0001

NUNAVUT IMPACT REVIEW BOARD
FINAL HEARING CONFERENCE FOR THE JERICHO DIAMOND PROJECT
JANUARY 5, 2004 VOLUME 1
LOCATION: CAMBRIDGE BAY PUBLIC HALL
CAMBRIDGE BAY, NUNAVUT

NIRB FILE NO. 00MN059

PANEL:	
Elizabeth Copland	Chairperson
Peter Paneak	
Albert Ehaloak	
Martha Akoluk	
Mary Avalak	
BOARD STAFF:	
Bill Tilleman, Esq.	Legal Counsel
Stephanie Briscoe	Executive Director
Dionne Filiatrault	Nunavut Water Board
Zainab Moghal	Technical Advisor
Jordan DeGroot	Technical Advisor
Gladys Joudrey	Environmental Assessment Officer

0002

Jorgen Komak	Environmental Assessment Officer
Josie Tucktoo-Lacasse	Interpreter/translator
Mary Hunt	Interpreter/translator
Edna Elias	Interpreter/translator
Henry Ohokanok	Interpreter/translator
COURT REPORTER:	Tara Lutz

0003

INDEX

0004

(COMMENCED AT 9:05 A.M.)

CHAIRPERSON: Good morning. Before we start this hearing, I am going to ask Peter Paneak from our board to say the opening prayer. Can we please stand up.

(OPENING PRAYER)

OPENING REMARKS AND INTRODUCTIONS:

CHAIRPERSON: On your ear things, number 2 is English, number 4 is Innuinaqtun, 5 Inuktitut. And if you have any questions, you can see Andrew and he is in the back.

Good morning, and happy New Year to everybody. Welcome to the final hearing conference for the Jericho Diamond Project.

We are sorry about the recent delay in proceedings for the original hearing dates in December due to the flu situation in the Kitikmeot region. We are happy, finally, to begin this hearing.

My name is Elizabeth Copland. I am the chair of the Nunavut Impact Review Board, I live in Arviat. And I have been with Nunavut Impact Review Board for about just over eight years.

Now, for a brief description of the application, this is NIRB file number 00MN059. The project being proposed by Tahera Corporation is for

0005

a diamond mine, the Jericho diamond mine located in

the Jericho watershed at the north end of Contwoyto Lake. The goal of the project is to extract the Jericho kimberlite reserve by way of open pit and underground mining. Full scale extraction is expected to be in 2005, with the mine to close and be reclaimed in 2013.

The mine will engage in continued exploration and development of prospective kimberlite pipes in the area with the possibility of extending the operating life of the mine past the eight-year period currently projected. And the project, while utilizing some existing infrastructure, will require the construction of additional elements associated with mining and production.

Okay. And I will introduce the Board members and Staff. In attendance today are the following Board members, but please note Peter Akkikungnaq, our Board member, has declared conflict in participating in our hearings as he is the mayor of Gjoa Haven.

To my left is Albert Ehaloak.

MR. EHALOAK: My name is Albert. I have been with the Board for a year and a half. I live here in Cambridge Bay, born and raised. I would like to welcome everybody to Cambridge.

0006

CHAIRPERSON: And to my right is Mary Avalak.

MS. AVALAK: I'm Mary Avalak. I am a Board member for Nunavut Impact Review Board. I like my job as a Board member, and I would -- representing the Kitikmeot.

CHAIRPERSON: And Martha Akoluk.

MS. AKOLUK: Good morning, and happy New Year. Martha Akoluk from Bathurst Inlet. I have been with the Nunavut Impact Review Board for three years now, and thank you. Welcome.

CHAIRPERSON: Peter Paneak.

MR. PANEAK: Happy New Year, and welcome. I got this membership in the last two years. I am very dedicated to my job as one of the Board members. And also my colleagues, my fellowship I work with, I thoroughly enjoy working with them. Thank you for having me here.

CHAIRPERSON: And we also had a board member Zack Novalinga from Sanikiluaq, he was just appointed in December, but the Nunavut Impact Review Board received unfortunate news in December that Zack died during surgery in Winnipeg.

And Nunavut Impact Review Board staff members are Stephanie Briscoe, our executive director; Mr. Bill Tilleman, legal counsel; Zainab Moghal,

0007

technical advisor; Jordan DeGroot our technical advisor; Gladys Joudrey, environmental assessment

officer, Jorgen Komak, environmental assessment officer; Josie Tucktoo-Lacasse, interpreter/translator; Mary Hunt, interpreter/translator; Edna Elias, is she here this morning? No. Henry Ohokanoak, interpreter/translator, and Tara Lutz, our stenographer.

MS. BRISCOE: We would like to recognize James Panioyak as well who is filling in for Edna who is weathered out in Kugluktuk.

CHAIRPERSON: Good morning. Official transcripts of the hearing will be prepared for Board use only.

I would like to make a special introduction of Dionne Filiatrault, who is the senior technical advisor for the Nunavut Water Board, Filiatrault, sorry. And Dave, who is a technical advisor to the Nunavut Water Board. Dionne will be here to ask questions in relation to the Water Board mandate issues, not to gather evidence, but to coordinate with NIRB to make its decision better.

Our method of advertising, the Nunavut Land Claims Agreement states that Nunavut Impact Review Board shall take all necessary steps by way of

0008

notice, release of information and scheduling and location of hearings to provide and to promote public awareness of and participation of hearings. We have tried to do that in the Jericho case by notifying all of you by writing and by public advertisement of this final hearing conference.

A copy of the correspondence between NIRB, the proponent and parties in what we call a public registry is available at the back table and also available at our NIRB office in Cambridge Bay. Please see Gladys at the back table or Zainab at the NIRB office.

We are here to conduct this meeting under the authority of the Nunavut Land Claims Agreement, Article 12, Part 5. Briefly the Nunavut Impact Review Board works to do impact assessment, and its primary objective is to protect and promote the existing and the future well-being of the residents and communities of the Nunavut settlement area and to protect the ecosystemic integrity of the Nunavut settlement area.

To summarize Article 12, Nunavut Impact Review Board's mandate is to use both traditional knowledge and recognized scientific methods in an ecosystemic -- ecosystem analysis to access on a site-specific and regional basis the environmental,

0009

cultural and socioeconomic impacts of those proposals for which it has responsibility.

The Nunavut Impact Review Board's steps to

date for the Jericho Diamond Project: On November 2, 2000, the Nunavut Impact Review Board determined that the Jericho Diamond Project proposal was insufficiently developed to determine proper screening and should be returned to the proponent for clarification. On April 5, 2000, the conformity analysis and final EIS guidelines were released by NIRB. On January 12, 2001, Tahera Corporation submitted the draft EIS. On February 7, 2001, the Board advised Minister Robert Nault that the Jericho Diamond Project required review under Part 5 or 6 of the Nunavut Land Claims Agreement. And in reply on March 14, 2001, Minister Nault agreed to refer the project to NIRB for a Part 5 review.

Nunavut Impact Review Board then held public pre-hearings in Cambridge Bay, Kugluktuk and Gjoa Haven in June of 2001. Tahera Corporation submitted the final Environmental Impact Statement in January 21st, 2003. Final public hearings were initially scheduled from May 26th-30 but were postponed due to numerous requests for additional information.

0010

Final public hearings were then rescheduled from December 1 until 5, 2003, but were postponed due to flu epidemic in the Kitikmeot region. And final public hearings have now been scheduled for this week, January 5 to 9, 2004, and were -- and will occur in Kugluktuk, Cambridge Bay and Gjoa Haven.

There were certain matters that the Nunavut Impact Review Board have paid special attention to, and we highlighted this in the November 14, 2003 letter.

First, we asked that all documents be translated for the upcoming hearing. Second, please share all written submissions with other parties, this is not the responsibility of the Nunavut Impact Review Board. Finally, where NIRB makes information requests of parties, and, in particular, the proponent, as it will do after this hearing conference, make sure you provide all information that you can.

Nunavut Impact Review Board matters to be considered at today's review are as per Article 12.5.5 of the Nunavut Land Claims Agreement. If you have any questions regarding this section, please ask the staff who can direct you to the Nunavut Land Claims Agreement.

0011

For our roll call, please, if you can introduce yourself, and if you have any witnesses. The Tahera Corporation.

