MACKENZIE VALLEY ENVIRONMENTAL
IMPACT AND REVIEW BOARD

GIANT MINE REMEDIATION PROJECT
ENVIRONMENTAL ASSESSMENT 0809-001

TECHNICAL SESSION

The Facilitators: Alan Ehrlich
Paul Mercredi
Chuck Hubert

HELD AT:

Yellowknife, NT
October 18, 2011
Day 2 of 5

APPEARANCES

Alan Ehrlich	MVEIRB staff
Paul Mercredi	
Jessica Simpson (np)	
Darha Phillpot (np)	
Doug Ramsey	Tetratec
Dave Tyson	Tetratec
Cesar Oboni	
Lukas Arenson	BGC
Jack Seto (np)	BGC
Joanna Ankersmit	AANDC
Lisa Dyer	PWGSC
Adrian Paradis	AANDC
Dr. Ray Case	GNWT
Mark Cronk	PWGSC
Daryl Hockley	SRK
Darren Kennard	Golder
David Knapik	AECOM
Yose Cormier	AANDC
Henry Westermann	PWGSC
Katherine Silcock	AANDC
Erika Nyyssonen	GNWT
Dave Abernethy	PWGSC
Bruce Halbert	SENES

LIST OF APPEARANCES (Cont'd)

Rudy Schmidtke	) AECOM
John Hull	) Golder
Octavio Melo	) AANDC
Michael Nahir	) AANDC
Dan Hewitt	) SRK
Doug Townson (np)	) PWGSC
Robert Boon	) AECOM
Kyla Kirk	) AECOM
Hilary Machtans	) Golder
Nathan Schmidt	) Golder
Till Freihammer	) AECOM
Goro Wollett	) AECOM
Arthur Cole	) Golder
Greg Newman	) NGI/SRK
Tony Brown	) SENES
Chris Greencorn	) City of Yellowknife
Dennis Kefalas	)
Jeff Humble	)
Morag McPherson	) DFO
Sarah Olivier	)
Rick Walbourne	)

LIST OF APPEARANCES (cont'd)

Amy Sparks	) Environment Canada
Lisa Lowman	)
France Benoit	) Alternatives North
Kevin O'Reilly	)
Ed Hoeve (np)	) EBA Engineering
Bill Horne	) EBA Engineering
Todd Slack	) YKDFN
Randy Freeman (np)	)
Lukas Novy	) ARKTIS
Ricki Hurst	) DPRA Canada

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--- Upon commencing at 9:08 a.m.

THE FACILITATOR EHRLICH: It was a slightly long minute. Good morning, everybody. Nice to see those of you who were here yesterday return for further engagement.

I see that there are some new people. I'm trying to decide how much of yesterday's opening comments to repeat. Because of that, I need to understand how many people are new.

Who was not here yesterday, please raise a hand high. Okay. In that case, I'll -- I'll keep it pretty short because what I needed to say was mostly understood yesterday.

The washrooms are down the hall. There's a key next to a little dish at the end of the bar there by -- by Yose. The red one -- the red one doesn't work if you're really in rush, right. I thought if the incentive was good enough with all these engineers they'd make it work. All right.

The order of questioning is going to be about the same as yesterday, which is going to be informal. I remind everyone this is not a Review Board hearing, because the Review Board is not present.

It is an informal technical session, but

it's being transcribed for the record so that we do have something in terms of evidence and you can track back. And also that means that your discussion would be searchable because the transcript that we get is -- is searchable.

So you hit control 'F', and you can find whatever word you want. This makes it a very valuable tool for keeping track of where the issues are.

I'm going to touch briefly on where we were at yesterday. Rather than take home commitments and undertakings, we tried to have things resolved during this week where possible. And as a result, there are a few things that happened.

There's a short list of these, and I'm going to ask Lisa Dyer who reported them back to the group at the end of yesterday, to correct me if I'm -- I'm off base on any of these.

But one (1) of them was a commitment for the Giant Team to provide the MSDS sheets for three (3) coolants to the Yellowknives Dene First Nation. And it's -- have -- has that been done?

MS. LISA DYER: Done.

THE FACILITATOR EHRLICH: You were going to do that, give them a physical copy of the sheets today, and a digital copy for our public registry as

well.

MS. LISA DYER: That has been done.

THE FACILITATOR EHRLICH: So to the Yellowknives, Todd, you're -- you're okay with respect to the -- the MSDS sheets on the coolants?

MR. TODD SLACK: Yeah, it's done.

THE FACILITATOR EHRLICH: Great. That was Todd Slack. That raises a very good point here. Although -- although I think I'd be telling this mostly to the people who were here yesterday, I'll remind the people who were.

Please start with your name, and -- and perhaps the organization that you're speaking on behalf of if it's not eminently clear because the -- the -- it's important for transcription.

The general layout of the room, for the benefit of the new people, is we've got Review Board staff and Review Board consultants. Then in the corner there we've got mostly DFO and Environment Canada. Alternatives North. And Alternatives North consultants are at the end of the table there. The Yellowknives Dene First Nation is over there.

And I know there's going to be a little bit of jostling, but in general the table facing me is the Giant Team with various supporting cast members in

the -- in the back.

And I know that there are other people at the back of the room, at well. What I said yesterday was, if you're not at the table due to our space limitation, these seats are comfy but big, they don't leave a lot of extra room. If you're not at the table, then -- and you have questions to ask, please feel free to come up and use a microphone. When you speak, you have to use a microphone.

Sorry, oversight. The City of Yellowknife is next to the Yellowknives Dene First Nation there, and I -- I didn't want to accidentally lump in the City with the developers either.

So one (1) of the things that I emphasized yesterday was this is informal and we'd like to try to keep it construction. Adversarial is not usually the most constructive approach we can take. The Giant Team has demonstrated quite an openness to, you know, tackle the issues and questions that are raised, and we -- we'd like to -- to keep the good vibes flowing that way. So, please remember this when -- when you're taking the position. I mean, this isn't a hearing, and -- and this doesn't need to be an adversarial situation.

If the media show up again today, I'll tell them what I said yesterday, which was: Please don't

turn this into a media grilling. The appropriate place for interviews here would be either in the hallway, or in a different room at the breaks, at lunchtime, or afterward. But it's open to the public, so anyone who wants to sit in is certainly welcome to -- to stay and observe.

But it is primarily a technical exchange between experts and parties, and so the -- the subject matter is pretty technical. But I don't think it's going to get much more technical than yesterday, and everyone survived that, so that's -- that's all right.

There is a sign-in sheet. Do you know where the sign-in sheet is?

MR. CHUCK HUBERT: It will be distributed after the break.

THE FACILITATOR: Okay. The sign-in sheet will go around after the break. It's really important for the transcription. If you don't want your name changed in ways that you may not like, please make sure that you put your own name on the sign-in sheet, because that's going to wind up going to Wendy Warnock over there who's doing our -- our transcription, and it really helps a lot for her to understand who's in the room.

Wendy, do you need a different sign-in

sheet for day 1? Because I -- you know, if there's anyone who was here on day 1 and didn't -- anyone who was here yesterday and didn't sign in, that sign-in sheet that's in front of Wendy, please make an effort during the break to sign in.

In terms of today's agenda, you recall that our -- our week overall -- yesterday was freezing underground, today is water treatment and management, and these -- these are -- are broad subjects. But surface remediation will be on Wednesday, risk assessment will be going on on Thursday, and long-term monitoring, evaluation and management will be going on on Friday.

There is necessarily overlap between these subjects, because the project exists as a whole in the real world, and so a certain amount of drift in the discussion is inevitable, but where we can keep things on the day they seem to mostly belong, we're going to try and do that.

As well, please try to stay within the scope of the environmental assessment. Remember that the scope of the environmental assessment isn't all the impacts of gold mining at Giant Mine; it's the potential impacts -- it focuses on the potential impacts of the project that is proposed, the one that is being applied for now. That's what the Board has to determine, whether

or not there are likely to be significant adverse environmental effects for it.

I'm not going to go over where we are in the process; I did that yesterday. Today's agenda, in short, has the developer's presentation on water, but we've got a little bit of preamble and a little bit of overlap from yesterday to take care of, and then there'll be a presentation on water. The overlap's just going to be a -- a verbal summary.

Then we've got questions from parties. And there'll be a break at 10:20, we're going to stop for lunch at five (5) minutes to noon, start up again at 1:15. There'll be a break in the afternoon at 2:30, start up again at 2:45, and we'll begin the wrap-up at 4:45. I will try very hard to have you out of here by five o'clock. If we did it yesterday, I'm pretty sure we can -- we can pull it off again today.

I'd like to also introduce my colleagues for the benefit of those who have not been in the room before. Paul Mercredi, you'll remember chaired some of yesterday. He's an environmental assessment officer. So is Chuck Hubert to my left, who's an environmental assessment officer who will be chairing some of this morning. So I'll be jumping in and out as chair and with the odd question, but they're both going to be co-chairs

at different times.

I think I want to do a round robin, because there are enough faces at the table that weren't here, so that I don't want to assume everyone knows each other, okay? So perhaps we can start with you, Cesar, since Chuck -- Chuck and I are notorious already.

MR. CESAR OBONI: So Cesar Oboni still, and I doing you -- will ask question on the risk assessments.

MR. LUKAS ARENSON: Lukas Arenson, with BGC Engineering, and I'm with the Board, expert -- Board expert.

MR. DAVE TYSON: Dave Tyson. I'm with Tetratec and expert for the Board.

MR. DOUG RAMSEY: Doug Ramsey, also with Tetratec, and an expert for the Board.

MR. RICK WALBOURNE: Rich Walbourne, Fisheries and Oceans Canada.

MS. MORAG MCPHERSON: And Morag McPherson, a fish habitat biologist with Fisheries and Oceans.

MS. SARAH OLIVIER: Sarah Olivier, environmental assessment analyst with Fisheries and Oceans.

MS. LISA LOWMAN: Lisa Lowman, with

Environment Canada.

MS. AMY SPARKS: Amy Sparks, with Environment Canada.

MS. FRANCE BENOIT: France Benoit, with Alternatives North.

MR. KEVIN O'REILLY: Kevin O'Reilly, Alternatives North.

MR. BILL HORNE: Bill Horne, EBA Engineering, representing Alternatives North.

MR. LUKAS NOVY: Lukas Novy, Arktis Solutions, and technical advisor for the Dene.

MR. TODD SLACK: Todd Slack, pardon me, staff member, Yellowknives Dene.

MR. DENNIS KEFALAS: Dennis Kefalas, Director of Public Works for the City of Yellowknife.

MS. KYLA KIRK: Kyla Kirk, AECOM.

MR. BOB BOON: Bob Boon, AECOM.

MR. NATHAN SCHMIDT: Nathan Schmidt, with Golder Associates doing the Baker Creek and surface water components.

MR. BRUCE HALBERT: Bruce Halbert, with SENES Consultants, technical advisor to the project team.

MR. MARK CRONK: Mark Cronk, with the Giant Mine Project Team here in Yellowknife.

MS. LISA DYER: Lisa Dyer. Giant Mine

Project Team.

MS. JOANNA ANKERSMIT: Joanna Ankersmit, Giant Mine Project Team.

DR. RAY CASE: Ray Case, GNWT, representative on the Giant Mine remediation team.

MR. ADRIAN PARADIS: Adrian Paradis, Giant Mine remediation project team.

THE FACILITATOR EHRLICH: I'm also going to ask the people who are not at the table to approach a microphone and let people know who you are and what you're doing.

MS. KATHERINE SILCOCK: Katherine Silcock, Giant Mine remediation team.

MS. ERIKA NYYSSONEN: Erika Nyyssonen, GNWT, with the project team.

MR. DAVE ABERNETHY: Dave Abernethy, with Public Works, on the Giant Mine team.

MR. NORM QUAIL: Norm Quail, with Public Works, Giant Mine team.

MR. RUDY SCHMIDTKE: Rudy Schmidke, AECOM, Giant Mine Team.

MR. TONY BROWN: Tony Brown, with SENES Consultants, part of the Technical Advisor Team.

MR. DARYL HOCKLEY: Daryl Hockley, SRK, Technical Advisor.

MR. MARK PALMER: Mark Palmer, Giant Mine Remediation Team.

MR. HENRY WESTERMANN: Henry Westermann, Giant Mine team.

MR. MIKE NAHIR: Mike Nahir, Giant Mine remediation team.

MR. OCTAVIO MELO: Octavio Melo, Giant Mine team.

MR. TILL FREIHAMMER: Till Freihammer, Giant Mine team, AECOM.

MR. DARREN KENNARD: Darren Kennard, Golder Associates, Giant Mine team.

MR. GREG NEWMAN: Greg Newman, working with SRK as a technical advisor.

MR. RICKI HURST: Ricki Hurst with DPRA Consultants, supporting the Giant Mine Team.

MR. RANDY FREEMAN: Randy Freeman, Yellowknives Dene.

MR. YOSE CORMIER: Yose Cormier, with Aboriginal Affairs Northern Development.

MR. CHRIS GREENCORN: Chris Greencorn, the City of Yellowknife.

THE FACILITATOR EHRLICH: Thank you, everybody. Now I want to briefly talk about some of the -- the homework that the Giant team took back. We've

mentioned one (1) of the things, the MSDS fact sheets, which both Giant and the Yellowknives have -- have confirmed is -- is done and is okay.

There was a question regarding groundwater level and the level of Great Slave Lake. I'm going to ask the Giant team, have you had a chance to consider -- what was happening was parties were being a bit confused because they were -- they were hearing the -- the -- the levels in terms of feet below surface at Giant Mine, but in terms of understanding the hydrological big picture, they thought it would be helpful to know where the lake was, and the lake is relative to sea level, and Giant team went back to sort it out. And -- so I see some nodding. It sounds like they've got a response.

Mark Cronk, please go ahead.

MR. MARK CRONK: Mark Cronk, Giant Mine team. I'd like to provide three (3) elevations, for the record. These are approximately geodetic mean sea level -- above mean sea level elevations.

Great Slave Lake is about 156 metres. The surface ground elevation around the C shaft area, close to where the Freeze Optimization Study, is 167 metres. And the current mine level is minus 77 metres.

THE FACILITATOR EHRLICH: Which party was it that asked the question about the elevation of Great

Slave Lake? Alternatives North?

MR. KEVIN O'REILLY: Thanks, Alan. Kevin O'Reilly, Alternatives North.

So, when Mark says the current mine water levels, is that the seven fifty (750)? I just wanted to confirm that.

MR. MARK CRONK: Yes, seven fifty (750) is an approximate feet below surface, but it's a loose -- oh, sorry, Mark Cronk, Giant Mine team.

Yes, Kevin. The mine historically operated in feet. The seven fifty (750) level is approximately 750 feet below surface. The water level is just below that, and it converts to minus 77 metres geodetic.

MR. KEVIN O'REILLY: Thank you.

THE FACILITATOR EHRLICH: Thanks. The next take home task that happened was a discussion between three (3) experts. That was to take place here this morning.

And rather than my trying to summarize what the subject was or how it went, I'm going to ask the three (3) people involved, starting with the Giant team.

Did you have the opportunity to hold that meeting, or, Lukas, are you the only person in that meeting who's -- who's in the room right now?

MR. LUKAS ARENSON: No, everybody's -- everybody's here -- Luk -- Lukas Arenson. Everybody's here, but I -- I can report on the outcome.

So we had Greg, Daryl, and actually Bill Horne also joined -- joined the discussion, and I think it was -- it was a productive discussion.

We -- we got to the point, and there's no further action. I think we resolved the -- the problem in terms of the contingency that is currently in the plan will -- is enough to -- to account for that ice lensing, which may occur -- may or may not occur, so we -- we discussed that.

But I'll give it over to -- to Bill because we came up -- we discussed his problem on the wetting, and the -- and the pressure, and we came up with some ideas on that.

THE FACILITATOR EHRLICH: Just before you start going on the ideas, I want to be sure that everyone, including the new people, have an understanding of what we're talking about.

You mentioned that there was ice lensing. Did that have to do with ice lensing inside -- inside rocks, and -- and expansion, and the results on structural integrity?

That was my recollection, but I covered a

lot of ground yesterday.

MR. LUKAS ARENSON: Sorry. Yes. Yes, I can confirm that yeah the -- the problem we discussed is the potential of ice lensing around the frozen shaft, or the -- the frozen core over the long term.

So that at some point water might migrate or is already there and form larger ice lenses, and then result in structural integrity, in particular when you didn't get to thaw, what would the impact be on -- on that.

And does it effect or not any of the freeze pipes, and the integrity of the system. Lukas Arenson.

THE FACILITATOR EHRLICH: Now, I -- I want to be clear; we've got two (2) different engineering Lukases; and that's Lukas Arenson who's the consultant for the Review Board.

So now over to the Giant team. Do you want to add anything to Lukas' description of your discussion? Also, Lukas has indicated he's satisfied with the outcome and you guys are on the same page. Are you of the same view?

MR. GREG NEWMAN: Greg Newman. Yes, we agree with Lukas' summary.

THE FACILITATOR EHRLICH: In that case,

I'd like to thank you all very much for taking it outside, because I -- I have no doubt it was probably a technical heavyweight kind of thing, and it -- it sounds like it got tidied up neatly.

That's exactly what happens when technical sessions are working. Instead of, you know, a huge volley of paper and many weeks of correspondence, a short bit of dialogue with the right people in the right places can -- can get us past things that -- that look like issues and turn out to be non-issues. So I -- I really appreciate that.

There was one (1) other person who was involved in that discussion. Bill Horne, there he is, consultant to Alternatives North.

MR. BILL HORNE: Yeah, we also had some discussions about the expansion due to freezing of the -- of the dust, and it was -- I believe there was agreement with everybody that there -- there is a risk of -- of fracturing the rock.

The dust is going to expand if we -- if we wet it and freeze it. There's -- there's no doubt we're going to get expansion of it.

There are -- is some unknowns how that dust is going to expand, which direction it's going to expand in, where the stresses or -- and deformation is

going to occur.

I think the conclusions were that some detailed monitoring is required during the freezing process, whether that's maybe some -- some tests in the laboratory, or -- or probably better is to monitor some of the chambers as they're freezing.

There's also unknowns in the whole wetting process, and we did talk about some -- some potential lab -- laboratory tests to look at that, but there's still some unknowns. Darren Kennard suggested that we -- we do some monitoring of the actual chambers when they're freezing, some extensometers (phonetic), and see -- see what's actually going on with the rock.

I'm not quite sure whether that's going to be Chamber 10, or it's part of the FOS Study, or one (1) of the first chambers to -- to be frozen.

THE FACILITATOR EHRLICH: At the meeting, were there any commitments to undertake further work like -- I mean, you've mentioned laboratory testing was discussed. Were there any commitments to do it, or is this something that you're going to pursue further in an Information Request, or is this something that you're satisfied with the answers that you've got and don't need to pursue further in the Environmental Assessment?

I just want to understand -- it sounds

like everyone agreed on the -- the theory at the -- the meeting. Does that tie it up or are there still some loose ends?

MR. BILL HORNE: I believe the Giant team did make some commitments. I don't want to speak for them, so maybe Darren or Greg.

THE FACILITATOR EHRLICH: Okay. And please start with your name. The previous speaker was Bill Horne for Alternatives North.

MR. GREG NEWMAN: Greg Newman here. I -- I think my understanding was our commitment was that yes, the -- the wetting process would require a study phase, but I'm -- I did not think we had committed to anything specific in terms of any instrumentation plans or anything concrete, but that we agreed that it was entering a study phase.

THE FACILITATOR EHRLICH: Mr. Horne, is that -- and Lukas Arenson, is that what you got out of it?

MR. BILL HORNE: Yeah. Bill Horne. I heard some commitments to -- to some monitoring during the freezing process. We could deal with it in the Information Requests, so maybe you can have some time to think about it if you want.

THE FACILITATOR EHRLICH: May I encourage

you -- your microphone is still on, Mr. Horne. May I encourage you to -- since you're both in the same place right now, if you're comfortable with meeting during the break and just clarifying exactly what those things are.

If they can be dealt with easily with commitments that the Giant team is prepared to make here, it could save a fair bit of paperwork, effort, and time. If it's something -- you -- you still have the option of doing it through Information Requests.

The round of Information Requests is coming up, but I -- I feel strongly that whatever can be resolved here should be resolved here. I -- I'm going to ask you to -- to give it a try.

Kevin, you are -- you had your hand up next and then Adrian.

MR. KEVIN O'REILLY: Thanks, Alan. Kevin O'Reilly here with Alternatives North. I don't want to speak completely for Bill, but I -- I think part of this discussion flows into what we might hear from Lisa in terms of what the content and structure of this Environmental Management Monitoring Plan, whatever they're going to call it, is going to look like.

If the -- if the developer is able to clearly identify what the performance criteria are for various things, if there's specific pieces of research

that need to -- to be done in a timeline and some engagement that can lead them to specific performance criteria on this topic, including wetting, I think we might be happier. But without seeing the -- the details of that, I don't think we're going to be able to resolve it here today.

Is -- Bill, do you want to add anything to that?

MR. BILL HORNE: No, I agree with that. I think we need a detailed plan for what is going to be monitored and how it's going to be implemented. Bill Horne.

THE FACILITATOR EHRLICH: And of course, day 5 of the program here is dealing with monitoring evaluation and management. So there'll be an opportunity to do that.

My concern about leaving this particular discussion in the air until then is our -- our -- are the right people on the Giant team going to be here at the time, who are involved in this discussion, enough to -- to know how to follow it up if Alternatives North doesn't get what they need from -- from day 5?

I -- I ask this because the Giant team has said that it will be rotating its -- its experts and not everyone will be here on all days.

MS. LISA DYER: Yeah, we will be meeting with the parties in a break, and Nike -- Mike Nahir will be there and we will come back to you with any commitments or approaches that we'll be taking. Lisa Dyer.

THE FACILITATOR EHRLICH: Thank you for that. Lukas Arenson, you had a comment?

MR. LUKAS ARENSON: Yeah. Lukas Arenson. Yeah, I think what -- we just basically need to see some commitment of doing the testing, because -- I mean, we all realized during the meeting it's complex and we don't really know what exactly to monitor. And -- and we -- I don't think we expect that from the developer to come up with a -- with a detailed monitoring plan within the next two (2) hours.

But we -- we want to see -- I think that that's kind of an agreement I -- I thought we had, that we -- we see that commitment, and we probably want that on the record. So, if we could just -- that could be done. If you agree.

MS. LISA DYER: Lisa Dyer. And Mike Nahir here will come back with commitments after the parties have had a chance to speak.

THE FACILITATOR EHRLICH: That's exactly what we love to hear. Because it -- it sounds like

there's -- this is something that can be resolved. Great.

Okay. The next item. There was a task to come up later, which was to give an interim report on the conclusions from the freeze optimization study, unless I'm mistaken.

Do I have that right?

MS. LISA DYER: We took that on. Lisa Dyer. We took that on as an undertaking, and we have made a commitment to get that report to you before November 14th. We will get that you before November 14th.

THE FACILITATOR EHRLICH: Okay. That's just fine. And as I recall that was Undertaking Number 1.

Next item is: The Yellowknives Dene asked the Giant team what your criteria for success, or in their phrase, their met -- your metric for success would be. How would you know when your project has done what it is intended to do? And the Giant team said, We'll get back you.

You were ready to speak on that at the end of yesterday. I preempted you to give the parties more time to question.

Todd Slack, of the Yellowknives, did I

fairly characterize your question?

MR. TODD SLACK: Todd Slack, YKDFN. With one (1) addendum. With respect only to the frozen block; the criteria for other issues will follow.

THE FACILITATOR EHRLICH: Thank you for that -- that clarification. That's right.

Lisa, are -- are you able to give now the summary you were prepared to give yesterday afternoon?

MS. LISA DYER: Yes, I am. Lisa Dyer. And I think it was a very good question. We had some discussions yesterday about kind of thresholds and parameters, but I think when Todd tied it up into what is -- how are we going to measure success?

And I think that is an important point for everyone in this room.

And one of the points I'd like to make is that there is no single number that is going to measure the success of the frozen block. There is no magic number like forty-two (42).

What we're looking at, and what you heard yesterday, was we talked about the results of the freeze optimization study, and the information we've learned from that. We also talked about the underground stability, and the importance of some of the stability work, such as drift plugs and backfilling that needs to

be done. And we also talked about mine water level, and the importance in managing of that. And all these thin -- - things play a factor into it.

Now, we have kind of performance for the design criterial of minus ten (10) for the shell, and min -- and once it reaches minus ten (10), we will be able to say that the frozen shell is in place, and we will move towards wetting. And once we reach the criteria of minus five (5), we will say that, Yes, we have created the fro -- frozen block, and can move towards passive.

But I also want to point out that if we have a certain temperature, is that success, that one (1) parameter alone? No. The reason being that we're -- and I want to refer us back to our objectives for remediation, and then I'll speak to this a little bit more. And our objections that we have in the developer's assessment report is that:

> "We want to manage the underground arsenic trioxide dust in a manner that will prevent the release of arsenic to the surrounding environment, minimize public and worker health and safety risk during implementation, and be cost-effective and robu -- bust in the long term."

So one (1) of the major things there is we want to prevent the release to the environment.

We may be able to achieve those temperatures, but, again, if we see that there is arsenic seeping into the mine water, that is something else we have to monitor. That's not a success if we see that it's leaving the frozen blocks. So, we'll also be monitoring groundwater and looking at the levels there, again, if we see any instability in the other underground that could compromise the success of the frozen block.

So, to be fair, there are many different parameters that we're going to look at. Not one (1) of them will define success, but looking at them together will allow us to know whether the system is working well. And this is part of why we're bringing in the environmental management system, is that there is, unfortunately, no easy number that, if we reach a six (6), or a forty-two (42), that we've made success. We need to look at all these parameters, we need to understand what they're telling us, and we need to be able to adjust and respond to them.

And so the environmental management system that we are going to be presenting is an approach. We're not going to have numbers to look at and debate on Friday. What we're rolling out is an approach that

allows for engagement and input into how we manage the Giant Mine site from frozen block to water treatment.

And, unfortunately, there is no -- there is no simple parameter to meet for any of the aspects that we work on at Giant. Everything is interacted. So, we need to develop a management approach that allows us to focus on the objectives and develop criterias that truly allow us to measure success, and that's what we'd like to focus on more on Friday.

As I said, those numbers and those approaches, to truly be protective and answer the concerns of perpetual care and the concerns of protection of the environment, is something that we need to look at and work together, and it really is an approach for us to move together -- move forward and make sure that we have considered the issues at Giant and we're all aware of what we are monitoring and what those numbers can tell us.

THE FACILITATOR EHRLICH: Mr. Slack, will that hold you until Friday when it sounds like we're going to see more about the environmental management plan, bearing in mind that there will be a round of information requests after that? But over the next -- well, I guess it's today and -- today, tomorrow, and the day after, we won't have yet seen that environmental

management plan, but it sounds like we're going to get introduced to it on Friday. And I see the Giant team is -- is nodding.

So will that answer do until then?

MR. TODD SLACK: Well -- Todd Slack, YKDFN. And while I appreciate the answer, and that is part of the final solution, the fact of the matter is, if there is no target for the parties to evaluate, at least initially, or the inspectors to evaluate initially, this throws this whole process into the qualitative in which it becomes -- it could become a -- a matter of interpretation between different parties. And especially an organization that has, I don't know, twenty-five (25) people here today vers -- our limited ability to provide comments, what happens is, in an evidence-based system, you get out-consulted, and in these matters where there is discretion, the First Nation ends up being disenfranchised.

That also brings into question the issue of the mandate. The inspectors -- and now I've been through three (3) significant closure plans in the last two (2) years. The inspectors want very clear criteria. Now, I understand there are a lot of different variables at play here, but we're talking about -- within that objective, we're talking about one (1) component: the

frozen block component.

There will be other criteria, and we're going to talk about them over the next couple of days, but that one (1) criteria within that one (1) component, there has to be some sort of initial target. This is the simplest one, and I just -- it -- it makes me so uncomfortable that we're moving in a direction where it's entirely subjective in terms of evaluation. And when we talk about a lack of trust with an organization, an organization that essentially gets the same when it's succeeded, regardless of what the parties think, an organization that didn't think this required an environmental assessment, you know, there -- there's big concerns here, and it -- clarity is required at this point, not at some point down the road. These bigger issues in terms of long-term management and flexibility, yeah, that comes into play as part of the adaptive management plan.

But right now there's got to be some goal that suggests what the target is, otherwise that broad objective is -- is only worth the paper it's printed on.

THE FACILITATOR EHRLICH: Lisa Dyer...?

MS. LISA DYER: Lisa Dyer. Thank you, Todd. We have stated the objectives of minus five (5) for the shell, and min -- or sorry, minus ten (10) for

the shell and minus five (5) for the block. And that will guide us into when we have successfully created the shell to move forward into wetting and the block.

Now, I appreciate your concern, and -- about being inclusive in part and -- and the concerns. We can monitor kind of how the temperature is performing, but ultimately, if the frozen block is successful we stop seepage from the chambers. And so, yes, we can say that number -- ultimately, you're asking me what a success is; the success is when I stop seepage from that chamber; and I will know that by looking at water quality in the mine water.

MR. TODD SLACK: Sorry, can I jump in?

MS. LISA DYER: Yeah.

MR. TODD SLACK: There you have your criteria for success of the frozen block then. You set a seepage amount and that's -- that's the target criteria in this case. It -- apparently it's zero seepage. Or if you wanted to use a temp -- you can use both in terms of your target -- target of success.

And then the adaptive management, which, you know, I understand you're not ready to talk about, that comes in subsequently and gives you the flexibility to respond. But if it's zero seepage, hey, that's the criteria, that's the target. Sorry, Todd Slack, YKDFN.

MS. LISA DYER: And I -- and I appreciate that, Todd, your -- your input. Again, we are looking at that and we -- you know, zero is maybe unrealistic in the short-term. We're going to be working towards that. And so what we need to do is, as I said, there are several things that we need to look at, and this is part of the environmental management system, is we are asking to create the future.

I know that people feel that up to this time that maybe there hasn't been the engagement in making some of these decisions to move forward. And what we're asking is that we're not going to come here and say these are all the parameters that we have and let's argue over them. What we're asking you to do is engage in a process that allows us to set out, you know, these are our thoughts technically and what we need to achieve, and we would like to have your input into making sure that those are -- those are responsible and meet the needs. Now, this is not uncommon in other processes where there is engagement and discussion about what appropriate criteria are to measure success.

And what we're saying is that we want to work with the parties and the Yellowknives Dene First Nation through the EMS process. We do indeed have ideas of what needs to be monitored, what we -- what our

objectives are, but at the end of the day we're going to end up in an adversarial approach again, where we put forward and number and you're going to say it doesn't meet your needs. We're inviting you. We're encouraging you to work with us through the EMS process.

