  
17 environmental assessment officer, Simon Toogood, and  
18 then from environmental assessment officer, Sachi  
19 DeSouza. I want to pronounce the last name right. And  
20 I got a few after that, too.

21 So can we start with Simon?

22 DR. KATHY RACHER: Kathy Racher, for  
23 the Board. Yeah, you guys sound like trouble, but,  
24 yes, indeed, Simon, go ahead.

25 MR. SIMON TOOGOOD: Hi. It's Simon

1 Toogood, with the Review Board. I just have a quick  
2 question on -- with the -- respect to the accidents and  
3 malfunctions. And you provided some cases where you're  
4 going to discharge effluent at higher levels, say a  
5 thousand, two thousand (2,000). And you said that  
6 there was going to be a response by De Beers, there was  
7 assumptions, there was going to be mitigations.

8 I'm just wondering if you can expand  
9 upon what that was. I mean, is it a mitigation to --  
10 for the effect on Snap Lake, that thousand, that zone  
11 that'll be -- the zone of influence, I guess, of that  
12 accident. Is there going to be a mitigation; like De  
13 Beers is going to be in the water with equipment doing  
14 something in that seven (7) days, or just what those  
15 assumptions were and what the mitigations were?

16 MS. HILARY MACHTANS: Hilary Machtans,  
17 from Golder. No, that -- that wouldn't be the case.  
18 You wouldn't assume on -- in lake activity or  
19 mitigation. It would be onsite activity in relation to  
20 water management, so some sort of change in water  
21 management under ground, above ground, surface water  
22 treatment plant, is -- is the assumption.

23 MS. ERICA BONHOMME: Erica Bonhomme.  
24 I'll just add to that. We -- we didn't pick any  
25 particular thing that could happen. All we know is

1 whatever happened -- whatever accident or malfunction  
2 would happen would discharge water to the lake with  
3 those levels over a period of a week.

4 By that point, we would resolve the  
5 issue, be it an equipment failure, or be it -- you  
6 know, we've -- you know, be it a power outage, be it  
7 something that would -- that would cause us to  
8 discharge at that level, we would resolve that, yeah.

9 MR. SIMON TOOGOOD: Simon Toogood, with  
10 the Review Board. So your mitigation is just to solve  
11 the problem. That's correct?

12 MS. ERICA BONHOMME: Erica Bonhomme.  
13 To stop discharging at that accident or malfunction  
14 level.

15 MS. SACHI DESOUZA: My name's Sachi  
16 DeSouza, with the Review Board. One (1) of the biggest  
17 risks is probably a spill from the water management  
18 ponds or water treatment ponds. And I understand you  
19 haven't put the treatment plant into the water balance  
20 model yet, but I guess, for the future of the water  
21 balance model are you going to assess the spill risk?

22 And related to that is kind -- is also  
23 the question of what climate information are you using.  
24 I understand groundwater is the primary water source  
25 for the mine site. But if you have, in 2025, when

1 you've got peak groundwater flows coming into your  
2 water treatment pond, combined with a big rain or a  
3 big, wet year, what's your spill risk going to be,  
4 and are you going to address that in your water  
5 management -- in your site water balance model and  
6 quantify what the spill risk is going to be from the  
7 water management ponds?

8 MS. ERICA BONHOMME: Erica Bonhomme.  
9 I'm -- I'm going to just respond to the first part of  
10 the question. I may ask you to rephrase that -- the  
11 second part. So on the -- on the first part of the  
12 question, we -- we don't -- a spill from the water  
13 management pond is not what we're taking into account  
14 in the accident malfunction scenario. The accident  
15 malfunction is a direct effect to the lake which is  
16 from a discharge to Snap Lake.

17 The water management pond -- and that --  
18 and that is a spill, in effect, because we're -- we're  
19 over our licence limit at that point for a period of  
20 time. However, that's not -- it's unrelated to  
21 anything that would happen in the water management  
22 pond. They're not connected. The water management  
23 pond goes through the water treatment plant. There's a  
24 number of controls and check valves in -- along the way  
25 before water's discharged to Snap Lake.

1                   So we're -- we're talking about, for --  
2 for some reason, that that final discharge point  
3 wouldn't work in the way that we need it to work, and -  
4 - and we -- we have our effluent that actually goes out  
5 beyond the limits.

6                   MS. SACHI DESOUZA:   Sachi DeSouza, with  
7 the Review Board. I -- I appreciate that. I just -- I  
8 -- my question still remains. Is there a risk that the  
9 water managements ponds could spill? And if they did  
10 spill, would they be spilling into Snap Lake?

11                  MS. ERICA BONHOMME:   Erica Bonhomme.  
12 We -- we have procedures in place to divert water back  
13 underground in an emergency situation.

14                  MR. ALAN EHRLICH:    Thanks. It's Alan  
15 Ehrlich, with the Review Board. Before I start talking  
16 about the accidents and the malfunctions thing, I just  
17 want to put a little reminder in everyone's mind to  
18 change gears a bit.

19                         Now, obviously, this is a joint process  
20 between the Mackenzie Valley Lane and Water Board and  
21 the Mackenzie Valley Environmental Impact Review Board.  
22 And although we try to work together on an integrated  
23 manner, we do different things, and we're trying to  
24 make slightly different decisions.

25                         And from the Review Board perspective,

1 what's important when we have a project before us in EA  
2 is, is the project likely to cause significant adverse  
3 impacts, right? That's our legal test and tells us a  
4 bit about where we're going, and if so, the Board has  
5 certain options, and if not, it has certain other  
6 things.

7 Our Board members are going to care  
8 about, if this change to the project that's proposed  
9 goes ahead, is it okay, is it going to be all right, in  
10 terms of things like downstream water quality, aquatic  
11 life. They're not going to care that much about this  
12 number versus that number. They're going to care about  
13 what's going to happen in the real world, right?

14 Which, you know, I think that there are  
15 other folks here who probably think along similar terms  
16 and have put with a lot of discussion about specific  
17 numbers, how they've been derived and how they've been  
18 modelled, but in reality, that question, is what you're  
19 proposing going to result in changes that are not okay.  
20 That's probably the important thing that -- that our  
21 Board certainly wants to get at.

22 And the we sort of spell out what would  
23 count as a significant impact, what wouldn't. And that  
24 feeds nicely into the framework that the Mackenzie  
25 Valley Land and Water Board deals with, because then

1 they make sure that it works that way.

2                   Do you -- I see nodding that suggests  
3 that I'm not mischaracterizing this. So I just wanted  
4 to bring it back to big picture stuff, because we've  
5 been dealing with a lot of highly technical models for  
6 a long time, and so remember why we're doing this,  
7 okay.

8                   Now, to get to some specifics having to  
9 do with accidents and malfunctions. I mean, the reason  
10 why we usually ask for accidents and malfunctions is  
11 because it's helpful for a number of reasons when  
12 someone proposes something big, to think of where could  
13 it go wrong, how could it go wrong, and what can you do  
14 about it.

15                   So normally what we expect to see under  
16 accidents and malfunctions is a description of what  
17 could go wrong, not just a mathematical model of, Hey,  
18 here's a number, and if we put it in, things look like  
19 this at the end, here's the other number; but here's  
20 what we're proposing, here's what could go wrong.  
21 Here's how likely it is to go wrong, as well as here's  
22 how bad it is if it goes wrong 'cause risk is a  
23 combination of likelihood and severity. That's how you  
24 work out the risk.

25                   You guys have modelled severity at some



1 length, but I haven't heard a peep yet about what  
2 actually -- initial events could cause these things to  
3 happen, what kind of systems could be affected by those  
4 events, how those systems overlap, and what you will do  
5 to make sure that things don't go wrong.

6                   There are a number of reasons we do that  
7 in EA. Partly, it's to figure out if it's going to be  
8 a cause of significant adverse impacts, but partly  
9 because it also helps manage projects in such a way  
10 that these things don't go wrong. And it tends less  
11 costly for developers to avoid these problems.

12                   And we've seen some examples in the past  
13 of -- of very serious accidents and malfunctions that  
14 would have been well nigh inevitable for the project as  
15 proposed that were cleanly avoided because of a decent  
16 discussion in a technical session in a technical  
17 setting in EA.

18                   I'm thinking of a co -- a particular  
19 example, south of the lake, where it probably would  
20 have been flooded within four (4) days once you  
21 actually worked it out. But the project changed for  
22 the better during the EA process. One (1) of the  
23 important things environmental assessment does is makes  
24 projects better, including better for the developer  
25 because then you don't have to pay for the big cleanup

1 and you don't have the financial liability of  
2 everything associated with that, as well as the -- the  
3 stoppage when you have an unforeseen event.

4 In this case, we haven't actually heard  
5 what could go wrong, or what could cause it to go  
6 wrong. We've just said -- we've just heard, Imagine if  
7 our water is this dirty and imagine if our water is  
8 this dirty, and we think it would be okay anyway. We  
9 haven't even heard likelihoods, like, Here's how  
10 probable we think it is that the water will be like  
11 this or like that.

12 But these are useful ideas to kick  
13 around, partly for project management, partly because  
14 it makes it a lot easier for the Board to figure out  
15 what kind of bets are being placed. There's always  
16 uncertainty anytime you're doing a risk assessment, and  
17 any kind of EA prediction involves weighing a certain  
18 amount of risk. But in this particular case, it really  
19 is modelled in a very hypothetical way.

20 Can you give us some examples of what  
21 kind of stuff could go wrong to lead to say the one  
22 thousand (1,000) level, or -- or just say Level A?  
23 What kind of stuff could go wrong practically, on the  
24 ground, in -- in real terms? Because you guys have  
25 been running a mine for a long time and you understand

1 what's involved in this; you understand your mitigative  
2 options, at least in the abstract sense, for this.

3 We're interested in -- in what could go  
4 wrong and what could -- what could cause it to go  
5 wrong. Thank you.

6 MS. ERICA BONHOMME: Erica Bonhomme.  
7 I'm just going to thank you for that, Alan. I -- I  
8 think, you know, we've wrestled with that question  
9 here. But I just wanted to pull up a schematic that  
10 may be useful, so just give me a minute.

11

12 (BRIEF PAUSE)

13

14 MS. HILARY MACHTANS: Hilary Machtans,  
15 for Golder. One (1) thing I can say, it more goes to  
16 your question, is De Beers has a approved water  
17 management plan, or a water management plan, that's --  
18 that's updated -- was updated very recently, so it  
19 covers most of these items that you've asked about. It  
20 doesn't cover elevated TDS, but it does cover all the  
21 operational things.

22 And secondly, in 2012, De Beers  
23 submitted a risk matrix to the Water Board. So that  
24 covers more to your points, Alan, of -- of likelihood,  
25 probability, risk, operational management, and types of

1 actions.

2 So those two (2) materials are sitting  
3 with the Land and Water Board and -- and have been for  
4 a while, just -- just for background if -- if the Board  
5 -- other Board wanted that material.

6 MR. ALAN EHRLICH: Thank you. So  
7 you've provided that information to a different  
8 organization and not on our public record yet, if I'm  
9 correct?

10 MS. HILARY MACHTANS: Hilary Machtans,  
11 for Golder. That's correct. It's referenced in the  
12 supplemental filing, but it isn't -- I would say that  
13 neither the Water Management Plan nor the risk matrix  
14 have been provided to the Board, correct.

15 MR. ALAN EHRLICH: In that case, it  
16 shouldn't be too hard to answer my question. What kind  
17 of things could go wrong, what could cause them to go  
18 wrong, how likely are they to go wrong? Thank you.

19 MS. ERICA BONHOMME: Okay. Well, I  
20 won't -- Erica Bonhomme. I won't be able to answer all  
21 of those likelihood type questions. But I -- I just  
22 thought it might be useful to -- just so that everybody  
23 understands how -- if -- if you don't already, how  
24 water moves through the mine. We've -- we've covered  
25 it a little bit over -- over the last couple of days.

1 How about if I actually pull it up. Those of you on  
2 the phone will not have access to this.

3 Again, the -- the largest water from our  
4 -- to our -- from our mine comes from underground. The  
5 water goes through -- the water goes through various  
6 processes and ends up going through our process plant  
7 to the north pile, back to the water management pond  
8 through our water management system, back to the water  
9 treatment plant. Sometimes it goes back and forth here  
10 a few times, between the water treatment plant and the  
11 water management pond, before being discharged into  
12 Snap Lake.

13 Our accident malfunction involves water  
14 coming out of that water treatment plant at a  
15 concentration that we're -- we're not -- that is above  
16 what, you know, we're comfortable with, or that we're  
17 allowed; one or the other, or perhaps both. So what we  
18 -- what we need -- what we wrestled with is under which  
19 situation would that happen. Now, keep in mind that we  
20 have a lot of water underground. We can always put a  
21 lot of water back underground, and that is our  
22 emergency fallback situation.

23 So when we have some kind of malfunction  
24 in the water management pond, if it attains a level  
25 where we can't -- you know, where the -- the dam is at

1 risk, we -- we have an option to put water back  
2 underground. And -- and so in a situation where we  
3 would have an uncontrolled release from the water  
4 treatment plant into the lake, it's hard to imagine  
5 under what situation that would happen. We just know  
6 that that would have an effect.

7                   And I guess the only -- the only  
8 situation we could come up with is -- is an event where  
9 somehow a series of events would lead -- lead the water  
10 treatment plant to not function, so the valves were not  
11 controlling the amount of water going to the lake or,  
12 you know, it -- it was -- or -- or the valves -- or --  
13 or there was some situation where the water treatment  
14 plant was, you know, discharging without going through  
15 all of its -- its processes to treat the water. It's -  
16 - it's very hard to imagine a situation under which  
17 that would happen, because we have so many checks and  
18 balances along the way.

19                   So that's why I -- you know, I would say  
20 that if we had, you know, a dam breach which we've  
21 assessed at our water management pond in -- in a  
22 different form, then, you know, that's -- that's a fair  
23 -- fair risk.

24                   But in a situation where we have a  
25 number of checks and balances in already it would

1 really only be a situation where our water treatment  
2 plant, for some reason, can't control the amount of  
3 water that's coming to the lake, either through human  
4 error or through an actual malfunction in the system.

5 I just wanted to -- again, and -- the  
6 schematic which shows how our main dewatering system  
7 ends up in the water treatment plant. Again, we -- we  
8 have, you know, so many pumps and valves and systems  
9 underground that we control. We have very, very, very  
10 good control over the 99 percent of the water that  
11 comes from underground. It can go up. It can go down.  
12 We can move it around. All -- all of that we have  
13 control over, and -- and gravity does the rest, right?

14 So even if we had a failure prior to  
15 water coming into the water treatment plant, we  
16 actually have an option to put everything back  
17 underground. It would naturally go back underground.

18 So I -- I think that that's what we're -  
19 - that's what we're struggling with, Alan. It's not as  
20 simple as saying, Oh, we've got a truck that, you know,  
21 goes down the road and flips over and spills all its  
22 contents. The -- we have checks and balances in -- in  
23 place already. And -- and from an operational  
24 perspective, if we saw that to be a risk to our  
25 operations, we would have identified and mitigated for

1 it already, right, because that's part of our  
2 operational risk that we -- you know, we have to  
3 evaluate.

4                   So -- so we -- I mean, I already believe  
5 we have a lot of that in place. We -- we have to  
6 assess the event of an accident malfunction related  
7 specifically to our proposal, which is to discharge  
8 water at a higher concentration. You know, honestly,  
9 we've -- we've tried to wrestle with how -- how the  
10 heck that would happen.

11                   MR. ALAN EHRLICH: Thank you, Erica.  
12 It's Alan again, for the Review Board.

13                   I appreciate that doing a good risk  
14 assessment is, you know, a very challenging thing.  
15 When you look at the initiation events of some of the  
16 bigger industrial failings that have happened in terms  
17 of low likelihood-high consequence events, it's been  
18 exactly what you talk about, a series of different  
19 things that have led to a larger failure that wasn't  
20 really anticipated, big picture, right?

21                   So, I mean, I don't know, but I'm  
22 assuming you're probably not in an earthquake area, but  
23 you have big earthquake that knocks out all your power.  
24 Suddenly, you can't pump anything out from underneath,  
25 right? I -- how much -- I -- I don't have much of a



1 sense that -- you said if something goes wrong with --  
2 was it tailings -- you could -- you could put it all  
3 underground, right? You've got storage space there.  
4 If your pumps aren't working, with the rate of  
5 infiltration that you've described, how many days are  
6 you good for?

7 MS. ERICA BONHOMME: Well, eventually,  
8 the -- the mine will flood.

9 MR. ALAN EHRLICH: Eventually. Like  
10 five (5) days, a week, a month? I don't get it.

11 DR. KATHY RACHER: Kathy Racher, for  
12 the Board. But it -- are you envisioning like it  
13 flooding over? Because the -- the water wouldn't come  
14 out of the mine, it would just go to the top, and then  
15 stop.

16 MR. ALAN EHRLICH: I'm -- I'm trying to  
17 -- to kind of probe for larger failure modes, but I'm  
18 doing it blind, because I don't really know what kind  
19 of systems they're counting on to keep everything  
20 working the way that they're saying. And so it's  
21 challenging from the perspective of someone who's --  
22 who's working on the Board's side to figure out, you  
23 know, what kind of risks and -- and likelihoods are  
24 involved when we -- we have these sort of blanks. To  
25 build on a good point...

1 (BRIEF PAUSE)

2

3 MR. ALAN EHRLICH: To build on a good  
4 point that Sean Whitaker raised earlier -- also, you  
5 talked about the mitigation measures you've got, but we  
6 don't have much of a sense of the -- for any mitigation  
7 measure there's a range of confidence that you have  
8 that it will be effected.

9 But in this particular case, we don't  
10 know enough about the mitigation measures yet to -- to  
11 know what you think is the appropriate amount of  
12 confidence that they will do what they're intended to  
13 do.

14 Could you help us with that, too,  
15 please?

16 MS. ERICA BONHOMME: Okay. Erica  
17 Bonhomme. So I'm -- I'm just going to go back on the  
18 first part again. We did submit a risk assessment, a  
19 north pile risk assessment. It gives you some idea --  
20 if -- if it's helpful, we can point to where -- where  
21 it is on the registry under the water licence. It just  
22 -- it just talks about the -- the kind of risks that  
23 we've already evaluated in terms of water -- you know,  
24 water management associated with the north pile,  
25 specifically.

1                   So we have a situation where we have:  
2   An uncontrolled release of process water, so that's  
3   from the process plant, that we would have inadequate  
4   storage capacity, either in the pile or in the water  
5   management pond. That we would have a breakdown in the  
6   water treatment plant, which I've -- I've talked about.

7                   That there may be a human sampling  
8   error, that there's -- you know, some things just --  
9   you know, we -- we thought we were okay but were --  
10   were not. That there's a failure in the pumping system  
11   coming out of the -- well, in this case, it was the  
12   north pile, so any one (1) of the -- the pumps that  
13   move water through our system. That there would be a  
14   spill from the water management pond, so something like  
15   an overtopping of the dam, or a full out dam failure.  
16   Or a failure in the water treatment plant to alert us  
17   of there being a problem.

18                  So those are risks we've already  
19   assessed as part of the North Pile Management Plan  
20   which -- which we needed to provide as part of the  
21   water licence.