MR. MISSAL: Madam Chair, we are here in

front of you this morning, and we have a number of consultants with us today. I will go into greater detail introducing the consultants during my presentation, if that's satisfactory to you.
CHAIRPERSON: Thank you. The Kitikmeot Inuit Association.
MR. DONIHEE: Good morning, Madam Chair. My name is John Donihee. I am counsel for the Kitikmeot Inuit Association. Mr. Charlie Evalik, the president, will join me shortly, and time dependent and weather dependant, we hope perhaps to have Jack Kaniak and Geoff Clark from the Kitikmeot Inuit Association lands department with us as well. Thank you.
CHAIRPERSON: The Nunavut Tunngavik Incorporated --
MR. INTULUK: Thank you. Please feel welcome to Cambridge Bay. I thank you, everyone, ladies and gentlemen. I'm James Intuluk, I'm the vice-president for NTRA, first vice-president of NTRA. And here with me is Stefan Lopatka, he is the senior advisor for NTRA for water-related and

0012

land, environmental water and marine management. And George Hakongak is also here, environmental coordinator, who will be doing the presentation on behalf of NTRA.
NTRA is the main Inuit organization that represents all Inuit in Nunavut on land claim issues.
CHAIRPERSON: James?
MR. INTULUK: Their interests --
CHAIRPERSON: Can you just please stick to who is here?
MR: INTULUK: Like I said, Stefan Lopatka, our senior advisor, and George Hakongak will be doing presentations on behalf of NTRA. Thank you.
CHAIRPERSON: Government of Nunavut? Go ahead.
MS. MOGHAL: I think there will be a representative here on Wednesday from them.
CHAIRPERSON: Okay. I have got the wrong piece of paper then. Sorry about that.
Department of Fisheries and Oceans?
MS. CRITCH: Good morning, Madam Chair. My name is Stephanie Critch, and I am a habitat biologist with DFO. And with me is Julie Dahl, fish habitat chief in -- from Yellowknife. And

0013

Julie Dahl will be doing the presentation for DFO.
CHAIRPERSON: Thank you. Heath Canada? Anybody from Health Canada? Not yet. Department of Indian and Northern Affairs?
MR. TRAYNOR: Thank you, Madam Chair. My

name is Stephen Traynor. I'm currently the active regional director for Indian and Northern Affairs in the Nunavut regional office. With me today from our office in Iqaluit is Robyn Abernethy-Gillis, Carl McLean, Paul Partridge, Norm Cavanagh, is our legal counsel. And with us also are some consultants who will assist us making our presentation to the Board. We have Ben Wheeler, Eric Denholm, Holger Hartmaier and Dale Osmond. And we will identify those further when we prepare our intervention. Thank you.

CHAIRPERSON: Okay. Environment Canada? Not yet. Natural Resources Canada?

MR. DYKE: Thank you, Madam Chair. My name is Larry Dyke. I represent Natural Resources Canada. And if I get a chance to, I will be making a presentation on behalf of the Geological Survey and the Canada Centre for Mining Technology. Thank you.

CHAIRPERSON: The Yellowknife Dene First Nations? Not here yet. And local hamlet, anybody

0014

from the hamlet council of Cambridge Bay? Any citizens from Cambridge Bay, Kugluktuk or Gjoa Haven? Not this morning.

I'll just read out the procedure for the hearing. I would like to outline the procedures for today's hearing. At today's hearing we wish to stress the principle of flexibility in our proceedings. In our procedure, Section 12.2.24 of the Nunavut Land Claims Agreement allows us to do this while giving due weight to Inuit communication and decision making.

In general, the Board's procedure for this hearing is the applicant, Tahera, presents its material, first focussing, of course, on the environmental impact statement. We should point out the evidence will be sworn or affirmed. Our counsel, Mr. Tilleman, will assist the Board in this regard. Then anyone with questions will have a chance to ask -- to ask Tahera those questions after they make their presentation. The Board Staff may ask questions, and, finally, the Board itself may ask questions. Intervenors will have a chance to present their case, and Tahera may ask questions. As before, it is only the Staff and the Board.

And when we have elders in our hearings, they

0015

can speak up at any time. At the end of the hearings, all parties will have a chance to make closing remarks. First the elders will make their comment, second the citizens, and/or intervenors and then Tahera.

And after Gjoa Haven, I believe Gjoa Haven is

Friday. After Gjoa Haven, I will close the hearings and we will send the Board's report to the Minister as per Section 12.5.6 of the agreement. Essentially we will inform the Minister the our assessment of the project and its impacts. We will also determine whether or not it should proceed, and if so, under what terms and conditions reflecting our ecosystem and other land claims objectives as stated previously.

As far as timing is concerned, the Board hopes to send its report and recommendations within 30 days of the close of the hearing in Gjoa Haven.

Upon receipt of the Nunavut Impact Review Board report, the Minister has various options, and these are found in Section 12.5.7 of the Nunavut Land Claims Agreement. What this means is that the final decision is for the Minister of the Nunavut Land Claims or the INAC to make.

Please keep your comments to 30 minutes or less, though we will give more time for the

0016

proponent. Remember, we have read all of your file statements, so do not repeat yourself except to summarize. If the Board determines the project shall proceed, the Nunavut Impact Review Board will recommend terms and conditions reflecting our objectives under the land claim. Parties, if you wish -- if they wish, can offer comments on the proposed terms and conditions, but this should be done during the week's hearing.

And now we can begin with Tahera. Excuse me, before you begin, Bill?

MR. TILLEMAN: Well, it is just simply a matter of swearing in the panel, so do you want to introduce your panel, Greg, and at that point I will swear everybody in?

MR. MISSAL: Thank you very much, Madam Chair and Board members. My name is Greg Missal. I am the vice-president of the Nunavut affairs with Tahera Corporation. On behalf of Tahera Corporation, I would like to say that we are very pleased to be here today presenting our material to you, and we are very appreciative of the Board organizing this event. It is a lot of the work for not only you, the Board members, but also for the NIRB staff, and Tahera realizes that, and we do appreciate it.

0017

We also appreciate those in attendance today who are sitting behind me, that they were able to make their time available and also at their cost in getting here. If it wasn't for the participation of all these groups, obviously meetings like this could not happen and could not be successful.

I would just like to very briefly go through

the people who Tahera has with us here today. I would like to start off -- maybe I will just get you to wave quickly. I would like to start off with Andrew Gottwald, he is our vice-president of finance and chief financial officer. Letha MacLachlan is Tahera's legal counsel.

We then have Pete McCreath, who is a consultant on water matters. Kelly Sexsmith is at the end of the table, she is also a consultant on water quality. At the back against the wall is Cam Scott, who is also a consultant with SRK consulting on geotechnical issues. We then have Bob Humphries, who is also a consultant on air quality, Court Smith, who is with Nuna Logistics who has -- Nuna Logistics has provided a great deal of information to Tahera to help us build our feasibility study and our final environmental impact statement.

Then we have Robert Hornal. Robert Hornal is

0018

our consultant for socioeconomics. Rick Pattenden is our consultant on aquatics. Bruce Ott, Bruce covers a wide variety of areas, including some water, vegetation and monitoring issues. Then we have Ben Hubert, who is our wildlife consultant. And last, but certainly not least is Andre Sobolewski, who is our consultant on land treatment. Thank you, Bill.

MR. TILLEMAN: Please state your name for the record and spell your last name.

MR. MISSAL: Gregory Missal, M-I-S-S-A-L.

(GREGORY MISSAL SWORN)

MR. TILLEMAN: Please state your name and spell your last name for the record.

MS. SEXSMITH: Kelly Sexsmith. S-E-X-S-M-I-T-H.

(KELLY SEXSMITH SWORN)

MR. TILLEMAN: Please state your name and spell your last name for the record.

MR. McCREATH: Peter McCreath, M-C-C-R-E-A-T-H.

(PETER McCREATH SWORN)

MR. TILLEMAN: Please state your name for the record and please spell your last name.

MR. GOTTWALD: Andrew Gottwald,

0019

G-O-T-T-W-A-L-D.

(ANDREW GOTTWALD SWORN)

MR. TILLEMAN: Please state your name for the record and spell your last name.

MR. SCOTT: Cam Scott, S-C-O-T-T

(CAM SCOTT SWORN)

MR. TILLEMAN: Please state your name for the record and spell your last name.

MR. HUMPHRIES: Bob Humphries, H-U-M-P-H-R-I-E-S.

(BOB HUMPHRIES SWORN)

MR. TILLEMAN: State your name for the record and spell your last name.

MR. SMITH: Court Smith, S-M-I-T-H.

(COURT SMITH SWORN)

MR. TILLEMAN: State your name for the record and spell your last name.

MR. HORNAL: Robert Hornal, H-O-R-N-A-L.

(ROBERT HORNAL SWORN)

MR. TILLEMAN: State your name and spell your last name for the record, please.

MR. PATTENDEN: Rick Pattenden, P-A-T-T-E-N-D-E-N.

(RICK PATTENDEN SWORN)

MR. TILLEMAN: Please state your name and spell your last name for the record.

0020

MR. OTT: Bruce Ott, O-T-T.

(BRUCE OTT SWORN)

MR. TILLEMAN: Please state your name for the record and spell your last name.

MR. HUBERT: Ben Hubert, H-U-B-E-R-T.

(BEN HUBERT AFFIRMED)

MR. TILLEMAN: Please state your name and spell your last name for the record.

MR. SOBOLEWSKI: Andre Sobolewski, S-O-B-O-L-E-W-S-K-I.

(ANDRE SOBOLEWSKI SWORN)

CHAIRPERSON: What about their legal counsel?

MR. TILLEMAN: They don't give evidence. Of all the things they do, that's one thing they don't.

CHAIRPERSON: I didn't know that. Greg?

PRESENTATION BY TAHERA CORPORATION:

MR. MISSAL: Thank you, Madam Chair.

I'm going to give you a presentation today, this is the beginning part or the instruction of the presentation which gives some background information on the project. I'm going to touch very briefly on the company. I will keep that brief though. And then as we move through the presentation, and it is quite a long presentation,

0021

so I would just ask everyone to bear with us. It is probably going to take somewhere in the neighbourhood of three, to three and a half hours to do this, but of course we will break it up into pieces as we see fit or as you see fit. And then, of course, the consultants will run through each of their individual areas and talk about their areas of expertise, and then I will come back at the end of that, again, and give a conclusion on this

presentation.