And those are some of the things that we've heard from you earlier in your opening remarks, is that there is a desire. So, we're not going to pretend that we have everything worked out at this point. What we're looking at is a process and an approach.

THE FACILITATOR EHRLICH: I would also point out that something that I'm -- I'm hearing, and I think there's -- there's a little bit of confusion, is this might not be about magic numbers. What I'm hearing from the Yellowknives is a request for a transparent normative model with which to compare your monitoring results. There are many different ways you can have a transparent normative model. It may not be about magic numbers. It may be about trends. It may be about direction and change.

This stuff needs to be thought through carefully, but I think those things would likely be quite important to the Yellowknives as well, based on what I've -- I've heard from the Yellowknives. Not just the number, but, you know, the direction of change is an

important issue.

I think that your answer and this subject is a pretty good segue into the world of water management, and there's a -- a presentation that the Giant team will have. There are a couple more comments on this -- on this subject we'll -- we'll float before we get on with the presentation.

Lisa, do you have a follow-up to what you just said?

MS. LISA DYER: Lisa Dyer. I actually want to give Kevin an opportunity to speak, and then I actually have one (1) more undertaking, or not -- or task -- we'll call them tasks -- that we took on that I want to report on. So -- but I want to give Kevin an opportunity to speak, because I -- I really feel his comments on this is important.

THE FACILITATOR EHRLICH: Kevin O'Reilly, from Alternatives North.

MR. KEVIN O'REILLY: Thanks, Alan. I think that -- I -- I've been involved in a number of closure planning processes, not as the developer, but as a -- an observer, occasionally as an Intervenor, or mostly as an Intervenor, and I think the -- what you might consider is looking at the guidelines that your department has for closure planning, or for -- I think

they're called "NWT Mine Site Closure Guidelines". 2007 is the last approved version, and there's a -- a draft that's floated out there right now by the Mackenzie Valley Land and Water Board and that your department also put together.

And, you know, we're -- we're not talking at this point about an interim closure plan; this is the closure plan for this mine. Unfortunately, the previous operator and regulators didn't see fit to actually develop a proper closure plan or criteria or anything, so you guys get all this dump -- stuff dumped in your lap. And I think I understand better now the complexities of trying to come up with the success, the performance criteria for the frozen block.

You need to do that 3D modelling that was talked about yesterday, so that you need to understand the variety of different stopes and chambers under there, how they -- how they would actually start to melt, and how you would actually start to measure that. I don't think you can tell us that now. I don't think you're going to be able to tell us that at the end of this process, this EA, but I think that what we need to know and have a certain level of confidence in, is that you have a plan to get there and a timeline to do it.

So, if you can't tell us what those

closure criteria, those performance criteria are now, I need to see the plan to get there, and I need to see the timeline for that. I need to know you have the resources to do it, and that you're truly committed to engaging people to do that. I'm still worried about the last one, and the -- the resourcing of all of this, but I understand.

So, I think, if we put it in -- if you look at that -- those guidelines and you look at the plan and the DAR, I don't think they actually reflect what the guide -- your own guidelines say. And so we need to have confidence that there's a -- if you don't -- if you can't -- if there's some uncertainty around the performance criteria, that -- the closure criteria that the inspector's going to need to be able to sign off on at the end of the day, where's the research you're going to do to fill that? Where's the timeline for it, and where's the real commitment to actually engage people pro -- properly on that?

And by the end of this process, we're not going to have that. But I want to see a clear draft, table of contents, a descriptive process for how you're going to get there. And I think what Todd is saying, and I -- we would agree, we want a greater level of detail on the frozen block than on the rest of it.

I don't agree with Todd completely; I don't want to see you give up on the rest of it. I want to know how you're going to get there to measure the performance of the -- the tailings covers. I want to know how -- you know, how you're going to measure success of tailings covers, because our experience with that is -- is twenty (20), forty (40) years, so -- with -- with covers in general.

So, we need to have a -- a level of comfort and confidence that if you can't specify those criteria today, there's a -- a roadmap to get there, and a timeline to do it, and true engagement that's going to allow it to be done collaboratively.

THE FACILITATOR EHRLICH: To the Giant team; are you going to be able to provide a roadmap and timeline as opposed to the highly detailed monitoring plan? Can we start off with during the technical session, and, if not, at some other point during the EA, at the approximate level of detail that you've just heard?

MS. LISA DYER: I want to thank Kevin for his comments because it gave me great faith that we actually are closer to being on the same page than we realize.

And I think that, yes, we do need to

outline our process, and people do need to have confidence that we are moving forward with timelines and all the rest.

We will start to give that information in detail on Friday, so I don't want to get into it now because we do dedicate a day to it. And I think it -- to be accurate, we can take it as far as we have where we are right now. We haven't started engagement, and that's an important part to what I hear Kevin and Todd say.

So, yes, there is some work forward. There is working with the parties to make sure that we have that engagement, and make it a meaningful process.

And so we will let you know where we've come, and we want to try and open the doors, and encourage that we work together to set these timelines, and we will -- this is important, and we are looking at dedicating the resources and -- and do this in a timely fashion so that it is part of the EA process.

THE FACILITATOR EHRLICH: Thanks very much, Lisa. There was one (1) other take home task that come up yesterday. It had to do with climate change and certain assumptions.

I'm going to ask the Board's consultant, Doug Ramsey, to just summarize what the task was.

MR. DOUG RAMSEY: Doug Ramsey. Just

summarizing on the request to the Giant team yesterday regarding climate change and specifically the worse case scenario that was -- that was employed in their climate projections and -- and which of the worse case scenarios presented by the IPCC was used, over what period, whether it was fifty (50), a hundred, two hundred (200), five hundred (500) years, or whatever; and which climate parameters were -- were actually considered as part of their -- their climate change scenario. Plus, whether or not that was -- climate change was incorporated into the event frequencies for various climate-related events. For example, whether it's a 1 in 500 year stream flow, or -- or whatever that might be.

THE FACILITATOR EHRLICH: Is the Giant team ready to respond?

MS. LISA DYER: Lisa Dyer. I'm getting good at saying my name, aren't I?

This is one (1) of the -- these items yesterday that we said that we wanted to talk to an expert that we had, that he was out of the country. Unfortunately, we have not been able to get a hold of him, so we did try to get that information to clarify.

I think because we need to talk to an expert that isn't readily available to us right now just to confirm all this, that we'd like to take this as an

undertaking and -- and provide this information back. It's important.

Unfortunately just due to logistics we can't provide that for you at this time. So if that's okay we'd like to have this as an undertaking, and get back to you in writing.

THE FACILITATOR EHRLICH: Before we get there, is the person you wanted to contact also unreachable for the next few days, or is there a chance you'll be able to reach them before the end of the technical session?

MS. LISA DYER: We probably won't be able to get a hold of this individual till Friday. I think he's in Mexico. Yeah. And contact is not reliable there at this point.

So we don't want to -- I think it -- we would be -- it would be false expectations to say that we thought we could, so we'd rather be on the safe side and take this as an undertaking.

THE FACILITATOR EHRLICH: That's all right, provided that you understand that there may be more questions on that subject during this technical session, because it is an important subject that was raised.

And, you know, I -- I mean, I -- ideally

the questions would be focussed based on the information you're able to provide during the technical session, but if you can't provide that there will still likely be other questions in that area. It may be a little bit harder for you to respond, so if you're able to reach this person, great. But we understand that if -- if you're not then you'll have to do that as a written undertaking.

And that undertaking would be to respond to the question as summarized by Doug Ramsey a moment ago -- summarized by Doug Ramsey. That's to be provided by November 14th.

Can you do it for the 14th?

MS. LISA DYER: Yes, we can. Lisa Dyer.

THE FACILITATOR EHRLICH: Okay. And, Wendy, my understanding is that is Undertaking Number 2. So on -- on the transcript that will be called Undertaking Number 2.

--- UNDERTAKING NO. 2: PWGSC to indicate which of the worse case scenarios presented by the IPCC was used, over what period, whether it was fifty (50), a hundred, two hundred (200),

five hundred (500) years; and which climate parameters were considered as part of their climate change scenario. And to indicate whether or not climate change was incorporated into the event frequencies for various climate-related events

THE FACILITATOR EHRLICH: I think that sums up the issues we had left over from yesterday and now we're going to ask the Giant team to give its presentation having to do with water.

I am going to -- because of the shape of this room, it's very hard for people at the end of the table I'm on, and I'm pointing to the DFO and Environment Canada types who are usually quite interested in water, hard for them to see what's going on on the screen.

I would strongly suggest you take your notebooks and sit in the chairs that are available over there just for the presentation if you don't need the desk in front of you.

I'd suggest the same for anyone else who's -- who is in this particular line of sight. And so,

Lisa, if you wish, you could make this presentation with a handheld microphone, or the -- the one there. Are you as stander or a sitter? Yesterday you didn't have the choice.

MS. LISA DYER: I am a stander, but I will be passing this along to Mark Cronk to introduce the team, and my team are happy sitters.

THE FACILITATOR EHRLICH: That's -- that's the name of your baseball team or the -- the group that we've got there?

MS. LISA DYER: These folks all work with me on the design of Baker Creek and water treatment plant where they're affectionately known as the "water babies," but today they will be known as the "comfortable sitters."

THE FACILITATOR EHRLICH: Lovely. I'm happy there's not a baseball bat in sight. Okay. Please go ahead.

MR. MARK CRONK: Mark Cronk. The presentation you're going to see today is comprised of five (5) major portions, which I'll introduce now. The first one (1) is going to be surface water in Baker Creek and that will be done by Nathan Schmidt. Followed by that there will be the groundwater management and pumping systems, which are associated with bringing water from

underground up to the water treatment plant.

Following that presentation will be the water treatment plant as a process facility in itself. That plant ultimately delivers treated water to the diffuser, which will be a standalone presentation. And finally, I'll ask Bruce Halbert to bring it all around in terms of ecological health risk assessment and human health.

THE FACILITATOR EHRLICH: Thanks for the summary, Mark. What do you think is the total amount of time you'll require for this? I mean, we've got approximately an hour on the agenda, but we -- you know, because we -- the Giant team needed a little bit more time than scheduled for yesterday's presentation we had to bump a little bit of yesterday's material to today, the follow-up stuff, which is okay.

Do you think that you'll be able to get all that across in an hour?

MR. MARK CRONK: We -- we have run it. Of course that'll depend a little bit on how many questions we take during the middle. If we can hold most of the questions, because this is a complete process dealing with water from its origin on surface all the way through a treatment and delivery to Back Bay, if we can hold most of the questions until the entire process is

explained, we can do it in an hour, yes.

THE FACILITATOR EHRLICH: Okay. In that case, the only questions we'll allow during the presentation are just for very short points of clarification if there's a terminology or something in there that's -- that's not clear.

But I'm going to ask the parties again to hold all of your substantive questions, because we've got the rest of the day to ask those questions. As well, we will put the -- the break halfway in between this presentation.

So when you feel like you're about halfway through and it's a reasonable time, it won't interrupt your flow, please let me know, because we've got a short break scheduled.

We're running a little bit late, it'll probably be a ten (10) minute break, not a fifteen (15). So with that, please take it away.

(BRIEF PAUSE)

PRESENTATION BY THE DEVELOPER:

MR. NATHAN SCHMIDT: Thank you. Nathan Schmidt. And today I want to talk a little bit about Baker Creek. It's one (1) of the major surface water

drainage features going through the mine site. I want to talk about how we're gonna get the water from upstream of the mine down to Yellowknife Bay.

And we're going to consider the case that's can -- that's discussed in the DAR. We're also going to address the design variant and some contingency planning that has been taking place during preliminary engineering.

Now this map is a little hard to read. There is also a hard copy of it up on the wall over there. And so if you want to have a closer look at it at the break you can do that at your -- at your leisure.

But just to set some context here, we've got a creek that comes from upstream here, and within the mine site runs for about 2 1/2 kilometres. We've got a 4 hectare pond called Baker Pond. Over the life of the mine, it's been subject to quite a bit of diversion operationally. The major diversions that we've seen are -- Reach 3 here, where it goes around C1 Pit, and also down in Reach 1. The reaches are numbered from zero to six (6). Reach 1 here, where it goes around A2 Pit, this allowed the mining of the pits. And really those diversions were strictly to convey water; they weren't intended to create any habitat.

After closure of the mine, what we've seen

and what a lot of people in the room have probably seen, is Reach 4 here that's been reconstructed. It used to go through the mill pond area, and it was reconstructed several years ago with fish habitat in mind, and so that's a Reach that we actually have as a -- as a template for our design. It's -- it's a good sort of pilot test there.

We have still some concern with proximity to some of these pits. We've got B1 Pit up here, C1 Pit here, and A2 Pit here, where we -- we know that there's a risk of spillage during extreme flood events.

So key concerns that we're dealing with here. Like I said, flood risk. The existing creek may not convey extreme flows, or even lower flows under conditions where we have rock falls, bank failure, or anchor ice.

Anchor ice was something that I was asked to define. I sometimes call it "elf ice". They are different, but basically, anchor ice is anchored to the bed of the creek. Elf ice is -- can be anchor ice, where it builds up over the winter in a laminar fashion, and it's something that's been a bit of a -- a concern the last couple of years with the monitoring.

One (1) of the things you can see here is the -- the operational diversion in the A1 -- or Reach 1

is immediately adjacent to A2 Pit. We've got an undersized culvert just downstream. So that's -- that's one (1) of the areas that's an example of where we've, you know, perceived some risk there.

Along with the flood risk we have concerns about the environment. We know that the water and sediment quality in the creek have been affected by historical deposits, you know, aerial deposits that have run off, and also tailings deposits, and that the existing channel alignment includes alterations and diversions that really don't provide acceptable or adequate fish habitat.

A little aerial view there of Baker Pond, where you can see tailings. This is where the work's going on on Jo-Jo Lake right now. The creek actually comes in over here and outlets down here, and you can see shallow, you know, sediments, and we'll have a little bit of a discussion about that.

So the objectives of the Baker Creek component here are to provide flow conveyance through the site without spillage to underground. The current design criteria that we're -- we're proposing are to use -- and I -- I'm going to get a little bit -- into a little bit more detail about this later on with some visual to help explain this, but we're looking at the five hundred (500)

year flow event with an allocation, a pretty healthy allocation, for 2 metres of anchor ice, and an additional metre of freeboard, okay, before anything would spill to the underground. We also want to minimize groundwater seepage to the underground workings.

From an environmental perspective, like I said, we've got a pretty good template there with the Reach 4 reconstruction. I'll -- I'll get into a bit more detail there, but we -- we want to make the creek a productive habitat. And the other flip side of that is that there are contaminated sediments there, so there is a -- a program going on right now where samples have been collected.

There's a framework that's set out under this Federal Contaminated Sites Action Plan that we're using to guide the decision-making process on exactly what gets done with those sediments. You know, is it acceptable to leave them there? Do we need to cap them in place or do -- do they need to be removed completely? That sort of thing. That's -- that's the decision that needs to be made.

With respect to the DAR, what we're saying is that restoring the flow regime and recreating fish habitat will be positive changes.

I want to step back a little bit and talk

about the hydrology of the creek, just to provide a bit of context here.

What you can see there is a hydrograph of the creek; it runs from 1st of January to the 31st of December, and in the grey, what we can see is the maximum flow that's been recorded on the creek on any given day. So it's a typical northern stream where we have, you know, frozen or near frozen conditions over the winter.

We have the largest component of freshette there during spring runoff. Okay, snow melt period. Often times, like we're seeing right now, you know, we get late season rainfall where we get secondary peaks.

Some of the important things here are the -- the maximum flow that we've seen on the creek, and this is -- we're in a really good situation here because the creek has actually been monitored for flow for over forty (40) years, okay.

Working in the north, this is a luxury, okay. We've got hard data. So that's -- that's a real plus. The -- the median freshette -- or flow, you know, during the freshette period is only a metre cubed per second, so, you know, it's not a -- it's not a big creek.

It's got about 140 square kilometres of drainage area. Mean annual flow, you know, about 7 million cubic metres. And like I said, aufeis formation

has been, you know, a concern that's kind of reared its head just in the last few years.

The flood regime of Baker Creek, what you can see here is, you know, the -- the median annual flow peak is about 2 cubic metres per second, something less than 2 cubic metres per second.

Our design number is twenty-five (25). What you might see in some of the previous documentation is that -- I think that twenty-five (25) number.

We -- we actually updated the frequency analysis since those initial numbers came out, and it went down. But just -- you know, to provide a little bit of extra comfort, and, you know, account for some uncertainty, we've kept the larger number there so there's a little bit of a cushion there, something greater than 10 percent.

So the current de -- channel design criteria, this is in -- you know, looking upstream, or downstream in the channel. And this is based not just on Reach 4, but we also had part of our team, a couple of fluvial geomorphologists who went upstream of the mine site, and looked at the undisturbed portions of it between lower Marten Lake and Baker Pond.

And basically we're listening to Mother Nature here. We're not trying to design a canal; we're

trying to design something that has adapted over the years to the existing flow regime. And so we're looking at a channel that's about 6 metres wide at the base, roughly 3:1 side slopes, and a bank full depth of about a metre. To provide extra flood conveyance, and to accommodate ice accumulation, what we're looking at is a floodplain, okay, 32 metres wide, and the side slopes on that would be steeper in rock and shallower in in-situ soils.

Now, to -- to look at the flood design criteria, we first have our 2 metres of aufeis accumulation. You know, it's a pretty -- pretty hefty allocation. A lot of volume of ice that would need to accumulate to get up to there.

We were below that this year in the Reach 3 area. And the Reach 3 area, of course, doesn't have the floodplain, so it's got nowhere to go but up. So we think that's a fairly conservative, you know, allocation there. On top of that, the five hundred (500) year flood flow. So an extra level of conservatism in that we haven't accounted for melt of that ice during this extreme flood event.

You know, there would be thermal erosion of the ice, but we haven't included that. And then an extra metre of freeboard. So that corresponds to the --

what I --what I said before on a previous slide.

Like I said, based on local geomorphology, channel and floodplain materials, you know, we're not dealing with sands and silts here, these are boulders and cobbles, okay, and that's what we see in the upstream areas, so it's very erosion resistant material. And below the channel and floodplain we're looking at a layer of compacted till to reduce the seepage potential.

And in -- in areas where we have concerns where the creek would be over top of shallow underground features, mine workings, we would also look at putting in a bituminous liner. That's something that is in place in -- in Reach 4 right now.

Looking at it from another perspective. This is plan view, and in the downstream here's where Yellowknife Bay is, Reach 0.

That area just inside of the breakwater at the downstream end of the site there are potentially contaminated sediments in there. That's where the work is being done to determine the nature of those sediments. If need be, they can be removed and that area re-vegetated.

Reach 1, where the existing creek goes here, that was where we saw the oblique aerial photo. What we want to do is actually divert the creek through

bedrock in this area and provide a flood plain to provide flood conveyance through there.

And Reach 2 actually is in relatively good shape right now. There are a couple of pinch points where we have old road access. There's a natural bedrock outcrop up in this area, but there would -- you know, we've got some good vegetation developed, it would be a -- a minor bit of work in there. Sediments -- fine sediments may need to be removed depending on the results of the current study.

Reach 3, there -- the main feature there is that horrendous canal that goes through rock cut right now, and this is the area where, you know, major concerns about -- about spillage. This embankment is being ha -- recently was just brought up to guard against spillage. What you see in the PDR is diverting the creek this way to the east. You can see the outline of the flood plain.

It's a little tight in this area and we have some uncertainty about foundation conditions in there. And so this is the PDR case, this is what's proposed right now, but we also have a design variant that we've looked at, going in a deep rock cut around to the west. Okay. There's a pretty significant cut volume through there.

So one (1) of the things that would be

considered if this -- if -- if this went forward was, well, what's going to happen with that material. And one (1) of the answers qualitatively is we may be able to use it as capping material for the tailings.

There -- it may -- it may give us a good situation where this is both an excavation area and a borrow area, so that's under investigation right now. But I've got to stress, this is a design variant right now, not what's -- what's currently proposed.

In the area upstream of that we have the existing Reach 4. There's no intention to do anything with that right now other than a little bit of a berm up in this area to guard against spill.

Reach 5, what's proposed here is a bit of a channel cut, again, through bedrock, to prevent an existing flow constriction in that area and it also gets the water away from the -- the B2 dyke there. And we go further upstream, and both Reach 5 and 6 we know have potentially contaminated sediments in there.

And Reach 6 in Baker Pond, we saw the aerial photo of that, and the big question is what to do with those -- those sediments in the pond. Okay. That pretty much summarizes what's in the DAR and a little bit of an update on where we've -- we've proceeded.

The other thing I want to talk about is a

contingency that we've started to look at, and this is just in the last couple of months. There's probably a lot of rumours floating around, so hopefully this can clarify what's being done.

It's strictly being done for contingency. We don't want to get ourselves in the situation where maybe we need this and we don't know anything about it. So we've -- we've done some initial looks and it involves diverting Baker Creek completely around the site to the north, okay.

The City of Yellowknife kindly gave us their digital elevation data, so we've got a pretty good topographic data set for that area. And we've looked both at a flood only diversion and also at a fish friendly diversion that would provide not just flood conveyance but fish passage up into that upstream area.

One (1) thing I should note is that right now there is no fish passage above Baker Pond into Baker Creek. There's a -- a waterfall and a very steep reach in that area. So anything that comes up out of Great Slave Lake, any large- bodied fish that come out of Great Slave Lake can't make it further than the pond. This is looking at, you know, potentially opening up that area.

Now we looked at multiple diversion alternatives but we are limited by topography. What you

can see is a map there, Yellowknife city limits, the north end of the mine site, northwest tailings, and Ingraham Trail coming through this way, Yellowknife River, existing water intake in this area, and Baker Creek coming through Martin Lake and down to the south.

Some of the key water bodies there, Baker Creek, Yellowknife Bay, like I said at the start of the presentation, our -- our goal is to get water from upstream to downstream. Okay.

Because of limitations on topography, we can't make the water flow uphill into these areas, into Walsh Lake, for instance, Gar Lake that I've just outlined there, Trapper Lake, and Shot Lake. This area really defines the route that could be feasible, and a bit closer look at that using the City of Yellowknife digital elevation data and showing the -- the diver -- diversion routes that we looked at.

And so -- sorry. Through Gar Lake to Trapper Lake, if we just wanted to short-circuit it and convey floods, we could make a big, steep channel through to Shot Lake and down into Yellowknife Bay, downstream of the existing water intake so we don't have concerns with, you know, the chemistry of that water.

If we want to provide fish passage, there are -- taking advantage of existing topography, we've

looked at alternatives in this area. And this is all at a very, very preliminary stage. What we recognize is that if anything goes forwards on this, there's going to be a lot more work, both on the engineering side and also on the regulatory side, that would need to be done, but we want -- just wanted to introduce this to people as -- as something that we are looking at kind of behind the scenes.

So thank you.

THE FACILITATOR HUBERT: Thank you. It's Chuck Hubert with the Review Board. Is this a good time for a -- a health break? Okay. It's about twenty (20) after 10:00. Let's have a break until 10:35, please. How about 10:30, just so we can make up a bit of time, a modification of that. Thanks. Bye.

--- Upon recessing at 10:20 a.m.
--- Upon resuming at 10:33 a.m.

THE FACILITATOR HUBERT: Okay. It's Chuck Hubert, with the Review Board. I see most people have managed to locate their seats again after the break. I'd like to thank the Giant team for the presentation on Baker Creek that's been presented so far, and, with that, can the team please continue with their presentation.

Thanks.

MR. MARK CRONK: Thanks for that. Mark Cronk, Giant Mine team. Carrying on with the presentation, I'd like to introduce three (3) individuals.

Firstly, Mr. Robert Boon is a senior civil engineer with a long history in the north. He's gonna talk about the groundwater management and the pumping systems that will supply the mine water to the water treatment plant; followed by Kyla Kirk, who is on the plant design team; and the last speaker will be again Mr. Nathan Schmidt, who will talk about the diffuser. And I misspoke myself, the last speaker will actually be Bruce Halbert, who will do a wrap-up on the human health risk assessment associated with the water system.

So, with that, I'll turn it over to Mr. Robert Boon.

MR. ROBERT BOON: Good morning, everyone. My name is Bob Boon with AECOM, and, as Mark said, we'll be talking a bit at the moment on groundwater.

Before we do, though, the -- should set the -- set the stage. The objective here is once the groundwater is brought from underground, treated, and sent through the diffuser. The objective is to treat all of that underground water to meet CCME 2007, or the

guidelines for Canadian drinking water quality, whichever is the more astringent, at the end of the mixing zone.

The only exceptions to that is if the background level in the bay is higher than those guidelines, then the background level will govern.

So ground -- the first part is about groundwater management. The current groundwater level in the mine is about 230 metres below the lake level, or two fifty (250) below the collar on the sea shaft. And we get groundwater into the mine from a number of sources. It can be rainfall or snow melt from the open pits, seepage in from Baker Creek, seepage from the various ponds on site, and of course groundwater seepage and infiltration into the mine itself.

So, this portion of it, we'll talk about the groundwater monitoring, the water levels in the mine, the storage of water in the mine, contingency plans, and some design variance. At the mine, there's an extensive groundwater monitoring program already in place. There's over a hundred and twenty (120) monitoring points, and these continue to be monitored.

The results of that monitoring clearly indicate the cresent -- the presence of a hydraulic trap, which would be expected with the artificially low groundwater at the 230 metres below the -- the lake.

And there was no significant difference in the piezometric levels observed when they flooded the mine from the 600 metre level up to the 230 metre level.

And I would note at this time, there's no specific water quality standard set for groundwater in the mine, as all the groundwater reports to water treatment plant.

How much water is coming into the mine? The current estimated average year volume entering the mine is about 630,000 cubic metres, which could increase up to about eight hundred and twenty-two thousand (822,000) in a wet year.

After the freezing is complete on the blocks, and the surface ponds are de-watered, that's expected to decrease to about four hundred and four thousand (404,000) in an average year, with up to about five twenty (520) in a wet year.

Those numbers are slightly higher than what you may have seen in the DAR. It's just reflecting design contingencies and recent flow data from the Akaitcho.

The underground water has been studied and sampled for many years, and that is continuing. There's also additional sampling points being added, and additional flow monitoring planned at various sources in

the mine, all to better understand that groundwater.

You may hear the term 'high test,' and I'll be using it later in this. 'High test' is a term that apply -- is applied on site to the high arsenic content water. That water primarily originates in the arsenic storage areas.

The majority of that high test water is currently captured and piped to the seven-fifty (750) level Akaitcho sump. There's ongoing work to identify and map the high test sources.

The sampling of that water is occurring, and that will be expanded to better characterize those high test flows, and the -- there's water metering being added to quantify the flows from the various sources. That metering will help identify changes to flows during and after the freezing of the blocks.

Minewater is current pumped to the Northwest Pond for storage and treatment during the summer months. The current plan is to retain the minewater underground, and treat it as -- on a year-round basis. That will require storage for the spring freshette and for major storms that may increase seepage and infiltration into the mine.

The storage is available in numerous drifts, raises or passes, open and backfilled stopes, and

various other mine workings. This is simply a figure from the DAR, which illustrates the flooded stopes, and the unflooded workings available above the seven-fifty (750) level, which is where the water level currently is.

The estimates of potential underground storage volumes are ongoing, but if you can imagine they're difficult due to the lack of backfill records in the old stopes, and the very complexity of the underground workings themselves.

Some data we have from the Akaitcho pumping station indicates that at the current levels, we're storing about 10,700 cubic metres per vertical metre of mine.

That's over a very small range, and that can be expected to vary as you go up or down in the mine. If you couple that with the current plant size we anticipate, you will need to store about 177,000 cubic metres to get you over the spring freshette. At the ten thousand seven hundred (10,700), that represents about 16 to 17 vertical metres in the mine.

The current short-term plan is to keep the water below the seven fifty (750) level, and that's shown on this slide. There's also a hard copy on the wall, if you want to have a look at it.

Keeping it at that level has a number of

advantages: it maximizes our underground storage volume during the plant and diffuser start-up and commissioning; minimizes the risks of flooding the arsenic chambers; maximizes the hydraulic gradient into the mine; it allows us to access the various levels -- four twenty-five (425), five seventy-five (575), seven fifty (750) -- for monitoring and remedial work; gives us time to better monitor and understand the minewater; and allows us to use the Akaitcho system, which is on the right-hand side, as a contingency pumping.

To accomplish that and feed the plant, we will have to drill a -- a couple of new probably 15- to 18-inch bore holes near the seven (7) -- or near the C Shaft. Those have to be drilled right down to this nine hundred (900) or nine fifty (950) level to pick up the water, and we'll install the pumps between the nine fifty (950) and the seven fifty (750) level.

In the future, as the mine is flooded further up, those can be lifted, and -- and both the pumps and the controls can be lifted in those shafts so you can accommodate further or higher water levels.

As I mentioned earlier, in the short term, we want to keep the Akaitcho system as a contingency plan. The existing -- and that would be kept in place until the existing ponds are dewatered by the existing

plant, that the new plant is online and functioning, that we've got operational experience with the new system, and the mine water is better understood.

Future water level will be raised; however, the final minewater level isn't defined at the moment. It is under discussion. The timing of that additional flooding is also under discussion; it is not defined, but it should only be raised based on design -- or detailed design and operational experience.

There's a -- with the -- the low water level at the seven fifty (750) level, there's a potential to keep the high test piping, so future design of the water treatment plant is to consider the benefit of retaining that high test piping and the possibility of expanding it, and feeding that to a separate treatment segment specifically designed to treat the high test water until the freeze is completed and that flow dries up.

The output from that high test water treatment plant, if it meets the design criteria, which -- which we've had at about .2 milligrams per litre, would go right into storage and then out to the diffuser. If it can't bring it down to that level, it would likely be taken and run through the main water treatment plant for further treatment.

Future monitoring. The groundwater at Giant will continue to be monitored. That includes the minewater quality at the entry to the water treatment plant. The minewater level would also be monitored at that point. There's plans for seven (7) multi-point -- multi-point wells to be installed surrounding the frozen arsenic areas, as outlined in the DAR; the groundwater to be monitored in both shallow and deep monitoring wells. Again, that process is outlined in the DAR. All of those water samples will follow industry standards, and the monitoring results are to be included in annual port -- reports and status of environment reports.

A couple of design variance. A continued review of the potential separate treatment segments, specifically to treat the high test water; to have mine access for personnel if the high test piping is retained so that that system can be maintained; the minewater to be held about 20 metres below the seven fifty (750) level for some time; and the future minewater level is currently under discussion.

So, in summary, on the groundwater itself, the ground -- the groundwater and minewater are being monitored. This will continue, and it will be expanded. The minewater level is to be held at current levels during remediation. Future water levels are still being

discussed, and the hydraulic trap will be maintained for some time with that low water level.