22                  On your second point, in regards to the  
23   -- the effectiveness and mitigation, what you have  
24   before you is what we know. We -- I mean, we -- we've  
25   told you where we're going to get to, the kind of steps

1 that we're taking to understand, in particular this  
2 next phase, which is using an act -- a scaled-down  
3 version of the treatment we -- we believe will be  
4 effective at -- how -- how it will work specifically  
5 for Snap Lake Mine.

6                   We're not talking about -- you know,  
7 from -- from our perspective, we're not -- we -- we  
8 have high confidence in the mitigation technology, or  
9 the -- the concept of treating for TDS. We -- we know  
10 that's effective. It's been done a million times  
11 before. What we don't know is how we're going to  
12 achieve that through those combinations of processes  
13 that I put up in the slides yesterday.

14                   The pilot study that we're doing right  
15 now will help us answer those questions, right? We  
16 can't invest money in mitigation. We can't say how  
17 effective it's going to be. We can't answer those  
18 questions until 1) we know what we're treating to,  
19 right, and, second, that we know what kind of  
20 technology we have to put into effect.

21                   So is it -- is it going to have -- what  
22 are the infrastructure requirements going to be? Is it  
23 going to generate, you know, a certain amount of waste?  
24 You know, how long will it take us to procure long lead  
25 time items. So if we have an actual plant that needs

1 to be designed from scratch, we've got to -- we've got  
2 to build it. We can't -- we don't buy one out of the  
3 box. It's -- it's one that we'll have to commission  
4 through a design process.

5                   So, you know, the steps we have is -- is  
6 -- you know, that's where we are with this. And so in  
7 -- like I'll just back up. In terms of having  
8 confidence in -- in treatment, we have high confidence  
9 in being able to treat for TDS. It's -- it's what will  
10 have to be put into place specific to Snap Lake Mine  
11 that we don't know right now.

12                   MR. ALAN EHRLICH: Thanks, Erica. And  
13 the first part of that answer was particularly helpful,  
14 because you started getting into, if I understood you  
15 correct, stuff that could go wrong that could affect  
16 TDS coming out into the lake.

17                   You've mentioned that you've submitted  
18 it to the Mackenzie Valley Land and Water Board. I  
19 would just suggest information that you just referenced  
20 you also put on our public registry, please, because I  
21 think other people in this room are interested in what  
22 you just said.

23                   One (1) of the reasons I ask about  
24 mitigation isn't solely for us to be able to evaluate  
25 (sic) the likelihood that mitigation will work the way

1 you think it will, but also because, as you point out,  
2 different mitigations have different byproducts, and  
3 different byproducts also carry with them different  
4 kinds of potential risks, kind of like Todd was  
5 pointing out earlier.

6 I have recently assessed a project where  
7 big alternative water treatments -- the -- the  
8 developer spent a while saying, If we treat water this  
9 way we have the advantage of working this way, but the  
10 problem is we have this byproduct that could really go  
11 wrong if these things happen. If we treat it this way,  
12 the water comes out really clean, except for then you  
13 have this huge problem of...

14 But some sense of, okay, if we do this,  
15 this is what's going to happen; if we do that, that's  
16 what's going to happen. We don't need exhaustive  
17 treaties on these things, but we just want to have a  
18 clue as to what you're thinking about, 'cause it makes  
19 it a lot easier for us to buy into it or consider it  
20 or, you know, that -- that kind of thing. And so I  
21 guess I partly wanted to echo the -- the point that was  
22 raised before.

23 But I think you're going in the right  
24 direction with those things: stuff that could go wrong.  
25 I'm hoping that there's some description of how likely

1 different problems are, like when I point out an  
2 earthquake and you're in the middle of a plate, you  
3 know, your odds are, I mean, one (1) in two hundred  
4 (200) and -- two thousand five hundred (2,500) that  
5 it'll actually happen in the life of your project,  
6 right? Like, I'm assuming. This is imaginary.

7                   But -- I -- I guess -- but you've  
8 probably done the math better because you have a lot  
9 more financially at stake and other stuff at stake than  
10 I do with this. And so it would be very helpful if you  
11 can -- you can give rough likelihoods or some idea of  
12 them, best guess kind of stuff, when you -- when you  
13 describe some of the failure modes you mentioned  
14 before. Anyway, I think that what you just said is  
15 already better than what was in the slides.

16                   I also have a question about the two  
17 thousand (2,000). You mentioned two thousand (2,000)  
18 'cause that's your highest TDS water, right? Is there  
19 -- is there any water around that's higher than -- than  
20 two thousand (2,000)? I mean, was two thousand (2,000)  
21 just a round number to use for the modelling, or -- or  
22 did you pick that because it's a very conservative --  
23 because it's -- it's the dirtier water that you're like  
24 -- that -- that might come out?

25                   Are there chances for dirtier water to

1 come out during unforeseen events?

2 MS. ALISON SNOW: Alison Snow. So the  
3 two thousand (2,000) number, it is a round number, but  
4 what we did was we looked at the -- the maximum  
5 predicted TDS concentration that would be in the  
6 discharge to Snap Lake if there was no mitigation in  
7 place, so those four (4) scenarios that I was showing  
8 yesterday. So it is a number from modelling. So we  
9 assumed -- or we used the maximum concentration that  
10 we're predicting would occur if no mitigation was in  
11 place.

12 MS. ERICA BONHOMME: Erica Bonhomme.  
13 And I just add to that. We do have higher TDS water  
14 underground. You've seen the numbers yesterday, right?  
15 So our footwall water is much higher than that. But  
16 it's in the footwall. It's, you know, very deep  
17 underground, unless we -- you know, and -- and it never  
18 -- it, in itself, never makes it to surface all by  
19 itself; it's -- it's diluted.

20 So the numbers that we've used that  
21 Alison just mentioned are appropriate, because that's  
22 what comes to surface. Gravity will do the rest. That  
23 -- that water, if we don't pump it up, won't -- won't  
24 make it up all by itself.

25 DR. KATHY RACHER: Go ahead, Sean.



1 MR. SEAN WHITAKER: Sean Whitaker,  
2 Environment and Natural Resources.

3 I'd actually like an Information Request  
4 put to De Beers to post all the material where all that  
5 information just came from, the Wat -- Waste -- Water  
6 Management Plan, the north pile risk assessment to the  
7 Board registry, the MVEIRB registry; and including the  
8 slides that were provided on the schematic just so  
9 there's a context for the Review Board. And any other  
10 pertinent information that De Beers would feel should  
11 be considered in the accidents-malfunction section.

12 MS. ERICA BONHOMME: Erica Bonhomme.  
13 Let me just -- the water -- the water -- the north pile  
14 risk assessment and the draft Water Management Plan are  
15 -- have just been sent to Simon, so I will add the  
16 schematic to that.

17 MR. SEAN WHITAKER: Sean Whitaker,  
18 Environment and Natural Resources. And any other  
19 pertinent information that you feel should be included  
20 that you would like to reference, I would ask that it  
21 get put onto the MVEIRB's re -- registry under that  
22 Information Request.

23 MS. ERICA BONHOMME: Erica Bonhomme.  
24 We'll -- what -- what we will provide is the  
25 information on accidents and malfunctions that was

1 provided in the original 2003 EA which speaks to a dam  
2 breach.

3

4 --- INFORMATION REQUEST NO. 16: De Beers to provide  
5 information on  
6 accidents and  
7 malfunctions that was  
8 provided in the  
9 original 2003 EA  
10 which speaks to a dam  
11 breach

12

13 MR. ALAN EHRLICH: Alan, for the Review  
14 Board. And I -- like I don't want to panic the -- the  
15 folks across the table here. We have no interest in  
16 reassessing the whole original mine. It's just stuff  
17 that could lead to TDS surprises are relevant to what  
18 we're talking about, right? We're -- we're still  
19 within the -- you know, we're going to be conscious and  
20 -- and careful of the limits that we described within  
21 the scoping document that was -- was released earlier.

22 Kathy, I don't have anything else on --  
23 on risk assessment, but I -- just I didn't want to get  
24 -- have all this, and the cumulative effects stuff, and  
25 all the alternative stuff all at once, 'cause it -- it

1 might be a bit -- a bit much. That's why I jaunted in.

2 So thank you to Kathy and to De Beers  
3 for -- for letting me interject a round of questions  
4 partway through your presentation.

5 DR. KATHY RACHER: That's fine. Kathy  
6 Racher, for the Board. Were there any other questions  
7 on this section? Go -- go ahead, Todd.

8 MR. TODD SLACK: Todd Slack, with the  
9 Yellowknives. I have one (1) point of clarification.  
10 And earlier you said you could never see a way that  
11 water would enter Snap Lake. Don't we already have the  
12 example? Water from the pile goes into TS3, or maybe  
13 it was 4, I can't remember which one, and then into  
14 Snap Lake.

15 So the earlier question as to the risk  
16 of when you -- you spoke to the water management pond,  
17 but processed water entering Snap Lake untreated is a  
18 hundred percent, 'cause it's already happened. And so  
19 I know that you say you have mitigations in place and  
20 that you've assessed these things, and like you guys  
21 have thought of it: Well, no, there's a lot of stuff  
22 out there that we probably haven't thought of. It's  
23 happened before, and we'll probably be wrong again.

24 So I -- I think that that just needs to  
25 be on the record, as well.

1 MS. ERICA BONHOMME: Erica Bonhomme.

2 So you -- we've just provided that. Take a look  
3 through it. I think those of you that have been  
4 involve -- that are involved in the water licence  
5 process have seen this before, so, you know, maybe it's  
6 an opportunity to revisit that. It includes, as I  
7 mentioned, upsets from -- from process -- using process  
8 water.

9 Now, keep in mind that the water we see  
10 coming off our site through our -- through the north  
11 pile, or through runoff, is less than 1 percent of what  
12 we're dealing with from underground. So when we talk  
13 about effects to aquatic life, we really do believe the  
14 worst case scenario is one that involves water that  
15 comes from the water treatment plant. But, you know,  
16 that's -- that's -- and that's why we've presented it -  
17 - it this way.

18 Add -- added to all the other north pile  
19 risks, maybe that'll put that all in context.

20 DR. KATHY RACHER: Kathy Racher, for  
21 the Board. I'm just going to ask, on the phone there -  
22 - I -- I've been texting with Don Hart. He says he  
23 doesn't have any questions on this part. But, Anita,  
24 from Environment Canada, if you're on the line, do you  
25 have any questions at this time?

1 MS. ANITA LI: Yeah, I have a question.  
2 In the presentation before, I do have a copy of a mike  
3 sin -- mine site component which shows the different  
4 sections, like the water treatment plant and how the  
5 water flows. I noticed that there is -- the waste rock  
6 pile is not in this schematic.

7 And I was just curious, is the seepage  
8 and runoff from the waste rock pile being directed  
9 somewhere?

10 MS. ERICA BONHOMME: Erica Bonhomme.  
11 Can I get clarification on what you mean by, "waste  
12 rock pile?" We do deposit all our processed kimberlite  
13 in the north pile.

14 MS. ANITA LI: Okay. So that's all the  
15 rocks -- waste rock you have. There is no, actually,  
16 any waste rock pile on the site --

17 MS. ERICA BONHOMME: We --

18 MS. ANITA LI: -- blasting the mine and  
19 all that?

20 MS. ERICA BONHOMME: Construction --  
21 all our construction lat -- or all our lat -- all of  
22 the site infrastructure, everything that we put within  
23 the footprint of our mine site, reports to our water  
24 management system. Every -- everything ultimately  
25 reports to the water management pond and to the water

1 treatment plant before being discharged to Snap Lake,  
2 regardless of if it's fuel storage or -- or the north  
3 pile, it -- it all ends up there.

4 MS. ANITA LI: Okay. So you have  
5 ditching in place to direct all of them to somewhere,  
6 to a water management pond or to the wastewater  
7 treatment pond -- plant?

8 MS. ERICA BONHOMME: Erica Bonhomme.  
9 That's correct.

10 MS. ANITA LI: Anita Li, for  
11 Environment Canada. That's all. Thank you.

12 DR. KATHY RACHER: Okay. Kathy Racher  
13 here. So it is 12:04. And so let's break for lunch  
14 till 1:20. Thanks.

15  
16 --- Upon recessing at 12:04 p.m  
17 --- Upon resuming

18  
19 DR. KATHY RACHER: ...the cumulative  
20 effects presentation. Do we need to wait for Erica for  
21 a sec?

22  
23 (BRIEF PAUSE)

24  
25 DR. KATHY RACHER: Okay. Yeah, we'll

1 wait to -- just a minute or so till she gets back.

2

3 (BRIEF PAUSE)

4

5 PRESENTATION - CUMULATIVE EFFECTS:

6 MS. ERICA BONHOMME: Erica Bonhomme.

7 I'm going to have Hilary Machtans continue with the  
8 presentation on cumulative effects.

9 MS. HILARY MACHTANS: Hilary Machtans,  
10 for Golder. Thank you.

11 So cumulative effects -- a -- a review  
12 for cumulative effects was done asking a similar key  
13 question as was done in the original Environmental  
14 Assessment, which is: What are the potential  
15 cumulative effects of the discharge of -- of the  
16 effluent, including TDS up to or equal to the six  
17 eighty-four (684), have on water quality in the -- in  
18 the Lockhart watershed? So we're looking in a regional  
19 study area. And again, our assessment assumes  
20 mitigation is in place.

21 So we did some steps to review  
22 cumulative effects. Step 1 is to do a water quality  
23 model to say what -- for Snap Lake itself, for the  
24 development itself that's being proposed, which is the  
25 water quality objective of six eighty-four (684), what

1 would that look like downstream throughout the Lockhart  
2 River watershed. That was Step 1.

3 Step 2 is then review the additional  
4 developments. So that was obviously done in the  
5 original Environmental Assessment, but need to be  
6 redone, because that was 2003.

7 And then Step 3, look at areas of  
8 overlap of where TDS or water quality changes would  
9 overlap. And then an assessment of cumulative effects.

10 Next slide. Or sorry, if -- going back  
11 one (1) slide.

12 So you saw this slide yesterday, but  
13 I'll just go over it again. So what we've got here is  
14 this -- I'm going to stab someone in the eye with the  
15 laser pointer.

16

17 (BRIEF PAUSE)

18

19 MS. HILARY MACHTANS: So again, we're  
20 looking at -- this was presented yesterday when we  
21 talked about downstream lake water quality modelling,  
22 and I'll just -- just go over it again in context here.  
23 So this is Snap Lake here to Lac Capot Blanc down to  
24 MacKay Lake, and then down again on -- through the --  
25 the Lockhart water -- watershed entering Great Slave



1 Lake here.

2                   So these little yellow dots on this plot  
3 are the water quality -- we call them nodes, if you  
4 will. So they're original sample stations from -- from  
5 Aboriginal Affairs at the time of their monitoring. So  
6 that data -- there are data points from 1993, 1994,  
7 1999, I think, for those stations. So that was  
8 considered as the sort of baseline conditions. And  
9 then the water quality is tracked downstream down to  
10 where it enters the -- where it enters Great Slave  
11 Lake, just for context there.

12                   The next slide. So in terms of the  
13 maximum predictions, this is a repeat from yesterday.  
14 I thought I'd just cover it again. So what we're  
15 predicting for downstream, on the left-hand side of  
16 this plot you see total dissolved solids, and across  
17 time is distance downstream from Snap Lake in  
18 kilometres.

19                   And this dotted line here and here, this  
20 represents what was the base -- the range of baseline  
21 concentrations documented in the late '90s. And here  
22 plotted, and we've -- what we've done is try to put the  
23 lake names on the plot just -- just for context, 'cause  
24 the -- the sample node names from Aboriginal Affairs  
25 don't have any context for us.

1                   So this is -- we're predicting the  
2   concentration to be -- this was what we originally said  
3   the prediction was going to be in the original  
4   environmental assessment. It would be around one  
5   hundred for TDS and then coming down into MacKay Lake  
6   and then within background. And so the prediction,  
7   assuming mitigation is in place, is -- is very similar,  
8   that -- you get concentrations are near background and  
9   then stay in background. This little blip goes up.  
10   That -- that happened at baseline. That data point is  
11   from 1999 in the Lockhart River.

12                   So we're just seeing that the predic --  
13   we originally predicted this sort of pattern, and we've  
14   predicted it again. If mitigation is in place we don't  
15   see rising TDS concentrations downstream of Snap Lake  
16   at this scale, or in the Lockhart River watershed. And  
17   that -- so again, the conclusion from this is it very  
18   much matches the original environmental assessment  
19   predictions for downstream of Snap Lake from King Lake  
20   onward.

21                   The next slide, please. Okay. Well --  
22   so I don't know if you guys have the -- the printout of  
23   this fabulous figure. So Step 2 is to look at, Well,  
24   what are all the current developments? And so this is  
25   to follow what are the past, present, and foreseeable

1 future activities within the Lockhead (sic) watershed  
2 in relation to TDS.

3 So we looked at --

4 MS. ERICA BONHOMME: Erica Bonhomme.

5 Could I -- could we just take a pause here? I think --  
6 Simon, do you have my stick? Pardon me?

7

8 (BRIEF PAUSE)

9

10 MS. ERICA BONHOMME: Yeah. Just let me  
11 make sure we can get that image up here.

12

13 (BRIEF PAUSE)

14

15 MS. ERICA BONHOMME: All right. Erica  
16 Bonhomme, we're ready to continue on here. We're on  
17 Slide 20, for those on the phone.

18 MS. HILARY MACHTANS: Okay. Now that  
19 you've all had a chance to think -- Hilary Machtans,  
20 from Golder -- so inline with what was done in the  
21 original assessment and was also done for the recent  
22 Gahcho Kue Project assessment, what was examined -- I  
23 don't know if we can blow this one up now on -- at the  
24 scale.

25 So what was included -- what we're --

1 we've reviewed the 2013 Mining Association  
2 publications. We've looked on the record. The Gahcho  
3 Kue Project developed a cumulative effects database  
4 listing. So we've reviewed that material to say, Well,  
5 what are the developments that would be in this area  
6 that have the potential to release TDS, that -- where  
7 you would potentially look at accumulative impact of  
8 TDS?

9                   So we looked at -- in terms of, you  
10 know, activities that are coming up in the foreseeable  
11 future, the De Beers Gahcho Kue Project, there's the --  
12 so if we -- just to orient ourselves here, if you have  
13 your printouts, Snap Lake mine here. Upp -- upper left  
14 here is the Tundra mine, closed, but going through  
15 reclamation.

16                   Right beside the Tundra mine, which is a  
17 little bit more toward Courageous Lake up here, there's  
18 exploration going on right now, and it's for -- for  
19 metals and that's an exploration camp there, the  
20 Contwoyto Lake exploration. Here we have the Gahcho  
21 Kue Project here, down here. And near Gahcho Kue is  
22 another project for diamond's exploration site called  
23 Kennedy North.

24                   And I think those are the only -- then  
25 over here in this hatching there's a proposed East Arm

1 National Park on the east side, East Arm of Great Slave  
2 Lake. And we've taken their overall area of interest.  
3 It's unclear whether the whole park will be that big.  
4 They've recently done a mineral's assessment for the  
5 entire area of interest, so it's a bit unclear exactly  
6 what will be done in the entire area of interest, but  
7 we've hatched that out here for your -- to see.