When we were preparing this presentation, we got thinking about the long process that exists in getting a mining project such as this built and up and running, and I thought that these were some real key words that keep -- kept popping to mind. It takes some vision and perseverance I think in the mining business to spend the dollars and do the work in order to find deposits such as Jericho.

I think that we need the cooperation in a process like this process, the NIRB process, and as well as all the other groups that are here represented today and even some groups that aren't able to join us just get, but the cooperation is needed. In conjunction with cooperation, of course, is the dedication that's required by each and every party involved in this process, and I

0022

think we have seen that to this date, and, of course, commitment in seeing that part through.

At the end of all that, we get success, and I think success in terms of the Jericho project is having this project developed and having it benefit the region, and that is certainly our goal.

As I said, we will -- I'll give an introduction, overview of the project. Our consultants will speak to their individual areas. Other information that's available today, as you look around the room, are the posters that are up on the walls for people to see. As well, we have brought along a copy of our final Environmental Impact Statement and the supplementary information that's available at the end of our table there.

And, of course, at any point, at the appropriate time, I should say, we are free to address any questions that anyone might have.

In terms of Tahera itself, I just wanted to make a few brief points about the company. We are a publicly traded company on the Toronto Stock Exchange. The company, itself, has been involved in diamond exploration in the north dating back to the early 1990s. And our work, our exploration work has produced numerous kimberlite discoveries in the area; however, the Jericho deposit is the

0023

most economic of any of the discoveries we have made to date.

In terms of what our vision is, we will be developing -- we intend to develop the Jericho Diamond Projects for purposes of extracting commercially saleable diamonds. We are developing Tahera's very first mining project, but we are doing it with the experience of mine builders, experienced mine builders, and those are such people as Nuna Logistics, SRK is our engineering

consultants, and DRA, who are a diamond plant builders, processing plant builders.

We will, and we hope to utilize as much local labour and services as possible for this project.

We have achieved an agreement in principle for an Inuit Impact Benefit Agreement with the Kitikmeot Inuit Association. The KIA will be giving a presentation later on, I believe today or perhaps tomorrow. And I am sure they will be touching on this, and we will be touching on it more throughout our presentation. And we will develop the Jericho project with minimal impact to the environment.

This map on the left just gives you a general idea, I'm sure everyone here today knows exactly where they are at, but there we are in the heart of

0024

one of the most geologically perspective areas in North America, and that's the Slave craton.

On a regional basis, the Jericho project is located right here with the green diamond. We are about 200 kilometres southwest of Bathurst Inlet or 220 kilometres southeast of Kugluktuk. The project is about 150 kilometres north of the Diavik and Ekati projects in the Northwest Territories.

In terms of the project itself, what we are proposing is an eight-year mine life for the Jericho kimberlite. We would be producing or processing 300,000 tonnes of kimberlite each year. Each tonne of that kimberlite will create 1.2 carats per tonne of diamonds, and over those eight years, we will be extracting in excess of 3 million carats of commercially saleable diamonds.

The open-pit mining will be done over a four-year period, and the underground mining in two years, and processing of the kimberlite that will be removed will be done over the full eight years.

In terms of this project itself, the properties that the kimberlite lie on were originally acquired in 1992. The kimberlite was discovered in 1995. We did extensive testing on the Jericho kimberlite in 1996 and '97. '99, a prefeasibility study was done. In 2000, the

0025

feasibility study was completed. 2001 was when we worked on completing our draft EIS, and in 2003, the final EIS is submitted. It is a long process to get to the point where we are today, and we are proud of that.

In terms of developing the Environmental Impact Statement, which are the documents that are on the table to your left, in the black volumes there, I believe there are six volumes in total, I believe, that were submitted in January. The draft EIS was written based on NIRB guidelines, and as

well, NIRB's consultants provided a conformity analysis.

The final EIS was completed to confirm with those two components. Additional consideration was given to certain CEAA requirements prior to finalizing the EIS. Information requests were received in April and May, as was pointed out earlier. And in order to address those information requests, we put together supplementary information, which are the three white volumes you see on the table to your left, and that was submitted in October of this -- of 2003.

When we produced the EIS and the supplementary information, we were keeping in mind Section 12.5.5 of the Land Claim Agreement. And we

0026

believe that we have satisfied these points in 12.5.5, and I just want to very briefly go through these points. Point (A) whether the project would enhance and protect existing well-being of residents and communities of the Nunavut settlement area taking into account the interests of other Canadians; (B) whether the project would unduly prejudice the ecosystemic integrity of the Nunavut settlement area; (C) whether the proposal reflects the priorities and values of the residents of the Nunavut settlement area; (D) steps which the proponent proposes to take to avoid and mitigate adverse impacts; (E) steps the proponent proposes to take or that should be taken to compensate interests adversely affected by the project; (F) the posting of performance bonds; (G) the monitoring program that the proponent proposes to establish or that should be established for ecosystemic and socioeconomic impacts, and steps which the proponent proposes to take or that should be taken to restore ecosystemic integrity following the project abandonment.

And I believe as you have read through the documents and as you listen to our presentation today, we believe that you will find that we have addressed each of these points.

0027

I now want to go through some of the site infrastructure. On the right-hand side, it is a little difficult to see, but that is a topographic map which we will leave posted throughout the presentation so that anyone can refer to any particular area of the site. But that map shows what we propose the mine site will look like with all its components. I will show that more clearly in some of my other slides that I will be putting up shortly.

This is the site as it exists today. We have a kilometre long airstrip at the site, we have an

exploration camp there. We have about three and a half kilometres of road networks that exist, and we also have an area where the bulk sample was extracted, which we call the portal site. This is a picture of the existing camp that's in place today. That camp would be taken out eventually as the mine site is developed. The portal location, which is where the bulk sample was taken in 1997. And this is a little clearer picture or a better illustration of the map that you see on the right-hand side, but that shows the essential areas of the site. And I would just like to stop here for a second and just go through them just so everybody understands what each component is.

0028

Right in the centre of the picture is the kimberlite pipe where the open pit will be developed. That open pit is going to be approximately 500 metres by 600 metres at the surface, so it is a fairly large pit. The infrastructure, the buildings that are going to exist will be in this area right here, which will be a fuel tank farm, and then over here will be a processing plant, the diamond processing plant. And here beside it, connected by an all weather tunnel, would be an accommodations facility, which would be where any of the workers would be staying, and we would have the offices located at that place as well.

These piles of rock that you see will take forms at different -- different forms at different stages throughout the mine life. A couple of them will stay in place permanently, because that's actually the waste rock that we are removing and mounding as we extract it. But as we extract that rock, we are going to be placing it in almost a permanent position, we'll be aware to slope the sides of those piles to make sure that it is safe, and we will also be dressing the top of those piles with some smaller material so that there is no big holes or big rock holes in that pile over time.

0029

Some of these ore piles that you see, of course, the ore will be taken out of the pit, it will be trucked out, and it will be put into these ore piles, and then the ore pile will then be fed into the processing plant. After they leave the processing plant, then, of course, they go over to coarse tailings stockpile, which is located here.

These two piles, the waste rock one, or dump site 2 and dump site 1, those are permanent piles. And, of course, we will be doing detailed engineering on all of these sites prior to any construction beginning.

I should also mention that this lake at the

bottom here is what we call Long Lake, and that's the lake that will be used for our process kimberlite containment area, which will be talked about more as we move through the presentation.

If I can get -- if I can just draw your attention to the map on the right, there is a road that will be built from the site going over to Contwoyto Lake, which is about 3.5 kilometres from the Jericho site. From Contwoyto Lake, we are able to link into the winter road that is built annually from Yellowknife travelling north, and that would be our means for transporting supplies and fuels up to this site.

0030

We would require to transport approximately 400 loads of supplies and fuels up to this site prior to any construction beginning. This is just a side view of what the pit would look like. Pardon me. This is an animation, a little cartoon, if you will, of what we propose that the project will look like. I will comment as we move through it. This shows you approximately what exists at the site today, the airstrip, the exploration camp, as well as the portal areas which was where the bulk sample was taken and which is where the kimberlite is located, which you will see here.

Now, that's the kimberlite body that we want to mine. And it is primarily the green area that we are focussed on. That's the richest area of that kimberlite. This just moved around, and it starts to show what the site will look like as we have the mine located there. As I mentioned, that's Long Lake, and then the mine facilities, the accommodations, processing plant, the fuel farm. And then this is showing the areas where we will be placing some of the rock piles.

So the open pit will require approximately four years to develop. It will be approximately 175 metres deep, at which time we would start doing two years of underground mining. This shows now

0031

how the underground will be mined. We will build this spiral ramp down to get that underground portion of the kimberlite out. So, of course, when we finish mining, then comes the reclamation stage. During this period, a number of the piles will be used up and the ore that will be processed. Over time, the open pit will be allowed to fill with water. The roads will be reclaimed as much as possible. As I mentioned, we will be removing the exploration camp that exists there today, and we would look for advice later on as far as what to do with the airstrip, but there may be some interest to leave the airstrip there for future safety landing purposes, but we would certainly work with

various groups on deciding that.

But that basically gives you a very quick look at what that looks like. I don't know, does anybody -- would you like to see that again, or is that fine?

CHAIRPERSON: I think we are fine.

MR. MISSAL: Okay. Of course, going on at the same time as all of the exploration and geological work that we are doing in order to discover and develop a project like this, we are also aware to begin starting our baseline environmental studies, and that's really the

0032

building blocks that puts together all the information that we have today to present to you. The baseline studies for the project started in 1995.