And with that, I will turn it over to Kyla to talk about the water treatment.

MS. KYLA KIRK: So my name is Kyla Kirk, and Till and I have been working on the water treatment portion of this project.

So just to give you a little outline of what we're going to cover, first we'll talk about the design criteria, the minewater quality, and the performance criteria that led us to undergo our technology review. Based on this technology review we developed a process design. We intend to perform validation to confirm our process design.

We also intend to discuss -- we plan to discuss residual handling, sampling and monitoring program, our contingency plans, and our design variants, and we'll wrap up with a summary.

Our design criteria: In the short term, we anticipate that our average treatment flow rate will be approximately 26 litres per second. In a peak wet year, this is expected to rise to about 34 litres per second with a maximum equalization storage volume of 177,000 cubic metres.

We expect in the long -- in the long term

that this will fall to a minimum level, with a average treatment flow rate of approximately 17 litres per second, and a peak wet year flow rate of 21 litres per second.

We reviewed several water analysis test results to determine the major parameters of concern, and what we've determined is that these are arsenic suspended solids and pH.

So we did -- we do understand that there is some salinity in deep groundwater, but we do not believe that this will affect the treatment process, or the water quality at the edge of the mixing zone.

So the blended and high test water, which was previously explained by Bob during the underground water management section, we reviewed water analysis test results from these -- from the -- from several existing sample points.

And this is showing us that the blended water to surface is approximately two hundred and eighty (280) -- goes up to 280 milligrams per litre of total dissolved arsenic, whereas the high test can go -- be as high as 7,300 milligrams of dissolved arse -- arsenic per litre.

We intend to have a preliminary sampling and monitoring program, and this will help us collect

data to support detail design, as well as help clarify flows to the Northwest Pond, and develop reference points to observe seepage and high arsenic content water capture upon freezing.

Here we have a table showing us the general Northwest Pond data for 2009/2010, and the Akaitcho dewatering system for 2009 to 2010.

Now, what this shows is that the existing treatment plant is treating water from the general -- mostly from the general Northwest Pond, and the new plant will be treating water from the Akaitcho dewatering system.

As you can see from the data, it's -- the water quality in the Northwest Pond is slightly better than that coming directly from underground.

So this is important because on our next slide we show our existing treatment plant effluent -- or new treatment plant predicted effluent, and our -- and the maximum criteria based on the former water licence for the existing treatment plant.

We'll see that -- we expect that the new treatment plant will produce water that is better than the existing treatment plant, but we also understand that in some cases because -- if we look at the chart you see for ammonia we do have slightly higher ammonia values

coming out from the underground compared to what is in the Northwest Pond, because the water quality changes in the Northwest Pond.

The -- the main -- I -- sorry. What we want you to take away from this slide is that again the new water treatment plant would meet or surpass existing effluent quality, and our current effluent quality water criteria will be set in conjunction with the diffuser design to meet the objectives at the end of the mixing zone. The existing maximum criteria listed is based on the former water licence for the existing plant.

We reviewed several technologies, and what we found is that our review collaborates previous studies that showed that conventional treatment is the most appropriate technology for this application.

So the conventional treatment process consists of three (3) main steps. The first is the oxidation of the arsenide to arsenic. The second is the precipitation of the arsenic, and finally, we intend to remove this precipitate through a liquid solid separation process.

Here we have a simplified process flow diagram which is also available on the wall if you want to have a closer look, because it may be a bit difficult to read here. And we have the minewater being pumped

from the underground. We have chemical addition in the form of potassium permanganate, ferric sulfate, and lime with a reactor chamber which helps us precipitate the arsenic in metals.

We add polymer for improved floc characteristics which help in our settling, which occurs in a liquid/solid separation step. This removes, or precipitates, and reduces our suspended solid content.

We intend to adjust the pH with carbon dioxide in the reactor chamber and have further liquid/solid separation for additional suspended solids reduction. The treated water has a return recycle line for retreating non-compliant effluent and the solids from the initial separation step, which is right here, will be held in a sludge thickener and then mechanically dewatered.

The liquid residuals will be returned for treatment at the start of the treatment process and -- or -- or backwashed from a secondary separation process, will be sent to the mine. We anticipate this will be approximately 150 cubic metres today -- per day.

So this type of process provides flexibility due to the two (2) parallel trains which are not shown here for simplicity, and the treatment process is based on a multi-barrier approach.

Together the all different barriers that we have in place should provide increased operational flexibility and offer a greater assurance that the water will be fit for discharge.

We intend to validate the performance of the system, the bench scale testing and the pilot plant. The bench scale testing process is recommended to confirm our choice of chemicals, to optimize our treatment process, for example, we can determine the order in which chemicals should be added in -- added to the treatment process, and it will also help us provide more accurate che -- chemical consumption estimates.

The pilot plant will confirm that our proposed treatment process will meet the effluent requirements and confirm the arsenic treatment threshold value. Bob discussed earlier the possibility of us treating the high test water separately and by performing a pilot test we can determine if the high test water can be treated in a separate stream based on the threshold value.

It also assists us in the operation of the plant as the arsenic concentration in the influent raw water also acts as an indicator of whether the effluent will need to be retreated.

We anticipate that our sludge volumes will

rage be -- range between 150 cubic metres per day and 210 cubic metres per day coming out of our treatment process. We investigated several locations for disposing of our sludge.

The first was returning it to the mine. The second was storing it in an empty arsenic stope, and the third was storing it in an onsite engineered landfill. We decided to go with the onsite engineered landfill as returning it to the mine or storing it in the arsenic stope can introduce the possibility of arsenic and other contaminant re-release.

The actual location for this -- for the sludge disposal is under investigation and details on it will follow in the waste management hazardous waste presentation. In order to reduce the number of solids going to our engineered landfill we plan to mechanically dewater these residuals. We anticipate that these -- the dewatered sludge volume would range from 15 to 50 cubic metres per day.

We also plan to do some bench scale and pilot testing for the sludge. This will help us identify the sludge characteristics and determine the best dewatering equipment for the sludge. It also allows us to optimize our polymer dosage values and obtain more accurate chemical consumption rates.

Again, liquid residuals will be returned to the start of the treatment process. We also plan to continue to sample and monitor several locations. I -- on the screen we have a list of some of those locations. The first is the plant inlet. This will help us monitor the performance of the plan by providing comparative data. It also allows us, as I di -- I talked about earlier, to dis -- to optimize the plant based on the influent water quality.

We plan to monitor flow rate, pH, temperature and con -- conductivity continuously, perform daily grab samples for arsenic and weekly composite samples for general chemistry and total metal parameters.

We also in -- intend to monitor after all major process stages. This also allows us to evaluate the performance of our equipment so we can tell if something is going wrong. We plan to monitor TSS, pH, and flow rate at these locations.

We also plan to monitor entering the treated -- treated water storage cells, as again, it provides comparative data for plant performance. This allows us to detect non-compliant water -- non-compliant quality water and return it for re-treatment.

Some parameters we plan to monitor daily there are pH, TSS, and total arsenic. Fin -- finally, we

also plant to monitor the water exiting the treated water storage cells. This should confirm that our water is treatable -- is suitable for discharge. And we plan to monitor flow rate continuously, metals, pH, TSS weekly, and monthly, acute lethality tests.

We have several contingency plans in place, the first of which is to provide extra capacity at the new plant. And how this is done, we estimated that our peak flows are -- earlier we estimated that our peak flows were 30 litres per second. What I did not mention was that this included a 10 percent downtime, and a 20 percent contingency.

We also have room to install a third treatment train if this is found necessary. We have provided backup equipment, and multiple injection points for our oxidant as the process will be less effective without oxidization.

We also have the effluent storage cell, which we plan to use to hold noncompliant effluent, and return it to the start of the process for re-treatment prior to the storage area. We also have several other contingencies that were presented earlier.

Several design variants: What we found is that our pro -- our proposed process does conform to the overall objectives. The first is minimizing contaminant

release via water treatment. We also indirectly assist in the restoration of Baker Creek, and reduce public health and safety risk simply by reducing the arsenic loading/exiting our treatment plant.

We also plan to reduce our worker health and safety risk, as we plan to automate our process as much as possible.

So, some of these variants are a choice of oxidant. We decided to go with potassium permanganate, as we found out it's more effective in cold water than hydrogen peroxide. We've included additional liquid solid separation steps to lower their solids concentration, and to lower the TSS concentration, as we plan to use our treated water for chemical makeup.

We've included polymers, just to include our set -- settling characteristics. We also have our treatment volumes. As Bob discussed earlier, this is approximately 630 cubic metres for the average, and 823,000 cubic metres per year of peak in the short term, and 405,000 cubic metres per day, and 518,000 per day in the long term.

And our short term arsenic concentrations are 76.8 milligrams per litre as an average number, with 280 milligrams per litre as our peak. In the long term, we expect that this should fall to approximately 2.9

milligrams per litre.

So, to summarize our presentation, we expect that the plant will treat up to 34 litres per second of minewater. Sampling and monitoring programs will be in place, both pre- and post-water treatment plant. Our dewatered residuals are to be stored in an on-site engineered landfill. We plan to perform bench scale and pilot tests. And most importantly, this is the most important part of my presentation, several -- non-complaint effluent will not be discharged. We will have several contingency plans in place, and this water treatment plant should conform -- will conform to the overall project objectives.

So, I will hand it over to Nathan to talk a bit about the diffuser.

MR. NATHAN SCHMIDT: Thanks, Kyla. Nathan Schmidt. And I want to talk a little bit now about what happens at the downstream end of this treatment train, and about the -- the diffuser that's going to be in place at the -- at the end of the pipeline.

Now, the -- the diffuser, it's a standard practice to -- to manage the mixing of effluent with natural receiving water, and some of the key components that we're going to talk about today are where it is,

what it's going to look like, what the regulatory requirements for these types of things are, and a description of the modelling that's been done to support the design.

Now, as for the location, I think there were -- you know, in the DAR, it was a little less specific, but the -- the preferred location right now is -- you can also see up on the wall there a map that details this, relative to the -- the Giant Mine site, and you can see Old Town, and the main part of -- of Yellowknife there. Off shore in the bay is where the diffuser is, or is planned to be.

What's shown in the green there is the size of the mixing zone. And you can see from the contours there that it's off in a deep water area. I'll discuss that a little bit more as we move along.

But the -- the actual physical design of the diffuser, what we're looking at is a supply pipeline, 273 millimetres. That's 10 inch nominal HDPE pipe. And we would have an 81 metre length of that with alternating ports. To start with, we would have twenty-eight (28) ports, and what those ports would look like is a riser that would get the pipe up about a metre off the ground, off the bed. That's about a 64 millimetre diameter, I believe. And then, right at the top of that, a very

narrow bit of pipe that basically is a half-inch internal diameter.

Now, the -- the reason for this configuration is that we want to burn as little energy as possible to get the water to the outlet location. That's why we have a large-diameter pipe in the -- the lower frictional losses, but when we get to the end, we need that extra oomph to provide the momentum for the water to provide mixing once it gets out into the bay. And so, what we're looking at is a -- a series of -- of twenty-eight (28) of these in the short term.

Longer term, like Kyla talked about, the flow rates will drop off, and so as the flow rates drop off, we still want to preserve our velocities, exit velocities, to keep that mixing up, and so what would need to happen is divers would need to go down and -- and turn off some of those ports. They would alternate in opposing directions, so every second one would face roughly north; every second one would face roughly south.

One (1) thing I should note is we are going to have a scale model of this delivered sometime today. It's already supposed to be here, but I haven't seen it yet, so I won't dwell too much on this. But you'll get a chance to -- to have a look. I think it's about a one-fifth (1/5th) scale model of a section.

MR. ADRIAN PARADIS: It is in the back -- back of the room.

MR. NATHAN SCHMIDT: Okay. Excellent, excellent. So, at lunchtime, everybody can go have a -- have a look.

The other important thing is that the nozzles actually come off at a thirty (30) degree angle. This is a -- of course, what we're working with right now. Pointing them straight upwards, especially under ice conditions, we couldn't achieve optimal mixing, and there's also concern with pointing them, you know, anywhere near to downwards from a sediment resuspension perspective. And so that's the -- the current design is -- is that angle.

Now, how does that look? How do we get from the water treatment plant out to the diffuser? Basically, what we're going to have is that pipeline laying on the bed of the bay. It's about almost 3 kilometres of pipeline. And we need that to get it out into an area where we've got a sufficient depth that we can get mixing under ice-covered conditions, under stratified conditions, that sort of thing.

So, in terms of the regulatory requirements, we've -- we've had a lot of talk about -- about meeting water quality standards in the -- in the

receiving environment. I think Bob and Kyla have covered that off pretty well.

One (1) of the key aspects here is the concept of a mixing zone. And so this is a -- you know, a fairly standard sort of approach, is to meet these requirements at -- at some distance, not too far from the diffuser, so we can take advantage of that mixing that's happening. And a 15 metre radius was the target from the diffuser ports where we want to achieve those -- those standards. So, keep that number in mind when we see some of the graphs that come after this.

This is basically the -- and you've got this in front of you in the handouts, but it -- it should correspond to, you know, the water treatment plant numbers, as well. And you can see, you know, background concentration is the defining factor for some of the constituents, drinking water guidelines and CCME, basically going with the -- the critical, most critical.

So, the mixing zone, again, you know, we've got the water surface being one (1) boundary, we've got distance to either side, and that's our 15 metres, and also 15 metres in and out of the screen there.

So, the modelling, we used a -- a model called Core Mix (phonetic). It's a well-established kind of near-field mixing zone model. And what you can see

is, for the open water condition where we have, you know, approximately a 9 metre depth of water, the -- the key contour that we're looking at here is the second one in, 'cause that's where we get our 100:1 mixing ratio, so one (1) part mine water, a hundred (100) parts ambient water. That's where we should achieve that level of mixing.

What was also checked was adding another 50 percent to that for a factor of safety. So, we should achieve 150 percent, or 150:1, mixing well within our 15 metre mixing zone for this.

There were quite a few model runs done, over three hundred (300) model runs, looking at different situations, different flow currents; flows, kind of with the -- the direction of the diffuser, perpendicular to the direction of the diffuser, and that sort of thing. So, all of these were checked. This is just a -- kind of a subset of the results that we're putting up here.

And this is open water with a near stagnate current, okay, under the ice cover period where we have 2 metres of ice on the bay. What you can see is, we get that 100:1 mixing below the ice cover, and 150:1 just touches it.

And in a stratified condition -- of course a stratified condition, we're also anticipating almost no flow velocity, so that actually accounts for the -- the

shorter distance from the diffuser port. You know, our mixing zone is up here, but over here is where we're achieving our -- our 100:1. And stratified, by that we mean warmer water in the summer time over a layer of cooler water down below.

Another look at it in plan view, and this is of -- of a single port again, and the reason we're showing this is, remember I said that the diffusers will -- the ports will be at a 3 metre spacing, and the other thing we want to do is make sure that they don't overlap next to each other. So, there -- there would be another port here going this way, and then another port up here going this way, and so we have adequate separation there that the -- we don't get overlap during the mixing.

So, a couple of issues that have come up over the last little while; concerns with thinning of the ice cover under winter conditions. And it is possible that some local thinning of the ice might occur. You know, we could deal with that to some extent by adjusting the port angle downwards to keep that plume further down. But, again, we're not just mixing the chemical constituents here, we're also mixing warm water with cooler water at, you know, 100:1 ratio. It's not a -- you know, there are some other thermal effects there, but essentially we're going to end up at the outside boundary

of that plume with a cooler mixture, sort of thing.

So it's not like we're going to have 8 degree water hitting that that ice. It's going to be a lot closer to ambient.

Bottom sediments. Like I said, we don't want to resuspend those. We want the ports sufficiently far above the bay bottom, that we're not going to get entrainment of fine sediments in those -- in those jets. And so that's something again, adjusting the angle, and looking at that a little closer during the detail design process.

So, in summary, you know, the design of the diffuser considers the water quality in the Bay, and the regulatory guidelines, and -- and what we're anticipating coming out of the plant. So, there -- those all have a firm basis. We want to achieve, you know, our mixing at at least a 100:1 ratio, and I've shown -- I've shown that there's, you know, a factor of safety in there within 15 metres from the diffuser ports. And like I just said, the bottom sediments and ice cover thinning are both factors considered in the design, as well.

So, that brings us to a close on this part of the presentation. So thank you.

MR. BRUCE HALBERT: So, Bruce Halbert. I'm going to provide an overview -- overview here on the

surface water environment, and I see by our timing I've got like five (5) minutes to do it, but I might take a couple minutes more than that.

I want to start by just presenting an overview on the reduction is expected in the arsenic loadings to the surface water environment, as a result of the combined effects of all project activities.

The first point I make here is that the frozen block method will effectively isolate the arsenic trioxide in underground vaults, and thus minimize significant adverse environmental effects that might otherwise occur. And I'm going to come back to that point in a -- in a few slides.

The second point I make, is that the shifting the discharge point for the treated minewater to -- to a new outfall location in Yellowknife Bay, combined with other remediation activities on the site, will effectively reduce the arsenic loading from an estimated 800 kilograms per year in -- at the outlet at Baker Creek, to 480 kilograms per year, which represents approximately a 40 percent reduction.

The third point I'd make is that, relative to current conditions, and respecting the loadings to -- to Yellowknife Bay in -- in the bigger picture, it's expected that the overall load would reduce from 910

kilograms per year to 690 kilograms per year, or approximately a 24 percent reduction.

And, lastly, the -- over time, these reductions are expected to result in measurable improvement in water quality in Baker Creek and Yellowknife Bay.

This slide shows a breakdown of the various arsenic sources in and around the -- the mine site. I mentioned this 480 kilograms per year as the expected load out of Baker Creek. It includes a load con -- contribution from drainage to the west of Baker Creek off the Giant mine site, per se, that drains into the creek. We have a -- an upstream load coming in of -- of 220 kilograms per year, which represents approximately 40 percent of the total load that's carried through Baker Creek to the outlet.

In addition, we have the internal sources within the Giant mine site itself. And then there's this shoreline contribution to Yellowknife Bay that, in total, makes up these 690 kilograms per year projected into the future.

This next slide provides an overall summary of the information that you just saw in the previous slide, and I just -- I'm going to focus here initially on these first -- these two (2) columns, one

called "Current" and "Post-Remediation". And, again, it just summarizes what I said.

We have 220 kilograms per year coming in Baker Creek, inflowing to the -- to the mine site. We have approximately 67 kilograms per year coming in from the west side of the site. The current effluent discharge from treating minewater plus surface drainages is -- contributes approximately 290 kilograms per year.

We have a -- a surface flow component from facilities into Baker Creek esturary from the Giant mine site, per se, of 220 kilograms per year. In the future, we're -- we've conservatively reduced it to a hundred and ninety (190), which is a small reduction, but we're just being conservative. In reality, over time, I'd expect it would be more.

These two (2) columns add up to the 800 kilograms per year current, 490 -- or 80 kilograms per year in the post-remediation case, and that's for Baker Creek. And then the similar summary for Yellowknife Bay.

Now, this doesn't really look like a -- much of a reduction overall when you consider, you know, all the work and activities that are going to be undertaken, but if we put it in a perspective here, if no remediation works were to be undertaken -- in other words, the -- you know, we didn't implement the frozen

block, we stopped treating minewater and eventually there's an outflow of minewater into Baker Creek and Back in it -- Bay -- we estimate that we could look at a -- a contribution of approximately 7,000 kilograms per year of arsenic from the underground mine workings. So, there's a definite need for the project in the -- in the big picture.

Turning to environmental quality, we evaluated this luc -- in two (2) basic sets of criteria. First is a comparison of predicted arsenic levels in the post-remediation period to environmental quality guidelines under criteria. The second is, we undertook a human health and ecological risk assessment work, where we could -- we reassess both risk for current conditions, as well as in the post-remediation conditions.

This slide summarizes some of the information, looking at it from a water quality perspective. This row I'm pointing to in the slide pro -- provides a summary of the expected arsenic, mean arsenic levels, if you will, in Baker Creek, 118 micrograms per litre; in Back Bay, at 3 micrograms per litre; moving to north Yellowknife Bay, of 1.4; and it was approximately .6 micrograms per litre in south Yellowknife Bay.

We're comparing here to the Canadian

freshwater guideline value of 5 micrograms per litre. We can see that we -- the checkmarks mean we -- we're below those levels, or we're -- we're in good shape. The "X" in Baker Creek obviously indicates we have an exceedance of the water quality guideline.

On the right-hand side of this slide, we're com -- doing the same comparison now to the drinking water guideline provided by Health Canada uptake in micrograms per litre. Again, we don't have an issue in -- in Yellowknife Bay. In -- only in Baker Creek do we exceed -- exceed the guideline.

Turning now and looking at it from a -- an ecological risk perspective, and this slide look -- is looking at aquatic species, again this is for the remediation case, or post, we assessed -- compared the predicted concentrations to toxicity reference values, or benchmarks, as we often refer to them, for each -- for several different plan -- species, including aquatic plants, benthic invertebrates, and predator fish, and forage fish.

In -- throughout the Yellowknife Bay area, which is including Back Bay, and -- and north and south Yellowknife Bay, we see we're below the benchmark values in all cases, so again there's little -- little ecological risks in those water bodies.

Baker Creek, we're below criteria with respect to aquatic plants. And for benthic invertebrates, comparing them here only to surface water, not sediments criteria.

We -- we did indicate, or do indicate a potential exceedance, or risk, if you will, to predator fish and forage fish, and this is comparing both to what's commonly referred to as EC-25 and EC-10 values, toxicity benchmark values. The field evidence though in recent years is that we -- we have seen fish migrate back into that system. And, as Nathan indicated, there is active spawning occurring within the Reach 4, and with both large body and small bodied fish present in that system in the -- in recent years, so that's a good sign.

I'm now going to move forward quickly to talk just about monitoring and surface water quality. The DAR outlines a program, which includes continued operation of -- of the surveillance and the network program on Bak -- Trapper Creek and Baker Creek. There's approximately eight (8) stations in total included in that program.

We're proposing new sampling stations in Great Slave Lake, with three (3) of them located in Back Bay, and four (4) in Yellowknife Bay. And I'm going to have maps that show that in just a moment. And then

ongoing sampling of surface water seeps and on -- under any surface drainages that are observed onsite.

This figure is a little bit busy, probably hard to read, but it basically identifies the locations where monitoring would be undertaken in Baker Creek, from the mouth up to above Baker Pond. And then in Trapper Creek there's a couple of locations. And then some surface seepage, or samples that -- sampling work that's undertaken on the site when observed.

In -- in Yellowknife Bay, we proposed that there would be two (2) locations -- or three (3) locations within Back Bay, two (2) of them in line with the -- the mouth of Baker Creek and out towards where the outfall is proposed to be located, and a third location offshore from -- from Latham Island. In Yellowknife Bay itself, we were proposing that it -- there should be one (1) near the mouth of Yellowknife River, a second station near the discharge location of the outfall opposite the city of Yellowknife, and further south opposite the community of Dettah.

Besides the surface water monitoring program, we've also proposed in the DAR there would be fish monitoring undertaken.

Boy, this is a funny looking slide. Yeah, something happened in the -- okay, sorry about that.

Fish monitoring in Baker Creek and Yellowknife Bay would be undertaken every three (3) years to assess fish health and fish tissue chemistry.

Aquatic effects monitoring would be undertaken every three (3) years to evaluate the effects of the treated mine water discharge to Yellowknife Bay. There's a comparable program in place today on Baker Creek relative to the current operation.

I also propose that there would be benthic invertebrate, aquatic vegetation, and sediment monitoring at Baker Creek, again undertaken in a three (3) year cycle to determine how recovery is occurring within that system.

Boy-oh-boy, my printout doesn't look like that. Good thing.

Besides that, we've -- also proposing in -- in overall conclusion, for Baker -- Baker Creek environmental quality is expected to improve as a result of remediation pro -- of remediation works; however, it is not expected to return to pre-mining conditions, and that should be quite obvious.

Back Bay and Yellowknife Bay water quality has improved dramatically in the past several decades, and is expected to continue to improve.

Arsenic levels in water today are below

criteria that are protective of all forms of aquatic life. Arsenic levels in bac -- in Yellowknife Bay are also well below Health Canada's drinking water guideline of 10 micrograms per litre.

The proposed outfall to Yellowknife Bay will not adversely impact the arsenic level in -- in the Bay, beyond the initial mixing zone that Nathan has described. As indicated in the preceding presentation, the treated mine water discharge will -- will be fully mixed with mine -- with lake water within 15 metres of the outfall.

Consistent with the overall -- overall objectives, the remediation project will result in an overall improvement in -- in the quality of the surface water environment. To confirm these conclusions and identify any adaptations that may be required, a comprehensive environmental monitoring program will be put in place.

Thank you very much.

THE FACILITATOR HUBERT: Chuck Hubert, with the Review Board. Thanks very much for those series of presentations on Baker Creek groundwater, the water treatment plant, the diffuser, and surface water quality.

At this time I'd like to open up the floor to parties for questions of the EA team -- or not the EA

team, the Giant Mine team, sorry.

QUESTION PERIOD:

MR. TODD SLACK: Todd Slack, YKDFN. I'll go first, and with a human health question. And sorry, your name plate's fallen off.

MR. NATHAN SCHMIDT: Nathan Schmidt.

MR. TODD SLACK: Nathan Schmidt. I think you're the man this is addressed for.

You talked a -- a little bit in terms of the ice situation, and this is a, you know, a very significant concern in the short-term, and you talked about a potential thinning. Like I'm not sure if you've been to this area in the -- the winter, but this is the, you know, essentially the primary corridor of travel, and a -- a thinning of the ice will -- and as we see in Jackfish Lake, which Jackfish is just a -- you know, people drive -- it's not the -- no one goes there on purpose, right.

(BRIEF PAUSE)

MR. TODD SLACK: I'll -- I'll -- yeah, I'll reserve comment on why you would go there on purpose.

So, I have a couple of questions. In terms of when you say that there's potential thinning, what are we talking about here, both in terms of a safety aspect and in terms of a temporal aspect? Are people not going to be able to use that? Can I get some more information on this.

(BRIEF PAUSE)

MR. NATHAN SCHMIDT: Nathan Schmidt. And the -- the first answer to that is it hasn't been looked at quantitatively yet.

Okay. So, we don't have numbers. That would be something that would have to be assessed during detail design.

Mitigating that though, we're expecting some very small temperature differences. And so, you know, going from 2 metres ice, you know, we're expecting small changes.

And so to be confirmed. Okay. We recognize it is an issue, but we don't have hard numbers yet.

MS. LISA DYER: I'm just going to follow up on Nathan's comments; is that, Todd, being -- having lived in Yellowknife for over seventeen (17) years, I

understand the use of that area and the importance of that area, and so I am working with the design teams to look at these issues.

This has been one (1) of the number 1 issues that has been given to the design team; they're aware of it. And one (1) of the things that we're proceeding on is we are doing further work to look at that quant -- quantitative nature of -- we do not believe it's going to be substantial, but that as part of the work that's going to be done this fall into the winter is looking at those dynamics.

So, this is on the books, this is an important concern, and we are -- we have proposed plans to provide more information to people.

MR. TODD SLACK: Okay. In -- a comment and two (2) questions on -- on that then. So, the -- the issue is not whether it's 2 metres at ice January 31st; the issue, as I'm sure you're conveying, but to be clear, is on April 21st, can I be skidooing through that area as people do now?

So the two (2) questions are, 1) when can we expect further information, because this is a -- you know, if you're going to propo -- continue the proposed diffuser, this is a requirement for the parties to know in the EA process; and number 2), is this being

considered in what we're seeing already in terms of the ice changes with climate change?

When you talk to Elders, you know, then they'll -- they'll tell you at length as to the -- the significant changes of ice, especially in the Yellowknife area. So, I think we're looking at a -- a confluence of events here.

MS. LISA DYER: Thank you. Lisa Dyer. I'll answer that question, Todd. Is -- yes, this is being considered, and we are considering it in the long term with climate changes and how we expect the ice conditions to change in the future.

As for answering when we'll be able to get this information back to you, I'd actually like to talk a little bit further with John Hull and Nathan -- and, as I said, this work has been identified -- and come back with a more realistic answer for you. I should be able to do that before the end of the day. I'd just like an opportunity to talk to them during a break, so that we can confirm that for you.

MR. TODD SLACK: Todd Slack, YDKFN. Thanks very much.

THE FACILITATOR HUBERT: Thank you. Chuck Hubert, the Review Board. I'd like to go to our technical advisor, Lukas, for a question, please.

MR. LUKAS ARENSON: Lukas Arenson. I've just a follow-up question. It's more of a technical nature. When I see the diffusion, what you'd shown in slide -- I think it's -- was 20, 28, or on page 28, did you consider any convective heat transfer that's going on there? Because what you'll get is -- you're going to get temperature mixing in there, and was that considered?

MR. NATHAN SCHMIDT: Sorry. Nathan Schmidt. I would have to follow up on that one with the people that actually did the modelling. I could make a phone call at lunch just to confirm on that.

MR. LUKAS ARENSON: Okay. That -- that would be good to know, because it's -- it goes into Todd's question of how much ice thinning you actually get when you have that additional gravity-driven flow at the diffuser.

MR. NATHAN SCHMIDT: We'll -- we'll follow up on that at lunchtime.

THE FACILITATOR HUBERT: Chuck Hubert. Thank you very much. And, Lukas, if -- if you can remind us of that after lunch, that'd be great.

MR. LUKAS ARENSON: Okay, yeah.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly. This was on -- for Alternatives North. This was on my list as well as the diffuser design, and I just

want to contrast the responses to the IRs that the developer gave, that we submitted one (1) number, fourteen (14). They said: No problem; ice, no problem at all. Then, when the City asked the same questions, the -- the response to the City was, Well, we might have to post signs, we might have to flag the area like they do at Jackfish Lake.

You guys need to get your act together when you respond to the IRs a little bit better and -- and make the -- the responses a bit more consistent, if I can suggest.

But having a -- a diffuser that's 81 metres long in the bay, you could have this big trough out there that's thin ice, and that's a public -- that's a public safety issue. It's a liability issue for you guys. If anybody ever goes through the ice because of the thinning, you're going to get sued. So, you need to resolve this during the EA.

I'm just, quite frankly, astounded that you've done the mixing in terms of the chemical stuff, but you haven't done the thermal modelling. I raised this issue a year and a half ago at a public session that was put on by you folks, and here we are without the thermal modelling work done. So, better get on with it, folks. Thanks.

THE FACILITATOR HUBERT: Chuck Hubert. Thanks very much. Question for Alan here?

MS. LISA DYER: Lisa Dyer here. I'd like to respond to some of those comments, because those were very bold comments. And I think, first of all, when it comes to -- you mentioned about the two (2) approaches to the IRs. Now one (1) of the things is -- is that we are looking at, and have looked at, the issue of ice cover and the effects on ice cover, and so we responded to that.