8                   So what we've done is we've excluded  
9 activities that are not permitted for discharge. So  
10 while we've identified that Kennedy North and  
11 Courageous Lake operations have exploration permits  
12 with the Land and Water Board, they are not permitted  
13 for discharge.

14                   So what we did include from a past  
15 operation is the Tundra mine. And it has a current  
16 discharge of TDS at almost a thousand milligrams per  
17 litre of TDS, on the basis of their water licence  
18 reports that they've sent in annually. So that's been  
19 included. So again, activities that are excluded were  
20 those not permitted for discharge, and activities that  
21 don't have any current project plans. So it's getting  
22 to that tricky part of foreseeable future.

23                   So in the recent Gahcho Kue assessment  
24 they included the Talston Hydro Project, which was  
25 going to have a transmission line and some crossing in

1 the water -- in the Lockhart watershed. To our  
2 understanding that project is no longer on the books.  
3 I don't know how else to describe that. So that is  
4 excluded. We don't -- we're assuming they are not  
5 proceeding with their proposal at this time.

6                   Next, please. So what we've done then  
7 is take -- plotted the areas where there are  
8 discharges. So there are three (3) operational  
9 facilities, developments, that have discharges of total  
10 dissolved solids.

11                   So the Tundra mine up here on our upper  
12 left. So Tundra is going north, more toward  
13 Courageous, which would then come around to MacKay  
14 Lake. Tundra mine, according to their water licence  
15 reports, is restricted to just a few kilometres away  
16 from their property. So while they are discharging,  
17 their -- their TDS is very limited in locale. They  
18 have actually two (2) areas. They have a seep area and  
19 a discharge area, so we've put both on this plot.

20                   Snap Lake mine, as we saw in our first  
21 slides, has discharge which then goes down here. The  
22 Gahcho Kue Project, according to their recent  
23 environmental impact predictions, has a discharge  
24 that's restricted to what they've called the Kirk Lake  
25 watershed. And some of these concentrations are quite

1 low, so you're seeing a line. You know, it might be  
2 more elevated near the project and then -- but that's  
3 where there is -- they've predicted detectable TDS.

4                   Next. So our conclusion from that is  
5 that on the basis of current permitted TDS there are no  
6 -- there's no overlap. So Snap Lake -- the current  
7 proposal to increase the release of TDS from Snap Lake  
8 to meet the site specific water quality objective,  
9 assuming mitigation is in place, the Snap Lake  
10 discharge is similar to as it was in the original  
11 assessment: that is unchanged. And therefore --  
12 therefore, they are -- we do not overlap, so we're not  
13 putting are -- an area of TDS on top of another area of  
14 TDS.

15                   And that's the scope of this assessment.  
16 And again, that's the same assessment that was done in  
17 the original Snap Lake EA, as well as in the Gahcho Kue  
18 EA. So we follow that methodology, that if they don't  
19 overlap in space, and -- and time, and water quality,  
20 you can't predict a cumulative effect in this regard.

21                   So the conclusion of this assessment on  
22 the base (sic) of those methods is that there's no  
23 linkage. The -- the TDS between those three (3)  
24 operations that currently have discharge, or  
25 foreseeably have discharge, are not overlapping. So

1 the assessment -- we would assess TDS on the basis of  
2 Snap Lake itself. Thank you.

3 DR. KATHY RACHER: Kathy Racher, from  
4 the Board. I think the next section is on  
5 alternatives. Do -- what do you -- what's your sense,  
6 Alan? Do -- do you want to stop here for questions?

7 MR. ALAN EHRLICH: No, but I think it's  
8 -- it's worth stopping here just so the cumulative  
9 effects questions don't get jumbled with alternative's  
10 questions, if that's all right? But I don't want to  
11 presume that none of the parties have questions on  
12 cumulative effects. I know I've got a few, but I'd  
13 prefer to wait until everyone else has had a shot.

14

15 QUESTION PERIOD:

16 DR. KATHY RACHER: Kathy Racher, for  
17 the Board. Okay, Todd, go ahead.

18 MR. TODD SLACK: Todd Slack, for the  
19 Yellowknives. And just for the record, the -- excuse  
20 me -- the Golder approach to cumulative effects, we've  
21 said it every time at every environmental assessment,  
22 is narrowminded and it results in a -- in an incomplete  
23 assessment of the cumulative effects. I'm not going to  
24 rehash that, but there you have it.

25 I'm wondering what the cumulative



1 effects assessment endpoint is for Lady of the Falls.  
2 How much change would be allowable from the Golder and  
3 the De Beers's perspective?

4 MS. HILARY MACHTANS: Hilary Machtans,  
5 for Golder. I -- I don't understand your question,  
6 because you're asking how much change is acceptable. I  
7 don't make those decisions.

8 What we're saying is you will not detect  
9 the Snap Lake effluent there, and we have always said  
10 that. You will not detect the Snap Lake effluent even  
11 -- even closer in toward MacKay Lake. So that --  
12 that's within the existing predictions of the original  
13 EA.

14 MR. TODD SLACK: Todd Slack, for the  
15 Yellowknives. If effluent is detected at Lady of the  
16 Falls that is a significant cumulative effect as a  
17 starting point. There is no acceptable change at that  
18 point. And the -- what will undoubtedly happen, if and  
19 when this occurs, is each mine site says, It's not us.  
20 The -- and there's no mechanism to -- to do this, like  
21 -- so we get caught in this circular issue again.

22 And then the -- the power of the Lady of  
23 the Falls, she's disturbed, which isn't -- you know,  
24 I'm a -- I'm a white guy, I don't really go to Lady of  
25 the Falls, but for the people of this North Slave area,

1 this is an incredibly important cultural area. It has  
2 great power and cannot be disturbed. This is  
3 fundamental in the Gahcho Kue where they came out and  
4 they said, No, there is no acceptable change here.  
5 Does De Beers, in this case, accept that same point?

6 MS. ERICA BONHOMME: Erica Bonhomme. I  
7 -- I understand the significance of Lady of the Falls.  
8 I -- I do, however, also stand by our predictions that  
9 Snap Lake effluent will not make it there. Not even  
10 close.

11 MR. TODD SLACK: Todd Sla -- Todd Slack  
12 for the Yellowknives. I -- I want to ask that in a  
13 different way.

14 Does De Beers believe that there is no  
15 acceptable change at this site?

16 MS. ERICA BONHOMME: Practically  
17 speaking, yes. That's -- that's a statement we would  
18 stand behind. What I'm failing to get, Todd, is just a  
19 connection between the Snap Lake mine and this -- and  
20 this area.

21 MR. TODD SLACK: Well -- Todd Slack,  
22 for the Yellowknives. The predictions around this mine  
23 site and the operations have not exactly gone according  
24 to plan. So while I respect the -- the modelling  
25 that's done here, I'd like a little something more if

1 and when that doesn't happen. So that's my point here.

2 MS. ERICA BONHOMME: Erica Bonhomme. I  
3 -- I disagree, Todd. Actually, our -- our monitoring  
4 shows at King Lake, for example -- Lac Capot Blanc,  
5 King Lake -- shows that our -- our effluent is how we  
6 predicted it. Compared to how we predicted it is  
7 actually bang on.

8 And -- and I'll -- I'll also go back to  
9 how we've matched our monitoring data from the  
10 underground model, from the site models, from the lake  
11 models, and they all work very closely within the  
12 predicted range that we've put forward previously. So  
13 I -- I would -- I would disagree that -- that what  
14 we're going to see is not going to be what we -- what  
15 we're predicting.

16 MS. HILARY MACHTANS: Hilary Machtans,  
17 for Golder. What we could also add, Todd, is some  
18 confidence in the ability to -- to monitor for that, to  
19 show -- so that we can predict that, but then you want  
20 to be able to monitor that.

21 So that data is provided annually and we  
22 could highlight it further if -- if there's a need to  
23 then show people that -- because we heard that through  
24 the Aquatic Effects Monitoring Program reevaluation  
25 period from 2012 to 2013 for the Water Board. We heard

1 the importance of that. And so we have set act -- to  
2 take action, you know, at changes. I don't know if you  
3 mind going backward, Erica, on the presentation.

4 I -- yeah, that one might work. Yeah.  
5 So, anyway, we -- we monitor -- I think Al -- I was on  
6 a -- on yesterday's presentation, we monitor water  
7 quality in here at -- at what's called the King Lake  
8 outlet. So we could definitely use that as a marker if  
9 that gives you any confidence of your ability to -- to  
10 check to see if these predictions are correct. That --  
11 that's what we're using.

12 DR. KATHY RACHER: Kathy Racher, for  
13 the Board. Did you have a follow-up, Todd, or should  
14 we move on to Sean?

15 MR. TODD SLACK: No, I -- I think that  
16 the company's view is their view, and I choose to not  
17 necessarily accept it and we'll pursue it through the  
18 Board process.

19 MR. SEAN WHITAKER: Sean Whitaker,  
20 Environment and Natural Resources. I have two (2)  
21 questions about that slide, so that's perfect.

22 As we stated earlier, what does this  
23 look like without mitigation if De Beers was to do  
24 nothing and continue to distribute the full effluent  
25 above it? What does that look like without mitigation?

1 I know you've committed to it, but if there is no  
2 mitigation, what does that look like? That's the first  
3 question.

4 MS. HILARY MACHTANS: Hilary Machtans,  
5 for Golder. If you can just give us a second, that --  
6 that was provided in the supplemental filing. We'll  
7 just find the exact figure number.

8 DR. KATHY RACHER: Kathy Racher, for  
9 the Board. Do you mean the cumulative effects  
10 assessment?

11 MR. SEAN WHITAKER: Sean Whitaker,  
12 Environment and Natural Resources. Yeah, the actual  
13 cumulative effects assessment.

14 What would this look like if we didn't  
15 mitigate this? And what would it look like post-2029,  
16 because you're going to continue to discharge effluent  
17 from Snap Lake if your entire thing's mixed at 80  
18 percent? So it's going to continue past 2029.

19 MS. HILARY MACHTANS: Hilary Machtans,  
20 for Golder. There's no cumulative effects assessment  
21 or review done on an unmitigated case. What we have  
22 provided in the supplemental filing is what the  
23 prediction for water quality would be downstream in an  
24 unmitigated case, just -- just for clarity.

25 DR. KATHY RACHER: Kathy Racher, for

1 the Board. And -- and I think an IR yesterday was to  
2 do an assessment of what those effects would be in an  
3 unmit -- unmitigated case.

4 And I'm wondering -- well, I'm going to  
5 ask the Review Board, who isn't paying attention to me  
6 right now, if -- if it would be helpful to know if --  
7 if the cumulative effects assessment that has been  
8 presented would change if there were no mitigations in  
9 place?

10

11 (BRIEF PAUSE)

12

13 MR. ALAN EHRLICH: Thanks, Kathy.  
14 Considering that we don't know exactly what the  
15 mitigations would be, it would certainly be a useful  
16 frame of reference, at least to understand, you know,  
17 what -- what the role of the mitigations is in  
18 preventing impacts, if you can tell us what it would  
19 look like if there were no mitigations in place.

20 MS. HILARY MACHTANS: Hilary Machtans,  
21 for Golder. What we can say is that in Figure 2-21 of  
22 the supplemental filing shows you for an unmitigated  
23 case for lower bound and upper bound flows, what those  
24 concentrations are downstream. So it -- it does show  
25 you that there's a lot of -- it's a very large

1 landscape and there is dilution and you don't see it  
2 again.

3                   So you -- it would be unlikely to see  
4 the cumulative effects. We didn't formally review  
5 that, but on the basis of that figure, that -- that  
6 conclusion would probably hold.

7                   DR. KATHY RACHER: Kathy Racher, for  
8 the Board. Yeah, and that's kind of what I assumed  
9 from the presentation yesterday, but I -- I think it  
10 would be worth just having that on the record stating  
11 that. And it could be just part of the existing IR,  
12 whatever that number was: eleven (11).

13                   So we'll just add that. It's just  
14 about, you know, making a statement. And you can bas -  
15 - you can base it on the data that you have since there  
16 doesn't seem to be anything much more complicated to  
17 it, but a statement on -- on whether the cumulative  
18 effect assessment predictions would change in an  
19 unmitigated case.

20                   MS. HILARY MACHTANS: Hilary Machtans,  
21 for Golder. Just a minor clarification, not to change  
22 yesterday's IR, but Section 2.2.4.3 of the supplemental  
23 filing has a paragraph that kind of summarizes that.  
24 So perhaps you could just review -- again, it's just  
25 very few sentences to just -- if that's adequate or

1 not.

2

3 (BRIEF PAUSE)

4

5 MR. SEAN WHITAKER: Sean Whitaker,  
6 Environment and Natural Resources. Is there any way to  
7 bring that up on the screen so we can at least see it,  
8 'cause I -- I don't have it?

9 MS. ERICA BONHOMME: I'll read it for  
10 you. Eri -- Erica Bonhomme. I'll read it for you.  
11 It's -- it's short.

12 So supplemental filing provided April  
13 11th, Figure 2.21 shows the concentrations. Maybe  
14 someone else can pull up -- pull up the file in the  
15 meantime and we can plug you in. Two point --  
16 paragraph 2.2.4.3:

17 "Non-mitigation scenarios mass  
18 balance model for lakes downstream of  
19 Lac Capot Blanc. Consistent with EAR  
20 predictions, maximum TDS  
21 concentrations in lakes downstream of  
22 Lac Capot Blanc were predicted to  
23 decrease with distance downstream, as  
24 shown in Figure 2.21. As total  
25 watershed areas and inflows to the



1 lakes increase the influence from the  
2 mine is reduced."

3 We've spoken to that before.

4 "Without treatment, predicted  
5 concentrations ranged up to 50  
6 percent higher compared to EAR  
7 values..."

8 So we're talking about the 2003  
9 predictions here.

10 "Immediately downstream from Lac  
11 Capot Blanc."

12 So let me just pull up the figure here  
13 so you know where that is.

14

15 (BRIEF PAUSE)

16

17 MS. ERICA BONHOMME: So Lac Capot Blanc  
18 actually barely -- barely shows up -- shows up on the  
19 map here. It's right here. It's right where my cursor  
20 is, because I don't have a pointer. Here we go, a  
21 pointer.

22 Lac Capot Blanc is right here. It's  
23 about 450 kilometres from there through all these  
24 watersheds down to Lady of the Falls, Lockhart River,  
25 Great Slave Lake.

1                   So again, 50 percent higher immediately  
2 downstream of Lac Capot Blanc, but we're near  
3 background TDS concentrations and EAR predictions by  
4 Site 11, which is MacKay Lake, right here, which is  
5 approximately 54 kilometres downstream of Snap Lake.

6                   So I guess what I'm -- I -- I just want  
7 to get some clarification whether there's additional  
8 information that this doesn't answer in respect to  
9 that?

10

11                                   (BRIEF PAUSE)

12

13                   MS. ERICA BONHOMME:     Erica Bonhomme.  
14 I've just pulled up on the screen Figure 2.21 from the  
15 supplemental filing that just shows what is summarized  
16 in 2.2.4.3.

17                   MR. SEAN WHITAKER:     Sean Whitaker,  
18 Environment and Natural Resources.

19                   Now, I'm hoping that someone can tell me  
20 where is the zone of influence that was originally  
21 predicted in 2003 supposed to be? How far down were  
22 impacts supposed to be seen from the mine effluent?  
23 Because I don't know that answer. I'd have to go and  
24 look. But how far is it allowed?

25                   MS. HILARY MACHTANS:     Hilary Machtans,

1 for Golder. The original assessment was the extent --  
2 I wouldn't term it as a zone of influence, but the  
3 presence of the effluent, so we would say the -- the  
4 dispersion of the plume, 44 kilometres. So remember  
5 though that -- that some of those concentrations are  
6 higher right by Snap Lake, and then they decrease  
7 within that 44 kilometre distance.

8 MR. SEAN WHITAKER: Sean Whitaker,  
9 Environment and Natural Resources. So what I'm getting  
10 at is, are we -- and it would be more for the Board's  
11 decision than everyone's. I'm just talking out loud.  
12 But -- well, I -- we can agree that it may be  
13 protective with an increase in hardness and TDS  
14 downstream, but is that acceptable to the users of that  
15 area?

16 It -- it'd be -- I don't know if that's  
17 acceptable. I don't want to speak for other  
18 departments. I don't know my own opinion on it yet, to  
19 be honest, so I'm just talking out loud.

20 But that's sort of the concern, 'cause  
21 you're going to keep discharging for Snap Lake. It's  
22 going to go downstream. How appropriate is that for  
23 the users? And we'd have to ask the Aboriginal parties  
24 and how they feel about that.

25 DR. KATHY RACHER: Kathy Racher, for

1 the Board. Does anyone else want to comment on that at  
2 this time?

3 Okay. So I'm sure -- and I'm sure we'll  
4 hear about that as we go along. Go ahead, Sean.

5 MR. SEAN WHITAKER: Sean Whitaker,  
6 Environment and Natural Resources. I have another non  
7 -- completely different topic. It's actually to do  
8 with the baseline data that's been collected  
9 downstream.

10 How much baseline data is available for  
11 all of those things and how recent is that data? Is it  
12 1999, the AANDC data, the most recent data that's  
13 available? And that -- is that reflective of the  
14 current conditions today?

15

16 (BRIEF PAUSE)

17

18 MS. HILARY MACHTANS: Hilary Machtans,  
19 for Golder. Sorry, that was a straightforward question  
20 and just took a pause there.

21 So what's currently in the model --  
22 what's current -- what was put in the model in 1999 was  
23 1993 to 1999 data. There is not an enormous amount of  
24 it. So what -- however, De Beers has been collecting  
25 their own data since that time on the downstream up to

1 the King Lake area.

2                   So what De Beers has proposed is that  
3 they -- partly through the GNWT Water Stewardship  
4 Program, et cetera, and through Aboriginal Affairs,  
5 through various Aboriginal Affair programs, they've  
6 been updating that data set. So De Beers is proposed  
7 to get that updated data and in -- include that in the  
8 model. Thanks.

9                   MR. SEAN WHITAKER: Sean Whitaker,  
10 Environment and Natural Resources. That's great that  
11 you're going to get the data.

12                   Now, my next point is how can you  
13 determine what the current level is based on the 1999  
14 number? That's almost fifteen (15) -- that's fifteen  
15 (15) years old, that data. Has it changed since 1999?

16                   It's hard to make an assessment on the  
17 old data if the reflections have changed and if -- does  
18 that mean we go back and reassess this from 2003,  
19 because you're using 1999 data in your prediction?

20

21                   (BRIEF PAUSE)

22

23                   MS. HILARY MACHTANS: Hilary Machtans,  
24 for Golder. I'm -- I'm sorry, I'm going to say what  
25 you said yesterday, as I was reading, and thinking, and

1 listening, and ineffectively doing all three (3). Do  
2 you mind rephrasing -- I mean, I think -- I don't -- to  
3 the -- to the first part of what you said, the baseline  
4 data stands. It -- it is what it is. It reflects what  
5 it was at the time.

6 So, I mean, we are currently updating.  
7 So I'm not sure I understand your question.

8 MR. SEAN WHITAKER: Sean Whitaker,  
9 Environment and Natural Resources. So because we're  
10 assessing the cumulative effects based on 1999 data,  
11 that's pre-mining data. So that is data prior to  
12 mining ever occurring.