Pardon me, I just need to forward this ahead here.

Here is a picture of some baseline studies going on. This is actually Barb Adjun from Kugluktuk doing some work for us.

There is a lot of information on this page, but what I would like to emphasize with it is the large amount of baseline information that has been collected over the years. And, of course, it focuses on a number of different areas, water quality, water chemistry, you know, vegetation, fisheries, wildlife, hydrology, meteorology. All of the disciplines of all of the consultants that we have here today have been covered off in these baseline studies which have been ongoing since 1995.

That's just one more picture of some work that was going on at the site.

Another important component of developing a project like this, of course, is traditional knowledge. We have been fortunate enough to organize two elders' visits to the mine site over

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the years. I believe this one was taken in 1999, and it really gave a good opportunity to bring everyone together. It allowed the elders to see the site, they had an opportunity to discuss any concerns they had. It brought elders together from different communities. It was an opportunity for elders to view some archeological work and some heritage resources work that was going on at the time. And I think what we found at the end of those two visits was that the traditional knowledge that the elders provided actually confirmed and complemented some of the scientific data for the area as well.

Of course, in conjunction with this type of traditional knowledge work, we have been quite

committed to ongoing community consultations, focussing on the communities of Kugluktuk, Cambridge Bay, Gjoa Haven. We have also been to Bathurst Inlet and Bay Chimo as well. On a few occasions we have also been to the communities of Pelly Bay and Taloyoak as well. But it has primarily been the west Kitikmeot communities that we have visited as they are the closest ones located close to our proposed mine site.

And I think each and every time we have our community meetings, we gain new and valuable

0034

information from that, and it gives us, I think, a greater appreciation of Inuit culture and values. And, of course, all of those things can be used to help us develop what our plans are and what our thinking is. And in that way, traditional knowledge has helped us develop our site in consideration of some of the migration routes which Ben Hubert will talk about in his presentation today. The management plans that we have been affected by Inuit culture.

During mine site operation, we will be giving right-of-way to any caribou migration on the roads. Specialized diversions to minimize impacts on migrations will also be developed, and, of course, monitoring committees that are in place will help ensure that traditional knowledge and traditional Inuit values are upheld throughout the life of the mine.

What kind of diversions?

What monitoring committees?

In addition to those items, we can also gain knowledge on traditional knowledge from the Kitikmeot Traditional Knowledge Study which is being worked on by a number of industry groups as well as the KIA.

The ongoing community meetings help us gain knowledge on traditional values, and, of course, the Inuit Impact Benefit Agreement, through the

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implementation and monitoring committees of the IIBA will also help to ensure that traditional knowledge is upheld. And, of course, information and knowledge that can be gained from other mining companies is also very important to us.

Another important study that we have done is, of course, the heritage studies at the mine site. Fedirchuk, McCullough & Associates have done that work for us. They are not here with us today, but we used them to identify and evaluate heritage resources at the Jericho site that might be disturbed or destroyed by the project development. And in summary, there was one artifact of scientific and cultural interest that was

identified, and that was an arrowhead. And there was a controlled excavation of that arrowhead done, and I believe that arrowhead went to the Prince of Wales Museum, isn't it, Bruce?
MR. OTT: Pending setting up off site.
MR. MISSAL: That's right. What Bruce mentioned was of course once a Nunavut location has been determined and set up, then, of course, any Nunavut artifacts would go to that Nunavut location. But this was something that the Inuit elders also had an opportunity to see while they

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were at the site.

In terms of our team, I'm pretty much to the end of my presentation, and we are going to move through each of the consultant's areas, but I just wanted to mention that various areas that you will be hearing about through their presentations, which are some of the geotechnical issues related to the project, the water quality and water-related issues, vegetation and water discharge, water and land treatment, aquatics, air quality, wildlife, abandonment and reclamation and socioeconomics. So over the course of the next couple hours, you will hear from these various consultants on these topics.

So with that, my portion is completed. Are you fine to move on to the next set of presentations?

CHAIRPERSON: Yes, we can move on to one presentation before our coffee break.

MR. MISSAL: Okay. I will just take a brief minute and introduce Cam to the Board. Cam is a principal with SRK Consulting in Vancouver. He has over 25 years of experience in geotechnical engineering, most of which has involved mine waste management. He has extensive experience with mines in cold weather climates, and he is currently

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involved with projects in the Northwest Territories, the Yukon and Alaska. With that I will turn the mic over to Cam.

MR. SCOTT: Thanks, Greg, Madam Chairman.

On this portion of the presentation we will be talking about mine waste management. What we will cover is an overview of the mine waste materials, their volumes and some of their characteristics very briefly. We will talk about the waste dumps and stockpiles associated with the project, including some of the layouts, some of the adjustments of those layouts as well, foundation conditions, a particular design section for all of the dumps and stockpiles and some comments of

construction methodology as it relates to mitigating environmental impacts.

Next we will talk about the process kimberlite containment area and, again, layout foundation conditions, typical design section and very brief comments on construction methodology. Next we will just touch very briefly on hazardous materials, and lastly we will just have the summary highlights of this presentation.

The mine-waste materials consists of the materials listed in the left column, the

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approximate life of mine tonnages are indicated in the right column. So the first one, the overburdened soils are, of course, the materials excavated during the initial open-pit development, the waste rock, which largely comprises the material perimeter of the kimberlite pipe, and then the materials below those are essentially all kimberlite materials. Low-grade ore is kimberlite What is low grade kimberlite? What is recovery rejects? What is the course kimberlite and the fine kimberlite?

material which will be stored by the plant site area. Recovery rejects, which represents -- which is one of the projects of the process and represents, as you see, a very small component of the total volumes of waste materials, the coarse kimberlite, the course PK and lastly the fine kimberlite material.

Essentially, all of these materials are handled by conventional truck and shovel methodologies with the exception of the fine PK. The fine PK, of course, is handled as a slurry pipeline for disposal.

This is just a brief table or slide to show the scales of this project relative to say, for instance, Ekati. The left -- under the Jericho heading, of course, you see the same volumes or tonnages that you saw life of mine for the project and then yellow, in the right column you see the

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one year of production for Ekati for some of these materials. And, in general, you can see that there is quite a significant difference just on one year of production at Ekati compared to the life-of-mine volumes for Jericho.

This is the production schedule for those materials. The first two years is when the overburden materials come off the open pit. Four years of mining gives us four years of waste rock and low grade ore. And the processing of the kimberlite gives us the extended time lines that you see there for the recovery rejects and coarse and fine PK.

This is a blowup of the -- basically the mine

area with the various elements of dumps and stockpiles. You can see in yellow, the open pit. Immediately to the east of the open pit is the overburden stockpile. There are two waste dumps, waste dump site 1, which will be developed first in this area, northeast of the pit. The second waste dump for waste rock is site 2 immediately south of the open pit. The low grade ore, low grade stockpile, the coarse process kimberlite stockpile, and then you can just see a portion of the PKCA which we will talk about later.

I just want to point out one subtle

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difference or detail relative to this layout and what Greg showed earlier. Since the preparation of his presentation, we have moved some of these facilities back a little bit so the toe stays inside catchment????. This green line is a catchment line, and these facilities now all stay in that catchment so drainage of these areas is to the north and does not go to Key Lake.

The foundation conditions at especially all the waste dumps and stockpiles consist very simply of bedrock or bedrock with isolated soil deposits. Essentially all of the waste dump sites are underlain by several hundred metres of permafrost.

This is just a typical slide or typical section showing the configuration of most of the dumps, certainly the stockpiles and dumps exclusive of the recovery rejects. Essentially, you have a series of lifts. Let me start again from the beginning, from the portion of the toe.

Initially, the organic material at the toe is removed. The material that's placed next is essentially done over in winter, so to preserve the frozen conditions in the active layer. For the low -- all of the kimberlite material dumps such as the low grade stockpile and the coarse PKCA -- coarse PK will then be -- a layer of rock will be

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placed over top for geochemical regions to provide a buffer and to preserve the permafrost, and then subsequently in a series of approximately 10-metre lifts, the waste materials we deposited.

The outer face will be -- the angle of repose will be fairly steep, that's the dump angle at about 35 degrees, and then there will be at the end -- at the top of each lift, there will be a berm or bench of about 13 or 14 metres width, and then the next lift will start. The overall slope angle from toe to the crest will be approximately 21 degrees.

So this just very briefly summarizes those construction procedures. To enhance the physical stability of these dumps, the organic soils in the

toe area to be stripped, material to be end-dumped in layers and overall slope of quite flat 21 degrees. To enhance the geochemical stability, the details of the geochemistry will be discussed later, actually, but just to enhance the geochemical stability, a frozen layer will be maintained in the base of the dumps and stockpiles, and for the low grade and coarse tailing stockpiles, a layer of coarse, granitic waste rock will provide separation with any organic soils.

The recovery rejects dump design, which is a

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very small dump, it is situated in this location approximately. It is a little bit different. All of the organic materials will be stripped from beneath that dump. Granitic waste rock will be used to establish a level platform, and then a plastic liner will be established underneath or at the base of the dump with esker sand on either side of it. Otherwise, the construction of the dump from that point upwards will be the same as discussed previously.

Moving from the dumps and stockpiles to the PKCA, this particular slide shows the general layout of the PKCA and its various elements.