Now, at the same time, we want to be proactive, and we want to make sure that everyone is aware that there's a diffuser in the zone. So, the answer to the City of Yellowknife is saying, We don't feel it will be a problem, but we also feel that we need to make the public aware that there is a diffuser in that area, and we -- we are going to -- it's just not a matter of putting it in and saying there's no problem. As with any aspect of remediation, we have to monitor, follow up, make the public aware. And these are things that we talked about in the perpetual care workshop, is that informing the public is -- is an important element, and that not everyone's going to be aware of the Giant Mine project.

So, building on what you've brought up in

the perpetual care workshop, Kevin, is we are looking at the modelling, and we do feel that there's a responsibility to communicate with the public on what's happening out there. I -- I don't see that there's a disconnect.

As for following up with the thermal modelling, I want to be fair to -- Nathan is not the expert who did the modelling, and so we do have an expert that has done the modelling, and, unfortunately, he is not in the room at this moment. So, I want to make it clear that it's not that we haven't done work. There is additional work that needs to be done, we're acknowledging that. I think we need to have an opportunity to be able to give Nathan a chance to talk to the expert and make sure that we can answer your questions adequately.

So, it would be helpful if we could clarify what you're looking for. As I said, the modeller was unable to be here, and so Nathan, being very knowledgeable on these issues, is here to provide information, but, at the same time, he is not the modeller, so I don't -- I just want to be fair to him as well. We will get you the information that you are looking for.

MR. KEVIN O'REILLY: Thanks. Kevin

O'Reilly, Alternatives North. I -- I didn't blame Nathan in any way; that certainly wasn't my intention. But the responsibility lies with the developer. I raised this issue, as I said, over a year and a half ago at a public meeting that you folks had, and the information is still not available.

So, I don't know what -- what the issue is, but this is a serious public safety issue. It -- this concern's been raised, and if you can get on with it and it -- I think it needs to be resolved within the timeframe of this EA. It's not something that can be put off. And whatever resources you need to do it and get it done in time, the sooner the better. So, please get on with it.

MS. LISA DYER: So, Kevin, I would like to just reiterate: What exactly are you looking for so that we can try and provide the information that we have after lunch? And then we can provide further clarification on the additional work that's been done.

I just want to make sure that we're all on the same page and that we're able to respond to some of your requests.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. Look, I'm not an engineer. I don't know. You guys need to be able to prove to us,

the public, that it's going to be safe for people to use in the winter. So, whatever you need to do to do that, do it.

You -- how thin is the ice going to be in that 81 metre long diffuser? What's the width of it going to be? Is there a reduced period during the winter when it -- it can be used?

I don't know what the weight of a snowmobile is going across there. Pressure waves.

You know, look, I'm not a person that can tell you what the research is that you need to do, but you need to be able to prove to the public that that area is going to be safe.

MS. LISA DYER: Thank you, Kevin. That -- that's very helpful to have this discussion so we can identify your -- your concerns and -- and be able to respond appropriately. We will come back after lunch. We're going to need -- we're going to talk a little bit further with the expert on modelling, and we will talk to the issues specifically on ice thickness and safety, of what we have and where we're going.

MR. KEVIN O'REILLY: Sorry, one (1) last thing. Kevin O'Reilly, Alternatives North. I guess I -- I also would want to know the timeframe in which this is going to get delivered, because, in my opinion, it needs

to be resolved in the EA phase. This is not something for the -- the regulatory stuff. We need to know this within the EA phase. So, if you can -- and it needs to be done before the hearing, presumably, unless you want this brought up at the hearing. Thanks.

THE FACILITATOR HUBERT: Thank you very much for the -- the questions and the answers. Alan...?

MR. ALAN EHRLICH: Thanks. Before I give my question, I thought I heard Lisa say earlier that she'll try to provide more information about the ice before the end of the day. Is that still the timeframe you're planning to respond on, or -- because, from what I just heard, I got the sense there was a longer timeframe involved, too?

MS. LISA DYER: Lisa Dyer. Just to clarify, we will -- we want to talk with the modeller to make sure that we accurately reflect the modelling work that was done, and then we will present what work is going forward to confirm the modelling that has been done.

There's two (2) things. There's modelling that's been done, and then confirmatory work, and we will clarify that after lunch. We just need an opportunity to make sure we are representing the modeller's work. And modellers are very interesting people, and I do not want

to try and explain their work without a little bit of help.

MR. ALAN EHRLICH: That's fair enough. Nathan, you wanted to add something to that?

MR. NATHAN SCHMIDT: Yeah, just -- just one (1) clarification, and I -- I will follow-up on -- on this.

But... (AUDIO CUTS OUT)

MR. ALAN EHRLICH: ...crossed on foot the ice every day there was ice, and I -- I was really struck -- my first-hand observation, I was really struck at how much less homogonous it was than I thought. I thought it was all going to be uniform.

And I remember one (1) time in December, it was probably minus thirty-eight (38), and I had augured something through at least a foot and a half of ice, touched the ice 5 feet away with a tow, and it gave way to completely open water, that I wasn't standing on that the time, so I was happy about that. But -- but the -- what I realized was that if the currents aren't moving much under the ice, it doesn't take that much to make a real change on the surface.

And I -- I don't understand enough about how -- how heat transfers through water to know that this won't just go up if there's not much movement, and erode

the ice from -- from underneath. So, I -- I mean I understand the -- the concerns that are being said; my question's more about the management.

What authority does the Giant team have to manage the -- the access and movements of people on a frozen water body?

I mean, you said before in response to the IRs that you could put up signs, which is helpful to those who see the signs and stop to read them, and that kind of thing, and I know you have other ways of communicating. But can you do other stuff to stop it if you find out there is going to be a big trench of thin ice? I -- I don't know where the authorities of the Giant team start and stop, and the response to the IR didn't really spell that out in detail.

Could -- could you elaborate a little, please.

MS. LISA DYER: Sure. Lisa Dyer. Our design objectives are to design it so that there is not an ice thickness issue. Just to be paramount, that is the overall objective. We do not want to see a problem there. That's not the intention.

So, the design is to -- again, two (2) things we're focussing on, because they're important to all of us that live in Yellowknife, is first of all we

don't want sediments being disturbed; and second of all, we want to maintain the integrity of that ice-cover in that area.

Now, with that being said, if there's a -- if there's a fatal flaw in that design where we see something, we are going to take measures to correct that. That's not an acceptable outcome. However, at the same time we have a responsibility to let people know that there's a diffuser in that area, whether people -- whether open-water or underwater, and we need to do that through communications, and if -- signage is helpful, as well.

But, I just want to clarify that our intention is not to design an area of weak ice. That is not an acceptable outcome to the design.

Now, to be -- to let everyone know how aware, I've gone through the ice with a dog sled team; not just getting myself out of the ice, but seven (7) other dogs, so I am more aware, and concerned, and -- and focussed on making sure this isn't an issue. Once you've gone through the ice, you don't want anyone else to go through the ice.

So, there are people working on this project that appreciate the environment we live in, and the fact that we do use our waterways in the summer and

wintertime, and they have to be safe.

MR. ALAN EHRLICH: Thanks, Lisa. And I -- you know, I certainly appreciate the Giant team's commitment to not creating a hazard for people in the area. My question was more -- you mentioned if there -- you're going to be monitoring -- presumably you're monitoring, so that if there's a problem you can remedy it somehow. You mentioned that if you identify a problem, you will take measures to do it.

My question is more what kind of measures do you have available if there is a -- if you're monitoring does turn out that there's an issue here?

DR. RAY CASE: Ray Case, GNWT. I think in -- in the instance where, you know, an issue is -- is identified there's -- there's opportunity for INAC, Government of Northwest Territories, and -- and in this situation, the City of Yellowknife, to identify that hazard, to work with those people that use the area, residents of Yellowknives -- Yellowkni -- Dettah, N'dilo, to -- to highlight it.

Certainly, the hazzards that are created in some years around the causeway to Latham Island, there's -- there's opportunity to inform people of those -- those hazzards and such.

So, in the -- in the event that something

like that were to take place, there -- there are mechanisms in place that could -- could ensure the signage and the information flows.

MR. ALAN EHRLICH: Thanks, Dr. Case. And I -- I understand the communications side of it, and I know that that can be effective up to a point as well. My questions was more like are there physical measures? Are there ways that you can cool the water, so that you don't have as much heat going out? Are there ways you can put up, I don't know, a fencing around it or something like that? That's -- that's kind of more of what I was getting at. You've mentioned there are options and I just don't know what those options are.

MR. MARK CRONK: Mark Cronk, with the Giant Mine team. There are technical options, Alan, and you've actually raised one (1) of them. We can cool the discharge on the way into the pipeline to the diffuser.

Nathan and the experts will likely come back after lunch saying that they've allowed for the heat aspects in the diffuser in terms of trying to get the slightly warmer water to equal the ambient lake temperature. We can add more ports, we can extend the length of diffuser, we can do parallel diffuser trains. There's a bunch of things that we can look at as part of the design.

So, as Lisa said, we need to get back to the modeller to see what he's allowed for now.

MR. ALAN EHRLICH: Thanks. That helps.

MR. TODD SLACK: Sorry, I'm going to -- I'm going to jump in here with two (2) points. And 1) that the -- I can't remember who made the commitment in the Debogorski and CGV undertakings to provide additional information in terms of prev -- preventing things going through the ice. I forget the exact phrasing, so I think that might inform this process as well.

But what I -- and listen, I -- I really appreciate the commitment in terms of the -- an ice reduction thickness not being acceptable. Tha -- that's sol -- yeah, solid -- and I'm making Alan jokes. But I also in the response to me -- to my initial question, I also heard there would be a timeline provided in terms of the response of future work, and I just wanted to make sure that we're both on the same page on that.

MS. LISA DYER: Lisa Dyer. Yes, we will come back and talk about timelines.

THE FACILITATOR HUBERT: Thank you. Proceed.

MR. DENNIS KEFALAS: Dennis Kefalas, with the City of Yellowknife. I just want some clarification. The mixing zone around the diffuser is a key component of

the water treatment process.

Is that correct? Does that mean the Yellowknife Bay forms part of the scope of this project?

(BRIEF PAUSE)

MR. ALAN EHRLICH: I just got a -- a stern look from Lisa pointing a finger at me, reminding us of course that the scope of the Environmental Assessment is -- is -- is firmly the Review Board's responsibility, while answering questions within that scope is the Giant team's responsibility.

The -- the way that the Review Board has articulated the scope for this assessment, it's got its general geographic scope, but any effect that comes out as a result of the -- the proposed project, whether it's right on the Giant Mine site, or off the Giant Mine site at the diffuser location, for example, is still fair game within the Environmental Assessment. It's still within the -- the scope. The Review Board, when it said it -- it isn't going to look at, for example, impacts of arsenic and sediments in Back Bay, it was referring to impacts from historical depositions.

If this project is going to change things, the Board will carefully make its decision based on the

changes that it expects are likely to occur as a result of what's proposed here. So, the -- the diffuser is a new component proposed by this project and the potential impacts of the diffuser is something that the Board will look at carefully.

MR. DENNIS KEFALAS: Working with the City I deal with public perc -- Dennis Kefalas, with the City of Yellowknife. I deal with public perception. We've done all our homework with regard to installing a new water intake to our new water treatment plant. I mean, we've done our homework in a sense, and we've done our studies of the bay water and -- and determined the quality to be quite good, and -- and currently very well -- very good, and we could use it as our main water source.

But public perception won't allow us to use that as our main water intake.

Because of that, I'm just wondering why the replacement of the existing submarine waterline intake to pumphouse number 2 located on the Yellowknife River wasn't included as part of this, I guess, water treatment and water quality process?

MR. ALAN EHRLICH: I'm going to break for one (1) minute just -- I want to think carefully about this before responding.

(BRIEF PAUSE)

MR. ALAN EHRLICH: I'm just trying to think back, and I -- I was talking to the Giant team to -- to make sure that we're remembering the same events. But at the time that the Board made it's reasons for decision about the scope of the project, changing the water supply for the City of Yellowknife from its current location in the Yellowknife River to -- to Yellowknife Bay, I -- I don't think that had been brought to the Board's attention, and I don't think any party had asked for that to be included in the scope of the project.

What the Board has been saying quite consistently and explicitly, is that it would like to look at the effects of the potential biophysical, and socioeconomic, and cultural effects of the project that's proposed. But changing the City's water supply, while there may be implications with respect to -- to how people think about the Bay, if I understand your question correctly, is definitely not one (1) of the things that's being proposed by the project team, and so I -- I don't think that the Board has had any expectation that the Giant team is in a position to describe how that would affect public concern regarding the City's options for a water supply.

Now, parties are always able to put in a request for ruling to get a formal decision from the Board on different matters. The way I've articulated it is -- is the way that I've seen it up to this point. So, I -- I don't think that that has been pursued by the Board, or by the -- the Giant team. We -- I mean, it's up to each party to decide what kind of IRs they're going to issue, and if they -- if they do have to provide a request for a ruling.

I -- I think that your preamble to your question has made your concern clear. I -- I don't think the Giant team is in a -- a position to respond to that.

Does the Giant team agree, or do you have a comment?

MR. BRUCE HALBERT: Bruce Halbert. Yeah, there are a couple points I'd like to make here. The first is, if you recall my presentation, I talked about reductions in loads of arsenic to -- to Yellowknife Bay from the project, and in -- in particular talking about the water treatment plant, I noted that we're going to be reducing the overall load that currently goes in through Baker Creek from two hundred and ninety (290), to an outfall load of one forty (140). So, in either case, they're both making it to Yellowknife Bay.

And so -- so, from that perspective, you

know, it's -- it's kind of a wash, if you will. We're have -- we're having a 50 percent reduction, approximately, in the load, associated with the effluent discharge.

The second point I would make is that the DAR actually does address some aspects of -- of the proposed water supply intake within the cumulative effects assessment component. And in particular, they were looking at what are -- what are the possibilities of cumulative effects related to construction activities occurring in the outfall and the -- and the new intake at the same time. Because, otherwise there really is no overlapping impact to the two (2) projects. And the commitment that was made in the DAR is that INAC is -- or AANDC, will undertake to make sure that those two (2) projects do not occur at the same time. Other than that, there is no overlapping influence.

MR. ALAN EHRLICH: I -- I would remind the -- the Giant team -- I -- I understand what you've said. Now, our -- our Board looks at biophysical effects, but it also is mandated to consider things like public concern, as well as social cultural effects, and things like that. And -- and so in the City's comment I -- I didn't hear a concern that the biophysical effect would reduce their -- the range of their future

opportunities. The question that I understood had to do more with per -- public perception.

But, of course, the Giant team has been wrestling with public perceptions in a variety of ways, more than others, and probably is, you know, pretty knowledgeable about how the public will respond. That still doesn't make it necessarily within the scope of this environmental assessment.

I mean, you've -- you've asked the question then you've heard what the Giant team thinks about it. I -- I say again that as a party you've got the option to ask more if you have to, or to do it in the form of an IR, or if you want a formal ruling from the Board, you're -- you're free to request one. But, philosophically, the Board feels strongly that the role of this environmental assessment, and the Board in this environmental assessment, is to make a wise, long-term decision about the project that's proposed by the Giant team.

MR. DENNIS KEFALAS: Dennis Kefalas. Thank you for that, Alan. Just -- I know you said we didn't -- the City didn't bring this to your attention as part of the original process, but there's several key members on this Board who are part of the team that -- that our Yellowknifers have been here a long time, and

they knew all about this pipeline, and they should have thought about this as part of the -- the whole process in -- and their whole -- and the development of their DAR.

The biggest thing is here -- I mean, when we as employees of the City of Yellowknife, myself, Jeff Humble, Chris Greencorn, we're the ones that walk down the street everyday, walk into Canadian Tire people recognize us. I mean, we're the ones that put ourselves out there every day, and if this project goes sideways it won't be any people here that they'll be questioning; it'll be us.

So, I mean, the biggest part of this -- I mean, it's an environmental impact review board and assessment, I mean, this takes into account the environment of the City, which includes its residents, Giant Mines within potentially the whole -- within the -- the Giant Mine itself is within the City boundaries. So, I mean, we have to look at everything here, and when you say long-term solutions, the replacement of that pipeline, which was originally replaced and paid for by the -- by the Federal Government, and to the best of some of the information that I've gathered, possibly the mines themselves, now the Federal Government is taken responsibility for Giant Mine and is letting the original developer walk away scot-free, and it's just the

residents of Yellowknife that will be looking for the best solution.

And that's something that I have to deal with, our councillors have to deal with, and the Mayor himself has to deal with.

MR. ALAN EHRLICH: If it helps, Mr. Kefalas, instead of going directly to requesting a ruling from the Board, you're welcome to just send a letter to the Board and get a -- a -- the Board's response. I mean, it -- there are many ways to get guidance from the Board. For example, the Yellowknives had a question regarding the sediment and the diffuser and -- and sent us a letter just saying: Look, we -- we want to know is this in or is this out. Is this something you're willing to consider in your decision? And - - and got a letter back that was clear and it public.

They could have taken the request for ruling, which is procedurally slower, because various other parties have time to comment and then the Board makes a decision. Writing a letter doesn't prohibit you from making a request for ruling later though.

I would suggest that if you're still looking to pursue whether or not this is the inside or outside of the scope of the assessment, the Board will have access to the discussion here, and if you can send a

letter describing your -- your views on the matter to the Board, they'll -- they'll certainly respond. And as I said before, as a party you always have the option of following our formal request for a ruling process, if -- if you require that instead.

I -- I don't really have much more to offer on that, but I -- I think you've certainly made clear what the -- the City's view is on that, and -- and how the City feels that the -- the Giant Project could affect it. Beyond that, I -- I -- I really don't want to go here.

I see you're nodding that's okay. So, would you be -- would you be willing to either put it in writing to the Review Board, or -- as a -- as a letter, or if necessary, a formal request for ruling?

MR. DENNIS KEFALAS: Dennis Kefalas, the City. I'll follow-up with a letter then to the Board.

MR. ALAN EHRLICH: We can -- we can normally -- depending on the timing of Board meetings, we can normally respond -- I mean the Board's committed to responding in a timely manner, and sometimes with a letter like that it can be quite short.

Now I -- I saw Alternatives North has a comment but I'm looking at the time. I'd rather wrap it up now. I said 12:55; it is 12:55. Let's pick it up at

this exact point, starting with Kevin's comment, when we get back at -- question? Kevin's question at 1:15. Thank you.

--- Upon recessing at 11:55 a.m.
--- Upon resuming at 1:15 p.m.

THE FACILITATOR MERCREDI: Okay. I'll give a chance for everybody to find their seats and we'll get started right away.

(BRIEF PAUSE)

THE FACILITATOR MERCREDI: Okay. Welcome back, everybody, from the lunch break. I'll just remind everybody we have a sign-in sheet, and it's an important part of the session today, so it's back at the information table. At next break if everybody could, as they're filing past towards the washroom, sign in.

And, without further ado, Mr. O'Reilly had a question, and we'll start off with -- with his question.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alt -- Alternatives North. Just before I get to the question, there's just one (1) procedural item. I

understood that the developer was gonna talk about the wetting process or research or something. They had their own huddle about that.

Our expert, Bill Horne, has left for the afternoon. He's still in Yellowknife, but his flight out is at 5:00. So I provided his cell phone number to Lisa and Michael, and if they want to talk to him or meet with him, he -- he may still be available this afternoon.

So, with that, I don't know if there's anything else they want to say about this, but, if not, I'll just go ahead on the -- the question.

THE FACILITATOR MERCREDI: Okay. And if anything comes from that discussion that's worthy of Review Board consideration, obviously let's put that on the registry.

MR. KEVIN O'REILLY: It's my pref -- sorry. Kevin O'Reilly, Alternatives North. It's always my preference to get something in writing for the registry.

THE FACILITATOR MERCREDI: You bet.

MR. KEVIN O'REILLY: So I'll just go ahead with my questions. I wanted to follow up on the issue that was raised by the -- the City of Yellowknife with regard to water quality in Yellowknife Bay. And I guess first off, I wanted to know -- I understand that

they've done some core mix modelling in the -- the near field.

I presume, then, that there's far-field modelling that has been done, or they may be doing, and when is that -- or is -- is there such a thing as far-field modelling and when would that be available? Because I think that might provide a better understanding of what sort of overall water quality effects there may be in Yellowknife Bay from the diffuser and the new discharge point and so on.

MS. LISA DYER: Lisa Dyer. Thank you, Kevin. I -- I'm actually going to introduce John Hull. He's at the table. He has been involved in the design review of the diffuser, and so I've asked him just to talk a little bit about what was included in the design model, and ask him to talk what future work is happening in looking at ice thickness. And also, I'd like to now add to that for him to talk about the mixing model as well. So it's all to do with the modelling. So I'm going to ask John to speak to those issues.

MR. JOHN HULL: John Hull. The -- the modelling that we've done that was presented this morning was two (2) dimensional modelling. It defined the parameters that were used in the -- the chart, including temperature. It's an uncalibrated model, but it

identified, as was presented this morning, that there should be no impact on the -- the ice under the -- or above the -- the diffusers.

The expectation is that there needs to be calibration for the model. That would require sampling this January and March with ice thicknesses and water profile temperatures in the location of the diffuser, and at several other locations in Yellowknife Bay.

We've considered, in the modelling, the potential impact of changes in temperature. And there -- there are several things that can be done to the diffuser model and to the actual diffuser; we can change the angle of the diffusers.

If you look at the -- the model or the example in the middle of the floor, what I'm talking about is the end piece that -- at the moment, that's designed at a thirty (30) degree angle. That could be changed to a twenty (20) or fifteen (15) degree. The key, however, is: What are the currents under ice? That's part of the sampling and the modelling and the calibration that would be required this March and February -- sorry, March and January.

So we have considered the impact. We would anticipate that, once the diffuser is in place, that there would be a period of calibration and modelling

and -- and testing of the water temperatures and the -- the efficiency of the -- the system, and that's all part of moving to the detailed design.

Answering Kevin's initial -- the question just asked. The next phase, once we have the temperature profiles, currents in the -- the bay at several locations, we would also look for currents during the freshette period. That would then all be placed in a -- or put into a 3D model, which would cover the -- the bay from the bridge at the Yellowknife River down past the Schoolhouse Draw (phonetic) area, so down towards the Great Slave Lake itself, that full por -- portion of the -- the bay area, and then that would then be used to define the currents and how the model -- and how the diffu -- how the model would anticipate the diffuser would work and just -- and have a minimal impact on the water quality in the bay once it's up and running.

THE FACILITATOR MERCREDI: And Mr. O'Reilly?

MS. LISA DYER: I would -- oh, sorry. I would like to further add to that response, because Kevin asked specifically about far-field modelling, and that was done by SRK, and it's document N-1 in the remediation plan. And I'm going to ask Bruce Halbert to speak to that, just to clarify Kevin's question.

MR. BRUCE HALBERT: Bruce Halbert for the record. With respect to the far-field modelling, that was undertaken as part of the risk assessment -- assessment work and is provided in supporting document N-1. In that analysis, the bay was broken into three (3) regimes: Back Bay, North Yellowknife Bay as we define it, and South Yellowknife Bay, and there are predictions presented for each of those segments within that report.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. The -- when was the work for N-1 done, that Appendix N-1.

MR. BRUCE HALBERT: Bruce Halbert for the record. The -- the -- the version of -- of that report that's -- that's in N-1 was done in 2006. That was preceded though by two (2) previous versions done in 2001 and 2000, I think three (3).

THE FACILITATOR MERCREDI: Mr. O'Reilly...?

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. So, I think I remember seeing this at some point. So this is basically a risk assessment. It's not really a far field modelling report?

MR. BRUCE HALBERT: Bruce Halbert for the record. That is part of a risk assessment, but a -- a

large part of a -- what's in the volume is a detailed water and sediment quality model that was developed to replicate historic conditions going back to the early period of operations and carrying us right through into the future.

So it -- it looks at the cumulative effects of history and ongoing into the future.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. So would the -- the design, or specifications of the diffuser, or its location in anyway affect the modelling results?

Was there some kind of sensitivity analysis that was done as part of the modelling to look at diffuser location or the design of it, that sort of thing? Probably not, because it was done in 2006, but I guess I just want to hear what you have to say about that. Thank you.

MR. BRUCE HALBERT: Bruce Halbert again for the record. No, the -- the near field modelling doesn't affect really the results of our far field analysis. And as it turns out, and we had assumed at the time, that the diffuser falls within the -- approximately the mid-zone of the northern segment of Yellowknife Bay and has no real effect on our far field modelling.

MR. KEVIN O'REILLY: Thanks. Okay. I

guess I feel somewhat reassured, but thanks for the answers. I did want to ask one (1) other sort of set of questions here. I know that in the developer's assessment report somewhere, there was a -- a commitment on the part of the developer that if the electricity rates that are charged to local consumers increases as a result of the power draw from the -- the project, that the developer committed to absorb those costs itself somehow.

That's in the DAR somewhere, and I remember reading it. Where, I can't tell you where, because I'm not that familiar with it, but -- or the -- the location of it. But I -- I raise that as an analogy. And I guess if I -- as a citizen, a taxpayer in Yellowknife, a former City Councillor, and I -- I understand that the water quality in Yellowknife Bay, if we take the predictions from the developer, will actually improve.

I guess I'm wondering if that might be backstopped somehow by a -- a similar commitment/guarantee form the developer that if something goes off track with the project and water quality actually decreased in some way, and the City actually had to increase its water treatment in some way, would the developer then be willing to pick up those incremental

costs as it's committed to do for the -- the power rates?

So I just wonder whether that might be a way of creating a greater level of comfort on the part of the City and I'm wondering if the same sort of commitment that you've made on power rates might -- might also be made on water quality. Thanks.

MS. LISA DYER: So, Kevin, it's just after lunch and I guess I'm a little bit slower right now, but I didn't understand the -- the second part of your question with the water quality and -- and rates.

If you could just clarify that. Sorry, I -- I didn't fully understand it.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. If for some reason the project and the direct effects from the project results, and I'm not saying that this -- this is going to happen, but if for some reason the -- the effects of the project resulted in a decrease in water quality in Yellowknife Bay that required the City to improve its water treatment in some way, and assume additional costs for that, would the developer be prepared to commit to pick up those additional water treatment costs if the -- it was a direct result from this project? Thanks.

MS. LISA DYER: Thanks, Kevin, that -- that was helpful. I would actually just like to take a

minute to talk to my colleagues, because there's two (2) parts to that question. And the first one (1) on the electrical rates, we just need to clarify because I think your interpretation of -- of making a commitment may not be what we have said, so we need to clarify that. And then we'll answer the second question on water treatment.

If you can just give us a sec.

THE FACILITATOR MERCREDI: You bet. Let the Giant team caucus.

(BRIEF PAUSE)

MS. LISA DYER: Thank you for that. Adrian Paradis is going to talk to the statement on electrical costs, and he's going to actually read from the DAR.

And then Bruce Halbert's going to talk about water quality, and incremental costs associated with that.

THE FACILITATOR MERCREDI: Adrian...?

MR. ADRIAN PARADIS: Kevin, I believe what you're -- Adrian Paradis, for the record -- what you're talking about is in Section 8-11-5-3, Mitigation Measures:

"Mitima -- mitigation measures identified to address demands on specific local resources that may be require -- may -- that may be affected by the project are as follows."

So instead of reading it specifically, I gave you the reference. But the basic -- the gist was:

"The project team is exploring opportunities to reduce the quantity of diesel-generated electricity that might be required. The project team will consider making arrangements with NTCL to cover incremental costs in the event that ele -- electricity required by the proponent -- or by the project would otherwise result in cost increases to other uses."

This could include just simply us shutting down the freeze for an extended period to allow the cost to -- cost decrease, or it could include -- doing off-peak hours so there's no increm -- interim -- incremental costs.

So it is probably net -- neutral project costs for the -- for the team.

THE FACILITATOR MERCREDI: Kevin...?

MR. KEVIN O'REILLY: Sorry, I -- I think the concept though is that if there is incremental costs -- you're going to try to avoid that, but if there are you folks are gonna pick that up.

Now, if I sort of use the analogy on the water, then -- and look, I understand that the water quality is probably gonna get better in Yellowknife Bay, but if something doesn't -- something goes wrong, goes off track, and there were extra costs that -- that had to be assumed by the City for water treatment -- look, I'm not trying to say the water quality is -- is gonna get worse, but if something happened and it did, and it was a result of what this plan is designed to do, or actions that are taken pursuant to the plan, you know, the equivalent analogy would be to then maybe you need to stop diffusing -- putting the water through the diffuser, or install extra water treatment plants, or whatever.

But I guess if you've found a way to -- to deal with this on the electricity side as a utility, can the same concept be applied for water?

MR. ADRIAN PARADIS: Adrian Paradis for the record. I think there's a misinterpretation of what the commitment is here. The cost is not being -- there's ways to absorb -- there was ways to do this so it's not incremental cost to other users, and that is simply by

project planning, so -- by going into off peak hours or shutting down, and it's not cost neutral to the project.

I think on your next question for water, Lisa is going to try and address this.

MS. LISA DYER: Lisa Dyer. As Kyla has presented, there's been a lot of thought into water treatment. Ultimately we will not deter -- discharge water that is -- does not meet compliance to the regulations that are set to us.

Now, as Kyla has mentioned, and if -- if she needs to provide any additional information after I've spoken, please do, Kyla, but we've designed the system to be robust enough to handle varying degrees of arsenic levels.

We also have the ability to add trains on should that water quality not be acceptable. Ultimately though, we will not be discharging water to the environment that is not compliant with the standards.

And we are going to get a water licence to regulate us on that, so we can take measures if the water quality is not compliant to improve water quality before it goes into Great Slave Lake.

THE FACILITATOR MERCREDI: Kevin...?

MR. KEVIN O'REILLY: Look, I -- I understand all of that, and I understand that the project

as designed is going to improve water quality in Yellowknife Bay. I understand all of that.

What I'm saying is if something goes off track, the City's incurs extra cost for water treatment, would you -- would the developer then be prepared to pick those up?

Look, I understand that -- that it's going to improve. That's what the plan is. But if something were to go off track, is the developer prepared to pick up the extra cost that the City might incur as -- for water treatment? I think it's a reasonable thing to know.

MS. JOANNA ANKERSMIT: Kevin, I think you're asking us to commit to something that is hypothetical, and if something like that were to incur, then that would be something, I guess, that a number of parties would have to -- to address collectively.

It's not something that on a moment's notice and in this hearing -- or this session today that I think is appropriate. Joanne Ankersmit.

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. We're not going to resolve this here today, and I -- I might have -- we might have to follow this up with an IR, but I just don't see how we're going to resolve it here today. Thanks.