13 So obviously we have to go -- if there's  
14 no information available, how -- how do we know what  
15 impacts the effluent from today's event are going to  
16 impact the data? Like, so we're not going off the  
17 current model year. We're not going from the current  
18 baseline forward. We actually going back to 1999 and  
19 predicting what this is. So it's actually -- we don't  
20 know what that cumulative impact -- it could be raised  
21 -- that -- or -- or it could be significantly lower. I  
22 -- I don't know. I don't know the data. That's sort  
23 of where I'm coming from from this line of questioning.

24 It's -- it's great that you have the  
25 data and that's the baseline, but it could be

1 significantly different today than it is from 1999.

2 MS. HILARY MACHTANS: Hilary Machtans,  
3 for Golder. Let us just process that for one (1) more  
4 minute. It should be a straightforward answer, but I'm  
5 -- let me just -- hang on.

6 MR. ALAN EHRLICH: Sean, just -- I'm  
7 trying to keep up here, could -- could you just reword  
8 that as simply as possible, because it was -- it was  
9 moving around a bit and it's after lunch. I'm a little  
10 low gear. I -- I could use the charity.

11 MR. SEAN WHITAKER: Sean Whitaker,  
12 Environment and Natural Resources. So we're assessing  
13 three (3) -- from 350 milligrams per litre up as per  
14 our question this morning. That's the assessment. But  
15 for the cumulative effects we're actually using data  
16 that's old, so the downstream environment, we don't  
17 know what the current update is. It's based on pre-  
18 mining levels. 1999 is pre-mining. It's 2003, I  
19 believe, is when they started.

20 So they've been discharging effluent  
21 downstream, obviously, from the outlet since 2003. So  
22 are we staring from the very beginning, because the  
23 data for the cumulative effects is from pre-mining  
24 levels, and now we're assessing a new endpoint,  
25 essentially, downstream. The entire Snap Lake's a

1 mixing zone. It's all impacted at this point.

2                   So if we're -- we're just trying -- a  
3 frame of where this is going for the cumulative  
4 effects. It's hard to -- and I'm not a hundred percent  
5 clear. I'm just talking. This is the tech -- the  
6 benefit of a technical sessions that we have to have --  
7 get to have this open discussion, so.

8                   MR. ALAN EHRLICH: I'll -- I'll grab  
9 the conch while De Beers is -- is contemplating. So  
10 it's Allen from the Review Board again.

11                   So is what you're saying, Sean -- is  
12 what you're saying a concern that if they're using data  
13 from before mining there may be downstream stuff going  
14 on that they have excluded by accident?

15                   MR. SEAN WHITAKER: Sean Whitaker,  
16 Environment and Natural Resources. That's correct.  
17 It's potential that that trend has changed over fifteen  
18 (15) years.

19                   MR. ALAN EHRLICH: I see.

20                   MS. HILARY MACHTANS: Okay. Hilary  
21 Machtans, for Golder.

22                   So, that was part of our consideration  
23 and an ex -- exclusion, but we -- I think we want to  
24 say two (2) things on that front. We wondered about  
25 either or -- sorry. We considered climate change. So



1 what -- what if -- what if there are changes to TDS  
2 from, for example, melting firma -- permafrost, other  
3 types of things going on? So it's a non-point source  
4 of TDS potentially in the watershed.

5                   There is -- we don't have data to assess  
6 that. There's a little bit of data from the  
7 Yellowknife area from Aboriginal Affairs to suggest  
8 they are seeing that change in ions through permafrost  
9 melt in small watersheds, for example in Baker Creek.  
10 And -- but they hypothesize that we won't detect it in  
11 any larger watersheds.

12                   So we excluded it on that basis of it --  
13 at this point, it's such an enormous watershed that  
14 we're unlikely to detect it. So that's point 1.

15                   Point 2 is, we agree the data should be  
16 updated be -- just going forward and to -- to -- in  
17 order to even in the future document that.

18                   But a third point would be that, to --  
19 to go to your point about time line of significance and  
20 adding three (3) -- from -- going from three fifty  
21 (350) to six hundred (600) some, we already monitor  
22 that. So we can exclude the ten (10) years of the  
23 Aquatic Effects Monitoring Program which provides that  
24 information.

25                   So annually, we provide an appendix of

1 all the data collected throughout the region. And that  
2 -- those are showing conductivities of twenty (20). So  
3 we don't have a -- we don't have a -- pardon me, 20  
4 microsiemens per centimetre.

5 Okay. I apologize. So that would we --  
6 we're seeing TDS concentrations of, you know, ten (10)  
7 to fifteen (15), which is within background.

8 So we didn't have an immediate  
9 suggestion on the basis of De Beers' own regional data  
10 to suggest an issue, but we are in agreement that we  
11 want to, going forward, put in a request to -- to the  
12 GNWT through the watershed strategy or -- or the portal  
13 to -- to get this data to pair it with De Beers' own  
14 data.

15 MR. SEAN WHITAKER: Sean Whitaker,  
16 Environment and Natural Resources. I appreciate that.

17 I'm going to ask that you table those  
18 Aquatic Effects Monitoring Program reports with the  
19 Boards for their consideration. While it's separate  
20 processes, it just has to -- I don't want to be the one  
21 to have to email, so I'm asking you to email it to the  
22 Boards for their consideration so they have that data.  
23 That would be my first point.

24 The second point is I -- it's great that  
25 we're going to have the data. And I don't know what

1 watershed strategy has -- I don't work in that  
2 department. I'm in a completely separate division. I  
3 don't want to commit them, or I don't even know what  
4 information's available, to be honest.

5 But when would De Beers have that data  
6 available? Because we are in the process now, and when  
7 do you plan on getting to that point to have a  
8 sufficient baseline data set? Because we need to  
9 assess on the new endpoints.

10 DR. KATHY RACHER: Okay. Kathy Racher.  
11 I'm -- I'm a little confused here. So the AEMP  
12 monitors routinely how far downstream? Twenty-five  
13 (25) kilometres downstream was the number that just  
14 came to me through the air. And this -- but this is  
15 reported annually, in the annual report, whatever those  
16 concentrations are.

17 So were you looking for the whole  
18 report? Which, I warn you, is a thousand (1,000)  
19 pages. Or did you want them just to extract the right  
20 -- the graph? There must be -- is there a graph?  
21 There's always a graph of TDS as a -- as a function of  
22 -- probably of distance from the diffuser or something  
23 at -- at King -- at King Lake? Okay.

24 So, yeah. Were you looking for the  
25 whole report to be moved over to the record or -- or

1 just the --

2 MR. SEAN WHITAKER: Sean Whitaker,  
3 Environment and Natural Resources.

4 Whatever is easiest, whether you feel  
5 like extracting it, or if you'd like to give the entire  
6 report to the Board if it's easier and just forward it  
7 on and highlight the sections that are relevant to our  
8 discussion, I think that would be acceptable.

9 But I would leave that to the Review  
10 Board on how they would like to have that on the  
11 registry. I know it's a huge report. I think it's a  
12 thousand (1,00) pages. I -- I vaguely remember it from  
13 last year.

14 MS. ERICA BONHOMME: Erica Bonhomme.  
15 I'm just trying to get a word in edgewise here. I know  
16 this is all rivetting stuff.

17 So we've -- I -- I have committed to  
18 providing all the relevant reports related to the AEMP,  
19 to the water licence annual report, risk assessments  
20 for north pile. All of that will be sent over to poor  
21 Simon who's going to spend the next twenty-five (25)  
22 days figuring out how to get it all on your registry;  
23 but nonetheless, it's all heading over.

24 The particular section in the eighteen  
25 hundred (1,800) page 2013 report that you're looking

1 for is 3.2.2.5 of the 2013 report sub -- that was  
2 submitted -- that will be submitted May 1st, just a few  
3 weeks from now.

4 The 2012 report is on there already. So  
5 the 2012 report is available -- will be available.  
6 It's already available on the Land and Water Board's  
7 registry. We will move that over to the Review Board's  
8 registry.

9 The other point I wanted to make is  
10 that, as we concluded in the cumulative effects  
11 assessment, effects with mitigation will be detectable  
12 44 kilometres downstream; without mitigation, 54  
13 kilometres downstream.

14 So I'm -- I'm not -- I'm not sure that  
15 we -- that it's relevant for us to consider baseline  
16 data for the whole Lockhart River watershed. We are  
17 looking at effects 44 kilometres downstream.

18 The -- the plume. Sorry, not effects.  
19 I -- I'm -- my -- I'm misusing my terminology, and  
20 you're correct -- thank you, Peter -- that it is the  
21 plume. So the -- the actual effluent from the mine  
22 will be detectible 44 kilometres downstream.

23

24 --- INFORMATION REQUEST NO. 17: De Beers to provide  
25 its most recent AEMP

1 Annual Report for the  
2 MVEIRB record  
3

4 MR. SEAN WHITAKER: Sean Whitaker,  
5 Environment and Natural Resources.

6 I'm going to go to a slightly different  
7 topic, same -- same topic, but different aspect. I'm  
8 looking at Table 2-3 of the supplemental Information  
9 Request, page 32 of the supplemental Information  
10 Request.

11 So it's -- the maximum predicted changes  
12 in TDS concentrations in lakes downstream of Snap Lake  
13 is the document that we're looking at. So we -- we  
14 note the distance downstream and the baseline TDS and  
15 then the EAR prediction.

16 But it looks like in base case 'A' and  
17 base case 'B', there is a change in TDS concentrations  
18 downstream. There is -- it's -- like, for example --  
19 what was a good one -- like MacKay Lake. It's 109  
20 kilometres downstream. Baseline was seventeen (17),  
21 base case 'A' was nineteen (19), base case 'B' was  
22 twenty (20).

23 Is that related to just regional  
24 statistical difference, or is that an impact from the  
25 mine?

1 (BRIEF PAUSE)

2

3 DR. PETER CHAPMAN: Sean, Peter Chapman  
4 here. You know, difference between seventeen (17),  
5 nineteen (19), and twenty (20), that's basically within  
6 background noise. That's pretty small differences at  
7 very low levels of TDS.

8 MR. SEAN WHITAKER: Sean Whitaker,  
9 Environment and Natural Resources.

10 Yeah, I do appreciate that that is a low  
11 incremental change, but you have shown a change. And  
12 is that attributed to the model? Is that the  
13 statistical noise within the model? How is that change  
14 being accounted for?

15 Would I -- if I did an isotopal analysis  
16 on the water, would I see Snap Lake water there?

17

18 (BRIEF PAUSE)

19

20 MS. HILARY MACHTANS: Hilary Machtans  
21 for Golder. Assuming I understand your question, I --  
22 I'm not sure I understand the relevance of your  
23 question, of TDS varying by 1 to 3 milligrams per  
24 litre.

25 There -- that -- that is -- those are

1 from the model. They are well within the background  
2 range. The background range is around 10 to 53  
3 milligrams per litre. I -- we're not able to speak to  
4 1 milligram per litre differences.

5 DR. KATHY RACHER: Kathy Racher for the  
6 Board. I'm just going to intervene as a -- as the  
7 chemist in the room, the one who's done this test in  
8 the lab.

9 And -- and just to say that the -- the  
10 differ -- the practical difference, if I measured a  
11 sample five (5) times, I'd get seventeen (17), eighteen  
12 (18), nineteen (19), twenty (20).

13 I'd get -- I think it -- it seemed to me  
14 that the plus or minus was -- was at least a couple of  
15 milligrams per litre. It's not a -- the measurement of  
16 TDS is not an exact science. There's also calculated  
17 TDS, which is a little bit different, but I -- I  
18 wouldn't be able to tell the difference between those  
19 numbers.

20 MR. SEAN WHITAKER: Sean Whitaker,  
21 Environment and Natural Resources. I as well was an  
22 analytical chemist in a past life, so I do appreciate  
23 that. I do understand the statistical noise associated  
24 with the analytic chemistry.

25 The reason I'm asking these questions



1 and the relevance is because, as Todd pointed out, the  
2 Lady of the Falls, no impact is what's supposed to be  
3 predicted. If we're seeing impacts 109 kilometres  
4 downstream, that's where this line of questioning is  
5 coming from.

6 And whether it's acceptable downstream  
7 to have Snap Lake water, and that's sort of -- while I  
8 appreciate the six eighty-four (684) is protective of  
9 aquatic life in De Beers' opinion, it's whether we're  
10 allowing impacts downstream to be incorporated into  
11 this.

12 DR. PETER CHAPMAN: Peter Chapman.  
13 Could I just correct you? We're not talking about  
14 impacts. We're talking about changes.

15 MR. SEAN WHITAKER: Exactly. Whether  
16 change is acceptable and how far change we're going to  
17 -- like is it 54 kilometres that change is acceptable?  
18 That would be a question for this environmental  
19 assessment.

20 DR. PETER CHAPMAN: And Peter Chapman  
21 again. Let's bring this down to earth.

22 Detectable change, you know, because  
23 really, honestly, this -- this is pretty difficult to  
24 detect given natural variability. You've mentioned  
25 you're -- you're a chemist as well. We can't really

1 say we're detecting anything this -- this far down.

2 MR. SEAN WHITAKER: Sean Whitaker,  
3 Environment and Natural Resources. Yeah, I -- yes, I  
4 agree. That's -- I'm just trying to narrow what were  
5 in the scope, how far are we going to have changes  
6 downstream.

7 DR. PETER CHAPMAN: And -- Peter  
8 Chapman here. There's two (2) different issues here.  
9 I am a biologist, an ecotoxicologist. My concern is  
10 with change that causes adverse effects, you know, to  
11 the biota and so on.

12 If I see a change that doesn't cause  
13 adverse effects, as an ecotoxologist and biologist, it  
14 doesn't worry me. But at the same time, I realize  
15 culturally there's other issues. So, you know, we're  
16 looking at two (2) different viewpoints here.

17 DR. KATHY RACHER: Kathy Racher for the  
18 Board. There -- there's a place we don't want to go  
19 today, I don't think. We've -- and we've had that  
20 discussion and -- with Fortune as well.

21 So is there -- do you have a follow-up  
22 question, Sean?

23 MR. SEAN WHITAKER: Sean Whitaker,  
24 Environment and Natural Resources.

25 I know we don't want to go down that

1 route, but it is an environmental assessment and we  
2 would need to incoun -- incorporate the traditional  
3 knowledge as much as we can in this -- in the -- not  
4 the Land and Water Board's process, but for MVEIRB's  
5 process. It just needs to be on the record that this -  
6 - it could be con -- concerned.

7                   While in Dr. Chapman's view you could  
8 have Great Slave Lake at 684 milligrams per litre and  
9 not have a significant adverse effect on Great Slave  
10 Lake' is that appropriate? That would be for the  
11 users, the land users' opinion. And I'm not -- I don't  
12 want to comment on that. I just want to have it  
13 highlighted for the record.

14                   DR. KATHY RACHER: Kathy Racher for the  
15 Board. And when I said we didn't want to go down that  
16 road, I didn't mean that -- that -- the opinions of --  
17 of people on that are varied, and of course I know  
18 that.

19                   What I meant was it's kind of asked and  
20 answered. There's a disagreement, a dis -- you know,  
21 of opinions, and -- and that's -- you know, that's why  
22 you throw that up in front of the Board and make them  
23 make the call. So that's what I meant when I meant not  
24 going down that road because a debate wouldn't be  
25 fruitful.

1 Do you have a follow-up question, Todd?

2 MR. TODD SLACK: Todd Slack with the  
3 Yellowknives. No, I have a separate question.

4 And I -- I'm just -- I think it provides  
5 a point of clarity here. We've got Dr. Chapman over  
6 there who's a toxicologist; Hilary, fish and AEMP;  
7 Alison, modeller extraordinaire, I assume -- sorry, I'm  
8 reading between the lines; and Tasha, water guru.

9 So I guess what -- or what work has the  
10 project undertaken to -- to work with the people to  
11 gather evidence to try to assess their perception of  
12 what this impact may be to double, triple, or maybe  
13 more the -- the level of TDS and the changes that are  
14 occurring within this watershed as to whether they  
15 believe it'll affect Lady of the Falls, and whether  
16 they still see Lady of the Falls as -- in the same way,  
17 having the same power for them as -- as it did  
18 previously?

19 MS. ERICA BONHOMME: Erica Bonhomme.  
20 I'm just going to speak to our -- our recent  
21 engagement.

22 So again, we've had two (2) sessions  
23 recently where we've invited members from the  
24 communities potentially affected by this to learn about  
25 what it is we're proposing.

1                   On -- on January 6th and on -- on March  
2 20th, we had invited technical staff. We do -- we --  
3 and unfortunately, not all the communities attended.  
4 We did not have representation from Lutsel K'e at -- at  
5 either of those meetings.

6                   And I would -- I would hope that -- that  
7 that's, you know, an -- an important perspective and  
8 that we'll continue to encourage them to participate in  
9 this process so that we can understand their views.

10                   Yellowknives Dene did participate.

11 Thank you for doing that because your -- the views are  
12 very important.

13                   During those meetings, we -- we didn't  
14 hear a lot. It might have been because people were  
15 just trying to wrap their heads around what it was we  
16 were proposing. It's -- it's a lot of technical  
17 information.

18                   But keep in mind that Snap Lake mine has  
19 always proposed to release effluent into Snap Lake and  
20 down through the Lockhart River watershed; that's not a  
21 new thing. It is a change we're seeking that we -- we  
22 believe will affect Snap Lake.

23                   We know -- we know that the importance -  
24 - we -- we know of the -- how Snap Lake is used from a  
25 traditional perspective based on previous work we've

1 done. We haven't asked the specific question of how  
2 people would be affected by a change of this,  
3 particularly in Snap Lake.

4 But I will add that, as part of our --  
5 our usual schedule of visiting communities and having  
6 communities come to Snap Lake itself for site visits,  
7 those will continue throughout -- throughout the  
8 summer.

9 And, in fact, we have the YKDFN chiefs  
10 coming to site on May 14th to visit the mine and to  
11 look at improvements in the water management  
12 infrastructure. You know, as soon as the water opens  
13 up, we'll -- we'll take people out on the lake, as we  
14 always do, and hopefully get some perspectives from  
15 that.

16 But the engagement we've done to date  
17 has not raised concerns specific to this amendment that  
18 we've proposed.

19 MR. TODD SLACK: Todd Slack with the  
20 Yellowknives. I -- I was at both those things, and I  
21 think you're quite right. It -- it was very difficult,  
22 and our position is the other engagements that you  
23 listed do not constitute engagement on this file.

24 But ultimately, the onus is on the  
25 Developer to show that this isn't going to have an

1 effect. And the project has submitted a lot of  
2 evidence on the physical and the toxicology and that,  
3 that from their point of view, it's not going to have  
4 any type of significant impact.

5 Can I surmise the position in regards to  
6 the -- the people and the perception as the project is  
7 not able to -- to provide evidence to show that they  
8 don't think that there's going to be an impact?

9 MS. ERICA BONHOMME: Erica Bonhomme.  
10 I'm just going to qualify one (1) point because  
11 discharging -- like I -- like I said before,  
12 discharging Snap Lake effluent is not a new thing.

13 And in the last water licence renewal,  
14 De Beers did indicate that it would probably come back  
15 to the Board seeking an -- an increase in the -- in --  
16 in EQCs or -- or a change in site-specific water  
17 quality objectives. And -- and, you know, we'd need  
18 some time to go back through that record and -- and  
19 pull out the -- the key pieces of information there.