Essentially, the site overlies Long Lake and is comprised of a series of dams. At the lowest point on the overall site is the west dam, moving around is the north dam. The east dam, is southeast dam, a series of dikes which are quite small, and then in this location downstream of the settling pond is the settling pond dam.

This slide illustrates schematically the volumetric aspects or storage capacity aspects of the PKCA. The lowest level or elevation in the lake is approximately 506 elevation down in here. At the west dam, which is effectively the one, the most downstream containment structure, the

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elevation of the natural ground is approximately 515. So there is quite a bit of storage capacity for solids within the Long Lake facility itself.

Assuming a typical density from what you get from other projects, you end up with approximately 380,000 cubic metres of fine PK, and then given the design elements, you have 1.4 million storage and then a spillway and then free board on top of that. This particular slide assumes no ice entrainment within the processed kimberlite.

This slide illustrates again the no ice entrainment. Assuming that there is 50 percent ice entrainment in the tailing -- or in the processed kimberlite, you double up that volume of processed kimberlite, you still have in the order of 1 million cubic metres of storage before the top of

the spillway is encountered and then free board again on top of that.

The difference between these two scenarios really depends on how the facility is operated, water management issues and so on. And the reality is there is likely to be somewhere between these two scenarios. Based on the air-photo interpretation and detailed field reconnaissance and recent drilling, the foundations at the various -- within the PKCA consist typically of bedrock

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with soil deposits. On the abutments, essentially you have in most cases bedrock with some soil, particularly on the south side of the facility. Within the valley itself, the long orientation of the facility in Long Lake, there is a series of glacial-deposited boulders and cobbles in the till matrix, some silt, sand and gravel.

Of course, the bedrock in that area, the reason that Long Lake is situated there is because it coincides with the fault. And, essentially, with the exception of the talik under the lake, essentially the permafrost is present around the entire site and extends several hundred metres into bedrock.

Next slide. I will just -- this slide just touches on some of the key design issues associated with the PKCA. The facility, by conventions associated with dams, is a low consequence category. That criterion defines a lot of the other elements that are appropriate in the design of the dams associated with the PKCA. So in essence though, in summary, the containment will be provided by an ice core within the dams, as well as a HDEP liner.

The dams are not that high, they are in the order of 9 to 12 metres in height. Although the

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settling pond dam is 6 metres high. The facility allows for significant ice entrainment, it also allows for water management, as will be discussed later, and sludge storage, and the embankments themselves will be designed to handle a 1-in-2475-year earthquake, which is essentially consistent national building code regulations that will be coming out in 2005.

This is a typical section through the -- any of the dams in the PKCA. What I want to point out is it has a frozen core. In green there is a high density polyethylene or plastic liner, and then on the upstream face, this is where the processed kimberlite and water would be retained. On the upstream face is rip rap, the other element is waste rock. The cutoff in this area goes down through the active layer and connects into the

natural permafrost.
Very briefly, the construction will be based on conventional ice core dam construction procedures using an experienced contractor. Most of the materials will consist of waste rock or esker sand, and the construction of all the dams would be done in winter over one season.
Just to touch briefly on the hazardous materials, essentially the petroleum projects,

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hazardous materials, hazardous wastes, and the storage of the ammonium nitrate necessary for blasting and development of the mine, all these materials will be handled using protocols appropriate and consistent with the current regulations.
Just to summarize now, waste dumps and stockpiles have been adjusted slightly so that they stay in one catchment. The design and construction, proposed construction procedures have been developed to enhance physical and geochemical stability. For the PKCA facility has a low consequence classification. It has adequate storage capacity, and containment is actually provided by the integration of ice core dams within the permafrost foundation coupled as a belt-and-suspenders approach with a plastic liner. And the construction is very conventional.
And, again, hazardous materials, just to close off, will be handled using appropriate methods and consistent with appropriate regulations.
Madam Chairman, that concludes my presentation.
CHAIRPERSON: Thank you. Tahera will continue with your presentation after our 15-minute

0047

break. Thank you.
(RECESSED AT 10:26 A.M.)
(RECONVENED AT 10:50 A.M.)
CHAIRPERSON: Shall we begin? We took a little longer on our break, sorry about that.
Tahera, you may continue.
MR. MISSAL: Thank you very much, Madam Chair. We are going to move on to some water quality and site water management issues, and presenting that today to my left will be Kelly Sexsmith and Pete McCreath.
And just a bit of background on Kelly --
CHAIRPERSON: Sorry, before you begin. Bill, you had a few things?
MR. TILLEMAN: Thank you, Madam Chair. And it was just on the matter of any new information that was presented. There was some new pieces of information in Tahera's presentation that

weren't included in our materials, and so I have talked to their counsel, and at the proper time, the audience needs to know that she will be submitting for marking as exhibits through the court reporter the following documents: the first one is a package of CVs of the presenters so that the audience can know the background of anyone who presents. And if they wish, they are entitled to

0048

ask questions about that.

The second one is the slide presentation in its whole, and once again, that will be prepared by Tahera and sent to the Board, which means it would be available to all the parties, should they wish it.

Next would be the maps on the walls, and we will have Tahera summarize those, and we will mark those individually. If any party or the Board itself wishes to ask questions about that, it is an easy reference point in the transcript itself.

And then finally, not by way of exhibit but by way of order of presentations, KIA's witnesses, of course, aren't here today because they would expect us in Kugluktuk. We will hope to have them here tomorrow or Wednesday, but in any event, we would need to bump them to the end of the list, and that's my suggestion to the Board.

And for matters of timing, we had suggested that 30 minutes would be the presentation time for the parties and the audience, and I think most of them feel that would be appropriate, but if they need more time, we should accommodate them given the change in the venue accordingly.

And those are my comments, Madam Chair, thank you.

0049

CHAIRPERSON: Okay. Thank you. Greg?

MR. MISSAL: Okay. Thank you very much. Just a bit of background on Kelly Sexsmith. Kelly is a senior geochemist with SRK consulting in Vancouver. She has 12 years of experience in the geoenvironmental division of SRK, specializing in the geochemical characterization of mine waste.

Kelly's northern experience includes monitoring of seepage from the waste rock piles and coarse kimberlite rejects at the Ekati diamond mine in the Northwest Territories.

And in terms of Peter McCreath, Peter is the president and principal of Clearwater Consultants Limited. He is a water resources engineer with over 25 years of experience in mining and resource development of projects across Canada and around the world. His specialist expertise is hydrology, hydraulics and river engineering has been applied to more than 100 mining projects ranging from

prefeasibility assessments to final designs, decommissioning and reclamation studies.

Many projects located in northern Canada have entailed the development of water management plans for tailing areas, waste dumps and heap leech pads, including diversion facilities, sediment control ponds and spillways. So with that, I will let

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Kelly and Peter begin their presentation. Thank you.

MS. SEXSMITH: Okay. In this presentation, I'm going to cover some of the key water quality issues associated with the site -- you can put the next slide on -- how we characterize the mine rock and the processed kimberlite in order to anticipate what the water quality will be like and, therefore, how we will need to manage it to protect the environment, and how we estimated metal and nutrient concentrations from the mine rock and processed kimberlite.

I am going to then turn the talk over to Peter, who is going to talk about the site water management and the water and load balance and how we used that to come up with discharge concentrations from the mine.

We are also going to briefly touch on the monitoring of the locations on the site to ensure that water quality is meeting the expectations that we have.

Following our talk, Bruce Ott will talk about the receiving water quality and the significance of any impacts on the receiving water. And Andre Sobolewski will talk about water treatment.

The key water quality issues for the Jericho

0051

project are the release of nutrients from sewage and waste stockpiles, control of suspended sediments from waste rock and construction areas, and the potential for acid rock drainage and/or metal leeching from the waste rock and processed kimberlite.

The release of nutrients such as ammonia, nitrate and phosphorus is a particular concern in northern environments where the reserving water has such low concentrations in the background waters. The main concerns with these is that increased biological activity will lead to loss of oxygen in the lakes. However, some of these are also directly toxic, so we want to make sure that we are controlling them.

The main sources of nutrients at Jericho will be residues from the sewage and blasting. The sewage will be treated using a rotating biological contractor.

CHAIRPERSON: If you can speak slower for

the interpreters. Just speak a little slower. Thank you.

MS. SEXSMITH: The sewage will be treated using a rotating biological contractor system, which is very similar to the one that's being used at the Diavik mine, and has been demonstrated to be

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very effective in reducing concentrations of ammonia and phosphorus.

The treated sewage water will be discharged to the processed kimberlite containment area, and there any additional -- any remaining phosphorus in the water will be removed by algae or absorbed to the kimberlite solids.

Because the kimberlite -- the Jericho kimberlite is a land-based pipe, we expect that the ground conditions will be relatively dry there. And dry ground conditions should result in relatively low concentrations of blasting residues left over in the rock, and that's what can lead to ammonia leeching from the rock.

We will be managing the blasting process carefully to ensure that any cutoffs and spillage is minimized to reduce -- to further reduce any nutrients left in the rock. However, there is still a possibility that there will be some ammonia left in the rock after mining.

Suspended sediment concentrations are another concern at this type of project, and we will be controlling suspended metal concentrations by allowing the solids to settle in constructed ponds or in the processed kimberlite containment area. Flocculents will be used to enhance the rate of

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settling as needed to ensure that the water is clear when it leaves the site.