THE FACILITATOR MERCREDI: Okay. So we'll put that to bed for now, and obviously you retain the rights to -- to file that. And we'll move on for anybody that had any questions.

Todd, you had a question?

MR. TODD SLACK: Thanks, Paul. Todd Slack, YKDFN. And speaking in terms of compliance, now I've got a series of questions here because I'm just a little bit confused as to what the actual point of compliance is intended to be for this project.

Were this a conventional proposal it would be end-of-pipe, but it's my understanding that you guys do not believe end-of-pipe is the appropriate choice here?

Can you just add some context to that?

(BRIEF PAUSE)

MR. ROBERT BOON: The criteria -- yeah, the criteria we were working on is the end of the diffusers -- or the end of the mixing zone. There will be monitoring at the end of the plant, or end-of-pipe, same thing, we're assuming with its own criteria because that's much easier to sample. But the -- the ultimate objective was to meet the CCME, or the drinking water

guidelines, at the end of the mixing zone. Sorry, Bob Boon.

MR. ADRIAN PARADIS: May I clarify, please, Todd? Adrian Paradis for the Land and -- or -- kind of go back to my Land and Water Board days. Adrian Paradis for Giant Mine project team.

The point of compliance is end-of-pipe. We're then gonna be trying to use the Land and Water Board's policies for edge of diffuser, and median background criteria. So our point of compliance will be end-of-pipe, and there will be contingencies put in place to -- if we don't meet that, bring it back into the system.

MR. TODD SLACK: Thanks, Adrian. That's clear and concise. That's great. Now then this begs the question: What -- what criteria are being proposed for end-of-pipe? Because we can see, and now I'm going on my memory, which is never a good idea for me, on slide 53, I -- are these the intended criteria for end-of-pipe, or is this the -- the way that I heard the presentation, that this is the criteria for the mixing zone, which is a different EQC -- or perhaps that's a bad qual -- or a bad term -- a different set of criteria to be applied?

MR. ADRIAN PARADIS: Adrian Paradis for the record. Just give us a half second here, Todd.

(BRIEF PAUSE)

MS. LISA DYER: This slide shows the water quality to be achieved at the end of the mixing zone.

MR. TODD SLACK: I'm sorry, what's the number at the bottom?

MS. LISA DYER: Point five (5).

THE FACILITATOR MERCREDI: Slide 53, is that what you're looking for?

MR. TODD SLACK: Oh. Okay. Yeah, yeah.

THE FACILITATOR MERCREDI: And that was Lisa Dyer in the --

MS. LISA DYER: Lisa Dyer, yes. So just to clarify, there are two (2) -- there is water treatment performance that we're working towards, and so the water perfor -- water treatment performance will be at the end-of-pipe. And then we're also looking at designing the whole system to be able to achieve background or -- or CCME standards at the edge of the mixing zone. We intend to meet compliance at the end of the pipe.

We are not saying -- we're not setting those standards -- that will be during the water licensing process -- but we are designing so that we have control at the end of the pipe, as well as achieving

certain objectives at the edge of the mixing zone.

MR. TODD SLACK: Okay. That's -- that's great. In terms of targets of success, again, what is the target going to be, not at the -- not at the mixing zone, but at the -- and I would -- I'm not eavesdropping, but I think he said last point of compliance. So when I say end-of-pipe in this case, before diffuser, before mixing zone, what's the -- the criteria that's being advanced for that?

(BRIEF PAUSE)

THE FACILITATOR MERCREDI: Can everybody see that with our giant heads here?

MS. LISA DYER: It's okay.

THE FACILITATOR MERCREDI: Yeah.

MS. LISA DYER: Got it. Lisa Dyer, Giant Mine project team. That is the performance criteria for the water treatment plant. We are not saying that this is the regulated criteria at this point. This is what we're using to design the water treatment plant to produce at the end-of-pipe, and so that we achieve our objectives at the edge of the mixing zone.

THE FACILITATOR MERCREDI: Todd, does that answer your question?

(BRIEF PAUSE)

MR. TODD SLACK: Todd Slack. No, not exactly. It -- it talks about before and after. Like the mixing zone is after, the plant is before, but what's the -- the target for -- for success in terms of the remediation for water treatment.

MS. LISA DYER: Point two (.2) is our target for the end-of-pipe. Lisa Dyer. Point two (.2) is the target for the end-of-pipe for arsenic.

(BRIEF PAUSE)

MR. TODD SLACK: Okay. It's Todd Slack, YKDFN. So if I interpret this correctly then, and what you're saying, the goals of the remediation for this -- for these particular contaminants of concern being arsenic, TSS, and pH here, are these in column 3 that are listed as "target"? Okay. Or wait, sorry...

(BRIEF PAUSE)

MS. LISA DYER: Can you restate the question and then -- because you're ask -- you're asking which column?

THE FACILITATOR MERCREDI: Todd...?

MR. TODD SLACK: Okay. So what I -- I'm gonna restate what I've heard...

(BRIEF PAUSE)

MR. TODD SLACK: So we -- we all agree on third column, right? And if we can't agree on that we've got bigger problems going on.

MS. LISA DYER: Lisa Dyer, but see how we worked together to come to the solution of what the third column was?

(BRIEF PAUSE)

MS. KYLA KIRK: Kyla Kirk. Could you explain your question one (1) more time for me?

MR. TODD SLACK: Okay. Sorry, in the third column we have three (3) items listed as targets for the primary contaminants of concern. And what I heard Lisa just say that -- is that this is the target criteria for the successful remediation in terms of water treatment for these principal COCs. Is that a correct understanding is my question, I -- I think.

MS. KYLA KIRK: Kyla Kirk. What this

table actually shows is what we predict would be the effluent quality from the new treatment plant. The ammonia, point one seven (.17) to five point three (5.3). This is based on the water quality coming out from underground.

Total arsenic point two (.2), that's the target that our plant will reach. That's what we're aiming for that we discharge at .2 milligrams per litre at end-of-pipe.

Total suspended solids, same thing, less than five (5). Where -- nickel where it says, "no change," we do not expect the nickel concentration in the effluent to change relative to what it was at the existing plant. So where it says, "no change," we're comparing it to what we're getting now. We don't expect the water quality in the sense that the plant will not remove it at a greater rate than the existing plant already is. So that's where it says, "no change." And -- yeah.

MR. TODD SLACK: Sorry, I'm gonna ask this -- or state this one (1) different way one (1) last time and see if we can arrive at agreement. So for these three (3) items that have, "target" beside them, I understand that this is the goal, but if this is the target and the -- and this is incorporated into the --

the regulatory process, can -- is that the measure of a successful remediation in terms of water treatment for this -- these particular criteria?

MS. LISA DYER: Lisa Dyer. We're -- we're getting back to the question that I think we asked earlier about the measure of success for the freeze. The measure of success for water treatment is not going to just, again, hang on a couple of numbers. We will look at what we see at the end-of-pipe; also, we look at how things are performing at the edge of the diffuser.

Now, that alone -- if we -- those will be regulated, but these are -- we have designed to meet these criteria so that there are no impacts in the environment. Now, again, there's going to be another component in which -- whether you call it an aquatic effects monitoring program or whatever, if we see something happening in the environment, and -- and even if we're meeting all those criteria, is that acceptable? No. So we have another program in a sense that we have to look at what's happening to the aquatic environment and be able to respond to that.

There is again not one (1) single number that is going to say whether we're successful or not; we have to look at the complete system, and we have to monitor to ensure that, indeed, the predictions are not

causing impacts, negative impacts. We hope for good impacts.

MR. LUKAS NOVY: Lukas Novy. So I guess I just -- I'm trying to find the path of how these came to be, and my understanding with looking through the DAR, was that there's been modelling done on the mixing zone, and that's been done on a certain arsenic effluent water quality, and this has been somewhat of a lowering of the MMER regulations.

Now, I guess the question -- the concern I have with that is -- is that -- that mo -- the diffuser and its performance has been numerically modelled, and it hasn't actually been tested. And I guess I would just like the team to kind of comment on what level of contingency measures are going to be put in place for that if -- once the diffuser is starting to be sampled and it's not performing as modelled, and the water treatment plan has already gone into full swing, and there's gonna potentially be a need to lower the effluent discharge quality to meet the expected performance of the diffuser.

So I just want a -- a little bit of a comment on, like, contingency measures for the water quality criteria, not just for arsenic, but I would like a comment on arsenic first.

MS. LISA DYER: Thank you. That -- that's actually a very good question: How do all these systems work together and contingency measures. If we see that things aren't working at the end of the pipe, we've talked about the fact that we will send the non-compliant discharge back. And I think that's a very good question. What if we have compliant discharge at the end-of-pipe, but then the diffuser is not performing, as we have stated that we want to see background CCME guidelines at the end of the mixing zone.

I am going to ask John Hull to talk about what contingency measures would be in place so that we could ensure that we could correct any issues that could arise.

MR. JOHN HULL: John Hull. The initially -- initial modelling that we've done that is presented and gives us the -- the diffusion problems that we've identified, we didn't use the point two (2) ar -- arsenic, as identified, but we were using higher numbers. I believe, if I -- if memory serves me correctly, that the number we actually used for the water in the -- at the diffuser was .5 milligrams per litre for the arsenic.

So we've already put in a conservative initial estimate, and, as I said previously, with doing some calibration of the -- the water and the

temperatures, we would then improve that modelling and be -- have a -- a better handle on the margin of safety that we've already built into our modelling.

MR. LUKAS NOVY: Yeah, I understand that for that element, but that still doesn't highlight that what happens if -- if that is the case, that the -- it isn't performing? Like, I understand it was modelled at point five (5), and there's an element of conservative in it, but it's not just the water quality at the edge of the di -- the -- the mixing zone could be smaller. There's a lot of other factors that could mean that that point two (2) level is not good enough to maintain it, and you would have to go to a lower value. Is -- I'm just wondering if that's been accounted for, that that point two (2) value could be changing in the future as the effluent quality criteria?

(BRIEF PAUSE)

MR. MARK CRONK: Mark Cronk. There are additional steps that we could take if we ended up with water we weren't happy -- at the end of the mixing zone. The water treatment folks could increase their re-agent addition. They could slow the plant down. They could blend it with treated water.

There's a number of opportunities inside the plant itself where we could probably improve upon the point two (.2) to give the diffuser the chance to meet the criteria that we're trying to achieve.

Does that answer your question? Bob, if you have anything to add to that.

MR. ROBERT BOON: Yeah, I -- I just might add is that one (1) of the -- sorry. Bob Boon.

The other contingency we have in place is we keep the Akaitcho system available to us, so if we have to slow the plant down we can always transfer some water to the Northwest Pond and use the existing plant in the short term to help us out.

MS. LISA DYER: I'm just gonna jump in because Till is our water treatment plant design expert, and he has some comments that he'd like to make about the flexibility of the water treatment design.

MR. TILL FREIHAMMER: Hello.

(BRIEF PAUSE)

MR. TILL FREIHAMMER: Well, can -- yeah, okay. Till Freihammer for the -- for the record. The treatment --

THE FACILITATOR MERCREDI: Actually we'll

-- we'll need to get you on a mic.

MR. TILL FREIHAMMER: Okay. Let's try it again. Till Freihammer, for the record. The treatment plant itself actually has this simplified process flow diagram. It's actually a little bit more complex than that. It has actually two (2) ida (phonetic) nickel process trains which can run parallel, and it also has two (2) more or less identical process stages. So if one (1) process stage doesn't get to the level we expect, the second process stage can go even further with a -- with another chemical.

So there is flexibility in the plant itself, and the operators can -- can handle that based on the -- on the levels they see on a daily basis in terms of arsenic, if the -- the arsenic levels go up.

But they would see that also because the -- the arsenic levels in the inlet would go up, as well. So they have a response to -- to their -- available to -- to tackle any -- any increase in arsenic there at the outlet of any process area. So, what you see there is -- is actually simplified.

MR. LUKAS NOVY: Lukas Novy. Thanks for that information. So I'm going to take it a bit backwards as well, and bring up an issue that was -- was talked about yesterday, but it was stated it was more

appropriate for this day 2 on the water management. And it goes back to the water levels, and how they're going to be fluctuating with time.

So I know it was indicated in the presentation that the present value is to maintain a level below seven fifty (750), and there was a set of advantages to doing that that was stated. And then a couple of slides after that there was a statement on future water level, and basically it provided a statement that it was -- discussions were going to be had, and based on certain other things, such as minewater quality.

And I just would like to have a staten -- initial statement made on what are the -- what is the technical rationale with lowering the water -- or raising the water level -- sorry -- with time?

What is -- what is the overall objective to doing that?

(BRIEF PAUSE)

MR. MARK CRONK: Mark Cronk, for the record. Complex question. Ultimately, I think people would like to have the project achieve a walkaway state where we would not be in a perpetual pump and treat operation.

We're not in a position to be able to say we can achieve that, but certainly the expectation is that the minewater quality would improve over time as it flushes, and we treat, and we flush, and we treat, over time. And so the ability to lift the water level in concept is preserving the ability some time in the future if the water quality is acceptable.

Darren Kennard and the underground people say that there's no risk to underground stability, a number of those design questions are answered that we could start to pursue, lifting the water level with the ultimate objective if we're fortunate, of reattaching the underground to the environment directly and stopping pumping and treating.

Mr. LUKAS NOVY: So that basically you're saying that eventually there could be a goal of removing the hydraulic trap and -- and getting a level back to -- equivalent to the water level, or is that kind of the idea with that?

MR. MARK CRONK: Mark Cronk. Yes, that is in the very long-term, but that is the ultimate objective if we can get there.

MR. LUKAS NOVY: I guess that's -- that's the problem right now that that's not clear to me in the -- in the DAR. And the presentation today didn't

highlight that to the level that it is clear.

I don't know, maybe it's just for myself, but that concept and how you guys go about getting to that level, it -- it's not clear. I'm not understanding what you guys are going to be looking at in terms of -- I know you say minewater quality, but then there's -- right now there's a statement that there are no standards.

So it's -- it's not clear with what specific things you're going to be looking at in terms of the minewater quality, what trends, what -- the overall process to raising the -- the water level is -- it's not clear.

And the danger with that is -- is that we -- we -- it was discussed in day 1, because it does directly correlate to the freezing and the timeline on that as well, and -- and that's not clear is what's going to be the main driver for the water level to be rising?

So I -- I may be asking -- maybe I'm just commenting now, but the -- the overall concern for that in the short-term that I had a question on is -- is that you guys have indicated that you want to use the underground system as a storage mechanism for your contaminated water. And that's an element of contingency for the functioning of the water treatment plan and that's not there either.

I don't -- there's not a clear understanding of the situation that you guys, depending on where your water level is at, could -- is reducing your storage significantly. So I'm just wondering what is the overall game plan for outlining how you're going to raise the water level with time and making sure that it correlates to all the input mechanisms that are controlling that.

So basically, what triggers for the freeze block system, or how much volume you need for storage contingency for the water treatment plant?

THE FACILITATOR MERCREDI: Giant team...?

(BRIEF PAUSE)

MR. MARK CRONK: Mark Cronk, for the record. Mr. Boon is going to say a few things and then I'll come back and fill in your question a little bit.

Bob...?

MR. ROBERT BOON: Yeah, Bob Boon for the record. In terms of the amount of storage, that has been quantified. With the plant size we have and the current projections on wet year, the eight hundred thousand (800,000), and so on, we need to store about 177,000 cubic metres. At the level we're at, more or less that's

about 17 metres of vertical storage in the mine.

MR. LUKAS NOVY: So from -- sorry, Lukas Novy. So from the seven fifty (750) benchmark right now, you're saying that would correspond to 17 metres of increased water level.

MR. ROBERT BOON: Bob Boone for the record. That's right. The intention was to drop the water level a bit so we can keep the seven fifty (750) level dry.

In the future, if the water entering the mine goes down as we -- has been predicted, down to about the four hundred thousand (400,000), then our storage becomes as -- basically minimal. We can keep up almost on a month to month basis, so you're only talking a few tens of thousands, not a hundred thousand (100,000). So we need very little in the way of storage.

MR. LUKAS NOVY: Just to clarify that. So you're saying that if you're going to be raising the level your storage is de...

MR. ROBERT BOON: Bob Boon for the record. No. Once the freeze is done and they have de-watered the ponds, if the prediction of water entering the mine reduces to the -- about the four hundred thousand (400,000) a year, or five hundred thousand (500,000) on a wet year, the plant will essentially keep

up, because we have the same capacity plant as we have for a current wet year of 800 and some odd thousand cubic metres a year.

So we -- in the future, if the flow goes down we will need very little, if any, storage in the underground. We just simply draw from the mine pool and turn the plant down to a lower rate for most of the year.

MR. LUKAS NOVY: Just -- just so that I have an understanding of the -- the amount that's coming in, is -- what, in terms of percentage, is from the surface, and then also what percentage is dependent -- because it's the hydraulic trap, so there is an influx and that is dependent on a -- on a water level. So I just want to get an understanding of how -- how sensitive that influx is to the actual water level as well.

MR. ROBERT BOON: Bob Boon, for the record. I don't have those numbers -- specific numbers here with me, I could pull them out of the DAR, but there's quite a bit of leakage -- there's quite a bit of leakage occurring now from the Northwest Pond and from Baker Creek into the mine, and once the Northwest Pond is dewatered a lot of that goes away. And Baker Creek, you've heard Nathan talk about using artificial liner in the areas over the underground to reduce seepage into the mine, as well.

Both of those two (2), combined with the seepage out of the stopes, is where the prediction comes from that current wet year is about eight hundred and twenty-two (822); in the future it's about five hundred and twenty thousand (520,000).

MR. LUKAS NOVY: Okay. I'm just going to collect my thoughts, and I'm -- I'll probably have another question on that, but that's -- that's it for now.

THE FACILITATOR MERCREDI: Okay. Thank you, Lukas.

MR. LUKAS NOVY: Lukas.

THE FACILITATOR MERCREDI: Any -- I'm sorry? And Alan has questions, unless the Giant team had another comment to add. Yeah, okay.

MR. MARK CRONK: Mark Cronk, for the record. Lukas, going back to your original question -- questions about the water level.

Part of my opening remarks yesterday tried to convey the sense that we are early on in our design efforts. There is a lot of pros and cons associated with a given water level. We haven't made any decisions as to where the best water level would be, and so what you're hearing here is our ability to try to keep the options open.

Leaving it low, as Bob described, provides us a lot of flexibility in terms of being able to get it out of the chambers, access, ability to inspect the frozen block as we build it.

Lifting the water level produces some advantages, too, but it comes at a cost. And so we just haven't decided what the best water level is going to be at this point in time. It will be answered as part of the detailed design effort that's ongoing, it's just not done yet.

MR. LUKAS NOVY: Yeah, and I -- I understand how complex it is. I just wanted to bring up those items, and just -- just bring up that scenario.

That -- that the work -- the scenario that I'm scared of just looking at it from a technical span -- standpoint is, is that the freezing blocks, there's a ten (10) year window that was indicated of its performance. That -- that's numeric modelling. I understand that's how it's going right now, but there's -- there's a worse case scenario that that's not happening as -- as needed. They're not ready to be in that minus five (5) state.

There's -- with the raising of the water level inside, the arsenic predicted amounts is now that the peaks are starting to come in higher and then there's a -- there's a need for water storage underground that's

not there anymore.

And I know that you guys talked about a certain ability to keep one (1) of the above-surface ponds open after, and I'm just wondering, initially it was stated that the results look promising for that. And has there any -- been any sort of progress since the IR in making commitment to keeping that open in terms of contingency?

(BRIEF PAUSE)

MR. MARK CRONK: Mark Cronk. I think what we were trying to convey -- no, what we were trying to convey is a conservative approach to bringing a new water treatment plant, which is a significant endeavour, has some complexities, allow us to commission it, shake it out, be confident in its ability to produce what we expect before we dismantle the old one (1).

So the keeping of the Northwest Pond, the Akaitcho dewatering system, the existing water treatment plant would be held, again some reason that we need to go back and use it if we have to tweak the new plant. It wasn't intended to be part of the Remediation Plan. It would just be a -- oh, excuse me, a sequencing issue as we bring the new one (1) online.

Does that answer your question?

MR. LUKAS NOVY: Yeah, it does. And I guess there -- there would be a process of outlining what terms of mechanisms and triggers you would be looking to -- to be able to decommission those various stages of those -- that infrastructure. Lukas Novy.

MR. MARK CRONK: Mark Cronk. Yeah, most water treatment plants are subject to seasonal surface water changes, which the team that's commissioning the plant would like to see it run one (1) whole year to see how it works.

Our minewater quality is relatively constant other than changes from surface water entering the mine. But still, it takes nothing for us to run the plant for a year and be comfortable for a period of time and then the next season decommission the Northwest Pond, drain it, which we need to do to introduce the tailings covers and close that facility up.

So to us it makes reasonable sense to leave it available as an operating facility for a period of time. The old one (1), sorry.

MR. LUKAS NOVY: Thank you very much. Lukas.

MS. LISA DYER: Lisa Dyer.

THE FACILITATOR MERCREDI: Go ahead.

MS. LISA DYER: I just jumped in, thanks. But I said my name first, so that was good. One (1) of the things I just want to bring together, because there's -- there's a lot of discussion on kind of timelines and when we're doing certain things.

To be aware the underground is -- we have underground stability issues, we have looking at water treatment, we're looking at surface interaction and we are fortunate enough, and sometimes laughed at for the number of people that we have on our team. But really, what that represents is the expertise that's required to look at the Giant Mine Project. And each of the members of the design team are gaining more knowledge and we are advancing the design to improve performance.

And so we have gathered a certain amount of information and we are working to bring those level of expertise together to make the best solution for Giant. So we may not -- you know, what we have right now is flexibility in the system to account for all those are -- areas of expert -- expertise and to account for any issues that come up.

And, therefore, what you're hearing is the fact that we are working as a team and bringing in all that knowledge to determine the best management solution. We have not made all the final decisions. There are some

decisions where, as we implement things, we will learn and be able to adapt to. And I think ultimately that allows us to be more protective and responsive.

MR. LUKAS NOVY: Lukas Novy. Yeah, just -- that is definitely coming across in the sessions; I understand it's a massive project. But you -- you guys have your set of consultants, you have freeze guys, water guys, and it is on the shoulders of the managers to make sure that there's a big picture understanding that these systems overlap.

And yeah, you ma -- your freeze guy may be able to know everything there is to know, but then it directly correlates to water management. And I think that's -- that's an important thing that needs to come across and probably will get talked about in day 4 and -- and 5, as this -- I mean, there has to be confidence that that communication network between all the consultants is there. And I understand how complex it is, but -- but sometimes that -- sometimes it doesn't come across.

MS. LISA DYER: Well, hopefully to give you some -- some confidence, is -- that's why we have a team of people at Public Works. Our job is to work with the consultants to make sure that there's that transfer of knowledge between the experts, and so that is a very big component. We meet regularly to talk about the

interactions between each of the components of the design.

So we are not -- there are people going off and working independently on, say, the freeze or water treatment, but we meet bi-weekly to talk about the interactions, to make sure that what we consider in the underground stability doesn't affect water treatment. So hopefully that provides some confidence that we do see the need for that interaction, and that is definitely built into the process of design.

THE FACILITATOR MERCREDI: Thank you, Lisa. I'll move the mic over the Alan. He had a couple of questions here. Alan...?

MR. ALAN EHRLICH: Thanks. It's Alan Ehrlich. I -- I'm picking up on a -- a couple of things that came out in the -- the recent discussion. One (1) of them was that there's expected to be a -- a very gradual tapering, I heard, over the very long term perhaps, of contaminants from the site, and -- and water treatment is gonna be needed for perhaps a very long time as a -- a result of that.

With respect to that, can you give me a -- even a rough ballpark of how many years are we talking about until the site reaches a stable state with respect to contaminants?

MS. LISA DYER: To clarify, Alan, are you talking about minewater or surface or both?

MR. ALAN EHRLICH: I was actually thinking about -- in my mind, I was thinking about the surface and the underground workings that were not inside the frozen blocks, because I know that there's an extensive network of contaminated material that isn't going to be contained in those frozen blocks, and that it's going to be captured by minewater treatment.

So if the stuff underground is being captured by minewater treatment, for the site overall, assuming that the blocks are -- are frozen and it's working well, roughly how many years are we talking about until it reaches a stable state with respect to contaminants -- really rough ballpark, because I know you're talking, you know, quite some time.

(BRIEF PAUSE)

MS. LISA DYER: Lisa Dyer for the record. And I've been told to move away from the mic a little bit, so hopefully that's better for people.

In terms of the underground, we do see that in the short term, that there will be an increase in arsenic levels until the freezing is in place. After

that time, we do see that there will be elevated levels in the minewater that will continue to be required to be treated, so it will essentially reach a steady state, but there still will be treatment required. We, at this time, see that we will be treating the water at Giant Mine in perpetuity.

MR. ALAN EHRLICH: Are you -- but with respect to the steady state, the -- the equilibrium, right, roughly --

MS. LISA DYER: We see ten (10) --

MR. ALAN EHRLICH: -- how long are we talking about before you expect the minewater to reach a steady state?

MS. LISA DYER: Ten (10) years.

MR. ALAN EHRLICH: In other words, for the site to reach a steady state with respect to contaminants?

MS. LISA DYER: Ten (10) -- ten (10) -- ten (10), years. Ten (10) to twenty (20) years.

MR. ALAN EHRLICH: And is that also true with respect to surface contaminants?

MS. LISA DYER: With respect to surface contamination...

(BRIEF PAUSE)

MS. LISA DYER: So to answer your question more fully -- Lisa Dyer, for the record. To answer the question of kind of stability of contaminant loading from the surface and underground, it is -- it is a hard number to predict, and so I'm going to add caution to the number I give you. But we see that a range of ten (10) to twenty (20) years the underground and surface should be -- after post-remediation, should be seeing a -- it become more stable.

MR. ALAN EHRLICH: Thanks. My next two (2) questions are going to hop around a little bit.

MR. TODD SLACK: Can we ask a point of clarification?

MR. LUKAS NOVY: Sure. Lukas Novy. I'm -- I'm just having a hard time with the term 'steady state.' That usually implies no influence from any exterior source. And I don't know how you can say that ten (10) years is the value that's been attributed to the -- the freezing system being done, and steady state would imply in my mind that you're not changing the water levels at all in that time period. So I -- I just would like further clarification on what the term 'steady state' means.

(BRIEF PAUSE)

MR. DARYL HOCKLEY: Daryl Hockley. The -- the -- the -- what's im -- important -- people forget that after the arsenic trioxide has been -- been frozen, there is still arsenic in the rest of the underground mine, right. There is arseno pyrite ore in -- arseno pyrite minerals were -- were in the ore; they're still in the tailings and the tailings have been used to backfill much of the mine. So there is a long-term source of arsenic quite independent of the arsenic trioxide. It's a -- it's a very different source.

Arsenic trioxide is soluble at 10,000 milligrams a litre. Arseno pyrite might reluse -- might release, 1, 2, 3, maybe 5 milligrams a litre of arsenic. Totally different level of magnitude, but enough that we've always been concerned that even after we dealt with the arsenic trioxide there would be a need to treat water from the rest of the mine.

So I think when we talk about steady state that's what we're referring to. We're referring to the period in time when the arsenic system has been frozen, when any residual arsenic, the -- the high test water that's been referred to has been -- has been removed from the areas around the frozen zones, and we are now just treating the -- the -- that background source, the -- the arseno pyrite in the tailings that we...

I should also point out we think we've been conservative in -- in saying that will last indefinitely. There are flooded underground mines with arseno pyrite tailings in them that don't require treatment, but it would be optimistic for us to tell all of you that we're going to be able to shut that treatment off in -- in X years.

So -- so we've -- we've said that count on high strength treatment for ten (10) to twenty (20) years and then perpetual treatment of a steady state source for the long-term after that.

MR. LUKAS NOVY: Lukas Novy. So what you're saying is -- is that -- that mechanism to reach steady state, the biggest driver for it would be the success of the freezing system?

MR. DARYL HOCKLEY: Yes. There -- there is also -- there is some amount of high strength arsenic outside of the frozen blocks. There -- there have been -- there have been -- there has been arsenic outside the chambers historically.

Well -- and -- and there are also slimes on the floors of the -- of the -- of some of the drifts that -- that may have arsenic trioxide contamination in them.

So I -- I think the -- the phrasing will -

- will start the clock ticking towards reaching steady state. That -- sorry, the -- the completely frozen block will start the -- the clock ticking, then it's ten (10) to twenty (20) years after that for these materials outside the frozen block to -- to reach steady state.

MR. LUKAS NOVY: Lukas Novy. So just one (1) more follow-up question on that.

What mechanism, or means do you attempt to -- to treat that, or get that arsenic outside of the frozen blocks to -- to be able to say that the contaminate source has -- is decreasing, or is not -- is -- has reached a steady state?

(BRIEF PAUSE)

MR. DARYL HOCKLEY: The -- the water treatment system, as -- as Till pointed out, has -- has capacity to treat a range of strengths of materials. It's been designed that way in part because we believe -- Till, correct me if I'm get -- misstating this, that I think the design has progressed a bit since -- since I last touched on it. But I believe it -- part of the -- the reason for that flexibility is we think there will be a higher strength source for some short term, and then decreasing to a lower strength course over the longer

term, right, so...

MR. LUKAS NOVY: Lukas Novy. One (1) more question. It's -- I'm just looking at it from a water standpoint.

Is -- is it going -- is the water elevation going to need to hit those points to dissolve the arsenic in the water form, and treat it in that way, or are you just saying for the natural period of unsaturated flow from the surface is going to be able to -- in some way that arsenic near the -- near this -- a non-frozen zone needs to get treated, and water is -- based on what you've been telling me, is going to be the mechanism to do that.

So I'm just wondering, is -- is that the strategy to use it through raising the water elevations, or is it just through the natural process of water percolating through the mine?

(BRIEF PAUSE)

MR. DARYL HOCKLEY: That's definitely one (1) of the -- one (1) of the factors that's in play in determining how high the water level should be.

I think it'll reach steady state in any case, because water typically -- water typically in an

underground mine, and in fact in most underground situations, finds a flow path. And it's that flow path that you have to flush out in order to achieve a steady state. So regardless of where the water level is, I think we will still reach a steady state after a defined period of time, and -- and our guesstimate is, and it's really the only guesstimate, is ten (10) to twenty (20) years.

But if we were to -- to flood some of those levels, we could potentially flush it out faster. That -- that's one (1) of the considerations in -- in determining the -- the sequencing of the water level rise.

MR. LUKAS NOVY: Lukas Novy. Thank you very much.

MR. ALAN EHRLICH: Okay. I'm going to continue with the questions that I had, and I've got to -- I've got to keep on trucking.

Okay. I'm going to continue with mine, and then I'll, as the Chair, hand it over to you, is it directly related to steady state?