20 But -- but I guess I would say that --  
21 that this is not -- this is not new. This is not  
22 something we've thrown out at everybody and say, You  
23 know, hey, we're just going to drop this on you. It --  
24 it has been several years now that we've been looking  
25 at and discussing with -- through the Land and Water

1 Board process, in particular, a change. Yeah, I'll  
2 just leave it at that.

3

4 (BRIEF PAUSE)

5

6 Erica Bonhomme. And -- and just -- my  
7 colleague just reminded me that -- that the predictions  
8 here in terms of the downstream lake plume distance at  
9 44 kilometres was provided -- was spoken to during the  
10 -- the renewal of the water licence in 2011,  
11 specifically at the -- at the public hearings. And we  
12 didn't hear concerns raised at -- at that time.

13 So, you know, I think that we -- we --  
14 you know, if people have concerns, we -- we'd like to --  
15 -- we'd like to hear them. But, you know, we -- we  
16 haven't heard -- we haven't heard from people to date.

17 MR. MATT HOOVER: Matt Hoover, North  
18 Slave Metis Alliance.

19 I just would like to agree with what  
20 Todd Slack said regarding engagement as well. From a  
21 North Slave Metis Alliance perspective, the engagement  
22 on this specifically has been quite limited.

23 In consideration of that, fish tasting  
24 on site with a single member was not specific to these  
25 plans. And, in addition, the March 20th meeting that



1 took place largely discussed an expansion of fuel  
2 storage on site, and it was very limited, the actual  
3 discussion of effects downstream and any of these  
4 distances.

5 So from our perspective, it's been  
6 limited, and it's difficult in that context to expect  
7 much in the way of legitimate concerns to be voiced by  
8 members, especially Elders. So thank you.

9 DR. KATHY RACHER: Okay. Kathy Racher  
10 from the Board. Is Anita still on the line? No?  
11 Okay. And I think that Don Hart has left us as well.  
12 We're being abandoned slowly.

13 Is there any other questions on the  
14 cumulative effects assessment presentation or  
15 information?

16 MS. SACHI DESOUZA: Sachi DeSouza from  
17 the Review Board. I just had a couple of questions.

18 You mentioned the effects of climate  
19 change in determining the effects of seeing the plume  
20 migrating downstream.

21 I think yesterday when you were talking  
22 about the downstream lakes' model, you mentioned that a  
23 monthly climate average or climate record was used to  
24 propagate the TDS moving downstream.

25 I'm wondering why a monthly average was

1 used for a climate record and not a daily value?

2 MS. ALISON SNOW: Alison Snow from  
3 Golder. So for the downstream portion of the  
4 modelling, I'd have to look back in the EAR, but the  
5 flows that we used moving downstream were the flows  
6 that were predicted in the EAR. So I'd have to look  
7 back and see what climate record was used to produce  
8 those flows.

9 MS. SACHI DESOUZA: Yeah. Sachi  
10 DeSouza. I think it'd be important to see that, given  
11 that if you're using a monthly value and something like  
12 a freshet comes, that's going to happen over a period  
13 of weeks, and that might change the extent of -- of  
14 where you're -- were predicting these effects. And  
15 also, a monthly average doesn't account for any change  
16 in climate on a year-on-year basis.

17 MS. ALISON SNOW: Alison Snow. I -- I  
18 will -- I -- I can address that question as an IR  
19 because I'm not sure of the values moving downstream.  
20 But we have flows predicted in the EAR. That's where  
21 they were presented, and those were the flows that I  
22 used for this model also.

23 But I would like to say, just in terms  
24 of the climate effects, like, the downstream lakes  
25 portion of this model from Lac Capot Blanc down to

1 Great Slave Lake is very conservative because what we  
2 do is we take the maximum predicted concentration at  
3 the outlet of Lac Capot Blanc and we carry that  
4 downstream.

5                   However, moving downstream from Lac  
6 Capot Blanc, we don't have volumes for any of those  
7 lakes. So, for example, the volume of MacKay Lake is  
8 not taken into consideration. So all we have are flows  
9 at each one of those nodes. We just consider the  
10 increase in watershed.

11                   We don't -- we don't consider, for  
12 example, the volume of MacKay Lake, the volume of -- of  
13 Artillery Lake, we don't consider mixing in any of  
14 those. So this is a very conservative model.

15                   MS. SACHI DESOUZA: Sorry. Sachi  
16 DeSouza. Just to clarify, so in your hydrologic model  
17 for -- for the effects moving downstream, you don't  
18 account for storage within the lakes.

19                   You just assume 100 percent routing  
20 through the lake into the downstream creeks and rivers  
21 through the Lockhart Valley?

22                   MS. ALISON SNOW: Alison Snow. Yes.  
23 So every -- everything past Lac Capot Blanc, we --  
24 there's -- essen -- essentially, there's no lakes, like  
25 the -- the volume of the lake itself. So all of that

1 flow going into the lake and mixing in the lake, you  
2 get a lot of dilution in -- in each one of those lakes  
3 which is not taken into consideration here.

4 MS. SACHI DESOUZA: Sachi DeSouza. If  
5 there are other mines in this area like -- that are  
6 going to go into place and you do see a TDS rise in  
7 some of those lakes, should that be accounted for then  
8 in those -- in those storage volumes?

9

10 (BRIEF PAUSE)

11

12 MS. ERICA BONHOMME: Erica Bonhomme.  
13 I'm just -- I'm starting to get a little confused by  
14 the discussions here. I don't know if "confused" is  
15 the right word, but -- but really, you know, we're  
16 talking about really -- I mean, my experts are all  
17 sitting here. What do I know?

18 But we're all -- these are minuscule,  
19 minuscule changes we're talking about, what -- you  
20 know, I -- I think it's important from a practical  
21 perspective to look at -- Snap Lake is going to -- is  
22 currently discharging water at a certain quality. It -  
23 - it would like to increase the amount of salts in that  
24 water that it's discharging.

25 Where is that effect -- where is that

1 going to make a difference? And -- and, to me, you  
2 know, we're -- we're talking about little pieces that  
3 are going to, you know, change things potentially, you  
4 know, a fraction of a percentage overall.

5 We stand behind our model results which  
6 show that the plume will be detectable, not -- not at a  
7 signif -- at any kind of level that would trigger a  
8 response. We're just talking about being detectable 40  
9 -- 40 -- 44 kilometres downstream.

10 We are saying that at Lac Capot Blanc,  
11 as far as Lac Capot Blanc, which again is right here,  
12 that's where we're going to -- that -- that's about the  
13 extent of it. And -- and so we -- and we've clearly  
14 shown that any of these other projects around here, the  
15 Gahcho Kue, tundra, they just do not overlap in any --  
16 in any way, never mind any appreciable way.

17 So I -- I would just like to maybe get,  
18 when these questions are coming, to see if we can't put  
19 it into that context in terms of, you know, the -- the  
20 salient conclusions that we've -- we've come to in  
21 regards to responding to the question: Will the  
22 cumulative effects be significant?

23 MR. TODD SLACK: Todd Slack with the  
24 Yellowknives. I -- I understand your perspective.

25 You look at these numbers and you're

1 like, Hey, nothing's happening here. But let's recall  
2 Gahcho Kue that happened, oh, six (6) months ago.  
3 Lutsel K'e opposed that project partly in basis of what  
4 was going on -- what was happening to the Lady of the  
5 Falls.

6                   So while you are looking at numbers and  
7 you don't see it, the -- the people who live in this  
8 region and depend on it and whose land you're coming  
9 into, just don't see it that way. That's the context  
10 for -- that forms certainly my questions.

11                   And I respectfully disagree with you and  
12 will be putting that to the Board.

13                   DR. KATHY RACHER: Kathy Racher for the  
14 Board. Sachi, did you have a follow-up question, or  
15 was Alison's explanation suitable?

16

17                   (BRIEF PAUSE)

18

19                   DR. KATHY RACHER: Alan...?

20                   MR. ALAN EHRLICH: I've got a few, but  
21 they're not about fine downstream details. They're  
22 about different things.

23                   So I tried to catch up on the -- the  
24 stuff that was submitted on Friday night, and I read  
25 the cumulative effects' section and noticed that you

1 cited the Review Board guidelines, which included an  
2 appendix on cumulative effects assessment and the  
3 definition in there.

4 But then, when I look at what you  
5 actually did under Methods, you said you asked: What's  
6 the magnitude and extent of the proposed development?  
7 Does the extent of the proposed development overlap  
8 with other past, present, and reasonably foreseeable  
9 developments?

10 The extent of the development, not the  
11 effects at this point, right?

12 You said: Are there other non-  
13 development impacts that can or should be included?  
14 And you talk about overlap between developments and  
15 non-developments.

16 And I -- I'm not -- I got a little  
17 confused if you're talking about this development and  
18 other developments or this development, other  
19 developments, and then other human activities that are  
20 not formal developments under the MVRMA.

21 But I kind of muddled through it, but  
22 the language I found a smidgen confusing. Look, here's  
23 what our EIA guidelines say is the way to do cumulative  
24 effects assessment, and it's -- it's pretty credible.  
25 It's been more or less standard practice since -- since

1 before we wrote this stuff. 1998 was when this stuff  
2 kind of became mainstream.

3                   The four (4) things are: You figure out  
4 the value parts of the environment that might be  
5 affected by your project; you figure out what other  
6 past, present, or reasonably foreseeable stuff could  
7 affect them; you figure out what the effects are going  
8 to be together; and you figure out if you can do  
9 anything about it, can you manage it.

10                   Those are the -- the main steps, and we  
11 spell them out, like, 'A', 'B', 'C', 'D' in -- in our  
12 appendix. And when I look at what was done here, you  
13 know, and I -- I think I understand what you're saying.

14                   But, in terms of the value parts of the  
15 environment that are potentially affected by the  
16 proposed development, right, well, you've -- you've  
17 talked a bit about aquatic life and about aesthetic  
18 stuff with water, so lake drinkability kind of -- kind  
19 of stuff.

20                   But then, when you looked at what other  
21 projects contribute, you only looked at what other  
22 projects are contributing TDS, not what other projects  
23 could be affecting the same value components.

24                   So supposing -- imagine this. Let's  
25 take moose or something, okay? Imagine I'm assessing a



1 pro -- impacts of a project on moose, and I know that  
2 my project is going to make dust that might harm moose  
3 -- not that yours will; this is totally hypothetical,  
4 okay?

5                   And I want to do a cumulative effects  
6 assessment on how -- how this project and other  
7 projects are going to harm moose. I'm not just going  
8 to look at what other projects are going to make the  
9 moose dusty.

10                   I'm also going to look at whether or not  
11 other projects are going to involve moose habitat or  
12 accidentally -- have road accidents with moose, or  
13 whether or not they'll increase hunting for moose.  
14 I'll look at all kinds of other things that could  
15 affect the same moose, the same value component.

16                   So similarly, if I care about the water  
17 quality, I'm not just going to think about -- and I  
18 know you guys are potentially affecting TDS in the way  
19 you've described. I'm not just going to look at what  
20 else is affecting TDS. I'm going to look at what else  
21 is affecting the water, right, because that's -- you  
22 know, that's sort of the question that we're trying to  
23 get at.

24                   And I -- I just -- I really didn't see -  
25 - I -- it was hard for me reconcile the method that you

1 describe in 3.2 on page 37 with the steps that we've  
2 prescribed in our EIA guidance material. And  
3 considering there's no terms of reference, we kind of  
4 thought the EIA guidance that we had out would be  
5 useful.

6 It does have a certain legal impetus.  
7 It's made under Section 120 of the Act. And so I -- I  
8 thought that was -- I found it hard to reconcile.

9

10 (BRIEF PAUSE)

11

12 MR. ALAN EHRLICH: So my question is:  
13 Why didn't you look at other stuff that could affect  
14 the water besides TDS from other developments?

15 MS. ERICA BONHOMME: Erica Bonhomme.  
16 Our development -- let me -- let me phrase what our  
17 view of the development proposal is.

18 It's the discharge of treated mine water  
19 with a TDS of 684 milligrams per litre AML and a  
20 thousand and three (1,003) MDL; that's our development.

21 We have indi -- so that's our  
22 contribution. So any kind of contribution to effects  
23 is from that -- that particular development. We've  
24 shown that the -- the extent of that development will -  
25 - will be 44 kilometres downstream and will affect the

1 -- will affect, to some degree, water quality within  
2 those lakes 44 kilometres downstream.

3 The cumulative effects assessment that  
4 we've completed shows that there are no other  
5 developments that similarly affect or that similarly  
6 overlap with those effects from the Snap Lake mine that  
7 extend 44 kilometres downstream.

8 MR. ALAN EHRLICH: So, Erica, you've --  
9 you've said that -- you've said that you've looked at  
10 stuff 44 kilometres downstream and that they won't  
11 overlap with the effects. But the actual stuff in the  
12 cumulative effects assessment is that won't contribute  
13 TDS to those.

14 But there are other things going on 44  
15 kilometres downstream that could conceivably -- I mean,  
16 like, this is based on my best read of the map. It's a  
17 small map, but --

18 MS. ERICA BONHOMME: No. Erica  
19 Bonhomme. No, I disagree. We have taken into account  
20 this -- the Tibbitt-Contwoyto Winter Road.

21 MR. ALAN EHRLICH: So this --

22 MS. ERICA BONHOMME: It -- it's on --  
23 it's -- it's considered in --

24 MR. ALAN EHRLICH: Yeah.

25 MS. ERICA BONHOMME: -- in the project

1 inclusion list. No, there -- there are no other  
2 developments that we believe contribute to a change in  
3 water quality.

4 So it's not that there aren't other  
5 things out there. There are min -- mineral  
6 exploration, but they're not allowed to do anything to  
7 the water based on their -- their scope of their  
8 projects.

9 MR. ALAN EHRLICH: So on -- now, 44  
10 kilometres downstream, that puts me somewhere in MacKay  
11 Lake, right? And -- well, I see there's a number of  
12 points in there, but I'm thinking forty-four (44)  
13 because it's the end of the plume.

14 So in MacKay Lake, best I can recall,  
15 you've got the Tibbitt to Contwoyto Winter Road, so  
16 you've got some use. So you've got -- let's assume  
17 we're talking aquatic life, right? You've got  
18 vibrations, you've got changes in algae, you've got  
19 potential spills, you've got small drips and things  
20 like that.

21 Then you've got stuff coming in from  
22 Snap Lake because, remember, when we talk about 'the  
23 project' here, we're talking about the amendment. But  
24 you have another project quite close, which is the Snap  
25 Lake Diamond Mine that presumably has some effects that

1 -- that could reach the same water bodies and other --  
2 I mean, and you showed it on that -- that -- you  
3 remember that round looking dial where you showed how  
4 must of this stuff is coming from underground water,  
5 and that small portions come from other parts of the  
6 Snap Lake Diamond Mine?

7                   Technically, in this, that's a  
8 cumulative effect because that's a separate project  
9 because of the way that -- that this thing is scoped,  
10 right?

11                   You mentioned the tundra mine, but you  
12 say tundra mine seems to be getting better. I saw you  
13 looked at other developments. I noticed you excluded  
14 anything going on at Courageous Lake.

15                   Now, look, I understand that Courageous  
16 Lake is not a certainty. It's not a slam dunk. But  
17 they have done advanced exploration and they have done  
18 public consultation in Yellowknife.

19                   Our EIA guidelines are pretty clear  
20 about -- about looking at reasonably foreseeable stuff,  
21 and one (1) of the things we say is that:

22                   "The identification of past and  
23 present developments that affect the  
24 same components requires less  
25 prediction than the identification of

1 reasonably foreseeable future  
2 developments. Proposed developments  
3 should be included in reasonably  
4 foreseeable developments; other  
5 developments that have not been  
6 formally proposed but can be  
7 reasonably foreseen should also be  
8 included. This is a challenging part  
9 of cumulative effects assessment.  
10 Developers are not expected to see  
11 the future. They are expected to  
12 make the best reasonable predictions  
13 they can. Like all predictions in  
14 EIA..."

15 I'm reading this for your benefit right

16 now:

17 "...like all predictions in EIA, this  
18 involves uncertainty but is necessary  
19 for the Review Board to reach the  
20 best decisions about a development.  
21 The Review Board will accept less  
22 detail and more predictive  
23 uncertainty the further in the  
24 future, or the less certain the  
25 reasonably foreseeable development

1 is."

2 So, you know, there's a lot going on at  
3 -- at Courageous Lake. We know it might not be a mine.  
4 But in the cumulative effects document that you've got,  
5 we say: Well, it's therefore hypothetical. We've  
6 simply excluded all consideration of it.

7 Similarly, what you've said about  
8 cumulat -- what you've said about climate was better,  
9 because what you said about climate was -- you  
10 described the reasons in -- in more detail than what  
11 was written here, but why changes to climate and how  
12 that could affect TDS were excluded. And -- and,  
13 Hilary, I -- I accept what you said. It would have  
14 been very helpful to write that in this document,  
15 because what this said was, we've seen changes to  
16 climate change in water systems. You make a citation.  
17 It's been documented in Yellowknife in a small stream.  
18 But it's uncertain what would happen to a larger  
19 watershed; therefore, they were excluded from further  
20 review. We don't know exactly what's going to happen,  
21 so we pretend it's nothing.

22 And that's not as convincing as what  
23 you've just said in this session, which is, They said  
24 this probably doesn't matter at large watershed scales.  
25 That I -- I can accept. I was a little bit surprised

1 to see Courageous completely excluded. I wouldn't  
2 certainly want to see it included as if it was a full  
3 certainty, you know, you were fully confident it would  
4 happen. But did you look at potential changes to water  
5 quality in MacKay Lake from Courageous Lake?

6 I saw you got Tundra. I saw you put  
7 Courageous Lake on the map. But the description in  
8 here says that you didn't actually look at potential  
9 contributions from -- from Courageous Lake.

10 I'm looking at all the stuff that goes  
11 into MacKay, because it looks to me like that's where  
12 it comes together. Thanks.

13

14 (BRIEF PAUSE)

15

16 MS. HILARY MACHTANS: Hilary Machtans,  
17 for Golder. Sorry for the confab; it takes time.

18 Perhaps it's a -- a wording choice, just  
19 as I would disagree with your wording of saying, "So  
20 we're just going to pretend it's not there." That's  
21 not -- that's not the intent or the case. So what --  
22 the way we wrote is was as if -- these -- we are aware  
23 these developments exist. So the document acknowledges  
24 that Courageous Lake and -- and in terms of what's  
25 permitted on the Land and Water Board, you know,



1 heading toward advanced exploration, it's acknowledged  
2 that Kennady North has a land use permit for drilling.

3                   So what we are saying is we've excluded  
4 it from review in terms of water quality bec -- so  
5 we're acknowledging it. It -- they are present. They  
6 are doing something on the land. That's what we've --  
7 what we're saying and perhaps it's a -- it's a word  
8 choice.

9                   We are excluding them from review in  
10 terms of TDS only, in terms of water, because we hav --  
11 we do not know. We do not know the size of their mine,  
12 the direction of their discharge, the flow path of  
13 their discharge. And there is Cont -- for in the  
14 particular case of Contwoyto -- or, yeah, Courageous  
15 Lake, pardon me, you know, it has a number of lakes  
16 before it gets into MacKay. So for sure that would  
17 need a future consideration.