The potential for acid rock drainage and metal leeching is a particular concern because of the potential for the release of metals into the environment. This is a naturally occurring process, but it is enhanced at mines where the rock is broken and minerals are exposed to oxygen.

Detailed characterization of the chemistry and mineralogy of the waste rock and processed kimberlite was very important for understanding whether these issues would be -- would occur at Jericho and what we would have to do to manage them properly. Because this last issue is so important, I'm going to talk a little bit more about how we determined where ARD and metal leeching would occur at the Jericho project.

The first step in understanding how the rock will behave is to look at the geology. Very briefly, the Jericho kimberlite pipe is shown outlined in green here. It is an elongated shape,

and it is made out of several different phases of eruption through a granitic country rock which is shown in the hatched here. There is a diabase dike running along the east side of the pit, and there is a few bodies of a more coarser grained granitic

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rock called pegmatite.

The different phases of kimberlite eruption are made up of different minerals including alovene (phonetic), serpentine, oxide and carbonate minerals. Small pieces of the country rock or the rock surrounding the deposit are picked up by these intrusions and they are in the rock, and at Jericho, these include granite and limestone.

The kimberlite ore is surrounded by this granitic rock with some granodiorite and pegmatite. The granite rocks in this area with --

CHAIRPERSON: With minerals, just slow down a bit because there is -- well, in Inuktitut or Innuinaqtun we don't really have some words for those, so give the interpreters time to translate what the minerals mean. Thank you.

MS. SEXSMITH: Okay. Sorry. The granitic rock surrounding the pipe will form the majority of the waste rock that will be produced on site. Portions of the kimberlite ore that don't contain enough diamonds to warrant processing will also be stockpiled on the surface. These will be mechanically separated into a coarse sandy material, which we call coarse kimberlite, and the fine mud-like slurry which will be piped to the processed kimberlite containment area. There is a

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small material made out of the heavy minerals that we call recovery plant rejects, and those will be stored in a lined facility that Cam talked about earlier.

Representative samples of each of the materials that I have just talked about were submitted for testing to characterize their geochemical properties and determine their potential for ARD and metal leeching. The test work that we did is listed above.

The acid base accounting test determines whether a sample could produce acidity or alkaline conditions and determines the balance between these minerals.

The mineralogy tests determine whether any reactive sulphide materials were present in the rock. Metal analyses are used to see what kinds of metals may be in the rock, and leech extraction tests are used to see what metals are soluble in the water in contact with the rock.

The bulk samples that were extracted were processed in a pilot plant to produce

representative samples of the tailing slurry, and we characterized all the products from that work, including the process water. And more recently, we have completed settling tests where we have mixed

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rock samples with water to see what the metal content of the suspended material or the very fine particles is, and that is shown in the upper photo where the test with the water with the suspended settlement is shown.

And, finally, we had an opportunity with the development waste rock pile, the one used to extract the bulk rock sample to collect actual water samples from waste rock that's already on site, and this was very important because this is stored under the same climatic conditions that any rock that will be produced during mining will be stored under.

So the results from this work showed that the granitic rocks have very low sulphur contents. This means there is very few reactive sulphide materials in the rock to generate acidity or metal concentrations.

The rocks have a low potential for acid generation. The leech extraction test showed that the water in contact with these rocks had neutral pHs and very low concentrations of soluble trace metals, and the development pile samples also had neutral pHs but slightly higher concentrations of aluminum, copper and uranium. All other metal concentrations were very low.

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The kimberlite materials, and this includes the ore, the coarse kimberlite and the fine kimberlite, the acid base accounting results for those had low sulphur concentrations and high neutralization potentials indicating, again, a low potential for acidity or metals.

The leech extraction test showed slightly alkaline or neutral to alkaline pHs, slightly elevated cadmium, molybdenum and nickel concentrations, and very low concentrations of all other soluble trace metals.

And as I said previously, the coarse and the fine processed kimberlite results were very similar to the ore. These different materials are only different sizes physically, they are not different chemically.

In the most recent work that we have done on the site, we estimated water quality from each of these types of materials by scaling up this laboratory data to reflect field conditions. These concentrations that we predicted were then adjusted to reflect secondary mineral controls or limits on how high the concentrations could go, and checked

against data from very similar geological sites such as the Ekati diamond mine and against the results that we saw in those seep samples from the

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development of the waste rock. The details of those calculations are all presented in the supplemental EIS.

We also estimated nutrient concentrations. For this we used a model called the Ferguson released model, which is based on the amount of blasting residue that is used and lost in the blasting process for an open pit mine. We also used data from similar sites, again the Ekati diamond mine, because field conditions were very important in that assessment. The data from the existing development rock pile was not used in this case because that rock was extracted using underground mining methods which can lead to slightly more loss of blasting residues into the rock, so we felt that those samples were not representative of what we will see at the full size operations at Jericho.

The source concentrations estimate the conditions directly at the base of each of these waste disposal areas, and they represent the short-term water quality which we believe will be the highest concentrations that will occur on the site over time.

This table just shows some of the concentrations that we estimated. I'm going to

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hand things over to Peter who will talk about the site water management, including these waters that will be managed. And after that, Bruce Ott will talk about the significance of these numbers in terms of potential impacts to the receiving environment. Thank you.

MR. McCREATH. Thanks, Kelly, Madam Chair. What I would like to talk about now is the management of water at the site. Management of water at any mining project is always a very major consideration, and the Jericho project is no exception. The work that has been carried out has allowed us to develop a water management plan for the site that we feel is both robust and flexible. What I will present are some of the details of the individual components within the site water management plan, and then I will talk about an overall site water balance and water quality model that has been developed for the project.

The first slide shows a general arrangement of all the facilities at the site, whereby each individual facility, the waste dumps, the overburdened storage, the ore stockpiles and the PKCA have water management components to them.

Each area is surrounded by perimeter ditches around the side of the processing area and the ore storage

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areas, for example, and these ditches feed to a series of collection ponds, Pond A, Pond B and Pond C. I will address these ponds and the individual areas in a little bit more detail as we proceed.

Some of the information that we are presenting today has been developed in response to review comments that were received based on the FAIS, and this supplementary information has been aimed -- has been developed to increase the security and flexibility of water management on the site. Particularly the flexibility within the system will allow us to either discharge water directly to the environment, if the water quality is acceptable, or direct the water towards the PKCA for subsequent discharge or to treat the water, if required, prior to release to the environment.

Changes that have been made since the earlier layouts include the elimination of a number of small collection ponds due to the adjustments to the footprint of, specifically, waste dump number 2 and the coarse tailings stockpile that Cam referred to earlier. This eliminates any drainage going towards Key Lake.

We have added a small ditch upslope of waste dump number 1 that would direct clean water away from the waste dump and, hence, minimize the

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quantity of water that would have been handled by that dump, that collection pond. There are two additional collection ponds, B and C. Pond B is located below waste dump number 2, and Pond C collects drainage from the ore stockpiles and the processing plant area.

Around the plant there will be several small sumps and pumps designed specifically to handle local areas where water quality might be a concern.

Spillways have been added to the main western dam in the PKCA area and to the settling pond. The purpose of these spillways is to protect the dams against possible overtopping and failure, and there are other contingencies related to water quality which will be addressed by Bruce Ott and Andre Sobolewski in subsequent presentations.

This slide shows a conceptual flow diagram for water management on the site. What it indicates is that each of the site components is being fed to a collection pond, waste dump number 2 to Pond B, waste dump and the overburdened stockpile to Pond A, and the processing plant area, the ore stockpiles going to Pond C.

In addition, there will be a sump within the open pit to manage water, runoff water within the

pit. The plan is set up such that water that's

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collected within any one of these ponds could be directed either to the processed kimberlite containment area or could be directed to Carat Lake directly for release if water quality is acceptable.Where are they going to test the water if it goes directly to Carat Lake.

From the processed kimberlite containment area, water will be discharged to the settling pond, through to Lake C3 and ultimately to Carat Lake.

One of the contingencies for addressing possible concerns with regards to water quality would be the use of spray irrigation, the -- another contingency would be use of flocculents within the settling pond.

So, in summary, the water management plan involves the collection of water from the waste dumps and the stockpiles in ponds. Depending on water quality, all of this water will be directed to the PKCA. That is the baseline assumption that we have developed, the plan and the water balance model, assuming that all of this water from all site components will be directed to the PKCA.

From the plant site area a series of small sumps will direct the water, again, to the PKCA, higher flows will overflow to Pond C where storage and pumping will direct the water to the tailings

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area.

Now, depending on water quality, the water in the containment area could be directed to the settling pond for release through Lake C3 into Carat Lake or it could be directed to spray irrigation area land application for final polishing before release to the environment Flocculents could be added in the PKCA, if necessary.

Each of the components of the water management plan will be designed using recognized engineering principles with appropriate risk levels applied to each component. For example, the diversion channel, diversion channel C1 around the open pit and the small channel above waste dump number 1 would be designed for a 200-year return period peak instantaneous discharge.

In addition, the construction of the channel would include an allowance for free board such that the actual channel capacity, in fact, would be significantly greater than the design flow rate. This is what I mean by talking about the robustness of the individual components within the plan.

The collection Ponds A, B and C serve both as collection ponds for water but also as sediment

control ponds, settling ponds to remove any

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sediment from inflowing waters prior to release to the environment or pumpings to the tailings pond. These collection ponds would be designed with a combination of water storage within the pond and pumping capacity from the pond sufficient to contain a 200-year return period maximum snow melt month, a high volume inflow event.