MR. KEVIN O'REILLY: Thanks, Kevin O'Reilly, Alternatives North.

I wanted to put to bed this ground water level issue some time ago.

MR. ALAN EHRLICH: Okay, put to bed.

MR. KEVIN O'REILLY: Well, thank you. In the DAR, it still -- there's this diagram 6.8.1 that shows the re-flood level after freezing process but prior to full flooding at the two hundred (200) level, and then in the text it says that could be raised up to the one hundred (100) level.

So just for real clarity, that is no longer the plan anymore? You don't know what the plan is?

(BRIEF PAUSE)

MR. DARYL HOCKLEY: I don't think the plan has changed in the sense that there -- there is no definitive plan for anything else. Sorry, Daryl Hockley. There's no definitive plan at this point for any other level. I think what you're seeing as -- as Mark suggested is that the developer is being very open in -- in letting you look inside the current design process.

Trust me, I work on a lot of big projects, and there's lots of things in -- in big projects where levels go up and down until they're finally decided. It's a very healthy process to have that dialogue.

You -- you're seeing it here. You -- you

may not -- you -- I suspect you probably don't see this in -- in most technical sessions, but in this case the developer has -- has -- is trying to let you see some of the deliberations that are going on. As far as I know at this point, there is no decision to -- to make any change, or to -- to make any selection of the timing of that -- of that level.

MR. ADRIAN PARADIS: Adrian Paradis for the Giant Mine team. What you're looking at here is under Section 683, "Under -- Underground Water Management" in the Developer's Assessment Report. And what it describes is, once the freezing's complete the mine could be allowed to flow up to that point, but it's not -- there's no -- it's not -- it's not definitive; it is just simply a 'this could be what -- what is allowed to happen.'

What we are talking about, or what we're trying to figure out as a project team, and I -- the community at large needs to wrap their head around is at what level and where do want to maintain it, and what are the pros and the cons, and you've heard today a lot of what that is.

There is benefits to bringing up the water to a certain point, and there's benefits to bringing it down, and the ability to actually sit down -- and I agree

with you, Kevin -- to try and nail it down right now, here and now, I don't think we're there yet, because -- partially because of our -- we haven't had -- quite understand what all those benefits and what those cons are, and I think largely because the community at large has not.

So, I think, with that, probably best to throw it back to you.

MR. KEVIN O'REILLY: Okay. Thanks. Kevin O'Reilly. I thought this was relatively easy, but this is no longer the plan, what's in 6.8.1, not -- the -- the re-flood level is not going to be at the two hundred (200) level. That's what this shows. That spurred at least two (2) IRs, and that's not what the plan is. So I'm just saying this is no longer accurate; it's not what the -- it's not what's currently planned. That's all I'm asking.

(BRIEF PAUSE)

MS. LISA DYER: Lisa Dyer, Giant Mine project team. Kevin, this is a difference in opinion. We do not see it as a change in the plan. We see it as a timing issue. There's not more -- we -- we've spent a lot of time on this. We do not see this as a sig -- as a

change in the plan.

MR. ALAN EHRLICH: Okay. I have something I'd like to request of the Giant team as an undertaking. Just for the clarity to the parties, it would be -- can you submit something in writing by November 14th that spells out where the thinking about major parts of this project has evolved since the creation of the DAR?

In other words, if -- if right now you're somewhere with this project, an important part of this project, that is different from where you were when you wrote the DAR, I just want to make sure that all parties have very good 'you are here now' sort of point.

I mean, my understanding is that the vast majority of the DAR is still exactly applicable to the project that you've done, but I know that you do have ongoing designing, and it would be useful for them to know where they are. I'm not saying every tiny design change -- that would be an onerous undertaking -- but for the big-picture stuff that matters to the things we're talking about, it would be a very helpful thing to have.

So, anyway, I'd like to request that as an undertaking.

(BRIEF PAUSE)

MS. LISA DYER: Alan, can you kind of maybe clarify exactly what you see us doing in this undertaking?

MR. ALAN EHRLICH: Sure. I'm thinking about -- the way I imagined it is we're looking at maybe ten (10), fifteen (15) pages, let's say single spaced, saying, You know, here's what we're looking at for Baker Creek these days.

MS. LISA DYER: M-hm.

MR. ALAN EHRLICH: It might have -- the thinking might have changed a little bit over the last few months 'cause we've been working diligently on this. You know, here's -- here's what we've decided in terms of the diffuser location. I noticed there were three (3) of them -- possibilities, in the DAR, but you've picked one, right? And so now you know a bit more about that. For things like that, sort of bigger-picture items.

If you have more clarity based on your -- your thinking, it would help if -- if you could share that. I -- I know that, you know, this is scalable, and I'm -- I'm trying to word this in a --

MS. LISA DYER: M-hm.

MR. ALAN EHRLICH: -- in a way that isn't too picky, but if you've got a big-picture item that's changed because of the Giant team's work since the DAR,

or -- or that the thinking has -- has crystalized or clarified somehow, it would -- it would be very useful to the parties just to have a reminder of where we're at now.

(BRIEF PAUSE)

MS. LISA DYER: Alan, we would be happy to undertake that -- do that undertaking, but just a caveat is that we are in the design process. There are going to be different design considerations in the future, so there's going to be some modifications. We're trying to be as honest and open as possible where we are.

Again, though, in many ways, there are aspects of design we're considering, whether we have -- you know, using 2-inch pipe in the freeze or using 3-inch pipe I don't think is -- is really deviating from the overall approach that's shown in the DAR, and so we will present, but again, there are some aspects that are being brought up here that we do not see as a deviation from the DAR. So we will be presenting it from our perspective of where the design has led us to date.

MR. ALAN EHRLICH: Perfect. I'm -- I'm definitely not expecting you to say where the design will wind up being, but as of the -- the date that you make

the undertaking, it would be nice if it was current. You know, an extra inch of diameter on the pipe, I mean, unless you think it's relevant to -- unless it's potentially relevant to the significant adverse impacts or any finding of likely significant adverse impacts, your -- your finalizing some design is worthwhile.

But when the Board is making its decision about this project, it's going to need a pretty clear idea of what it is that you're proposing, and, you know, it would be irresponsible for it to make its decision if it didn't have a pretty clear idea of this. So I -- I just wanted to make that -- that point clear and on the record.

--- UNDERTAKING NO. 3: Giant Mine project team to provide information on what changes have been made to the DAR resulting in significant impacts

MS. LISA DYER: Excellent. Thank you, Alan. And I'm glad that you brought up the point that we're looking at significant impacts, and so we'll be focussing on that if there's a change that we see modifying impacts.

MR. ALAN EHRLICH: Haven't got my questions in yet, but the break time is upon us. So let's do a ten (10) minute break, start again at, oh, let's say -- yeah, let's make -- can we make it a seven (7) minute break? Can people live with that? We'll -- we'll start at 2:45.

--- Upon recessing at 2:38 p.m.
--- Upon resuming at 2:50 p.m.

THE FACILITATOR EHRLICH: I'm going to ask everyone to take their seats again, we're going to get rolling. For the remainder of the afternoon the questions for the next half hour or so are going to come primarily from Environment Canada and DFO, which organizations haven't had a -- organizations that haven't asked any questions in this to date, but have waited patiently for the last day and a half.

And then following that the Review Board's experts are going to have an opportunity to ask questions, and I've still got some of mine I -- I haven't got off my chest yet.

If necessary, what will happen is that tomorr -- that some of this subject may be carried over until tomorrow morning, because it obviously needs a -- a

more robust handling here and we can make up for that tomorrow day, I -- I really believe, based on the -- the subject matter we're going to be dealing with.

Does anyone at DFO or Environment Canada have a question they'd like to ask?

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Two (2) points before I hand it over the Amy Sparks of Environment Canada. One (1) point is there's a sign-in sheet coming around. Please sign it in. There's nothing that makes a transcriptionist more cranky then not knowing the names of the people they're supposed to be attributing stuff to.

So please sign the sign-in sheet. That's people at the table. And when it gets to the end of the table please hand it to the Chairs. Thanks.

The other thing is that I want to remind you that as I said in the opening comments it's a public session. CBC is here and is interested and they've asked the sound people if they can -- now remember that all of this is transcribed and on the record anyway, so it's all public, but they've asked if they can record the session.

The Giant Mine team has indicated that

they've got no problem with that. Presumably it's for use by the CBC at some later time.

Is everyone else okay with that?

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: All right. So then just please be advised that the session is being recorded as well and you might hear snippets of it in -- in the news. Okay. Amy Sparks of Environment Canada.

MS. ANY SPARKS: Thanks, Amy. So we have a couple questions about the diffuser, just to go back to that first and then some more quality stuff. So my first question isn't difficult, but we're just starting to learn kind of where the diffuser location is now, and -- and how the mixing zone is going to look.

And I'm wondering about how the mixing zone was decided to be 15 metres. Was that just based purely on meeting fresh water aquatic life or were there other factors that played into that decision?

MS. LISA DYER: Thank you, Amy. I'm going to ask John Hull to come to the table, if someone can make some room for John, and -- and we'll get him to answer -- respond to this question.

THE FACILITATOR EHRLICH: And in the

interest of time -- it's Alan again -- I'd just encourage where a concise answer is informative enough, please feel -- feel free to try to keep it focussed. This is not a particular jab at -- at John Hull, it's just looking at the amount of terrain we've got between us and the end of the subject. We need to keep rolling along. Thank you.

MR. JOHN HULL: John Hull. The 15 metres was picked in part because of the water depth of 13 metres and the desire to have the mixing zone which would not have an impact on the underside of the ice during the winter conditions.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Amy, do you have a follow-up, or -- or your colleagues at DFO?

MS. AMY SPARKS: I guess I have a -- a bit of a follow-up -- sorry, Amy Sparks -- because it shows in the diagram that it would be required that the depth would be 9 metres, but now we're seeing 13, is that a difference?

I'm just wondering about the plume since the mixing zone isn't 15 metres deep, it's -- it would be 15 metres long, how that's going to be different on the surface, because you're not going to be meeting those

objectives there.

THE FACILITATOR EHRLICH: Giant Team...?

MR. NATHAN SCHMIDT: Yeah, Nathan Schmidt. The -- the 15 metre dimension that we're talking about is strictly lateral, so, you know, upstream, downstream, side to side.

We are proposing that it's in a sufficient depth that -- that the plume never actually, you know, hits the surface before the mixing zone boundary.

THE FACILITATOR EHRLICH: Amy, I see you nodding. Could you articulate that nod into a microphone, please?

MS. AMY SPARKS: I don't know how to make a nodding sound. Amy Sparks. That's good. Thank you.

THE FACILITATOR EHRLICH: I see Morag McPherson of DFO has a question.

MS. MORAG MCPHERSON: Yeah, thank you. Morag McPherson with Fisheries and Oceans. We did have a couple of quick questions on the diffuser. We had several other questions on Baker Creek as well, but I think we'll move to some of the water quality questions from Environment Canada and then see where that goes and -- and potentially move the -- the Baker Creek stuff to -- to tomorrow. But we'll sort of start with some of the diffuser questions that we had.

As you were saying, there's been a lot of questions through the IRs on sort of design details around the diffuser location from several other parties as well, and, as presented in the presentation today, it was sort of one (1) location.

I just wanted a question of clarification: Is that location that's been sort of proposed here in the presentation -- is it the same as location number 2 that's presented in the DAR, or is it actually a slightly different location than the three (3) that were presented in the DAR?

MR. JOHN HULL: John Hull. Location 2 is the closest location. It was moved from location 2 to slightly deeper water and about 50 to 100 metres closer to the river, what we can see or identified as the Yellowknife River, through the Yellowknife Bay area.

Site 1 is in -- turns out to be in shallow water where we have better bathymetry, and site 3 turns out to be in a hole which we identified only with better bathymetry that we collected for the preliminary design from previous work that had been done that wasn't as accurate.

THE FACILITATOR EHRLICH: So what I'm hearing there is it's 50 metres towards the Yellowknife River from Site 2, correct?

MR. JOHN HULL: Fifty (50) downstream. Not into the river, but downstream. John Hull.

THE FACILITATOR EHRLICH: Are you saying it's 50 metres away from the former site to -- away from the direction of the Yellowknife River, or is it 50 metres closer to the Yellowknife River than Site 2 was?

MR. JOHN HULL: It -- John Hull. It's 50 metres going in a downstream direction, but not moving into the -- the river; it's right at the edge of the -- what would look like to be the -- the channel, as defined by Latham Island, just in that small region.

THE FACILITATOR EHRLICH: Is that clear enough, Morag?

MS. MORAG MCPHERSON: Yeah, it is, thanks. I just wanted to make sure it was -- we were clear on whether it was closest to location 2, if it was the same, or sort of how far off it was from that.

I have a -- sort of a follow-up question on that. Based on the information presented in the DAR on the habitat in the bay in terms of a habitat assessment around the diffuser, there were some challenges with that, some of the information that was attempted to be gathered prior to the DAR, and I believe there was also a statement saying that there would be additional information collected.

I was just wondering if the Giant Mine team could provide an update, now that there's sort of one (1) preferred alignment that seems to be coming forward, on the status of any habitat assessment activity for this proposed diffuser location. Just a -- an update on sort of where -- where that -- that work is at.

(BRIEF PAUSE)

MS. LISA DYER: Thanks, Morag. Lisa Dyer. We are planning to do some under-ice work in conjunction with the work that's being -- further modelling work that's being done on the diffuser, so that should -- should start around January, and then we will need to follow up with work during the summer season.

THE FACILITATOR EHRLICH: Another question from DFO?

MS. MORAG MCPHERSON: Yeah. I guess a quick follow-up and then I think maybe Environment Canada has a follow-up as well. Just if there is more particulars on -- on what work, I guess, you're considering doing in the summer would maybe be a little bit helpful, just so we sort of know what type of information may be introduced and when.

MS. LISA DYER: Lisa Dyer. I'm going to

ask Hillary Machtans to speak to the program she is currently working with us to develop, and she gets the names of benthic thingies better than I do.

MS. HILLARY MACHTANS: Thanks. Hillary Machtans, Golder Associates. Yes, so at this time, the preliminary plan is to collect sort of standard aquatic parameters under ice and then through the open-water season, so probably a -- a four (4) quarter program next year, mostly to support the modelling, to -- so to continue to gather enough information for -- to support the 3D model, but, at the same time, support the habitat assessment. So likely water quality at depth and water quality at surface, water quality profiles, sediment quality, sediment composition, benthic invertebrates, and -- and probably not at this time fisheries composition.

MS. MORAG MCPHERSON: Thank you.

THE FACILITATOR EHRLICH: Have you noticed that since lunchtime, since the Giant team has deposited a large metal bright blue hunk of the diffuser into the middle of the table, most of the questions have had to do with the diffuser? I just wonder about the influence of our surroundings.

Environment Canada, or DFO...? I see Lisa Lowman. Can you also name your organization, and...

MS. LISA LOWMAN: Lisa Lowman from

Environment Canada. I just had a few comments and some questions following that.

In reference to the -- the previous water licence effluent quality criteria presented on page 18 of the proponent's presentation, overall Environment Canada feels that the discharge criteria may not be stringent enough.

And those criteria were based on -- primarily on the Metal Mining Effluent Regulations. So I just wanted to make that comment.

The Metal Mining Effluent Regulations -- excuse me -- provide minimum national standards, and represent discharge levels that have not been evaluated in this assessment, and that would not be deemed desirable for year-round discharge to Yellowknife Bay.

Environment Canada acknowl -- acknowledges that there will be improved water quality discharges; however, the new proposed discharge location is characteristic of a more pristine receiving environment.

As well, Environment Canada is encouraging a full suite of parameters be evaluated beyond Metal Mine Effluent Regulations. That is standard metal suite and major ions, which would include, you know, parameters such as aluminum, arsenic, cadmium, copper, lead, nickel, zinc, nitrogen compounds, total suspended solids, oils

and grease.

And Environment Canada notes that proposed water quality objectives for various parameters on page 27 of the proponent's presentation, you know, would fall at the edge of the mixing zone, so we just wanted to acknowledge that.

So with respect to nitrogen compounds, Environment Canada recognizes that there would be more bore -- borehole drilling -- that there was more borehole drilling historically than present; however, does the proponent anticipate any historical nitrogen in the underground mine workings resulting in mobilization via flooding?

So that's one (1) question. I have a couple more.

THE FACILITATOR EHRLICH: With regard to the preamble, if Environment Canada is asking because it thinks that it -- this has something to do with the potential for likely significant adverse environmental impacts, then that -- that's suitable for the environmental assessment phase.

Where it doesn't pertain to the likelihood of significant adverse environmental impacts, the regulatory phase is always ready to --

MS. LISA LOWMAN: M-hm.

THE FACILITATOR EHRLICH: -- deal with it as well. But I -- I understand your -- your point, and your --

MS. LISA LOWMAN: Yeah.

THE FACILITATOR EHRLICH: -- your question stands. Can you just rephrase the last sentence again?

MS. LISA LOWMAN: Sure. Yeah, and I mean, we are -- we're just -- I'm just bringing this up now rather than -- than later just so that there's some thought behind it.

So I guess that question -- it was with respect to nitrogen compounds. And so Environment Canada does recognize that there will be -- that there was more borehole drilling historically than present. However, does the proponent anticipate any historical nitrogen in the underground mine workings resulting in mobilization via flooding?

So that is one (1) of our concerns that we have, so...

THE FACILITATOR EHRLICH: Does it? The proponent...?

(BRIEF PAUSE)

MS. LISA DYER: So in response to Lisa's comments -- it's Lisa Dyer here responding to Lisa. First of all thank you for your kind of comments on Environment Canada's perspective on regulatory requirements for the project. That's very helpful for us and we'll take that under consideration.

With respect to nitrogen, it is -- currently there's no development work happening at this point in time, but as we move forward with the freeze there will be some development work. Will there be nitrogen compounds used, yes, so this is a parameter that we're going to have to consider in the future. So part of that is good management, underground management, and proper storage and use of that, which is what we will implement.

We have seen -- as the mine water flooded we did see some nitrogen levels increase and that is something that we are monitoring at this point and will have to monitor. But we do not assume that they will be significantly higher.

MS. LISA LOWMAN: Great. Thanks. I just have a couple other questions that relate to mine water quality as well. In reference to mine water quality on page 17 of the presentation, where the proponent indicates salinity from deep groundwater does not affect

the treatment process nor water quality at the edge of the mixing zone, Environment Canada would like to know what evidence or rationale the proponent has to support that. And also, Environment Canada would like to know what will be the extent of increased salinity in the Yellowknife Bay and associated floc, so a two (2) part question.

MS. LISA DYER: I'm just going to take a moment to talk to Till and Kyla and we'll get back to you and respond to that.

MS. LISA LOWMAN: Great. Thanks.

(BRIEF PAUSE)

MS. KYLA KIRK: Okay. Kyla Kirk. We do have some data with the salinity in the Northwest Pond and this is what's currently being treated by the existing plant and this is still being discharged into Baker Creek and will eventually make its way into Yellowknife Bay.

We do not anticipate that it will change -- affect our process, because our current process is not designed to remove salinity, neither is the existing process. So as to what evidence we have, it's not gonna change. Whatever is going into there right now is

exactly what's going to be going in in the future. Hopefully that helps. Kyla Kirk.

MS. LISA LOWMAN: So I guess the follow-up question to that -- thank you for that. It's Lisa Lowman, Environment Canada. So just to follow up, Environment Canada would like to know, you know, if there's no change, what -- still what would be the extent of increased salinity in Yellowknife? Not increased, but the level of salinity in Yellowknife, and associated effects. Has that been considered or looked at?

(BRIEF PAUSE)

MR. BRUCE HALBERT: Bruce Halbert. It's on? Okay.

THE FACILITATOR EHRLICH: Please go ahead, Bruce.

MR. BRUCE HALBERT: To answer your question about salinity, the -- I understand from our discussion here that the TDS concentration that's being pumped up to -- through the system is about 500 milligrams per litre.

That, when diluted, in the -- in the effluent diffuser, which Nathan was indicating is a hundred -- a hundred to one (1) to a hundred and fifty

(150) to one (1) depending on which -- which profile you're looking at, translates into about a 5 milligram per litre increase above baseline in the system, so that's really a minor consequence.

MS. LISA LOWMAN: Sorry, what was that last part, five (5)?

MR. BRUCE HALBERT: Milligram per litre on top of background.

MS. LISA LOWMAN: Okay. Thank you.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Lisa, do you have more questions?

MS. LISA LOWMAN: Yeah, one (1) more question. It's Lisa Lowman, Environment Canada. This is a slightly different topic. Okay. The Aquatic Effects Monitoring Program, I know currently under the MMERs the Environmental Effects Monitoring Program applies.

But my question is, has there been any prelim -- prelim -- preliminary discussions with the Mackenzie Valley Land and Water Board with respect to requirements of an AEMP Program associated with the upcoming water licence?

I'm just wondering if there's been any

initial discussions as of yet?

MR. ADRIAN PARADIS: Adrian Paradis for Giant Mine Project Team. We've had some -- we haven't had any preliminary discussions with the Mackenzie Valley Land and Water Board on the Aquatic Effects Monitoring Program. We have had other discussions with them on other issues, but not this.

(BRIEF PAUSE)

MS. LISA LOWMAN: Okay. Great. Thank you. That -- that's all I had for questions.

THE FACILITATOR EHRLICH: Does DFO have any other questions? Who would like to launch them? Give 'er.

MS. MORAG MCPHERSON: Thank you. Morag McPherson with Fisheries and Oceans. We had a -- a number of questions on some of the information presented on Baker Creek as well as the North Diversion, so I'll start off, I'll see how far we go and I obviously want to allow the Board to have questions so you can cut us off and we'll -- we'll see where we're at.

Several of these questions are just more wanting to provide some clarification for ourselves, for the other parties on the record. In the DAR, for the

remediation options for Baker Creek on the mine site, it indicates that clear preferences have only been selected for Reaches 1, 3 and 4, and outlines a number of options for each of the remaining Reaches. So that's Reach 0, 2, 5, and 6.

And it goes on to sort of talk about how there's some additional weighing of pros and cons, feasibility of being able to handle some of the contamination issues in each of those Reaches.

However, the information in this presentation, as presented, sort of seems to outline only one (1) remediation option for Reaches 0 and 2 related to sediment. And I know when Nathan was presenting it and spoke to it, he said, Well, depending on the results of current studies. But as the information was presented in the presentation it just outlines one (1) option in terms of removal of sediment.

I just wanted to clarify. I know he -- he did indicated that it's -- you know, these options are dependent on -- on current studies, but just was wondering if the Giant Mine project team could clarify what the status is of these additional studies that are underway to assess sediments in these Reaches, and how this relates to the selection of the final remediation options for these Reaches where there hasn't been a clear

preference outlined yet?

MS. LISA DYER: Lisa Dyer. So, Morag, just to make sure I fully understood your question, you were asking about the sediment study that has been undertaken recently. I'm gonna ask Hillary to speak to that, because she has been a project lead for the work that has been done on the sediments, and then we can follow up with talking about how we will use this information to inform the decision for the remediation plan.

MS. HILLARY MACHTANS: Hillary Machtans, Golder Associates. So I can give a very brief version. So currently we've just completed a -- a sediment study of Baker Creek, and it included Reach 0 to Reach 6, so sort of bottom to top. It included surface sediment, sediment core -- so subsurface sediment -- water quality, water toxicity, sediment toxicity, and benthic invertebrates, and periphyton.

So all the -- that field work was actually just completed last week, so the status is pending, if you will, for -- for all the data, so it will be a number of weeks before we have some of that lab data back. And it's my understanding that the first to come will be sediment thicknesses and sediment metal concentrations, and then that informs -- again, like Lisa said, someone

else may speak to that -- the decisions on -- on individual Reaches.

So it's just, I think, pending, but field work complete, lab analysis to come.

THE FACILITATOR EHRLICH: Thank you. Morag...?

MS. MORAG MCPHERSON: Yeah. Thank you very much. Morag McPherson with Fisheries and Oceans. As the project team knows, DFO has been involved in some of the -- providing some advice on some of the studies that need to be undertaken.

I just wanted to put this out to clarify that, if there had been some additional thinking or -- or other sort of movement towards certain preferred options, if -- if things had progressed or there was an update on that, that it was sort of brought out right now in terms of if anything has moved forward, or just clarifying that -- that they're -- they're still sort of up for discussion right now, and that the options, as outlined in the DAR, are still sort of evaluating the various options for these -- for these Reaches.

THE FACILITATOR EHRLICH: Any other questions from Environment Canada. And I didn't hear a question in that; I heard a statement. Are there any other questions from DFO or Environment Canada?

MS. LISA DYER: We didn't finish answering Morag's question.

THE FACILITATOR EHRLICH: In that case, please continue, Lisa.

MS. LISA DYER: So Morag's question was: How would the sediment work and form the final plans for remediation? We know right now -- well, prior to the -- the assessment, we know that we had elevated levels of arsenic in sediment, so fairly high levels, and we had minimal information on the extent and depth of that contamination. So the big question for us is: What is the risk of removing the contamination from the stream bed? Is that going to create more of a problem based upon its characteristics, or does it make sense to leave it in place?

So we are looking to this study to inform us on whether there are more risks associated with removing the sediment or leaving it in place. Obviously, if we remove the sediment, it makes sense we remove the contamination, but we may also have to destroy some valuable ha -- some habitat that's currently being used to do so, and so we're looking for that study to help inform us.

As Hillary said, it's -- it's still -- we just finished the field study and we're getting the

results back, so we don't have any further information on that -- to help us inform our decision-making at this point, but that is a big question for us, is what do we do with the contaminated sediments.

And first of all, let's characterize what is -- what is the state of the sediments, and what can we do to bring Baker Creek back to a more healthier state.

MR. ADRIAN PARADIS: Adrian Paradis, for Giant Mine project team. The next half, I believe, off of what Lisa is talking -- talking about is for those decisions about either covering, capping, or removing the sediments is discussions with the community.

We'd need -- need to have an understanding of once you have that information what your expectations are, what your understanding would be of what the risk could be there, so.

Our understanding is that -- that's -- this study is only one (1) component of it. That'll inform our -- the idea of the risk. The last half of that needs to be from the community to understand what your desire is.

MS. AMY SPARKS: Amy Sparks, Environment Canada. There's been a struggle to find sufficient, or appropriate background, or reference locations to compare to Baker Creek.

Has any work gone into that as part of the study?

MS. HILLARY MACHTANS: Hillary Machtans, Golder Associates. The answer is yes and no.

So, yes, we've chosen a reference location in the Yellowknife River because it's a consistent reference location with the EEM program under the Metal Mining Regulations.

It's my understanding Environment Canada Water Resources and Aboriginal Affairs Water Resources are doing some additional sediment sampling further up in the Baker Creek watershed. That -- that data was not available to us at this time. So yeah, I guess you would say preliminary attempts to find other stream reference locations have begun but were not available at the time of the study. So, therefore, the study proceeded with Yellowknife River, which on the basis of the EEM seemed an appropriate reference study -- location, pardon me.

THE FACILITATOR EHRLICH: DFO, are you okay with holding the rest of your questions on this subject until tomorrow morning?

As I've indicated earlier, there's going to be a little bit of overlap of this subject to the beginning of day 3, and you guys have certainly -- are certainly organized.

Are you -- how -- how far through your questions are you?

MS. MORAG MCPHERSON: Morag with Fisheries. We're about half way through. We have about another three (3) related to Baker Creek.

THE FACILITATOR EHRLICH: There's going to be more discussion of Baker Creek here today, so it won't be a bad thing to carry over. That way your questions will also be informed by whatever responses the Giant team has produced since.

On the subject of Baker Creek, a couple of questions from me, but most of the questions for this part of the agenda are -- are from the Review Board, and it's -- it's experts, and I want to make sure they have enough time to ask what they need to.

I was thinking about the recent icing event. Considering the baseline information you have on Baker Creek, how it behaves, how predictable that is, that's the baseline for your project planning related to Baker Creek, and any impact predictions you have about it.

And recently -- it's -- it's a matter of public record that Baker Creek changed its -- its route; would up going over tailings, and then there was an unplanned tailings release into Back Bay. Similarly

there was an unexpected surprise with a sink hole that I understand had something to do with groundwater.

I was wondering if you could describe in -- in detail why this came as a surprise? What happened with Baker Creek to make it change its -- its route this spring?

You've mentioned an icing event. You've mentioned elf ice. Can you give me a really short version of -- of what happened this spring?

MR. NATHAN SCHMIDT: Nathan Schmidt. The icing that we observed this spring, what I'm told by people at the site that have been there for decades, is that it was unusual, and as you said, unanticipated.

One (1) of the things that, you know, I got to do when we were up there doing the fix up on it was sta -- talk to Steve Coequal (phonetic) over at INAC. And he has a -- quite a major interest in the topic, and a lot of ideas.

Some of the, you know, suggestions are that there may have been, you know, some sort of shift, a climate shift in the late '90s that they think they've identified where we're getting more of what we see out there today and yesterday, the kind of late season rain, that sort of thing that can actually sustain these -- these seeps, you know, over the course of the winter and

that develop into the -- the elf ice development, that sort of thing.

So, you know, at this point there are a lot of unknowns there. What we've done in our design is put in a pretty conservative, from my view, allocation for elf ice development. And like I said this morning, the area that was worst within the mine site at least, was at Reach 3 area. That does not have a flood plain, and, you know, providing a sufficient flood plain for that accumulation is also, you know, a mitigating measure that would be incorporated into the design.

Does that help?

THE FACILITATOR EHRLICH: Yes, that -- that helps very well. Thank you. I -- I think Baker Creek has at least shown that it was not entirely predictable. I certainly would suggest that the -- if the events this spring were predictable you would have predicted them because I know you're looking at the site very carefully.

So we know it's a -- a somewhat unpredictable source of heat and water to an area where you want to -- where groundwater is a bit of an issue and you want to keep something frozen for a very long time.

In the Giant team's response to Review Board IR number 18 you stated that, and I quote:

"One (1) priority for any modifications to Baker Creek is to ensure that its hydrological characteristics are ideal for the long-term management of the site."

And it says a second priority is:

"To manage potential risks to ecological and human receptors."

Now I'm wondering, based on that, if it would be fair to say in -- in -- in your view, if the creek were to pose an unacceptable long-term risk to arsenic containment and water management, would you be willing to pursue relocating it to the North?

Now you've -- you've indicated in your presentation earlier that there is a contingency you've been exploring, which involves rerouting -- it looked to me like Baker Creek from Martin Lake and hooking up to the Yellowknife River via some existing lakes and some -- some new workings.

And so, again, my question is, is it fair to say that if the creek were to pose an unacceptable long-term risk to arsenic containment and water management, you'd be willing to pursue relocating it?