18                   So perhaps what we could -- we could  
19 rephrase to say, We acknowledge those developments  
20 exist. And if they proceed to a mine state, they would  
21 probably have a discharge. We cannot model that. We  
22 cannot assess that in any way. Even to head toward  
23 your -- your point about, you know, even in a -- in a  
24 less rigorous manner, we cannot. It's strictly  
25 hypothetical. So we -- for us as quantitative types,

1 we can -- we can't make any assessment of them, so  
2 we've excluded them for now. You know, in the future  
3 would -- would something have to be examined for them?  
4 The other -- so that's -- that's part 1.

5 A part 2 is at that distance from Snap  
6 Lake, you are -- we're back to this question of Sean's  
7 of: What's the range of background TDSs that we're  
8 talking about? We're easily within those ranges. So  
9 they're -- from us from a numeric perspective, the  
10 detectability of a change is very low there. Thank  
11 you.

12 MR. ALAN EHRLICH: So -- okay, so to  
13 paraphrase the -- the -- well, to think about the first  
14 part you were saying, you couldn't do it  
15 quantitatively, so you didn't want to wade into it. I  
16 would suggest that, you know, if you can't do it  
17 quantitatively, you could at least take a stab at it  
18 using the considerable amount of expert opinion that  
19 you have sitting on your side right now.

20 You know, but the second point kind of  
21 makes that first point irrelevant, because your second  
22 point is a very good one, which is you're saying that  
23 the big changes in water -- if there are real changes  
24 in water they're most -- I know I'm paraphrasing,  
25 right. But big changes would -- would -- might -- the

1 plume might -- might matter as far as Lac Capot Blanc,  
2 but they would be so trivial by the time you got to  
3 MacKay Lake that it -- they don't really add much to  
4 whatever's going on there.

5 Do I have that right?

6 MS. HILARY MACHTANS: Hilary Machtans,  
7 for Golder. Yes, I think that's a fair assessment.  
8 They exist at the current state of the projects and the  
9 current approvals. And assuming mitigation, assuming  
10 all the rest, yes, that is correct.

11 MR. ALAN EHRLICH: Okay. That helps a  
12 lot. Thank you.

13

14 (BRIEF PAUSE)

15

16 DR. KATHY RACHER: Kathy Racher, for  
17 the Board. I'm not seeing any more hands at the  
18 moment. I don't -- do we want to carry on or have a  
19 short break? Peter, what's your opinion? Why don't we  
20 take a...

21

22 (BRIEF PAUSE)

23

24 DR. KATHY RACHER: Yeah, let's take a  
25 ten (10) minute break. Cheese makes everything better,

1 so let's do that. Yes, we'll take a -- like a ten (10)  
2 minute break. I'll just -- I'll just get Peter to tip  
3 the side of the glass when it's time to come back.

4

5 --- Upon recessing

6 --- Upon resuming

7

8 DR. KATHY RACHER: Okay. Kathy Racher,  
9 here for the Board. So the last presentation today is  
10 on -- on alternatives. And I'm going to turn that over  
11 to Erica.

12

13 PRESENTATION - ALTERNATIVES:

14 MS. ERICA BONHOMME: Erica Bonhomme.

15 So as is required in the Environmental Assessment, we  
16 are -- we've presented some information in supplemental  
17 filing on -- on -- filed on Friday, April 11th, in  
18 regards to alternatives to the development. And I just  
19 want to be clear again on what our development proposal  
20 is.

21 And so our development proposal is to  
22 discharge treated mine effluent at concentrations not  
23 exceeding AML 684 milligrams per litre and the  
24 corresponding maximum daily limits, as well as the --  
25 the components of TDS, including nitrate, chloride,

1 fluoride, nitrite, and sulphate as is in our -- our  
2 application.

3                   So we assessed three (3) -- evaluated  
4 three (3) alternatives, one being that we don't change  
5 the effluent quality criteria from its current lev --  
6 levels. So where we do have EQCs, we wouldn't -- we  
7 wouldn't change those.

8                   Alternative 2 is a reduction in footwall  
9 development. So basically, we talked about yesterday  
10 how it's our footwall where the majority of our TDS  
11 originates from.

12                   And 3) reducing overall water flows  
13 coming from within the mine, because that's where most  
14 of our effluent originates from -- from, underground,  
15 water underground.

16                   So Alternative 1, where we don't change  
17 the effluent quality criteria, we did touch on this a  
18 little bit yesterday in our discussion around the TDS  
19 Response Plan. But be aware that our licence limits --  
20 our licence -- current water licence shows that there  
21 will be limits that come into effect January 1st, 2015,  
22 for TDS, chloride, and nitrate.

23                   We mentioned yesterday that those are  
24 not realistically achievable with our current mine  
25 practices, as well as the -- the known cost estimates

1 for TDS treatment options. De Beers has conducted pre-  
2 feasibility of those treatment options and -- and  
3 that's in the TDS Response Plan. And they did mention  
4 yesterday again that -- that if we were looking at  
5 having to treat the whole effluent, which is pretty  
6 much what it would take to get down to the limits that  
7 come into effect January 1st, 2015, that we would not  
8 be able to achieve that; 188 million would be the cost.  
9 The alternative is not viable. We've concluded the  
10 alternative is not viable.

11 Alternative 2, where we look at a  
12 reduction of footwall development. As I mentioned,  
13 again, the greatest contributor to TDS loadings is from  
14 advancement of the footwall. So that's part of our  
15 mining practice. That's when the high TDS connate  
16 water is rele -- released. The increases in TDS in the  
17 mine effluent are directly related to continued mining.  
18 And we -- we've talked about that in the groundwater  
19 model, which is based on the mine plan.

20 But logically, we know then that slowing  
21 advancement of the footwall would decrease the rate of  
22 TDS loading to the environment. However, footwall  
23 development is essential to our current methods for  
24 mining the ore deposit. And it's the footwall that  
25 contains all of our infrastructure that supports ore

1 mining, so that a reduction in footwall development is  
2 not achievable to support the current mine plan,  
3 because it will result in the mine becoming non-  
4 economically viable in the long term. Basically,  
5 reducing footwall developments -- development to a  
6 level to achieve a different limit means we have to  
7 reduce our mining.

8                   Option 3, reducing water flows. Again,  
9 we talked about this yesterday in the TDS Response  
10 Plan. And largely that would involve grouting of the  
11 high flow areas, or high TDS connate inflow areas. We  
12 know that that's only partially effective, in some  
13 cases impossible, and that it would take most of the --  
14 most of the -- the life of the mine to be able to  
15 achieve that. As a result, we conclude that full  
16 grouting is also not feasible.

17

18 QUESTION PERIOD:

19                   DR. KATHY RACHER: All right. Kathy  
20 Racher, for the Board. Do we have any questions or  
21 comments? Todd...?

22                   MR. TODD SLACK: Yeah, I've got a few  
23 here and I guess we'll stick with the -- the slide on  
24 the scene -- on the scene -- screen.

25                   If grouting is not an acceptable

1 alternative and we know it's not right from the get go,  
2 why was it considered as one?

3 MS. JULIE L'HEUREUX: Julie L'Heureux.  
4 We -- we had the conclusion from the grouting group  
5 three (3) weeks ago. So we have this on file if  
6 needed.

7 MR. TODD SLACK: Yes, please. I -- I  
8 think that would be useful. Sorry, Todd Slack, with  
9 the Yellowknives. Yeah, that would be great.

10

11 (BRIEF PAUSE)

12

13 MR. SEAN WHITAKER: Sean Whitaker,  
14 Environment and Natural Resources. Just to clarify,  
15 that is going to be posted to the MVEIRB registry,  
16 correct?

17 DR. KATHY RACHER: Kathy Racher, for  
18 the Board. Yeah, if it's being taken as a -- an IR.  
19 So, yes, of course it will.

20 MS. ERICA BONHOMME: Yeah, Eri -- Erica  
21 Bonhomme. Just for clarification, that would be  
22 provided as an IR response by -- by April 30th.

23

24 --- INFORMATION REQUEST NO. 18: De Beers to provide  
25 the grouting study



1 recently completed by  
2 De Beers's grouting  
3 expert  
4

5 MR. TODD SLACK: Todd Slack, with the  
6 Yellowknives. All right. Thanks for that. So I  
7 understand that \$188 million is a lot of money. It  
8 seems like a lot of money. I don't know how much money  
9 it is, but it seems like a lot. And I accept De  
10 Beers's position that that's too expensive.

11 So I guess I ask the question: How much  
12 will the current six eighty-four (684) mitigation cost?

13 MS. ERICA BONHOMME: Erica Bonhomme.  
14 We -- we don't know. We haven't got the results of  
15 that pilot testing back which will provide us some of  
16 those estimates that, you know, the results of the four  
17 (4) -- four (4) test scaled treatment testing, which we  
18 can then apply to a percentage of the mine effluent.

19 The 108 -- 88 million involves treating  
20 the full mine effluent. And that is a capital  
21 expenditure. So it's not the same as a scaled version  
22 of that, which would treat a percentage of the  
23 effluent. So we -- we -- it will be less. I can't  
24 give you a number right now.

25 MR. TODD SLACK: Todd Slack, with the

1 Yellowknives. So how then are we, as parties, supposed  
2 to evaluate both the proposal and what is acceptable?  
3 Okay. If you say one eighty-eight (188) is too much  
4 but you can't say how much the current plan will be, I  
5 guess, what is an acceptable cost to De Beers?

6 MS. ERICA BONHOMME: Erica Bonhomme.  
7 You know, we do have a ballpark idea internally. I'm  
8 not going to give you a number on that now.

9 MR. TODD SLACK: I -- I'm not  
10 surprised, but -- sorry, Todd Slack, with the  
11 Yellowknives. The purpose of alternatives is to  
12 present real alternatives, things that you could have  
13 done but, you know, chose not to do for some reason.  
14 We don't -- we, as parties, do not know what you're  
15 proposing relative to the first alternative. It --  
16 where -- I'm at a loss as to what to do here. But I'll  
17 move on, money -- money aside.

18 I'm guessing -- why did the project not  
19 consider an alternative of let's just use the Health  
20 Canada guideline of 500 parts -- parts per million  
21 rather than only three fifty (350) or only six eighty-  
22 four (684)? That would have given us some spectrum to  
23 be able to look at these different alternatives and  
24 understand what your thinking is. Because right now  
25 all, we know is you're going to go with the lowest-cost

1 solution that meets that pollute-up-to limit of six  
2 eighty-four (684).

3 MS. ERICA BONHOMME: Erica Bonhomme.  
4 You know, I -- I guess I've always said that we -- we  
5 were hoping to get some direction from the regulator in  
6 terms of what our -- our -- an appropriate site-  
7 specific water quality objective would be. We are  
8 assuming right now. We're doing all our testing based  
9 on the one (1) we're proposing.

10 The evaluation that we're doing does  
11 take into consideration some different numbers. But,  
12 you know, we think we've provided really solid  
13 evidence. We have high confidence in our groundwater  
14 model. We have high confidence in our site models and  
15 our lake models. And we have high confidence that a  
16 TDS treatment system will work; in particular, a  
17 reverse osmosis system, which has been used for  
18 decades.

19 What we don't have is a defi -- a  
20 definitive number. What we don't have is the actual  
21 cost estimate based on the -- the scaled testing that  
22 we're currently undertaking. What we know is it's not  
23 going to be 188 million, which is the alternative we've  
24 proposed, which is just a capital expenditure. It  
25 doesn't take into account any operating cost associated

1 with that. And that, I -- I can tell you, is not  
2 achievable for De Beers.

3 MR. TODD SLACK: Todd Slack, with the  
4 Yellowknives. And I guess my last question, does the  
5 project see any benefit to achieving a -- a effluent  
6 quality criteria greater -- or better than what they  
7 have approved -- or suggested, pardon me?

8 MS. ERICA BONHOMME: Erica Bonhomme.  
9 Sorry. Sorry, can -- can you just run that by me  
10 again, Todd?

11 MR. TODD SLACK: Do you see any benefit  
12 in achieving an effluent quality criteria better than  
13 what you've proposed?

14 MS. ERICA BONHOMME: Erica Bonhomme.  
15 Yeah, I mean, if we were to discharge at no effluent,  
16 that would be a -- a huge benefit. Again, it's all a  
17 cost-benefit analysis that we have to undertake. I put  
18 up a slide yesterday which says -- has -- which takes  
19 into accou -- which describes all the things we have to  
20 take into account when doing this.

21 We will have to implement treatment at a  
22 cost; not at any cost. And -- and that's an important  
23 distinction. I should note that we do have funds set  
24 aside in our strategic business plan that -- for  
25 implementing a treatment option. I think that's a -- a

1 business commitment you need to be aware of. And that  
2 what we don't have is the actual model that we'll put  
3 into implementation what it is against those costs.

4

5 (BRIEF PAUSE)

6

7 MS. SARAH-LACEY MCMILLAN: Sarah-Lacey,  
8 with Environment Canada. So going with that, can you  
9 give us any details on the options that are being  
10 considered?

11 MS. ERICA BONHOMME: If you just give  
12 me a moment, I can pull up the slides from yesterday.

13

14 (BRIEF PAUSE)

15

16 MR. ZHONG LIU: Kathy, may I ask --  
17 Zhong Liu, from SLEMA. May I ask -- I want to present  
18 one (1) slide and -- or it's an email to Tasha Hall of  
19 Golder. I want to present that slide.

20 And it show some interesting -- the  
21 propulsion, how much of water will be treated. I did a  
22 -- a simple calculation. I want to show that and have  
23 a further discussion.

24 DR. KATHY RACHER: Kathy Racher, for  
25 the Board. So how -- how does that -- I mean, I -- I

1 don't know that that's going to affect anything that De  
2 Beers is going to come up with the mitigations. I'm  
3 just not sure how it -- it helps parties here --

4 MR. ZHONG LIU: Well --

5 DR. KATHY RACHER: -- because it won't  
6 help us with knowing the cost or what, you know, the  
7 feasibility of -- of anything.

8 MR. ZHONG LIU: I guess -- Zhong Liu,  
9 from SLEMA. I guess to give you some idea about how  
10 much cost, because it will give you how much -- you  
11 know, it -- based on different mine water TDS levels  
12 and how much water should be treated.

13 DR. PETER CHAPMAN: Peter Chapman here.  
14 Could we request this be submitted formally as a -- an  
15 IR so we have time to look at it and, you know,  
16 determine that? Otherwise, we're just looking at it  
17 off the fly, and -- and that's very difficult.

18 MR. SEAN WHITAKER: Sean Whitaker,  
19 Environment and Natural Resources.

20 I'd also like Zhong to post that to the  
21 Board's website for information to the Board as well,  
22 as well as that poster, while I'm on it. And if you  
23 guys can provide that poster as well. Any information  
24 that's been presented, I would love for it to be on the  
25 Board website. I'm sure there's a PDF file of that.

1 Sean Whitaker, Environment and Natural Resources.

2 DR. PETER CHAPMAN: Peter Chapman. I  
3 just offered to -- to let him take it, so he can take  
4 that one (1) and I will -- we will provide a PDF as  
5 well.

6 DR. KATHY RACHER: Kathy Racher, for  
7 the Board. Yeah, Zhong, I'm -- I'm not sure that a  
8 discussion of some back of the envelope stuff at this  
9 stage is -- is really a good idea, or fruitful. But  
10 we'll take the request to put it on the record. I  
11 don't see any problem with that. And I don't know if -  
12 - we'll have to talk amongst ourselves as to how to,  
13 you know, whether we want some back and forth on that  
14 or -- or whatnot.

15 But certainly for the -- the benefit of  
16 parties -- Paul, I'd like you to leave your hand up a  
17 little bit longer. All right, go.

18 MR. PAUL MERCREDI: Paul Mercredi,  
19 GNWT. Just to separate things out here, if Zhong would  
20 -- would -- I'm not requesting on behalf of Zhong, but  
21 if -- if he is requesting that -- that the Board posts  
22 that to the registry for the Review Board's  
23 consideration during the Environmental Assessment, that  
24 is separate from -- from what Sean just asked. So I'll  
25 address what Sean just asked.

1                   The poster on the wall has been --  
2   everybody's been looking at for about -- about a day  
3   and a half at this session, I know that De Beers  
4   referenced it during their -- their presentation of --  
5   on -- on their impact prediction. So that poster does  
6   need to be on the Review Board's registry. It -- it  
7   has been -- like parties here have been exposed to it.  
8   Board staff have been exposed to it. It is a pretty  
9   critical piece of information relevant to the case that  
10  the Company is making.

11                  And it has been -- everybody here has  
12  been exposed to it. It's -- it's a fairly critical  
13  piece, and I just want to make sure that that is an  
14  Information Request that GNWT is -- is putting forward  
15  to the Review Board for the Company and to -- to  
16  deliver on.

17                  DR. KATHY RACHER:   Kathy Racher.  
18  Erica, did you have something to say before I...

19                  MS. ERICA BONHOMME:   Erica Bonhomme.  
20  It's been on the record since January 6th. We -- we  
21  presented this, this very same poster. It was up on  
22  the wall when we held an information session on January  
23  6th. It was subsequently filed with the meeting notes  
24  as -- as part of this application.

25                  MR. PAUL MERCREDI:   And just --



1 DR. KATHY RACHER: Sorry, Kathy Racher,  
2 for the Board. Which -- which Board did it go to?

3 MS. ERICA BONHOMME: Land and Water  
4 Board. The Review Board was not engaged at that time  
5 yet.

6 DR. KATHY RACHER: Okay. So it needs  
7 to be just put on the MVEIRB reg -- registry as well.  
8 Yeah.

9  
10 --- INFORMATION REQUEST NO. 19: De Beers to provide a  
11 PDF version of the  
12 Poster titled "Effect  
13 of total dissolved  
14 solids on  
15 fertilization and  
16 development of two  
17 salmonids";  
18 alternatively, De  
19 Beers may submit the  
20 meeting notes from  
21 its information  
22 session in January  
23 (which contains this  
24 poster) to MVEIRB for  
25 its registry

1

2

MS. ERICA BONHOMME: Erica Bonhomme.

3

4

5

6

We also would -- would like to just speak to some of the questions before about the processes. I appreciate that Zho -- Zhong has some information. We'd like the opportunity to look at it.

7

8

9

10

As I have said a couple times before, we have high confidence that TDS treatment, in particular an RO-based system, will be effective. I -- I might say that a few more times.

11

12

13

14

15

16

17

But I'd like Julie to walk us through -- again, these four (4) slides that we put up yesterday, we didn't spend much time on. But -- but just to really -- so that you understand what we're testing and that we do have a world-class expert working on this. Denver, Colorado, is the -- the centre of the universe in terms of water treatment.

18

19

20

21

22

23

24

And Linkan Systems -- Linkan Engineering has been engaged to help us with this. And these are the four (4) systems -- a combination of systems that they're -- they're currently testing for us based on a -- a sample of the mine effluents. So they actually took water from our site and they're -- they're testing it -- it in their modular units.

25

So I'm just going to have Julie walk

1 through these four (4) things that we're testing, just  
2 so you understand a little bit better.