Sorry, can we just back up. The in-pit sump, typically sumps within open pits are designed for something like a 10 to 25-year rainfall event. The actual location of this sump will probably move with time, and the pumping capacity will be developed in conjunction with the mining engineers, bearing in mind suitable protection for the workers and sufficient guarantees that the work will not be interrupted by unnecessary flooding.

The processed kimberlite containment area and the settling pond will both have emergency spillways to present any overtopping and possible failure of the containment dams. These dams -- sorry, these spillways would be designed for an extreme event known as a probable maximum precipitation runoff event.

Having developed the overall layout of the water management plan, we then developed a water balance model for the overall site, considering all

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components of the site. The water balance model included both the quantity of water that could be generated from each of the site components and also the quality of the water.

Kelly referred to the source concentrations from example one of the waste rock dumps. Those source concentrations were included with the estimates of runoff water that would be generated from these sites. Flows from the different areas were mixed such that the final concentration of all the water combined in the PKCA could be estimated.

This slide shows the base-case assumptions for the water balance model, these include the eight years of ore processing. I should say that the model itself is a continuous simulation model, so it runs throughout the entire period of mine operation and into the closure period as well.

Base-case conditions assumed average precipitation and evaporation conditions, but with the ability to look at more extreme events in any one year or two years, any year within the period. The basic assumption is that all water from all site components will be directed to the PKCA.

Conservatively, we have also assumed that there would be no water reclaimed from the PKCA to the processing plant. In other words, all water

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for process use will be fresh water coming from Carat Lake. There will be extensive ice entrainment within the deposited fine kimberlite.

Cam referred to earlier the volumes and the elevations within the tailings area, we have a spillway set at elevation 523. We have made an assumption that there would be a nominal minimal operating volume within the tailings area of about 100,000 cubic metres.

There will be no release of any water from the PKCA for the first two years of operation. In other words, all the water collected, all the runoff water, processed water collected from the different site components will be directed to the PKCA for the first two years and held there, and the reason for this is to find out what the actual water quality is going to be.

We have estimates, our best estimates now of what the source concentrations will be, but when we actually get into operation, we will be monitoring each of these sources and the kimberlite, the mixture of all of these sources in the PKCA to find out what the actual water quality is.

The assumption for the water balance model is that releases will commence from the storage area in the third year of operation, and that there will

After the two year waiting period, will water from the PKCA be released on a continuous basis (i.e. will there be a settling period?)

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be up to possibly a million cubic metres per year of total release from the area to get rid of the stored inventory from the first two years of operation.

This slide shows the -- for the base-case model what the variation in the volume of the water stored within the processed kimberlite containment area will be, and also the total volume which is made up of the volume of solids, plus the volume of supernatant water. The rise at the beginning is because of the criteria that there will be no release from the containment area over the first two years. Subsequent to that, releases commence and then mining terminates, processing terminates after the eighth year and the pond level stabilizes.

The model also allows us to estimate the elevation of the water both within the PKCA and within the settling pond immediately downstream of the PKCA, and that is indicated on this slide.

The water quality modelling portion of the model allows us to estimate what the concentration on any particular parameter may be within the PKCA. As an example, this slide shows the concentration of ammonia and how it varies over the life of the

mine, including the first couple of years when

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there is no releases, the middle portion when there is annual releases going on from the point, and then after mining processing ceases, how the concentrations begin to tail off within the pond.

These developments of these concentrations have been carried out for a number of parameters, as mentioned by Kelly, based on the source concentrations. This slide shows some typical -- the maximum concentrations expected at any time during the operating life within the PKCA for a series of parameters during the operating period and also during the postclosure period when runoff from the individual site components will be directed towards the open pit.

What is going to be very important is monitoring the quality of water at all of the individual site components. This slide shows the various locations at which water quality will be monitored during the operational phase, specifically the inputs to the PKCA, the collection ponds A, B and C, water within the open pit, supernatant processed water from the kimberlite processing plant, drainage from the recovery plant rejects and also treated sewage.

Water quality also would be monitored within the PKCA, which is the combination of all of these

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items. These concentrations that we have developed then form the end of pipe concentrations for possible releases from the PKCA.

And we will turn it over now to Bruce Ott to address how these concentrations were applied in assessing dilution and potential impacts in the downstream receiving waters.

Thank you, Madam Chair.

MR. MISSAL: Madam Chair, just before we let Bruce get started, I would just like to give you a little bit background on Bruce's experiences.

Bruce has a Ph.D. in biology and is a registered professional biologist with over 25 years of experience in environmental project approvals and permitting of mining and forestry projects in western and northern Canada.

From 1999 through the 2002, Dr. Ott managed environmental affairs for Tahera Corporation specifically related to the Jericho Diamond Project. His duties included designing in the execution of the environmental baseline and impact assessment programs for the project.

Bruce also coordinated and supervised the studies conducted at the site by the external consultants that are here today, including fisheries, vegetation, wildlife, socioeconomics,

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archaeology, hydrology and geotechnical engineering. And with that, I will let Bruce begin his presentation.

MR. OTT: Thank you, Greg. Madam Chair, members of the Nunavut Impact Review Board and Staff, what I am going to discuss briefly here is the Jericho aquatic discharge assessment, and I think we need to move to that presentation, please.

Sorry, was that the first slide? Sorry, Madam Chair, a little confusion here. The assessment was discussed with -- by Kelly and Pete, and it is based on the supplemental work that was done by SRK on contaminant loading, water balance, the regional and local study area, climate analysis, discharge concentration estimates. And for the receiving environment, a dilution model that was -- that was run by Dr. Grismond (phonetic) and Don Dunbar to provide estimations of the dilution capability of the system, including Lake C3, which would be the immediate receiving environment and Carat Lake.

Do we have -- C3 is just right there on the edge of the map, and this is Carat Lake, and flow is into C3, into Carat Lake and then out north.

CCME, that's Canadian Council of Ministers of the Environment, guidelines were taken to indicate

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no chronic effects, and CCME guidelines are just that, they are guidelines. The mine will be -- will have a regulatory instrument that will determine the discharge of water quality that will be allowed, and that will be part of the water license. However, the guidelines provide an indication of the levels that have been found through scientific study to be safe for fresh water aquatic -- or cold fresh water aquatic life all over Canada, so they are very conservative estimates.

Two dilution models were run, the first one, the model takes quite some time to run, and we started it before the analysis was completed on the water balance. This first model use extreme low flow estimate, one in 10-year 7-day low flow for each of three months of discharge and 60-day low flow for the rest of time, but didn't take into account the necessity given the scenario that water is stored for a period of two years of the total amount of PK supernatant waters that would need to be discharged. So the flows were lower than what would be representative of extreme conditions, but the discharge was -- sorry, was also lower.

So the model was subsequently rerun, and you can see here the bar along the top and along the

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side on the previous one gave an idea of the dilutions, and the second model produced almost essentially the same result as the first, so that we are satisfied that the dilution model provided a conservative robust estimate of what the dilutions would be in the system.

There was a number of assumptions that were made to develop an assessment, these were detailed in the written -- in the written presentations to the Nunavut Impact Review Board, and I'm just going to briefly summarize them here for you. There -- we are assuming that there is one discharge point for all of Jericho water, that is Stream C3 and into Lake C3. I showed you the lakes previously.

Water is discharged from the PKCA to a sedimentation or polishing pond and then into Stream C3. Sewage treatment water is discharged to the PKCA. All mine water is routed to the PKCA prior to discharge, and all uncontaminated runoff water is routed through clean-water ditches and the Stream C1 diversion, which is required to bypass the open-pit area.

So we examined a number of scenarios here, there is that one could look at an infinite number of scenarios. What we have chosen to do is illustrate ones that demonstrate what our estimates

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would be for maximum concentration and minimum flows and a couple of averages.

We have -- SRK developed for us two estimates of PKCA end of pipe contaminant levels, and the maximum contaminant level and what an expected or average contaminant level. We looked at extreme low flows, which is one-in-ten-year event, and we looked at average flows, which is what normally would occur at the site. So we have a combination of four scenarios there.

Okay. Scenario one is extreme low flows and probable maximum PK discharge concentrations. What we have predicted from the dilution model from that is that no Health Canada guidelines were exceeded at the water intake. That's important because the potable water would be drawn from that, and it is approximately right there. Sorry, this thing bounces around a lot because of the distance. It is approximately right there, discharge is over here.

There is some potential for chronic effects from substances for the most sensitive fresh water organisms, that would be in Lake C3 here. So what can we do about it? Suggested mitigations would be cessation of discharge, if that is an option, spray irrigation or addition of phosphate into the PKCA

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to reduce ammonia and metal concentrations.

Scenario two is, again, extreme low flows and average PK discharge concentrations. In here, we are predicting protection of aquatic life guidelines, that's the CCME guidelines, would be met within 100 metres of the mouth of Stream C3 and that no mitigation would be required under those circumstances. What effects in the first 100 m of Stream C3, is that a concern? What about cadmium concerns as in the averages model? Why would cadmium be a problem there and not here?

Scenario three is average flow and maximum PK discharge concentrations, and there we are predicting that cadmium would exceed protection of aquatic life guidelines. I should know parenthetically that the cadmium guideline that Environment Canada has set is somewhere down around or below the average detection limit for the metal so that the concentrations are extremely low.