MS. LISA DYER: Lisa Dyer. Thanks for the question, Alan. It's -- it's a good question and

it's one (1) of the things that we've been asked to look at as part of Section 37. We got a directive this spring to put a cap on the tailings and to make sure that we didn't have sediment release again into Baker Creek.

As part of that we've been asked to look at contingencies to deal with the changing nature and -- of Baker Creek. And so we are currently looking at this North Diversion as part of that Section 37 directive. And so we are currently at the early stages.

As Nathan has said, we've looked at is there a technically feasible route. And so that's the investigation that's been done. He's showed two (2) potential routes, one (1) for fish passage, one (1) for not.

Obviously, you know, we have two (2) things. When we do the risk assessment, and this will come out on Thursday, is that one (1) of the greatest risks on site at Baker Creek is -- or sorry, one (1) of the greatest site risks at Giant Mine is Baker Creek. And so if we felt that we could not properly contain Baker Creek and it posed a risk to the underground, the North Diversion would be a contingency that we could use.

Ultimately, our goal is to protect the site and ensure that we don't have it -- any -- it's getting lost into the underground. So currently our

proposed, in the remediation plan, is to keep it on site. It's a contingency that we're exploring as part of the Section 37 directive and as part of due diligence due to the high-risk nature of this issue.

THE FACILITATOR EHRLICH: Thank you. I'm clear that your current plan is to keep Baker Creek on site. You've indicated that it's a contingency, and so then the question is: What's it contingent on? The -- the question that I'm asking is:

Would you be willing to pursue relocating it if the creek were to pose an unacceptable long-term risk to arsenic containment?

MS. LISA DYER: The answer -- Lisa Dyer -- is yes.

THE FACILITATOR EHRLICH: Thank you. I've got other questions that I could launch into, but I don't want to take too much time from the Board experts who've also come a long way and have really restrained themselves from jumping into conversation up to this point today.

Do any of the Board's experts have any questions? Hold on one (1) second, please.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Okay. Doug Ramsey...?

MR. DOUG RAMSEY: Doug Ramsey. My question's related to Baker Creek, going back to the proponent's presentation this morning. I noticed that one (1) of the key design criteria for the Baker Creek works is a 1 in 500 year flood event on top of, what was it, 2 metres of anchor ice, and allowing for a metre of freeboard.

Now, I guess my first question in that regard is: How did you come to choosing the 1 in 500 year event as being the design criterion?

MR. NATHAN SCHMIDT: Okay. That goes back to a workshop we had in Yellowknife in early July 2010 with a number of, you know, INAC, Public Works, and other participants, and that was a number that was generally agreed upon. Nathan Schmidt.

MR. DOUG RAMSEY: Doug Ramsey. Following on from that, given the importance of ensuring that Baker Creek does not overtop its banks because of its proximity to a number of characteristics of the mine site they're important to keep water out of, I was wondering if, given that frequency, and carrying through the arithmetic that it's a .2 percent probability in any given year, but if you take that through to fifty (50) years, it becomes a

10 percent probability; a hundred (100) years, 20 percent; and so on.

Was that kind of relatively high probability over a relatively short term, in consideration of this being management in perpetuity, was that kind of relatively high probability on a multi-decade instance considered to provide adequate prevention against overtopping of the Baker Creek banks?

(BRIEF PAUSE)

MR. NATHAN SCHMIDT: Okay, sorry for the delay there, Nathan Schmidt. We -- we have the five hundred (500) year flood, but we also have it compounded with the anchor ice, and we also have it compounded with the additional freeboard.

So your math is -- is good; I don't question it. But we believe that the five hundred (500) year flood, with those other conditions, is not a five hundred (500) year event. It's -- it's a much lower frequency event.

For instance, if we -- if we look at a -- an ice free channel, you know, we've got much, much greater -- we've got at least triple the flow area there compared to what we would have under this condition.

THE FACILITATOR EHRLICH: Doug, you want to follow up?

MR. DOUG RAMSEY: Well, I think following on -- Doug Ramsey, pardon me, following on from the -- the question that kind of introduced this -- this line of inquiry, it seems at this point that we don't have a very good predictive ability with respect to predicting anchor ice.

And the fact that it may be connected to climate change in some way, how was climate change taken into consideration in the selection of that criteria, or even in determining what the 1 in 500 year flood event was, if at all?

MR. NATHAN SCHMIDT: Okay. There wasn't any explicit, you know, allocation for climate change there. One (1) of the things that we did do -- Nathan Schmidt here.

One (1) of the things that we did do was between when the -- the initial numbers that you see in the DAR were calculated, and that was in the first part of the 2000s, I believe, are based on data, you know, from the first part of the -- the 2000s.

We did re-evaluate -- redo the frequency analysis based on more up-to-date data, including to 2009 or 2010. The -- the number actually came down by about

10 percent for that five hundred (500) year value.

We did continue with the larger number, giving us a little bit of extra cushion there. So because we don't have, you know, adequate predications or anything for the future, we did add a little bit of a cushion in there to -- to take care of that to some extent, the uncertainty.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Just for the -- for -- for my -- you know, I -- I have a little clarification to ask, but Dr. Cesar Oboni is our -- our risk assessment specialist, and he has a question he'd like to ask.

DR. CESAR OBONI: Yeah, Cesar Oboni from the -- on behalf of the Review Board. I just want to clarify the -- what -- the probability and frequency. Those are completely different issues, and I just want for math wise. If we take for example the next hundred (100) years, it's going to be 20 percent of chance to see at least twenty (20) events, so it's a lot more than to see one (1).

Now my question is: How much of a bias is it talking about frequency when we're talking of -- at

perpetuity process, and isn't that a bit misleading the public in terms of giving false sense of security?

MS. LISA DYER: Sorry, Cesar. I'm --

MR. CESAR OBONI: Yes.

MS. LISA DYER: -- I'm not sure what the question was there.

MR. CESAR OBONI: So the question basically is: How is the public understanding that we're talking about frequency when actually it's an at perpetuity process? And isn't that a bit misleading?

(BRIEF PAUSE)

MR. CESAR OBONI: Excuse me, I can bring so -- an example for example. So far in France, for instance, nuclear power plants are designed to withst -- withstand an earthquake twice as strong as the one thousand (1,000) years, even calculated for each site.

MS. LISA DYER: Sorry, I'm still not quite understanding what line of questioning and -- and what -- what you're looking for us in a response, because you're referring to public safety but then going back to probabilities and frequencies.

So if there's a question on probabilities and frequencies, if you could clarify that we can answer

that. And I think it's a judgment call that we're trying to give false sense of security to the public where actually, the goal of this Remediation Project is to protect people and the environment.

So I'm just having a hard time seeing how those two (2) are connected.

(BRIEF PAUSE)

MR. CESAR OBONI: Yeah. So my -- my question is how the credibility threshold are set up. That's basically it.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: If I -- if I may, I can just clarify a little bit about the part about French nuclear power plants.

The -- the point that Cesar has relayed to me is that when the French designed their nuclear power plants, not their nuclear waste storage, but their nuclear power plants they designed them to a -- a 1 in 1000 year probability of it -- actually, they double it for the sake of safety.

So if the French are -- are -- assuming

that that's a reasonable standard for a nuclear power plant, which isn't intended to go on in perpetuity, but your project is proposing perpetuity, why do you feel that 1 in 500 years is a reasonable design criteria?

Cesar, did I characterize that part okay?

MR. CESAR OBONI: Cesar Oboni. Yes, absolutely.

MR. MARK CRONK: Mark Cronk. Unlike nuclear power plants, the Giant Mine Project does not exist in the same state over its entire lifetime. The acute time of risk is while the chambers are unfrozen. Once the frozen block is in place, the risk to the project of a flooding event is essentially gone.

THE FACILITATOR EHRLICH: Cesar, do you have a follow up?

MR. CESAR OBONI: Absolutely. Cesar Oboni. So basically what you are saying is that during those ten (10) years we are calibrating those five hundred (500) -- that's rate of return of 1 on 500 years, only for that ten (10) years period and then it's fine to flood?

(BRIEF PAUSE)

MR. MARK CRONK: Mark Cronk. A fair

question. The 1 in 500 year was chosen through a risk assessment. Our exposure is relatively short. The consequence of a failure after the frozen block is in place is really quite small.

And so the 1 in 500 was deemed as an appropriate value based on that.

THE FACILITATOR EHRLICH: May I clarify, Mr. Cronk. You're saying the possibility of a failure is quite small once the frozen blocks are in place assuming that the various systems you've described before are around -- are ready to remediate and repair following that failure, right?

You've indicated before that I think it was twelve (12) things have to happen before blocks will -- will thaw unintentionally.

MR. MARK CRONK: Yes.

THE FACILITATOR EHRLICH: And so when you say the risk of a failure after that is virtually nil, you mean assuming those twelve (12) things are -- are in place?

MR. MARK CRONK: Mark Cronk. Correct. If the remedium -- remediation plan is executed as it's currently outlined in the RAP and DAR, the risk of failure after the frozen block is executed is very small.

THE FACILITATOR EHRLICH: Thanks for

clarifying that. Cesar...?

MR. CESAR OBONI: Cesar Oboni. So when you -- can you clarify on "very small," please?

MR. DARYL HOCKLEY: I think -- I think I've seen this kind of miscommunication on -- on lots of other projects, so maybe I can help. The -- the selection of a design criteria is, essentially, an economic decision. One designs things because, in essence, if we built everything for the -- the worst-case scenario we couldn't afford to build anything, right. So, essentially, it's an economic decision. It's not a credibility decision.

The -- the choice -- I think the best analog is not nuclear safety, nuclear power plants, but hydroelectric dams or even mine closures elsewhere, and tailings dams, for example.

The Canadian Dam Safety Association, for example, has a guideline that says depending on what is at risk in the event of a dam failure, one shou -- one should choose a higher level of -- of design.

So if -- if you have a town with ten thousand (10,000) people right at the toe of your dam, then you design that dam to survive the probable maximum flood, the maximum conceivable flood.

If the -- if you have nothing but a reach

of stream that has no environmental value, no human habitation, you might choose to design the -- the spillway on that dam to -- to fail in a 1 in 500 or some -- some such number economically justified.

The -- the decision here is that once the blocks are frozen, the risk of -- the -- the primary risk associated with flooding the mine and discharging arsenic is reduced. If you flood the mine after the arsenic chambers are frozen, you still have a mess. Somebody still has to spend money to clean it up, but you don't have a signif -- you haven't sent hundreds of milligrams per litre of arsenic into Yellowknife Bay, right, so it's remediable.

Generally speaking, now, there's no direct analog, but those sorts of remedial -- remediable risks, remediable at cost. I think if you look at analogs in -- in the dam safety industry, they would -- they would argue that you do not design those for probable maximum flood conditions. You -- you design them on some economic basis with conditions. One in 500 is a very typical in -- in those sorts of circumstances.

THE FACILITATOR EHRLICH: I'm going to head it back to Cesar Oboni, but I do want to just interject a quick question. I mean, you -- you mentioned the Canadian Dam Association standards in response to

Review Board Number 9.

Are those standards suitable for perpetuity projects? Are they intended for perpetuity projects? I'm just not familiar enough with dam design to know which dams were constructed for perpetuity.

MR. DARYL HOCKLEY: They are applied in design of tailings dams, which -- which do exist in perpetuity. Hydroelectric dams, there is always some argument whether or not they're going to exist in perpetuity. That's -- proponents will say that and its opponents will say they're -- they're not, but they are in fact applied to many, many structures that are going to be around for the very, very long-term, yeah.

THE FACILITATOR EHRLICH: So then the -- you're saying the Canadian Dam Association standards are designed for perpetuity?

MR. DARYL HOCKLEY: I'm saying they're applied. I honestly don't know what the writers of that -- of what they meant for it, but they are certainly applied in -- in circumstances like that, and similar guidelines.

Australia has a set of guidelines, similar guidelines around the world are routinely applied to questions just -- just like this one. Daryl Hockley.

THE FACILITATOR EHRLICH: And I'm going

to pass it back to Cesar Oboni.

MR. CESAR OBONI: I just want to bring some clarif -- clarification on the Canadian Dam Association and the ANCOLD, which is the Australian National Committee of Large Dams. And they're actually put in relation the number of casualties and an annual probability.

So, this is where the -- there are -- if we take the example of this remediation, we need to have an annual probability, and it's -- this is where it gets tricky to understand for a project that's perpetuity. That's just a clarification to Alan.

THE FACILITATOR EHRLICH: Thanks. Do any of the Board's consultants have any more questions?

Doug, you were following a line of questioning. I think I diverted you briefly with -- with this. You were asking about -- your last question had to do with the application of climate change to predictions regarding Baker Creek, and I -- I thought I jumped in before you could follow up.

MR. DOUG RAMSEY: Doug Ramsey. Yes, that's correct, and I just had one (1) follow-up question on that line. You indicated, in your response to my last question, that there was - and I'm paraphrasing here - a cushion to accommodate some aspect of climate change

added to your -- your estimate of your 1 in 500 year flood event.

Now, could you provide more specifics on the nature of that cushion, and where it was derived from?

MR. NATHAN SCHMIDT: Nathan Schmidt. The -- basically, what I was talking about there was, we had a frequency analysis, flood frequency analysis, that was done based on -- and these -- these are going to be numbers that are close, but not necessarily accurate -- 1968 to 2004, and that gave us a 500 year flood value.

What we did was then we updated it with 1968 to 2009, and the 500 year value actually dropped. Now, it dropped by about 10 percent.

One thing I should say is any time you're taking, you know, low-frequency events like the -- the high return period events from a smaller length of record, there's a lot of uncertainty there to start with, but, given that it did drop, we kept the higher numbers, just to give us an additional, you know, comfort level there.

Does that answer your question?

MR. DOUG RAMSEY: Yes, that explains it. Thank you. Doug Ramsey.

MR. NATHAN SCHMIDT: Thank you.

THE FACILITATOR EHRLICH: Lukas Arenson has a question.

MR. LUKAS ARENSON: Lukas Arenson. Just a quick follow-up question on these climate change projection, because it's -- Environment Canada or Prouse Adell (phonetic), he presented in 2009 some regional study on chan -- expected climate changes in -- in northern regions, and he, or the authors there, predicted about 40 percent more precipitation, or even changes in the IDFs between -- by 2050.

So I -- yeah, has -- has this more recent data been considered, even IPCC 2007, the Prouse report, the -- the Copenhagen diagnosis, in -- in your climate change assumption that -- going even into more regional model? So we are expecting more -- or these all say we're expecting more precipitation, which would result in higher flood events, I guess.

Has this been considered to -- to some point?

MR. NATHAN SCHMIDT: The short answer to that is no. I -- the term "expected" is -- eve -- even predicted, because if you go to the IPCC models, they specifically use terms like "projections" and "scenarios" and "plausible futures"; they don't assign any -- any probabilities to these changes.

There are a couple of papers that are -- and was that Terry Prouse (phonetic), the one you were talking about? Okay. I -- I may have read that at one (1) point.

There are a couple of recent papers that actually focus on northern rivers and northern meteorology, one by a fellow named Kitt Zedo (phonetic) with Environment Canada from 2008. It was in the Journal of Climate, and one (1) of the things he identified was a -- a shortcoming in the climate modelling in this area, in the Mackenzie Valley, because of the orographic effects coming across from the Pacific Ocean, and also a related dependence on pacific decadal oscillation.

Temperature and precipitation in this area really does depend on the climate patterns, the long scale climate patterns that are happening in the north Pacific.

And to my understanding, that's something that's not actually picked up in the climate modelling, so when these models are extrapolating, they're not picking up some -- some key physical things that we know exist. Okay.

I'll -- I'll leave it at that. Thank you.

MR. LUKAS ARENSON: Yeah, Lukas Arenson. I -- I do understand that -- I mean, these -- these are

very complex processes, and the climate models currently are really at the limit in order to -- to model the precipitation cha -- changes in precipitation, even third order effects.

But based on that, I appreciate that, but I mean the ultimate question is: How comfortable are you in your 1 to 500 event?

MR. NATHAN SCHMIDT: I -- I guess one of the -- the answer to that is, we really want to make sure that we're not painting yourself into a corner with our designs, and there are some -- it's not everywhere along the creek where we have a potential spill location, okay.

So I guess where I'm getting here is -- is the potential for adaptive management, and making sure that if at some point in the future we can look back, and we can say, Yeah, it's changing, we're getting wetter, then that would be a point where it may be necessary to re-evaluate and perhaps, you know, buttress some of these key locations.

But at this point, you know, especially where we're designing for something the -- the critical event on the short term until the freeze happens, I don't think we see that as a necessity.

MR. LUKAS ARENSON: Okay. Thank you.

THE FACILITATOR EHRLICH: Just -- I want

a short caucus here.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Okay. If I can pass the -- the microphone back to Lukas Arenson, who has a request for an undertaking regarding the subject that we just discussed.

MR. LUKAS ARENSON: Yeah, the -- the undertaking would -- would be that you could maybe provide an updated report on the whole -- on your climate change assumptions, basically.

I mean when you go back to the DAR, you always refer to the IPCC 2001, which is also when you look at temperature changes, for example, for the frozen block as we discussed yesterday.

The -- the 2001 models were kind of used at that point. We're now at 2011. Things have changed, as you said in a couple of reports.

So yeah, the undertaking would be if you could update the parties involved on what has happened probably on the climate change projection front since -- since your DAR report -- or since your 2001 assumption.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Can I add a -- just something to the request. In addition to the updated report on -- on climate understanding since that time, it would be helpful if you could also indicate how that has affected your project design.

(BRIEF PAUSE)

MS. LISA DYER: We will be happy to undertake your request.

THE FACILITATOR EHRLICH: Thank you. Do you think you'll be able to have it in by November 14th?

MS. LISA DYER: I will chat with people and get back to you by the end of today on that. On tomorrow morning on that, someone has whispered in my ear, we will get back to you on that undertaking. And I have someone touching my shoulder.

We would like to just have a follow-up question, on that topic, and Daryl Hockey -- Hockley will ask that question. Lisa Dyer speaking.

--- UNDERTAKING NO. 4: For the Giant Team to update the parties involved on what has happened on the climate change projection front since

your 2001 assumption and also indicate how that has affected the project design.

MR. DARYL HOCKLEY: Daryl Hockley. On -- on another project about five (5) years ago, we did a -- a -- I think a very thorough search and we -- we brought in a couple of noted academics in the field to give us the -- the latest opinions on the relationship between climate change and extreme events for the purposes of hydrologic design.

And their answer was that there really isn't any good connection between climate change and extreme event predictions, that, in their opinion at least, climate change could -- climate change science can at best inform us about changes in average precipitation or possibly seasonal precipitation, but it wasn't helping us much in -- in modifying extreme events.

If -- if you're aware of any additional literature on that in the last few years, it would be very, very helpful if you could let us know that.

MR. LUKAS ARENSON: Yes. I -- I will. I think we can discuss that off the record as soon as I give -- give you a little bit of a -- a background. Or, well, what -- what we typically use in -- for -- for such

assessments.

THE FACILITATOR EHRLICH: My request is if you do have a sidebar meeting on that subject, and I presume it will be over the next couple of days, please -- we want to capture at least whatever the outcome is on the record, so please be prepared to at least report back a short summary of the discussion and it's outcome.

Lukas, do you have any other questions?

MR. LUKAS ARENSON: No. Thank you.

THE FACILITATOR EHRLICH: Okay, I'm going to ask Dave Tyson who's a consultant for the Review Board, if he has any questions for the Giant team.

MR. DAVE TYSON: Dave Tyson for the Review Board. I guess I can put it in a short phrase, which is, would the developer consider relocating Baker Creek, if Baker Creek was a risk to aquatic life and human health? I can go on.

I know that -- I noticed in the presentation this morning, that the predicted arsenic concentrations will exceed CCME guidelines for the protection of aquatic life. And it -- water quality is one (1) of his -- one (1) of the habitat components for fish.

So I don't see any indication on how long this will persist. Is this going to be a -- a chronic

addition to the cree -- or to the -- to the stream over a long period of time? Because then we're talking about, you know, creating habitat in what's going to be a chronically -- what would you say, impacted habitat.

And I guess, in addition to that, I understand there's currently a catch and release for Baker Creek, and normally catch and release is to protect the stock from the fishers. But in this case, the application is to protect the fishers from the stock. And if additional habitat improvements draw more fish into the creek, does not -- does that not increase the risk to the fishers? Because everybody obeys the rules, but also, we cannot expect those fish to only inhabit the creek.

From my own work I know that fish can travel a long distance in a short period of time. And people are fishing in Yellowknife Bay, so they can be exposed to what would be Baker Creek fish in a very short period of time before the arsenic levels decline in the fish.

So that was the question with the long -- would -- would you consider relocating Baker Creek in order to -- in order to address these situations?

MS. LISA DYER: So just on that, so the rest of the part was just kind of a commentary and the

question really is: Would we consider relocating Baker Creek? Is that -- is that the main question, or was there other questions about catch and release and -- and that in there, in your question?

It -- I wasn't quite sure where the question started and ended, just to clarify.

MR. DAVE TYSON: Dave Tyson. Yeah, essentially I asked the question and then I --

MS. LISA DYER: Okay.

MR. DAVE TYSON: -- you know, I -- I could have developed that and then --

MS. LISA DYER: Right.

MR. DAVE TYSON: -- asked the question. I mean, is this a sustainable management plan?

MS. LISA DYER: Thank you, Dave, and thank you for letting me clarify that. Right now this is part of the reason we are doing the sediment assessment that Hillary has talked about.

And we acknowledge that there is contamination in the -- that we know that the sediments are contaminated. And so that assessment was to give us a better handle on that environment and to help us make decisions based upon whether that environment -- whether there's something we can do to modify that environment, such as dealing with the sediments to improve the habitat

there.

And so part of that is working with that study -- using the information from that study to help us make decisions. I do not feel that -- that I can speak on habitat, whether habitat is acceptable or not to fish.

We are working with DFO, in a sense asking them to look at the results that we have to help guide us on whether this is acceptable habitat for fish or not. So we are using them as a resource to -- to assist us with that.

So at this stage we're looking at kind of the risks associated with the sediments. We're in initial stages. We don't have all the answers. And that information will help inform us of whether that environment is acceptable for -- as habitat or not.

THE FACILITATOR EHRLICH: I -- I'm just going to throw in a couple of comments. Of course, the Review Board -- some of the people who fish in Yellowknife Bay are doing so as part of a traditional lifestyle and there's subsistence fishing by non-Aboriginal and Aboriginal peoples. Yellowknife Bay is a pretty big place.

One (1) of the things the Review Board has to look at is potential impacts on traditional practices as well as effects on people in general. And, of course,

you're -- you're aware of that.

The other thing the Review Board has to look at is not just biophysical impacts and socioeconomic, but public concern is another thing. And so I think that, you know, some of the points in -- in Dave Tyson's comment there might apply in a few different -- a few different ways.

I don't see any people who I know as fish people, so to speak, you know, any -- any freshwater biology experts there with the exception of -- of Golder.

So, Hillary, does that mean that -- that fish questions can be directed to you now? I mean, I -- I -- in the agenda this seems to me to be the most appropriate place. But what I was wondering is for the large bodied species of fish that are breeding in -- in Baker Creek now, is there any regional shortage of breeding habitat for those species?

(BRIEF PAUSE)

MS. HILLARY MACHTANS: Hillary Machtans, Golder Associates. I can answer some, but not all. I -- I think I can just give one (1) preamble just -- just relating to what Dave was saying and I think if there's any human health questions, if that's okay, I'd refer

that to Bruce rather than myself.

One (1), I think we are aware in -- in the design that you don't -- and we've had this discussion with DFO many times -- you don't want to attract fish to a contaminated site if they can uptake the contaminants. That -- so that question has to be answered as part of the -- the options. So, at this point, we do not know if fish are taking up arsenic. It's my understanding from the risk assessment based on some -- from fish tissue data from large-bodied fish, that fish are not taking up the arsenic in Yellowknife Bay.

We do not know yet from Baker Creek if they are. Those samples are still pending. So we should have an answer for both small-bodied fish and large-body fish and bugs if they are actually taking up the arsenic.

So we have a case where you have high values in theory, but we don't know if they're bio-available, if you will. So that's more on the contaminant side.

From a habitat limiting perspective, we also don't know the answer to that question. Little is known about streams from a biology perspective in the North Slave region. And -- and Dave will please jump in if I'm -- I'm misstating that. So we -- we cannot completely state the value of Baker Creek relative to the

region or whether or not the habitat is limiting.

THE FACILITATOR EHRLICH: From that, it sounds like the -- what I heard as part of that then is that it -- there's no particular reason to think that it is especially important spawning habitat for the species that are in there, but it's not really understood because there hasn't been much done in those streams.

Is that right? I mean, is there a perception that it's an especially important breeding habitat for the fish that use it?

MS. HILLARY MACHTANS: And again, Morag might be better to answer that question -- Hillary Machtans, from Golder.

Is that okay?

MS. MORAG MCPHERSON: Morag McPherson, with Fisheries and Oceans. This was actually part of a question that we had that related to INAC's response or Giant Mine team's response to this IR 18. In terms of the statement saying there's an abundance of superior habitat, now I think something that, you know, is spelled out in the DAR in various ways is what is our understanding of the habitats in Baker Creek.

And there isn't just wetland habitat. It's a seasonal spring spawning stream that has broad ripple run areas. It has different types of substrates

and cobbles. It's three point five (3.5) -- or 2 kilometres of -- of this type of habitat available to species from Great Slave Lake and from Yellowknife Bay.

What we have been discovering over the last few years is more -- understanding more and more how much of the creek is being used to produce fish in terms of arctic grayling being one (1) of the most targeted, I guess, valued species. And the current catch and release regulations for -- from a fisheries management perspective are targeted on protecting the arctic grayling spawning population.

And there are currently objectives under fisheries management to aid in population recovery specifically for these gray -- Baker Creek arctic grayling population. Now, we don't know -- in terms of population information, we don't know the importance of Baker Creek to the overall grayling populations in Yellowknife Bay. There hasn't been that study done.

But what we do know from a habitat perspective, working with the Giant Mine team trying to understand natural analogues to Baker Creek, we can go to upper Baker to look at a natural analogue in terms of habitat. But in terms of availability of this habitat to species from Great Slave Lake, we have been unable to find a reference stream.

The Yellowknife River has been used under the environmental affects monitoring but, again, that's to do with substrate and things like that. But we've provi -- had some input from the Yellowknives Dene on a couple of known arctic grayling spawning sites with access from Yellowknife Bay, but they are not at any weight, any scale of what Baker Creek is.

So we -- we -- there's more work to be done. But based on the preliminary reconnaissance we've done, we haven't been able to find a similar type of stream with the same channel configurations and hydrologic regime and habitat available that Baker Creek has.

Based on a literature search, the closest river that we've been able to find where there's documented arctic grayling spawning is the Boleo (phonetic) River, which is about 70 kilometres east towards the East Arm.

So there's several rivers off towards the East Arm. The closest stream that we know of or river that has arctic grayling spawning with access from Great Slave Lake is -- to the west is the Kakisa River, which is in the South Slave. So in the North Slave region there are some rivers available over by the East Arm. But in terms of Yellowknife Bay, we -- we haven't been

able to find a similar system to Baker. There's more work that has to be done on that.

The Yellowknife River, there's documentation of potential grayling spawning but, again, it's a very different system, provides different availability seasonally. So that's our current understanding, and -- and that's why the -- it is a fairly unique creek. It provides some valuable habitat and it is limiting based on our knowledge right now in the context of Yellowknife Bay for sure. In the North Slave region we're unsure.

THE FACILITATOR EHRLICH: Thank you, Morag. That addresses part of the question I originally directed towards Giant, but the other part that I'm asking is -- I'll paraphrase:

In your view, would it be fair to say that the grayling which are using Baker Creek are the same -- the contaminated environment in -- in Baker Creek are the same grayling that would be caught by recreational fishermen or subsistence harvesters in Yellowknife Bay, or may be caught by subsistence harvesters or rec -- recreational fishermen in Yellowknife Bay?

MS. MORAG MCPHERSON: Morag McPherson, Fisheries. Yes, they -- they are a migratory species, so they move in, they spawn, and the adults move out into

the bay. So they come from the bay, they move into the creek, they spawn, and they move out. So the time that the adults are within the bay is approximately, I would say, three (3) weeks to four (4) weeks at most -- sorry, or in the creek. But they originate from the bay and they return to the bay after about one (1) month in -- in Baker Creek.

THE FACILITATOR EHRLICH: Thank you. Do we have any other questions from the Review Board's consultants? Doug Ramsey...?

MR. DOUG RAMSEY: Doug Ramsey. I have one (1) more question related to Baker Creek. Now, this goes to the presentation this morning that indicated that there was going to be an approximately 24 percent reduction in arsenic loading to Yellowknife Bay as a result of the remediation project. Now, in looking through the -- the mass flux information here, it appears that Baker Creek, in passing across the mine site, picks up approximately 260 kilograms per year of arsenic, and that 260 kilograms per year increase in passing across the -- the mine site represents a fairly significant percentage of the total loading that will continue into Yellowknife Lake -- or Yellowknife Bay post-remediation.

What is the possibility to eliminate some of -- some or all of that pickup perhaps by redirection

of Baker Creek away from the mine site?

MR. BRUCE HALBERT: Bruce Halbert, for the record. I'm going to refer back to a -- a summary slide I had, and on that slide it showed several breakdowns in the arsenic loading. Coming into the site was 220 kilograms from upstream, and I mentioned that from the west of -- of the creek, there was about 67 kilograms coming in. That's really an off-site contribution. So the total coming into the site -- and let's round it at seventy (70) -- is about two hundred and ninety (290) of the total is coming from, if you will, peripheral to the site. And the remaining portion is attributed to the site from -- from the four eighty (480) figure we had shown.

So in the longer term, as far as the arsenic load directly from the site itself, we were showing a figure of approximately 190 kilograms per year. And that was being very conservative, not allowing really any, if you will, other than a small reduction from the loading area in around the mill complex, which is a very contaminated area, and removal of soils in that area, it was assumed that the rest would stay steady-state, if you will, or constant over time. I don't think that's probably realistic but we took a conservative approach.

THE FACILITATOR EHRLICH: Doug Ramsey, do

you have a follow-up?

MR. DOUG RAMSEY: Doug Ramsey. Just to clarify, then, this represents -- you did not consider the potential for redirection of Baker Creek and the -- any resultant reduction in arsenic loading as -- as an alternative as part of the remedial project?

(BRIEF PAUSE)

MR. BRUCE HALBERT: Bruce Halbert, for the record. No, we did not try to factor that in. This drainage we're talking about is not directly to Baker Creek, right? So, I mean, this is drainage coming into -- into Baker Creek, so it was not taken into consideration.

THE FACILITATOR EHRLICH: Doug Ramsey, do you have a follow-up to that? While you're considering, I -- I'm happy to ask one (1).