3 MR. PAUL MERCREDI: If I can just jump  
4 in, I -- has that been captured for the Review Board  
5 registry for the Information Request? I -- I don't  
6 know that we had any response from -- from Board staff  
7 for that. I just want to make sure that that is  
8 captured. Yes. Thank you. And that was Paul Mercredi  
9 with GNWT.

10 MS. JULIE L'HEUREUX: Okay. Julie  
11 L'Heureux. So I just want to come back again so people  
12 understand that we did some BTA, best technology  
13 achievable, for our site-specific parameters since  
14 2008. So even this year -- and I think you request  
15 those -- those studies yesterday, so it's -- it's going  
16 to be available for you.

17 But yeah, so different -- a different  
18 company, different people from Golder, from ACT  
19 (phonetic), from AMEC (phonetic), specialized engineer  
20 went to the same conclusion that it's RO. Okay.  
21 That's the best option for us. And as Erica mentioned,  
22 it's been thirty (30) years that it's been effective  
23 for treating nitrates, TDS.

24 So that's the premises, that's the  
25 Option 1. That's -- that's what we are talking. This

1 is what we are looking. Why we presented to you those  
2 four (4) different options that we actually going --  
3 we're undergoing is just to make sure that our -- our  
4 assumptions are right. But what we're looking at at  
5 the moment is just what we -- what we would like to  
6 achieve. It's pretty simple.

7                   So it's -- it's just water going through  
8 a membrane and removing from 90 to 98 percent of -- of  
9 the -- of the constituent. And then after that it goes  
10 through an evaporator, because we can't deal with the  
11 brine on site. There's just too much of a volume. So  
12 then it will go through another unit that's just going  
13 to evaporate all the -- the water from this brine and  
14 it just gets solids.

15                   So we -- we ask many other mining  
16 company in Canada for -- and we ask for a  
17 recommendation on which engineer. You know, we didn't  
18 want to have -- we would like to have a third party as  
19 -- we asked Golder and other people, but we decided to  
20 choose this specialist in water system as a consultant.  
21 So we're not going to be married with a company that  
22 sells unit. We wanted to have the best consultant to  
23 tell us what is the best unit for us at Snap Lake.

24                   So that's where we are at the moment.  
25 Telling you a price, he can't even tell us, because we

1 will still have to go through a procurement process of  
2 four (4) different companies from Violaia (phonetic) or  
3 GE that's going to say, You need an RO treatment unit  
4 for 10,000 cubic metre per day; that's what we can  
5 offer for you. So as the De Beers policy, we'll have  
6 to go through four (4) different vendors to make sure  
7 that there's no corruption or collusion and then we  
8 will -- can give you like a baseline.

9                   Then we need to make sure that we finish  
10 those pilot tests. And then when those pilot tests are  
11 done, then we can put the numbers in the model. And  
12 then we will -- we will know better from our sixty-  
13 three (63) -- or let's say we have a buffer at 70  
14 megalitre per day, how -- what is going to be the  
15 volume will need to go and pass through those  
16 microfiltration and RO? And then we'll have to  
17 purchase those three (3). So we'll have a capital  
18 expenditure and then an opex budget that we will  
19 present when we'll have the answer.

20                   But for the moment, we have a ballpark  
21 idea, but we won't say it at the moment, because  
22 nothing is proved. And the second part is we're  
23 working with finance and we'll make sure that we have  
24 the budget, because we say we need -- we will need that  
25 in the near future and everybody is aware of it.

1                   So, I mean, the system's been proven  
2 it's going to work. We are under -- doing everything  
3 to make sure that it's going to work. So like once  
4 again, I just want to -- to say that -- I mean, we're  
5 all working in the same direction here. So I hope it's  
6 clarified things, but that's the premise. That's a  
7 simplified RO treatment and then crystallizer unit.  
8 This is where we're looking at. But we decided to look  
9 at other options just to make sure that we are using  
10 the best option to minimize the brine as well.

11

12                   (BRIEF PAUSE)

13

14                   DR. KATHY RACHER: Kathy Racher, for  
15 the Board. Just to finish off Zhong's request, we just  
16 -- the -- the Board has decide -- or the Board staff,  
17 really, and the executive director has decided that  
18 because there -- there has been new information on the  
19 record just since Friday and we've -- we've had -- I  
20 think we've had a good discussion about it today and  
21 yesterday, but there's an understanding that there may  
22 be some follow-up questions on that.

23                   And so we're going to give parties till  
24 April 22nd, at 5:00, to submit any additional  
25 Information Requests on the additional information that

1 has been filed. And, Zhong, in speaking with Mark  
2 Cliffe-Phillips, we ask that -- that you could submit  
3 what's -- what you were talking about earlier with a --  
4 a question if you have an actual request or a question  
5 for De Beers to include. That can be done by -- it's  
6 not Monday; it's Tuesday, April 22nd, at 5:00. You can  
7 submit it -- all additional Information Requests to  
8 Simon about that.

9                   So having said that, Todd, you had a  
10 comment?

11                   MR. TODD SLACK: So -- Todd Slack, for  
12 the Yellowknives. So I guess it comes back to what  
13 that Information Request is. Because the evidence that  
14 as a party we have -- I know you keep saying, RO, RO,  
15 RO. Well, we haven't seen a lot of that. You know,  
16 the -- I've been through the application twice. It's  
17 pretty thin in terms of det -- details.

18                   So I -- the question I have is: Is the  
19 Information Request from yesterday, 8 or 9, whatever  
20 it was, for further information on the mitigation  
21 methods, is that going to include -- include some  
22 details that gives us a better idea of the  
23 achievability, the -- whatever you -- because it seems  
24 very clear in De Beers's mind.

25                   Can you provide some of those details to

1 us so we can understand what it is you're thinking?

2 MS. JULIE L'HEUREUX: Yes, Julie  
3 L'Heureux. As I mentioned, we have an historical BTA  
4 from different company and we will provide that. And  
5 you'll see that these engineers looked at all the other  
6 -- like all the option that are feasible in 2014.  
7 That's why read on the exercise. I mean, six (6)  
8 months ago, to make sure that we're not going to use an  
9 old document. If there's a new technology that was on  
10 the market and proved then we would have looked at  
11 idea.

12 But that's why we decide let's do it  
13 once again. Update the cost. Update maybe new  
14 technology. But we said yesterday that we will provide  
15 all those BTA that's been since 2008.

16 MR. ZHONG LIU: Zhong Liu, from SLEMA.  
17 My -- it's a kind of a very short research, very, very  
18 short. Just one (1) -- like one (1) slide. And that  
19 with some very simple calculation to give you some  
20 idea, because yesterday when Erica is both presenting -  
21 - and that is for options for RO TDS treatment. And so  
22 -- because right now De Beers couldn't present how much  
23 water will be treated.

24 So my little research is just tell you  
25 if in a different level of TDS, or in the main water,



1 how much percentage of the water -- main water be  
2 treated and then can meet the effluent -- proposed  
3 effluent EQC for TDS. That's very simple.

4 For example, I just give an example. If  
5 the -- the TDS level in mine water around 700  
6 milligrams per litre, De Beers only has to treat 2.5  
7 percent of mine water. That how much it is. But if  
8 the TDS level is around 2,000 milligrams per litre in  
9 the main water, De Beers might has to -- have to treat  
10 around 40 -- oh, sorry, 70 -- 69 to 73 percent of the  
11 main water based on different percentage of efficiency  
12 of removal.

13 DR. KATHY RACHER: Okay. It's Kathy  
14 Racher, for the Board. I -- I do understand and we  
15 have -- we have said you can put it on the record with  
16 a question for De Beers. I just -- you know, those are  
17 pretty specific numbers and they could make people feel  
18 really good, or really bad, and -- and they may or may  
19 -- you know, you've done them, but they haven't been  
20 checked by anybody. And I just -- I don't want to have  
21 a -- a theoretical discussion without having had a  
22 second look at the information.

23 So you can submit that on -- on Monday  
24 by 5:00 -- or Tuesday, sorry, by 5:00. And if you have  
25 a specific question for De Beers, if De Beers wants to

1 look that over and give an opinion, that would be  
2 great. And then everyone else will have -- be able to  
3 see that plus an evaluation by the company.

4 Having said that, are there any more  
5 questions? Rick...?

6 MR. RICK WALBOURNE: Rick Walbourne,  
7 GNWT. Is there a potential that once pilot testing is  
8 done, you make a determination on capital costs,  
9 operational costs, precise numbers?

10 I guess I'm a little concerned that is  
11 there a potential that De Beers could come back after  
12 all that's done and still determine that it's not  
13 economically feasible to treat water at Snap Lake?

14 MS. ERICA BONHOMME: Erica Bonhomme.  
15 Okay. I'm going to -- I'm going to say a few things  
16 again. We have really good confidence in our  
17 groundwater model. We have really good confidence in  
18 our site models and our -- and our lake models. We  
19 have really good confidence in the benchmark studies  
20 that have been undertaken.

21 We have high confidence that the  
22 proposed water quality objectives will be protective of  
23 the aquatic life and the water will remain safe to  
24 drink. We're going to provide information about the  
25 out -- outcomes of the pilot testing. Some -- some

1 information will trickle in before this, but we'll  
2 provide the information on the outcomes July of this  
3 year.

4 Now, yesterday I provided a time line  
5 for when we would implement a treat -- a treatment  
6 option. We've also -- we've told you that we have high  
7 confidence that the model will work -- that the treatment  
8 will work.

9 What we don't know -- we're not making a  
10 -- a feasibility decision here. We're making a  
11 decision on what the system will look like, that by Q2  
12 of April -- Q2 of 2015, we will have this thing  
13 implemented.

14 Now, a number of times we've come back  
15 in this discussion around, Well, what happens if  
16 everything's unmitigated? Well, when you -- when you  
17 look at the models, we will exceed the site-specific  
18 water quality objective that we're proposing of 684  
19 milligrams per litre if we do nothing right now.

20 If we do nothing and let our mine water  
21 just go, by Q3 of 2015, in a worst-case scenario --  
22 worst-case scenario, upper bound flows, we will exceed  
23 our proposed site-specific quality objective after our  
24 -- our time line for implementing the mitigation.

25 So if -- if we can't sort all of this

1 out and -- and, you know, in the end you don't have  
2 confidence that we're going to do something, or you say  
3 that, you know, we're -- we're -- maybe the site-  
4 specific quality -- water quality objective is not  
5 appropriate, then -- then, you know, we -- we -- now is  
6 the time to know that.

7                   Because this is the time line we're --  
8 we're implementing and it's based on the assumption  
9 that six eighty-four (684) will be -- will be provided  
10 as the site-specific water quality objective that we're  
11 trying to achieve.

12                   But keep in mind that we -- we will not  
13 achieve that site-specific water quality objective in  
14 the lake until mid-2015 if we do nothing.

15                   Just -- my colleague wants to add  
16 something.

17                   MS. JULIE L'HEUREUX: Julie L'Heureux.  
18 So just quickly to answer your -- your question.  
19 Obviously we did some calculation that Zhong wants to  
20 present. But because we didn't -- we have not finished  
21 the pilot test, we don't want to present those result.

22                   So since we have an idea, okay, then we  
23 also have an idea of the cost. So if we going forward  
24 with the pilot test and showing to you and doing all  
25 the modelling, that means that we have the font (sic).

1 So I hope it answer your questions.

2 MR. RICK WALBOURNE: Rick Walbourne,  
3 GNWT. Not entirely.

4 Again, you've presented all your models  
5 and you have high confidence. And -- and we're not  
6 discussing that right now, nor are we discussing the  
7 validity of the six eight-four (684).

8 My concern remains that, based on your  
9 pilot testing -- and you did mention that this is not a  
10 feasibility study. You're just trying to get an idea  
11 of how this would look. My concern is that once you  
12 determine what that treatment system will look like and  
13 then do the feasibility study, what is the potential  
14 that De Beers could make a determination that is not  
15 feasible, economically feasible, similar to the one  
16 eighty (180)?

17 DR. KATHY RACHER: Kathy Racher for the  
18 Board. I think -- I think your -- your -- I think De  
19 Beers' position is -- is clear, and -- and so is yours.  
20 And I hope that you will make that clear to MVEIRB,  
21 like, and think about what you would recommend for  
22 measures to the Board to, you know, make whatever case,  
23 you know, you -- you think should happen.

24 I mean, De Beers will do -- it has -- De  
25 Beers has its own plan, and then it's also regulated

1 and -- by -- by the Boards, and will have to follow  
2 what the measures are and what the water licence says  
3 or it won't be able to operate.

4 So that's where -- you know, you guys  
5 don't have to agree today on what, you know, exact --  
6 we're not going to get exactly the commitment that  
7 you're looking for. The most powerful position you  
8 have is to present your case to the Board.

9 MS. JULIE L'HEUREUX: Julie L'Heureux.  
10 Just to finish, I think if you go back, yes, it's a  
11 feasibility study. So we -- at the end of this  
12 feasibility study, we'll be in conceptual design.

13 MR. TODD SLACK: Todd Slack with the  
14 Yellowknives.

15 We've just come through a -- a long  
16 Giant process -- you know, Golder was a big part of  
17 that as well where they decided that the reverse  
18 osmosis method was, (1), very expensive and, (2), it  
19 was very problematic in terms of the brine. And that's  
20 here in Yellowknife.

21 So I -- in terms of achievability, I --  
22 listen, I hear you say, reverse osmosis will work. I  
23 guess I'm looking for some understanding as to why this  
24 can work at Snap Lake, but it wasn't applicable  
25 somewhere here that's already on the transportation

1 network.

2 MS. JULIE L'HEUREUX: Julie L'Heureux.  
3 I don't have the detail of your other study so I can't  
4 judge, you know. We're doing our proper -- our study  
5 with our expert, and they say that it -- it can be  
6 feasible.

7 DR. KATHY RACHER: Kathy Racher for the  
8 Board. I guess it is a different case. I think -- I  
9 think we talked about this at the Gahcho Kue -- I don't  
10 know -- technical session. Just that -- I mean, Giant  
11 is looking at treating in perpetuity, which is a  
12 different story altogether, I guess, than -- than the -  
13 - than the current case.

14 And it is a proposed method for Fortune.  
15 Now, it hasn't been implemented, and the water licence  
16 hasn't been given, so there's no -- there's no  
17 assurance in that. So I -- I don't know. I -- I don't  
18 know that they can answer a question about a project  
19 they don't know about.

20 Do you have -- does anyone else have any  
21 other information as to why the RO wasn't suitable for  
22 Giant?

23 MR. SEAN WHITAKER: Sean Whitaker,  
24 Environment and Natural Resources.

25 I don't want to commit -- commit to that

1 one, but I did work quite closely with Tundra, which is  
2 the same -- I worked for WESA at Tundra doing the water  
3 treatment.

4                   The process is significantly different  
5 and to the level that they will be required to treat  
6 to. So because you're governed by MMER, it's five  
7 hundred (500) parts per million. It's actually a  
8 flocculation treatment, so it's lime ferric sulphate  
9 and a flocculant, and then you remove the flocculant  
10 from water and you -- based on your dose response, you  
11 achieve a number.

12                   An RO is more cost prohibitive. It is -  
13 - you -- you do have to have high pressure volume of  
14 water going through that membrane to be able to remove  
15 the contaminants. It's an ion exchange essentially.  
16 Like you're exchanging ions through a membrane, or  
17 there's different versions -- filtration. It depends  
18 on how you pre-filter stuff out.

19                   So it's a -- it's cost and to the number  
20 that you have to achieve, and that's -- so it's what  
21 you have to remove and what you need to achieve. An RO  
22 could achieve drinking water standards. So if Giant  
23 was -- had to go to drinking water standards -- I don't  
24 know, I did not follow the process at all -- you could  
25 feasibly achieve it.



1 But you're also coming from I believe  
2 it's seventy (70) parts per million from the north pond  
3 of arsenic to get down to. So you'd have to have extra  
4 processes in that. So that's the assessment that would  
5 have to happen.

6 An RO system would work. It would just  
7 -- depends on the steps before that to get to that  
8 level. And then ferric sulphate obviously adds TDS  
9 because it's the sulphate portion of that. So then  
10 you'd have the RO to remove the TDS at the very end.

11 So those are things you have to consider  
12 in the costs assessment of a water treatment plant.  
13 And that's the difference for Giant. Like, I'm  
14 assuming Giant, but the current method that they use is  
15 the same as Tundra and Con Mine. It uses the same  
16 process as well for water treatment. It just depends  
17 on the level you need to achieve and what your final  
18 effluent numbers are.

19 MS. JULIE L'HEUREUX: If I can just  
20 conclude of -- of what he just said, exactly what we  
21 are saying. It's we need to have our assumptions from  
22 site and our specific parameters and our water  
23 analysis. We can't just take what we doing at Snap  
24 Lake and -- and make projection on something else.  
25 That's why we hiring specialist consultant to take our

1 assumptions at -- at site specific, and all the BTA  
2 will conclude on that as well.

3 MR. SIMON TOOGOOD: It's Simon Toogood  
4 with the Board -- sorry, the Review Board.

5 I just had a question with respect to  
6 the off-site disposal. You committed to some form of  
7 treatment. You know, the exact get-up isn't known, but  
8 the products are somewhat known. It's going to be  
9 primarily salt.

10 Just -- do you have any idea of the  
11 scale and the methods of disposal? I mean, obviously,  
12 it's just -- maybe in a scenario like best case, worst  
13 case, let's take the \$180 million case down to, you  
14 know, your lowest case.

15 This -- do you have any idea of what the  
16 scale of this is going to involve? And -- and I  
17 presume you'd be trucking it out. Just kind of some  
18 idea around that topic.

19

20 (BRIEF PAUSE)

21

22 MS. JULIE L'HEUREUX: So -- Julie  
23 L'Heureux. So I don't have the number, but we have --  
24 we have -- we're thinking about it, like how we going  
25 to dispose. It's going to be in a sealed containment

1 because it's very soluble salt.

2                   So for the year before the winter --  
3 well, obvious -- hopefully, we will be able to  
4 transport all the -- the -- all the -- the waste on our  
5 winter -- winter road truck that's coming with material  
6 and getting back empty. So we can put them back on  
7 those trucks. That's the first assumption.

8                   Obviously, if needed, we have Hercules  
9 that come quite often to site and Buffalo. So, I mean,  
10 for me, it's not a problem of how we going to get rid  
11 or we going to go back to society. And then you have  
12 specialized waste landfill for -- for those product. I  
13 mean, I think it's regulated in Alberta or -- it's not  
14 a problem for us to truck waste to Alberta if needed.

15                   MR. SIMON TOOGOOD: I guess it was just  
16 some idea of the scale. It's Simon Toogood with the  
17 Review Board.

18                   We're talking a thousand (1,000)  
19 truckloads, say, is it a couple cubic metres? Just --  
20 do you have any idea of the scale?

21                   MS. JULIE L'HEUREUX: Julie L'Heureux.  
22 I think it's a couple of cubic metre per day.

23                   DR. KATHY RACHER: Okay. I think that  
24 -- sorry, Kathy Racher from the Board. I've forgotten  
25 who I am really.

1                   The -- the last part of the agenda dealt  
2 with the other amendments, the ominously labelled other  
3 amendments. These are the amendments that were  
4 requested as part of the application to the water  
5 licence by De Beers in its application.

6                   So I'm going to open it up to see if  
7 people have -- Sean's laughing at me because I'm  
8 repeating myself -- if anyone has any comments or  
9 questions of clarification on those amendments.

10                  We're -- we weren't planning to have a  
11 technical session in -- in -- between the MVEIRB  
12 process and the water licence process. So I realize  
13 these questions could be very specific on the water  
14 licence, but it's a good opportunity if -- if -- while  
15 you've got folks here to ask any specific questions if  
16 you have them.

17                  Paul...?

18                  MR. PAUL MERCREDI: Paul Mercredi,  
19 GNWT. Just to clarify again, these transcripts will be  
20 about -- available on both registries in their  
21 entirety. Is that correct?

22                  DR. KATHY RACHER: Kathy Racher for the  
23 Board. Yes, that's correct. Everything's being  
24 duplicated on both registries. So if it goes on the  
25 MVEIRB one, it -- it's going on the Land and Water

1 Board one as well.

2 MR. PAUL MERCREDI: Okay. Paul

3 Mercredi, GNWT. Thank you.

4 And in their entirety, they'll apply  
5 fully to each of the Boards' mandates and jurisdiction,  
6 correct?

7 DR. KATHY RACHER: Kathy Racher for the  
8 Board. Yes, that's my understanding that's -- that  
9 they will apply to both processes equally.

10 MR. PAUL MERCREDI: Paul Mercredi,  
11 GNWT. Thank you very much.

12 MR. TODD SLACK: Todd Slack with the  
13 Yellowknives. I have a single other question.

14 I'm wondering if the project has any  
15 evidence to provide where they've gone to land users  
16 and people who may use this site in the future to look  
17 at whether the -- there's a perceptible change in water  
18 palatability.

19 So if Snap Lake eventually ends up at  
20 six eight-four (684), as the proposal is, will land use  
21 -- is it likely that land users will avoid the area  
22 based partly on -- on the palatability of the water, or  
23 the taste of the water?

24 And this seems simple to do, not just  
25 based -- given six eighty (680) -- water with six

1 eighty-four (684), water with three fifty (350),  
2 anything like that. Is there information to -- that  
3 can guide us in closure?

4 MS. ERICA BONHOMME: Erica Bonhomme.

5 We -- we have not done those studies, Todd, but I would  
6 suggest that, you know, we do -- we do do the fish  
7 tasting annually. People get a chance to see how the -  
8 - how the fish are tasting. The -- each of the  
9 community can nominate members to go and -- and see how  
10 the -- how the fish themselves are tasting. We'll do  
11 that again in -- in -- this year.

12 We -- we can easily add a -- a water  
13 tasting piece to it. We would have to simulate the  
14 water, I guess, to, you know, achieve the kind of  
15 proportions of -- of T -- I mean, it's most TDS that's  
16 going to affect it. You know, if -- if people would  
17 like to have a sense of what TDS -- water with that TDS  
18 concentration tastes like, it's more like mineral --  
19 kind of -- a little -- little bit less than mineral  
20 water.

21 Maybe we can just provide some  
22 comparisons of what -- what different kinds of water  
23 you can -- you can buy commercially contains.

24 DR. PETER CHAPMAN: And Peter Chapman.  
25 Just wanted to remind you that the five hundred (500)

1 was based on not just palatability, but also on scaling  
2 and, you know, instruments and so on.

3 When they did the actual panel testing,  
4 they said up to six hundred (600). They didn't say  
5 zero because they indicated very clearly some TDS is  
6 important for taste, but up to six hundred (600) was  
7 good.

8 So we're talking six eighty-four (684),  
9 which is in the fair range. So, you know, we're not  
10 talking water that's going to be really, really salty  
11 by any means.

12 MR. TODD SLACK: Thanks. And when --  
13 would that be available for this environmental  
14 assessment process where some type of water tasting be  
15 done on your schedule?

16 MS. ERICA BONHOMME: Erica Bonhomme. I  
17 -- I don't think we'd do a -- a full panel tasting.  
18 You know, Health Canada has done that in respect of,  
19 you know, its own -- developing its own guidelines.

20 We do have community visits planned for  
21 -- for this summer. We can -- we can do that then.

22 MR. TODD SLACK: Thanks. Todd with the  
23 Yellowknives. And, Peter, while you're here, can you  
24 just remind us what the baseline TDS for Snap was?

25 DR. PETER CHAPMAN: Peter Chapman here.

1 Ten (10) milligrams per litre.

2 MR. TODD SLACK: Thanks. Todd with the  
3 Yellowknives. And again, the concern that I have is  
4 that what -- whatever Health Canada's panel testing  
5 was, blah-blah-blah, I -- I have no idea. But I do  
6 know the water up here is -- is very important to  
7 people. It's generally very low in elements and TDS,  
8 things like that.

9 And so that were you to do that testing  
10 here, I think you would see different results. And it  
11 is the perception of the water that is just as  
12 important from a closure perspective as whatever  
13 numbers you guys are coming back with.

14 DR. KATHY RACHER: Kathy Racher for the  
15 Board. Okay. Thanks for that -- as he drinks water.

16 So is there any questions around the  
17 table on the other water licence amendments? Sean...?

18 MR. SEAN WHITAKER: Sean Whitaker,  
19 Environment and Natural Resources.

20 I think we're going to wait in the  
21 process to provide any comments in our water licence  
22 intervention at this point. It's -- we've -- we've  
23 read the response from the Proponents. We agree and  
24 disagree on certain points, but I think we'll bring it  
25 up in our written intervention at that time, following



1 the EA process.

2 So, we could discuss it and we could go  
3 back and forth on little finer points of the licence,  
4 but the large aspects are obviously in the  
5 environmental assessment. So I think we'll hold off at  
6 this time.

7 DR. KATHY RACHER: Lindsey's been  
8 waiting for days to talk about these things. This is  
9 all that matters to her. Kathy Racher for the Board.  
10 So -- all right, I'm just kidding.

11 And with that, we'll -- we'll lead an  
12 embarrassed Lindsey to the microphone.

13 MS. LINDSEY CYMBALISTY: Lindsey  
14 Cymbalisty for the Board.

15 No, we just have a couple of things that  
16 we need a little bit of clarification on so when we're  
17 preparing the draft licence we have -- we have the  
18 information we need.

19 So I would just first bring your  
20 attention to the changes that you proposed for Part E,  
21 item 3. I'll just give you a second there to figure  
22 out what that was. And it's -- you there? Okay.

23 So just in terms of adding the term  
24 "geoprofessional", I guess what we would need to  
25 understand is what kind of professional designation

1 that is. Is there a registering body that we would be  
2 able to use to define that term?

3 MS. ERICA BONHOMME: Erica Bonhomme.

4 All -- all of the en -- all of the engineers and -- and  
5 geoscientists that work on our projects are registered  
6 with NAPEG. So it would be the NAPEG designation:  
7 professional geologist, professional geophysicist, or  
8 professional engineer.

9 MS. LINDSEY CYMBALISTY: Lindsey  
10 Cymbalsty for the Board. Okay. So -- but the term  
11 "geoprofessional" that you're suggesting here is not  
12 one that we would be able to define really?

13 MS. ERICA BONHOMME: Erica Bonhomme.  
14 Would it be easier to just replace that with  
15 "registered in the Northwest Territories"?

16 MR. SEAN WHITAKER: Sean Whitaker,  
17 Environment and Natural Resources.

18 I think it should say registered  
19 professional geologist, geol -- or geophysicist, or  
20 professional engineer as it's defined by NAPEG would be  
21 the most appropriate.

22 MS. LINDSEY CYMBALISTY: Lindsey  
23 Cymbalsty for the Board. So we have a definition for  
24 a professional engineer. So, you know, if you wanted  
25 to encompass a few different other des -- designations

1 under geoprofessional, we would need to know  
2 specifically which ones were going to be defined.

3 Do you see where I'm going with this a  
4 little bit?

5 MS. ERICA BONHOMME: Yeah. I -- I  
6 guess I'm just -- I'm just wondering. We -- we expect  
7 that the professional working on these reports is  
8 registered with the Northwest Territories and Nunavut  
9 Association of Professional Engineers and  
10 Geoscientists. They may be a professional engineer, a  
11 professional geophysicist, or a professional geologist.

12 Erica -- Erica again. Just to clarify  
13 the point. I -- I'm just wondering if it wouldn't  
14 encompass that by indicating that they have to be a  
15 professional registered with NAPEG.

16 MS. LINDSEY CYMBALISTY: Lindsey  
17 Cymbalsty for the Board. That's fine. I think we can  
18 work something out with -- with that.

19 Okay. So the next one that we would go  
20 to would be part F, item 8. And that's requesting a  
21 renaming of station -- the station number that -- where  
22 the sewage treatment effluent is sampled.

23 So your request was just to rename the  
24 station. And I think it's been brought up in a couple  
25 of other places now that the way that that condition is

1 currently worded doesn't -- no longer really reflects  
2 the situation on site.

3                   So right now -- I mean, the -- right  
4 now, the way it's worded, I think it was intended to be  
5 -- that you would meet those conditions prior to  
6 discharging that effluent directly to the receiving  
7 environment. And at this point, maybe you can just  
8 clarify whether -- that treated effluent is going to  
9 the water management pond is what we understand now.

10                   And as far as I can tell from what I  
11 know with your water management plan, it's going to the  
12 water management pond from the sewage treatment plant,  
13 regardless of whether it meets these compliance  
14 conditions or no.

15

16                   (BRIEF PAUSE)

17

18                   MS. ALEX HOOD: So there's a couple of  
19 things there. Sorry, it's Alex Hood for De Beers.

20                   So when we initially wrote that  
21 condition, it was because we were moving our sewage  
22 treatment plan into the utilities building that has all  
23 of our other water treatment infrastructure.

24                   And so since then, we've -- we've had  
25 issues with commissioning it. And so, for that reason,

1 we have both of our sewage treatment plants operating.  
2 And both of those sewage treatment plants outside of  
3 them have treated effluent that's coming out of them  
4 and is sampled at the 02-16 (phonetic) as per those  
5 conditions.

6 And then from there, it goes to the  
7 water management pond as treated effluent. And then  
8 from the water management pond, it goes to the water  
9 treatment plant.

10 MS. LINDSEY CYMBALISTY: Lindsey  
11 Cymbalisty for the Board. Okay.

12 So -- but if that -- so if that water  
13 does not meet those compliance limits when it comes out  
14 of the sewage treatment plant, where is it going?

15 MS. ALEX HOOD: So after it meets  
16 compliance, it's sampled at 02-16, and then it goes to  
17 the water management pond as per our water management  
18 plan that's in draft.

19 MS. LINDSEY CYMBALISTY: Lindsey  
20 Cymbalisty for the Board. But when it doesn't, where  
21 is it going?

22 MS. ERICA BONHOMME: Erica Bonhomme.  
23 So just for clarification, we -- we set -- the  
24 compliance point 02-16 is at the exit of the water  
25 treatment plant, and it's a bleed off that plant --

1 sewage treatment plant, sorry. Maybe I'm confusing it.

2                   So off the two (2) sewage treatment  
3 plants is -- is compliance mea -- measured against  
4 compliance. If it -- if it -- regardless of whether it  
5 meets compliance or not, sewage is discharged to the  
6 water management pond. Now, obviously, we try to meet  
7 compliance, but in a situation where we -- we didn't,  
8 it would still be discharging to the water management  
9 pond.

10                   We may have to take other measures to  
11 ensure that it's meeting cri -- criteria before it's  
12 discharged to the lake because it -- from the water  
13 management pond, goes through the water treatment plant  
14 and into the lake which -- which is 02-7 -- 17, same as  
15 -- same as all the others. It's the final compliance  
16 point.

17

18                   (BRIEF PAUSE)

19

20                   DR. KATHY RACHER: Sorry. Kathy Racher  
21 for the Board. So I guess, yeah, we've just been  
22 struggling with how to do that because we want you to  
23 be in compliance all the time.

24                   We also recognize that some of the  
25 parameters that you have for the sewage treatment plant

1 like BOD don't actually make sense if things are going  
2 to the water treatment -- you know, water management  
3 pond and the water treatment plant. I mean, it's  
4 irrelevant. BOD is only relevant if it's discharging  
5 directly to the receiving environment. And you have a  
6 diffuser, so again it's a non-issue.

7 But fecal coliforms, for example, we  
8 typically set EQC at the edge of the -- for the  
9 effluent from the sewage treatment plants so that we  
10 don't have to measure it at the -- at the end of the  
11 water treatment process.

12 But if you're not able to meet that for  
13 fecal coliforms at the end of the sewage treatment  
14 plant, then we have to -- we have to think of a way to  
15 make that compliance point a reality.

16 So if -- because what you're -- what  
17 you're doing right now is you're putting sewage in the  
18 water management pond whether it meets the EQC or not,  
19 which, you know, for the -- for the environment, is  
20 probably not a big deal because it's got a lot farther  
21 to go.

22 But I don't -- I don't know whether you  
23 want to propose something or want us to come up with  
24 something that would make sure that you have EQC at  
25 that point that will make sure that it goes through.

1                   And recognizing that this is a little  
2 off topic from the bigger thing. It's just that you --  
3 you've just brought it up as an amendment, so I wanted  
4 to make -- I want to make sure that the licence going  
5 forward reflects operational practice and something  
6 practical.

7                   MS. ERICA BONHOMME:    Okay.   Erica  
8 Bonhomme. So just -- just so I'm clear what we're  
9 seeking there.

10                  So this proposed amendment to the  
11 condition you're saying will also include a different  
12 operational practice, potentially, and a change of  
13 location of that sampling point?

14                  Are we -- are we talking about a  
15 renaming of that point, or are we actually talking of a  
16 -- about a physical potential change to the sampling,  
17 to the compliance point I think is what I'm hearing  
18 from you.

19

20   (BRIEF PAUSE)

21

22                  MS. LINDSEY CYMBALISTY:   Lindsey  
23 Cymbalsty for the Board. That -- I mean, that is kind  
24 of what we're trying to figure out is how to make the  
25 condition relevant to your current operational



1 practices, right? Because it's not written for your  
2 current operational practices, and it just raises some  
3 issues for the inspector. And we're just trying to  
4 figure out what to do with it.

5 And I -- I don't know that we can get  
6 any further with this conversation right now, but it's  
7 just something that we're going to have to think about  
8 during the -- the drafting of the licence and how to  
9 make it a relevant condition, basically.

10 Okay. So -- I'm still talking. It's  
11 still Lindsey Cymbalisty from the Board. And the last  
12 one that I just wanted to kind of clarify a little bit  
13 was Part F, item 9(b), and that was about the bog and  
14 seepage sites.

15 And I did understand the additional  
16 information that you -- you supplied in response to  
17 that -- to AANDC's original question there in terms of  
18 acid rock drainage. But there was mention of how the  
19 low pH might also be related to oxidation of ammonia  
20 from explosives. And both of those stations are near  
21 your storage area.

22 So it just makes it a bit tricky because  
23 you're saying the pH is naturally occurring but could  
24 also possibly be affected by the project, even if it's  
25 not acid rock drainage.

1                   So I'm just wondering how -- how we  
2   could really exclude that pH requirement from -- for  
3   those sites, or change that p -- pH requirement for  
4   those specific sites, if there's potential for project-  
5   related impacts on the pH that aren't necessarily due  
6   to ARD but are still project-related impacts on the pH.

7

8                   (BRIEF PAUSE)

9

10                  MS. ERICA BONHOMME:   Erica here.  I --  
11   I think, you know, we're -- we're wrapping our heads  
12   around that, too.  I think, you know, either maybe we  
13   could get just an additional IR on that or just another  
14   opportunity to -- to discuss that.  I -- I think I know  
15   what you're getting at, and so, you know, we need -- we  
16   need to think about that.

17                  DR. KATHY RACHER:    Kathy Racher for the  
18   Board.  I know in other processes sometimes we have  
19   just little meetings that don't have microphones and we  
20   take notes.

21                  And we -- anyone can come who wants to  
22   come, but it's for stuff like this because I think it  
23   would be helpful to have an inspector who's been to the  
24   site and -- and your operational people and -- and some  
25   Board staff and whoever else wanted to come and was

1 fascinated by the subject, to try to come up with  
2 conditions that -- that work and are practical.

3 Like that's -- that's what we're -- what  
4 we're aiming for. So maybe we'll recommend that. It  
5 doesn't have to happen right away. It could happen in  
6 between the EA and water licencing process perhaps.  
7 It'll be part of the record, and we'll keep track of  
8 it, but I think that's what I'm going to recommend to  
9 the MV Board.

10 Okay. So if -- I don't even know if I  
11 want to ask if there's any more questions. I'm going  
12 to give the evil eye to anyone.

13 I -- what I would like to do right now  
14 is -- and I will give an opportunity if people wanted  
15 to have any last comments, but before we do that, I  
16 just want to point out the next few dates.

17 So -- so Information Requests will be --  
18 our -- our plan is to circulate them to all the parties  
19 tomorrow morning. And this has been a practice we've  
20 been using lately. You just have a few hours to look  
21 it over and say, This is not what I asked for, or You  
22 forgot this, or whatever, and send us comments back,  
23 like, within a few hours tomorrow.

24 And so it's -- that's -- that's kind of  
25 been our practice lately. And then we will officially

1 give them to the Company after that, so hopefully by  
2 end of day tomorrow would be our goal, although you've  
3 already got a heads up on most of them already. As I  
4 said, five o'clock on April 22nd, which is the Tuesday.

5 If you have additional Information  
6 Requests particularly around the supplemental  
7 information that was submitted April 11th, you should  
8 submit that to Simon Toogood so that -- because we  
9 would like to distribute that to the Company by April  
10 23rd.

11 April 30th, Information Request  
12 responses are due from the Company.

13 After that, the next important date is -  
14 - May 8th is when we expect a report from EcoMetrix on  
15 a number of aspects of -- that we have discussed today.  
16 That will be publicly available.

17 That's an independent -- the Board's  
18 independent consultants, so we've just given them some  
19 questions and let them gone away and to -- to give us a  
20 detailed technical review, a second opinion, for those  
21 who weren't able to get their own technical review. So  
22 that's May 8th.

23 Prehearing conference will be May 13.  
24 The details of that are to come.

25 Deadline for submission of technical

1 reports are May 21st from all the parties, and the  
2 response technical reports are due May 28th.

3 Parties' presentations are due May 30th;  
4 Developer's presentation, June 2nd; and the public  
5 hearing is scheduled at the moment for June 5th and  
6 6th. And I don't think the logistics have been  
7 finalized for that yet, so we'll let you know.

8 So, given all that, does anyone have any  
9 last comments? So long, thanks for all the cheese, or  
10 something? Anybody?

11 MR. RICK WALBOURNE: Rick Walbourne,  
12 GNWT. We just wanted to thank the Review Board again  
13 for being able to accommodate our consultants'  
14 availability. Thanks.

15 DR. KATHY RACHER: On be -- Kathy  
16 Racher for the Board. On behalf of the Review Board  
17 staff, you're welcome. Any time.

18 I do want to also thank our -- our  
19 patient friend from Pido in the back here for taking  
20 care of the -- the mics and the -- and the call-in, and  
21 to the staff who -- who organized everything, and the  
22 presenters, and your patience in general.

23 So if that's it, I'm going to call it  
24 closed. All right. Good night.

25

1 --- Upon Adjourning 4:15 p.m.

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4 Certified Correct,

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9 Wendy Warnock, Ms.

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