So if Baker Creek was redirected, what proportion of the arsenic coming off the mine site -- no, how much percentage-wise would that reduce the amount of arsenic from the mine site entering Great Slave Lake?

MR. BRUCE HALBERT: Bruce Halbert, for the record. We -- we of course have not tried to -- attempted to answer that -- that specific question. But

-- but my -- my take on it would be simply that if we're redirecting the creek, it doesn't mean we don't still have drainage coming off the site, and residual flow going down Baker Creek. So presumably most of this load would still enter Back Bay, regardless.

THE FACILITATOR EHRLICH: The part -- it's Alan Ehrlich. The part that I'm unclear about though is if you've got a much smaller volume, you know, I mean it seems to me there may be opportunities to treat the residual, which don't exist for the treating the entire volume of Baker Creek if Baker Creek was released elsewhere.

Am I mistaken?

MR. BRUCE HALBERT: Bruce Halbert. It's a complex question, and this -- this loading that's shown coming in is not coming in in defined flow streams. So this is a dispersed, if you will, runoff that's entering the stream, so the concept to try and collect it is, while interesting, it would be a -- basically a -- you're -- at the end of the day collecting all of Baker Creek -- whatever remained of Baker Creek.

THE FACILITATOR EHRLICH: When you say "collecting whatever remained of Baker Creek," but with Baker Creek following a different course. I mean I guess what I was wondering about is if you collect it at the

point before Great Slave Lake where it's more or less whatever surface drainage has -- has converged, are there any opportunities there of interest to the Giant team?

MS. LISA DYER: Alan -- Lisa Dyer here. This isn't our current proposal for the project, and so I -- I feel that we're kind of putting Bruce a little bit on the spot to speculate some of these situations and conditions on the spot.

There's -- there's a lot of thought that needs to go into these considerations, so I'm just a little bit concerned about this line of consideration, when this isn't our proposed project at the time.

THE FACILITATOR EHRLICH: I -- I'm asking because you point out it -- it is a contingency that's on the table, which means under circumstances it could be part of the proposed project. But out of fairness, I -- I know you guys haven't had a long time to chew on it, so I -- I won't dig too much deeper.

I have heard, as well, what the Giant team said, that Baker Creek is one of the -- the larger unknowns and harder to predict things on the site, and that there is some risks that are associated with it. And I do understand that you're looking at alternatives, but it's not part of your -- your main proposal. I think that --

MS. LISA DYER: Yeah.

THE FACILITATOR EHRLICH: -- I think you guys have been quite -- quite clear about that.

MS. LISA DYER: No, I -- I appreciate -- I appreciate why you're asking these questions. I think they're logical questions to ask.

We haven't had a lot of -- what we've done originally -- or to date is we've gone out, we've done an aerial extent of the northern diversion, and we've looked at two (2) potential routes. We're really early on in the stages of looking at this. As I said, this came out because of a Section 37 directive: What is your contingency if things go wrong?

And we're looking at that. So it's the early stages of us kind of looking at this contingency. So to be fair to Bruce, he hasn't done all these calculations. We're more than open, if there's further lines of questioning, to provide the information if you feel it's necessary and useful. I just don't think we're going to be able to -- to provide that here.

THE FACILITATOR EHRLICH: By here, do you mean today, or do you mean --

MS. LISA DYER: Today.

THE FACILITATOR EHRLICH: -- this week or...?

MS. LISA DYER: Today.

THE FACILITATOR EHRLICH: Okay. Well look, if there's -- let -- let me think about if there's, you know, a more clear undertaking you might be able to take back with you before we -- we go any further

MS. LISA DYER: No, we appreciate the questions, it's just we don't have this information readily available to present.

THE FACILITATOR EHRLICH: Yeah, fair enough. Are there any other questions from the Review Board's consultants?

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Are there any other questions from Alternatives North, the City, or the Yellowknives Dene First Nation?

(BRIEF PAUSE)

MR. DENNIS KEFALAS: I have one (1) quick question.

THE FACILITATOR EHRLICH: That's Dennis Kefalas with the City of Yellowknife.

MR. DENNIS KEFALAS: Sorry, Dennis

Kefalas with the City of Yellowknife. I -- just regarding Reach number 1 or Reach 1, in the proposed -- I guess, improvements to Baker Creek. That runs right through our access to the Giant boat launch. What measures will be in place to ensure that we'll have -- continue to have access to the Giant boat launch?

THE FACILITATOR EHRLICH: Dennis, could you please repeat the -- the first part of that question?

MR. DENNIS KEFALAS: If you revert -- if you go back to page 4, I guess it's slide -- slide 7, it shows that the -- Reach 0, 1, and 2, with the proposed closure activities concerning Baker Creek and its improvements.

Reach 1, the actual diversion, actually goes right through our existing access road to the Giant Mine boat launch, and what measures will be put in place to ensure we continue -- continue to have access to the boat launch?

THE FACILITATOR EHRLICH: It looks to me like the Giant team needs a moment to discuss that. Nope, they're -- they're ready to respond.

MR. MARK CRONK: Mark Cronk. In response to that question, Dennis, we will maintain access to your city boat launch with those improvements to Reach 1.

MR. DENNIS KEFALAS: Thank you.

THE FACILITATOR EHRLICH: So I'd the -- the record to clearly show that the Giant team has made a commitment to maintain access to the city -- the city boat launch. Am I referring to that correctly? The -- the Giant Mine boat launch, regardless of the site changes that may happen as a result of improvements to Reach 1.

Is that correct, Mark?

MR. MARK CRONK: That is correct.

--- COMMITMENT NO. 1: Giant team to maintain access to the Giant Mine boat launch regardless of site changes that may happen as a result of improvements to Reach 1

THE FACILITATOR EHRLICH: Thanks. Again, that's -- that's the kind of thing in our technical sessions working the best. You've got a concern, it comes up, you guys completely put it to bed, say a little lullaby, and it's over.

Some of these other things, I understand why you might need more time to, you know, take it back and think about it. But I really do appreciate where you're able to, you know, to just deal with something on

the spot, or -- it's very helpful.

Okay, now. Kevin O'Reilly...?

MR. KEVIN O'REILLY: Thanks, Alan, it's Kevin O'Reilly, Alternatives North. Dennis actually took one (1) of my questions.

So, but I -- I wanted to have -- I have one (1) other question about that Reach 1. When I look at it on the slide 7, it looks like it would cut the corner right off the -- the road there and maybe even go through part of the -- I think it's the A-frame complex, that the mining heritage folks have identified as potential heritage buildings and so on.

So what's the plan for that?

THE FACILITATOR EHRLICH: A -- a brief answer now would be okay, but I think this would be a pretty good fit with a -- the surface planning as well, because it's sort of an intersection of both points. So if you can give a short answer now, great. If it's a long answer, let me know and we'll do it tomorrow.

MR. ADRIAN PARADIS: Adrian Paradis for the project team. A-shaft, regardless, is gone due to both structural and health and safety hazards, one (1) way or the other, so.

THE FACILITATOR EHRLICH: You see, Kevin, there, the question was about water, but the response was

about surface stuff. It all overlaps here. Do -- do you want to follow up with something else?

MR. KEVIN O'REILLY: Sure. Kevin O'Reilly, Alternatives North. Look, I'll confess to some conflict of interest because I'm a member of the Mine Heritage Society, or I pay my ten (10) bucks a year, but -- 'A' -- A-shaft, if it goes, it's probably not a big deal, but they've also I think expressed interest in one (1) or two (2) other buildings.

There's one (1) that they use to store a bunch of records and things in, so is that gone as well, or -- and I know this is in the early stages and you guys may have thought about it, but I'm just asking the question.

THE FACILITATOR EHRLICH: Giant team...?

MR. ADRIAN PARADIS: I -- Adrian Paradis for the project team. I don't want to waste too much of a very brief amount of time, but probably best to talk about this tomorrow, through surface.

THE FACILITATOR EHRLICH: Okay to the --

MR. KEVIN O'REILLY: Sorry, another question if I may, thank you.

THE FACILITATOR EHRLICH: Is it a follow-up to that one (1)?

MR. KEVIN O'REILLY: No, it's about

another Reach on Baker Creek.

THE FACILITATOR EHRLICH: Okay. Hold that thought, let's give the Yellowknives a shot at it too, but -- Lukas Novy from Arktis, on behalf of the Yellowknives. Did I understand that you have a question?

MR. TODD SLACK: I was -- I have a question about a different topic if Kevin can promise to keep it short, then, you know, I'll give him a shot, if he stays on the Reach topic.

THE FACILITATOR EHRLICH: At this time of day, short is all we can offer. Kevin, please go ahead.

MR. KEVIN O'REILLY: Look, I'm 5'6" already, so. Kevin O'Reilly, Alternatives North.

Reach 3 seems to go through the highway a couple of times, and presumably you want to maintain site access, so you're going to have to realign the -- the highway or the -- the -- the road access through there?

MR. ADRIAN PARADIS: That is correct, we will move the highway farther east to make room for the realigned creek. Mark Cronk.

THE FACILITATOR EHRLICH: Adrian Paradis, you're supposed to say your name before you say Mark Cronk's name.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Kevin's done.

MR. TODD SLACK: I also have a couple short ones and one (1) long one.

THE FACILITATOR EHRLICH: Go -- go ahead Todd Slack of Yellowknives.

MR. TODD SLACK: Todd Slack, Yellowknives Dene. I'm wondering if INAC is willing to make a ten (10) year -- or a review of best technologies for water treatment on a ten (10) year basis and monitor the commitment that they have in place in terms of the -- the block existing technology review?

(BRIEF PAUSE)

MR. ADRIAN PARADIS: Adrian Paradis for the project team. Not on a ten (10) year but we would do it on a twenty (20) year cycle. Part of the reason why -- sorry, I apologize. Part of the reason why, it would be it's coming close to the recapitalization at that time. So it would just make some sense to actually look at it and try make sure that best technologies are going to be put in place.

MR. TODD SLACK: I appreciate the answer. Todd Slack, YKDFN.

THE FACILITATOR EHRLICH: And Jeff Humble

from the City of Yellowknife has a question.

MR. JEFF HUMBLE: Thanks. Jeff Humble, City of Yellowknife. I'm not sure, I think this might overlap a bit with tomorrow, but it does -- it was in the water IRs and that's with regards to the shoreline tailings.

And the City is undergoing a -- a harbour plan that we've been in consultation for several years, and one (1) of the -- one (1) of the preferred sites for a marina is the Giant Mine site and it is being used for mooring purposes.

We know in consultation with various stakeholder groups that there is ongoing redevelopment work with regards to the -- the Great Slave Cruising Club docking facilities. We know that we may need to look at doing some dredging there in the future to facilitate the marina. And the response in the IRs was it was beyond the scope and that it could be addressed at a later stage with environmental assessment.

I was just wondering how that would be addressed at a future date if the City was to proceed on a detailed planning process, the likelihood of that occurring and then who would bear the expense should there be any additional remediation work related to -- to those undertakings.

THE FACILITATOR EHRLICH: Mr. Humble, this sounds suspiciously similar to a question that was also raised by a different party. I -- I mean -- suspiciously -- it's not suspicious -- of -- of -- this is my ill attempted humour late in the day.

But the Yellowknives asked a similar question which had to do with potential effects on future uses of the marina, and the Review Board's response on that was that the Review Board wasn't comfortable including in the scope of EA sort of distant theoretical projects that haven't been applied -- for which there's been no application to date.

If your question applies specifically to not the effects of Giant Mine, but specifically to the effects of this particular project on some aspect of the environment or -- or people, could you rephrase it that way?

MR. JEFF HUMBLE: I guess if the City determined as the outcome of our harbour plan that Giant Mine is the preferred site for the marina, we are like to make a significant investment in that site. Would that then be deemed sufficient to initiate a process to -- to begin further work in terms of what environmental work would need to occur in conjunction with the remediation plans.

THE FACILITATOR EHRLICH: I'm still a tiny bit fuzzy on this, but you're saying that if the City went ahead and proposed -- proposed a new marina development within that area, would that be enough to get the Giant Mine team talking with the City team about how it could go ahead?

Is that -- is that it? I -- I just feel like I might have misunderstood that again.

MR. JEFF HUMBLE: Yeah, sorry. Jeff Humble, City of Yellowknife.

Yeah, essentially I believe that catches the -- the gist of it. We know from talking with the -- the engineering team that's part of our project team doing the -- the harbour study that there may need to be dredging work, for example, that needs to occur. Obviously, that's going to have implications on the -- on the shoreline tailings that are there. So who holds the -- the risk, the liability if -- if we look to undertake something to that effect?

And can we even undertake it in a -- in a time frame of what's proposed for the remediation plan? Or do we just simply have to wait until this process is concluded and then go through a separate environmental assessment to determine if such a project is feasible?

I guess it's a scope question, but it

could also be a development team question in terms of whether the developer has a proposal that -- that we could work with them on something like that, or whether it's something that we could look at in terms of the scope, in terms of the City making a submission to the -- to the Board.

THE FACILITATOR EHRLICH: Well, the Board has pointed out that for theoretical developments that aren't proposed at this time, specifically with regard to the marina area in response to the Yellowknives' question, that that is not within the scope of the EA, didn't make any conclusions about projects that are proposed at this time. So you're -- you're welcome to send the Board a letter asking if -- if that would be -- if the same answer that the Yellowknives got applies when the project has been proposed.

The other question that I think I heard is: We're the Giant team and I'm going to assume it's outside of the particulars, outside of the EA process, but would the Giant team be willing to sit down and talk with the City planning team about the proposed marina so that you can harmonize where possible.

MS. JOANNA ANKERSMIT: Yeah, I was just going to say, the Giant team is very open to having discussions and working collaboratively with the City. I

think it's a theme that we're trying to let people know that it's -- it's our intention to work as collaboratively as we can with people and, of course, more than happy to sit down and have those discussions.

Joanna Ankersmit.

THE FACILITATOR EHRLICH: Mr. Humble, it's -- it's Alan Ehrlich again.

So would you be willing to have those discussions with the Giant team outside of the EA process?

MR. JEFF HUMBLE: Jeff Humble, City of Yellowknife.

Yeah, thank you very much. That's a step in the right direction. I think we -- we also share similar community needs with the YKDFN on that matter. So we probably would like to involve them and perhaps Alternative North on -- on those discussions going forward. So we look forward to that. Thank you.

THE FACILITATOR EHRLICH: Does that pretty much suit what the Giant team had in mind?

MS. JOANNA ANKERSMIT: I have a feeling we'll be talking to lots of people, so, yes.

THE FACILITATOR EHRLICH: All right. It sounds like we score another point for the technical sessions. But at least there's a venue for this to be

resolved.

I don't see how talking to the Giant team outside of the EA process in any way limits or prevents you from asking for a clarification on the scope of the EA for a project that is proposed, if -- if that's the course that the City wants to follow. I -- I just want to be clear on that. It's really up to the City as a party how -- how it wishes to proceed.

But I'm certainly happy to hear the openness amongst both parties to discuss it and try and sort it out in its own meetings.

MR. JEFF HUMBLE: Just in closing, Jeff Humble, City of Yellowknife. Thanks.

And I suppose it relates a bit to tomorrow's discussion too regarding the land matter, but that's certainly a -- a topic of very high interest on behalf of the City of Yellowknife, so perhaps you -- you may hear a little bit more on that tomorrow. Thanks.

THE FACILITATOR EHRLICH: Okay. We look forward to it.

And, Kevin, did -- you had another question which was parked, right?

MR. KEVIN O'REILLY: Thanks, Alan. Kevin O'Reilly, Alternatives North. I got a few questions, but I think I'll ask an -- an easy one. Maybe it's easy.

Just what happens to the sewage onsite during the construction implementation phase, and then the longer term? Are you going to keep putting it in with the tailings, or is it going to be trucked, or what?

MR. ROBERT BOON: Yeah, the -- the current plan with the -- Bob Boon speaking. Yeah, the current plan with the water treatment plant is to have truck-out sewage from the plant.

MR. KEVIN O'REILLY: Sorry. Kevin O'Reilly, Alternatives North. Is that for -- does that include, like, construction implementation phase and the longer term, or is it -- I see, yes, but maybe Mark wants to put that into the mic. Thanks.

MR. MARK CRONK: Mark Cronk. The demolition sequence of all the buildings is not specifically laid out at this point in time. There is only one (1) building that provides real sewer and water at this point in time. Until we schedule when that comes down, it'll affect a little bit about how we manage it.

Given that all the buildings on the site are coming down, general assumption would be we're trucking everything offsite, yes.

THE FACILITATOR EHRLICH: Kevin, do you have another question on this subject? It's going to be --

MR. KEVIN O'REILLY: A different topic.

THE FACILITATOR EHRLICH: Well, we -- we've got about three (3) minutes before the wrap-up begins. Perhaps it's a topic that's better carried over for tomorrow morning, like some of DFO's questions will be. We will still be continuing with the subject of water for the first part of tomorrow, before the developer's presentation.

Can you live with that?

MR. KEVIN O'REILLY: Sure. Maybe this is a quick one. Can I try it? Kevin O'Reilly, Alternatives North. In response to Alternatives North IR Number 14, you said that the diffuser design would be ready, I think, in the fall of this year. And is that design -- is that report what we've seen today, or is there a different report, and is it going to get submitted to the Review Board, and when?

THE FACILITATOR EHRLICH: Would the Giant team like to respond to that?

MR. KEVIN O'REILLY: Sorry, Alan. It's Kevin O'Reilly, Alternatives North. It's at the very end of our IR response number 4, or their -- their response to the IR Number 14. It says:

> "Results will be presented in the preliminary design report expected for

the fall of 2011."

I think we're almost there, so I'm just wondering when.

THE FACILITATOR EHRLICH: So the question to the Giant team is: Was the report that's mentioned in the IR response the same as what you have presented today?

MR. ADRIAN PARADIS: Hi. Adrian Paradis for the project team. What we'll do is we'll incorporate that into the undertaking for the Review Board to describe the differences between the -- what was in the DAR forward in design where the changes are, and we'll provide a supplemental onto that undertaking to talk about the -- the diffuser.

THE FACILITATOR EHRLICH: Kevin, does that work for you?

MR. KEVIN O'REILLY: Sorry. Kevin O'Reilly, Alternatives North. Just so I understand it, so then there's going to be like an appendix or something? You're actually going to attach the preliminary design report, or is it just going to be like a three (3) page summary or -- I'm just trying to understand if it's a separate report, you've already almost got it in hand, or whether it's just some sort of summary.

MR. ADRIAN PARADIS: It'll be a summary of actually what the -- where we're at with the diffuser at this point.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Kevin, are you okay with what you just heard?

MR. KEVIN O'REILLY: Sorry. Kevin O'Reilly, Alternatives North. If there was a full report, I think that would be better, but if it's just going to be a summary, we'll take what we get, and if we have to ask an IR about it, we -- we may have to. So thanks.

THE FACILITATOR EHRLICH: How does the Giant team feel about submitting the whole report electronically for the public record?

(BRIEF PAUSE)

MR. MARK CRONK: Mark Cronk. Kevin, the report is not ready yet. They're coming in in draft as we speak right now. The report also deals with internal issues, cost estimates and things like that, that we don't feel is appropriate to make a matter of public

record.

So we will strip out the details that I think you'll want to see and submit them to you.

MR. KEVIN O'REILLY: Okay.

MR. MARK CRONK: Okay.

THE FACILITATOR EHRLICH: Okay. I'm going to wrap it up now. I'd like to thank you all for what has been I think another productive and interesting day. I think that even people who knew a fair bit about the project learned more about the project. And I do feel like there was some pretty constructive dialogue. Not that we've covered everything having to do with water, but I'm convinced that it won't take much longer tomorrow to get caught up with that.

How do people feel about starting at 8:30 tomorrow instead of nine o'clock, as the agenda shows? Is there anyone who needs to be here for the discussion on water who can't make it for 8:30 in the morning?

MR. LISA DYER: I cannot make it for 8:30 in the morning and neither can Adrian Paradis.

THE FACILITATOR EHRLICH: In that case, is nine o'clock...

MS. LISA DYER: We do. We have a date with the media, so we've committed to an interview. So, unfortunately, we're a little bit committed there. And

so that should -- don't start any rumours about Adrian and I. Lisa Dyer, that is. Yeah. Okay, you guys, it's getting late in the day.

THE FACILITATOR EHRLICH: They're not rumours until they're reported in the media.

So, in that case, let's stick with nine o'clock in the morning as our start time. We're going to try and keep up the spritely pace that we picked up around 2:30 here and just try to make sure that we get through everyone's questions on all these subjects.

In terms of tasks and undertakings, there weren't as many today as there were before. I believe those people who are involved and who have -- who have offered to do them know what they are.

A short recap: Anyone here who asked for an undertaking, we can get it in your own words. I guess I'll start out with -- we know that there was one (1) from our own team. Lukas Arenson asked for some questions on how new models regarding Giant have been considered, and also how they've affected project design, in other words, current understanding.

That's pretty much what Giant team took away from that. Is that correct?

MR. ADRIAN PARADIS: Yes. Adrian Paradis.

THE FACILITATOR EHRLICH: And for the record, Kevin O'Reilly just acknowledged yes to the same subject. Is that -- is that right?

MR. KEVIN O'REILLY: Sorry. Kevin O'Reilly. I was asleep at the wheel. What was the question?

THE FACILITATOR EHRLICH: Hold on one (1) second, please.

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: Sorry, that was me going backward. I'm reading a note that says, "For the record, Kevin O'Reilly acknowledged yes," which is generic.

Turns out that it meant Kevin O'Reilly nodded but did not say into the microphone that, yes, a summary report for the time being would be okay regarding the diffuser design with costs removed, and that's what Paul noticed you nodding yes to, but it didn't get captured on the record.

MR. KEVIN O'REILLY: Sure. Kevin O'Reilly, Alternatives North. If the -- if what we get is the report and stripping out the costs. And look, I understand you don't -- that's proprietary stuff. That's

fine. But I think more than just a couple of pages on the diffuser design would -- would be really helpful in understanding what went into the design of it. So thanks.

THE FACILITATOR EHRLICH: And that's something that the Giant team has undertaken to provide. When will you be providing that by?

November 14th is the date for our other written undertakings. Are you talking about something this week or something by the undertaking date?

MR. ADRIAN PARADIS: November 14th or before.

THE FACILITATOR EHRLICH: Are there any other -- there may be other undertakings that we find when we're rereading the transcript. But off the top of people's heads, are there any other undertakings people can recall just to remind everyone about them now?

MR. TODD SLACK: Sorry, I don't know if you were talking just undertakings or commitments or tasks.

THE FACILITATOR EHRLICH: Let's throw tasks in there as well, tasks being the phrase we're using for things that we hope will be resolved during the technical session; undertakings for written homework for November 14th.

MR. TODD SLACK: Todd Slack, YKDFN. There was a task to provide from -- I can't remember if the date was this afternoon or tomorrow, and I'm fine with either -- a commitment in terms of providing a timeline response on further ice studies, along those lines. I -- I can't remember the exact text of the commitment, but I think I'm paraphrasing it fairly.

THE FACILITATOR EHRLICH: As I recall, it was that the Giant team was going to try to give the Yellowknives Dene more information, a more detailed answer regarding ice cover around the diffuser. We originally said before the end of the day, but because we're out of time, is that something that you're planning to do tomorrow?

MS. LISA DYER: Well, I think, by having John come back and talk to -- about diffuser design after lunch, we tried to provide that information after lunch.

THE FACILITATOR EHRLICH: So, Todd Slack, it -- it sounds like you've actually got the more detailed information. Is there more that you need to understand about ice?

MR. TODD SLACK: Yeah. Sorry. The commitment that I remember, or the task that I remember, was that there was ongoing research, and I was asking -- and I think that this is a fair summarization -- that --

as to when that further information would be made available during this EA, further ice study, ice business?

MS. LISA DYER: So, as John mentioned, there's going to be kind of calibration of the model done by gathering information from January through to March, and so that's to calibrate the model, and results of that, I think, would not be ready until April or May.

THE FACILITATOR EHRLICH: And according to our current schedule for this EA, hearings are likely around the end of March, assuming there are no unforeseen delays, so it's -- it's worth remembering that when you -- you hear that response.

If there's anything else on that subject, let's defer it till tomorrow morning. I'd like to thank Trevor for the sound and Wendy for the transcription.

We have one (1) more item from Nathan Schmidt.

MR. NATHAN SCHMIDT: Yeah, sorry. Nathan Schmidt. We had committed to talk to the modeller who did the diffuser modelling and get back to Lukas on the thermal convection question. I think we got that resolved offline?

MR. LUKAS ARENSON: Yes. Lukas Arenson. We -- we got that offline where we had a quick

discussion, and I think that could be put to bed.

THE FACILITATOR EHRLICH: So you're satisfied with the response? As I recall, you were going to give a short report on that discussion. Can you do that tomorrow morning?

MR. NATHAN SCHMIDT: Nathan Schmidt. Yeah, I'd be fine with that.

THE FACILITATOR EHRLICH: I see Lukas Arenson nodding, as well.

Kevin, you have a point?

MR. KEVIN O'REILLY: Thanks. Kevin O'Reilly, Alternatives North. There was to be some further discussion on what the developer's doing in terms of this wetting research, and I know that was raised by our guy when he was here. I gave the cell phone number to those folks, and I don't think that conversation -- maybe it did take place, but I'm not sure that that one was signed off or resolved.

And I also raised the issue about polluter pays in terms of water -- water quality, water treatment for the city, and that -- that's not going to get resolved. So I just wanted to get that out on the record again.

THE FACILITATOR EHRLICH: Right, but for the -- the last time that you said it's not going to get

resolved, I don't remember any particular tasks or undertakings that were --

MR. KEVIN O'REILLY: No, no.

THE FACILITATOR EHRLICH: -- assigned to it.

MR. KEVIN O'REILLY: No. Just an unresolved matter. Thanks.

MR. MICHAEL NAHIR: It's Mike Nahir. Just on the -- I had a brief email chat with Bill Horne, and we're going to have a chat tomorrow. So there -- there's been some internal discussions from our side, and we're going to make a proposal to Bill and then see if that's acceptable.

MR. KEVIN O'REILLY: Sorry. Kevin O'Reilly, Alternatives North. I guess I'd like that put on the record, whatever the -- the outcome of that is. So, Michael, whether it's going to be a little memo or a set of email correspondence, whatever, it should -- I want that file, please.

MR. MICHAEL NAHIR: Sure, I'll -- I'll put that to file. Mike Nahir.

THE FACILITATOR EHRLICH: Nathan Schmidt of the Giant team had a comment? Oh, okay. Apparently it's been resolved. Then we're going to break and we're going to start again at nine o'clock.

A couple of minor items, first of all, Lisa's hand has never been higher. Lisa...?

MS. LISA DYER: Lisa Dyer, thank you. Just to clarify, are we going to be -- I mean, we've got a large group of people here and do we need everyone? And I'm -- and I'm really thinking about kind of cost savings. Do we need to have the whole panel here tomorrow or -- to answer questions on water, or are the questions that are left specific to diffuser or a topic or Baker Creek, just so we can -- I'd like be able to say to people they can go and work on other things if we don't necessarily need them because I don't want to tie them up for a full day.

THE FACILITATOR EHRLICH: DFO, what is the breadth of topics you'd like to cover tomorrow with respect to the matters that have been carried over from today?

MS. MORAG MCPHERSON: Morag McPherson with Fisheries. The questions we had remaining was one (1) relating to clarifying some of the information related to fish and fish habitat in Upper Baker Creek, above the Giant Mine site.

That was in an Information Response to Alternatives North IR 6. And leading -- that is related to and leading into some questions we have in terms of

the North Diversion contingency plan and information around that and when it'll be submitted.

THE FACILITATOR EHRLICH: Thank you. And, Kevin, what subjects were you talking about carrying over? Or, Environment Canada, do you have additional questions that you are carrying over from today?

MS. AMY SPARKS: Amy Sparks, Environment Canada. I have an additional follow-up question on Baker Creek.

THE FACILITATOR EHRLICH: And I think it's safe to say there will be a few other questions on Baker Creek tomorrow morning as well, so you don't want to discharge everyone who's -- who's dealing with Baker Creek.

And, Kevin, do you have an additional idea of what kind of a subject that's carried over from today they'll need people for tomorrow?

MR. KEVIN O'REILLY: Thanks, Alan, Kevin O'Reilly. Here's the -- the -- the areas that I want to pursue some questions. The North Diversion contingency, the water treatment plant sludge disposal, and what the alternative methods for stratification sampling may be. Thanks.

THE FACILITATOR EHRLICH: Okay. I think we're going to try to -- to focus the carryover items in

the first hour or hour and a half of tomorrow and -- and then start on with the surface remediation matters. So I hope that provides some sort of scheduling clarity. Adrian Paradis...?

MR. ADRIAN PARADIS: Adrian Paradis for the Giant team. Water treatment sludge disposal we'll wind up talking about through surface regardless.

THE FACILITATOR EHRLICH: Thank you for that. Kevin, please go ahead.

MR. KEVIN O'REILLY: Thanks. Sorry, Alan. Kevin O'Reilly, Alternatives North. I misspoke. I'm not talking about sludge disposal. I want to know what the chemistry of it is, the stability, toxicity, that sort of thing, which may have implications for disposal, but I want to have a better understanding of what it is, thanks.

THE FACILITATOR EHRLICH: But we're still talking about sludge, which to my understanding fits into tomorrow's scheduled agenda item no problem. And I see a lot of nodding.

Before you leave, please take your books off the table and put them on your chairs, because it makes it easier for them to clean up. We have a --

MR. TODD SLACK: The Yellowknives Dene have four (4) questions tomorrow.

THE FACILITATOR EHRLICH: And does the City of Yellowknife have additional questions regarding water treatment for tomorrow?

(BRIEF PAUSE)

THE FACILITATOR EHRLICH: I -- I don't see anyone saying yes, so we'll assume they -- they don't, unless we find out otherwise.

MS. LISA DYER: Sorry, Alan, I didn't hear what topics the Yellowknives Dene's questions were associated with.

MR. LUKAS NOVY: Lukas here, there's one (1) for Baker Creek. And for you, Todd...?

MR. TODD SLACK: Todd Slack. I have one (1) on fish, and specifically IR 13, for the YK Dene. And then two (2) on Baker Creek, North Diversion, and volumes of rock cuts.

MS. LISA DYER: Lisa Dyer. Excellent, that -- that's very helpful for us and thank you for taking the time to share what your additional questions and the topics they're on.

THE FACILITATOR EHRLICH: Thanks. So if everyone could please remember to put your books off the table and onto your seats so they can clean up. And the

room will be locked in the evening, and we'll see you tomorrow at nine o'clock. Thanks.

--- Upon adjourning at 5:00 p.m.

Certified correct,

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Wendy Warnock, Ms.