Mitigation would be treatment to lower ammonia and tie up metals in the PKCA or spray irrigation.

Now, scenario four is average, average and there is potential for slight exceedance of cadmium within 100 metres. You can see the two sets of numbers there, those are in milligrams per litre. If you knock three zeros off the beginning of each of those, you will have the numbers that are normally shown by Environment Canada or by CCME in

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their guidelines.

Then we move to closure, and on closure, we have the following assumptions: the PKCA will be reclaimed to land, and any water flowing from Stream C3 will be essentially uncontaminated. Water from the mine area after closure discharges to the open pit, and after approximately 20 years, the pit will overflow through a prepared channel to Pond A. Pond A is approximately right there, and the open pit is here, so we would have a channel flowing over to there, and then from there out, and no active water treatment.

Other assumptions we have made is that the ammonia would be completely oxidized prior to release, that's after 20 years, but that metals may still be present above CCME guidelines. If, after the monitoring of the water during the mining operation and afterward, the postclosure monitoring period indicates that metals or that all contaminants the concern are below CCME, we would expect to have the water exfiltrate from Pond A as long as it meets CCME and Health Canada guidelines. Otherwise, what we are suggesting is that a diffuser could be set up in Carat Lake, and we have had a design previously developed for us that would indicate that we can expect a 36-to-1 dilution

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within about seven metres.

I should note that dilution of discharge water has been proposed for the Snap Lake project, diamond project in NWT, and has been accepted. This would be diffusion of chronic -- potentially chronically chronic water and not acutely toxic water, there would be no discharge of acutely toxic water.

We believe the assessment is conservative for the following reasons. I have talked about CCME. Dilution models will use conservative assumptions. We expect that the volumes of water that need to be discharged would be less than what we have predicted. The -- there is also sequestering, and that's a scientific word that means that metals would be tied up in the aquatic environment, and that can occur from a number of forms, the chemical composition, chemical form of the metal, whether it is complexed or chelated or absorbed or free ionic, determines its availability to aquatic organisms.

The metal interaction with components of the lake ecosystem would generally reduce bioavailability, and absorption to biotic and abiotic particles suspended in the water will also reduce bioavailability.

There are a number of other mechanisms that

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occur in natural systems that I won't get into here but that are -- that also work to reduce availability of metals.

In summary, under average conditions, discharges during the mining will not be chronically toxic. Options are available to mitigate if required. The closure treatment can be handled passively if the open pit is allowed to fill naturally.

And that's the end of my talk, Madam Chair. Thank you very much.

MR. MISSAL: Madam Chair, we will move along to Mr. Andre Sobolewski next to discuss some of the land treatment methods. Andre received his Ph.D. in microbiology in 1987 from the University of British Columbia. In '89, he started an environmental consulting company specializing in treatment of industrial waste water.

He has extensive experience in the north having worked at the Keno Hill project in the Yukon, the Brewery Creek mine in the Yukon and Ekati in the Northwest Territories. He has authored a review of the environmental impacts on diamond mines worldwide on behalf of Environment Canada. So with that, I will let Andre start his presentation.

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MR. SOBOLEWSKI: Thank you, Greg, Madam Chair, members of the Board.

Several people before me have indicated that it may be necessary to treat water prior to its discharge. Metals are predicted to be very low, but ammonia, in particular, has been raised as a concern. I have been considering various ways of treating this water and concluded that a land treatment-based process would be suitable for treatment of this kind of water. So for the mine, specifically what I am proposing is that a spray irrigation-type of treatment system be used where water is applied on land, and ammonia is taken up by plants and microbes in the soil and removed out of the water.

Effectively, for this type of treatment then, the water fertilizes the land because ammonia is a nutrient.

What is this type of treatment system, spray irrigation? It is based on using spray guns that are placed apart to apply water evenly over a certain treatment area. Water is pumped from PKCA through a network of spray guns, so the treatment system consists of pumps and pipes and these different spray guns. I will show you in a little bit what it looks like.

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The treatment occurs as the water flows over the land, and at that time, both ammonia and the metals are removed from the water.

This is an area where we looked at but is not suitable from treatment, it has many boulders, it has steep slopes. This is an area which is suitable for treatment, it has a gentle slope, it is mostly covered by vegetation.

This is what the spray guns look like. You see the pipe bringing the water to a spray gun, it is pumped under pressure so the water is sprayed out evenly over the land. These are pictures that were taken on site in 2000 when we conducted tests on the site, and essentially what we wanted to see is if this approach would work, if we can pump the amount of water that is predicted that may need to be treated at a maximum and find if there are conditions that would work -- under what conditions this may work.

There are a lot of advantages to this type of treatment. First of all, it is very simple, there are few parts that are needed, it is easy to assemble, it is easy to get parts, and I think that is very important in the north. It is a flexible type of system, it is easy to start, you can start it very quickly, you can move it around.

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These types of systems have been used

worldwide in agriculture but also in mines for treatment purposes, and it is quite inexpensive, which is a good thing. One of the disadvantages is that it has not been used, it has not been applied in the arctic, not for the treatment of mine water in this kind of application.

The proposed treatment area is just in this area here next to Lake C3. There is 15 hectares available that could be used for spray irrigation; however, the calculations that I have made, based on what we expect of the water needing to be treated, show that we only need 5 hectares, so we have lots of spare room if we need to.

The 15 hectares of this area here is areas that is gently sloping, it is not very steep. It has a very high proportion of vegetative cover, it is not boulder fields like I showed in the video. It is organic rich soil for the most part. And in this area, we conducted field trials to show that, in fact, we could apply water at a high rate and still we should be able to get effective treatment.

Now, I have some concerns. I have to examine if there will be some impacts of this type of treatment, and I looked at a number of issues. One of them is that there is some chloride in the water

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and maybe that chloride could have an impact on the vegetation, so we conducted some tests on the site, and we have showed that when we apply water with up to 1000 milligrams per litre, that's when there is a toxic effect. However, the water to be treated has less than that amount, so I concluded that there should not be any impacts from chloride in the water on vegetation.

Similarly, I looked at a number of other issues. There is ammonia in the water, but actually it will have a positive impact in that it will stimulate plant growth.

There are some low concentrations of metals, and they may accumulate in soil, we have to worry about that, and we will be monitoring soil to see what sort of accumulation of metal may occur and to make sure that it does not occur -- that it does not accumulate past safe levels.

The water that is being applied is -- has some fairly high salt concentration, it is not fresh water; however, I measured the salt concentrations in the soil where I am thinking of applying the spray irrigation, and in fact, the salt concentrations are higher in the soil than they are in the water, so, in fact, I predict that the salt concentrations will decrease during spray

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irrigation.

And then there is a concern that the spray

irrigation will affect the permafrost in this area. This summer, there is a couple of test pits that were done where the active layer was measured, and it was shown it was fairly deep, so it is expected that there should be minimal or no impact on the permafrost; however, it will be monitored, and if we see that there are some impacts that would develop, then we can move the treatment area to other places or expand it as necessary to prevent any further impacts.

So I mentioned that there will be some monitoring. There is a monitoring program that has been developed and that needs to be detailed that goes together with the spray irrigation. We have to monitor the quality of the water that is being treated to make sure that it -- the water that is discharged into the lake is good water. We will be monitoring metals in the soil, as I mentioned.

We will be monitoring the active layer to make sure permafrost is not degraded, and then we have some contingency measures available, so if ammonia concentrations are too high in the discharge going to Lake C3, we can expand the treatment area. As I mentioned, I calculated I

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only need 5 hectares, but I have 15 hectares available, so there is room for that. We can move it around if there is problems with permafrost or there is problems with metals in the soil.

So in summary, there is a -- if it is necessary, we can provide a way of treating the water from the PKCA to make sure that we will be monitoring the discharge from PKCA to find out if, in fact, it is necessary or not. If it is necessary, then I propose that spray irrigation is a good way of treating the water, making sure that it is good quality when it comes into Lake C3, and I propose a monitoring program be implemented if there is some spray irrigation to make sure that there is no negative impacts on the land where the treatment would occur. Thank you.

MR. MISSAL: Madam Chair, that essentially brings the water portion of our presentation to a close. In terms of time, I would ask your advice on what you would like to do for lunch. If you would like us to do one more presentation, it would probably take about 20 minutes or 25 minutes.

CHAIRPERSON: Okay. There is one more presentation you said takes 25 minutes, so we will do that.

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MR. MISSAL: It will be about 20 minutes or so, yes, that's right.

CHAIRPERSON: Okay. Go ahead.

MR. MISSAL: Okay. Thank you. Madam Chair, we are going to do our next presentation will be on aquatics, and that will be done by Rick Pattenden the Mainstream Aquatics Limited.

Rick is the principal and senior biologist of Mainstream Aquatics. He has pursued a career in aquatic ecology and environmental biology for more than 20 years. He has been the primary investigator for the Jericho Diamond Project since the base studies were initiated in 1995, and I will let Rick proceed with his presentation.

MR. PATTENDEN: Madam Chair, Board members, I'll go over my -- the outline of my presentation. At first, I will discuss the baseline studies that were conducted. I will give a description of the EIS approach that was used. I will describe or discuss the significance of the impacts, and then I will briefly go over fish habitat compensation options and the proposed monitoring program for aquatics.

So we go into baseline studies. The approach used for the baseline studies was to collect information that describes the aquatic biologic

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community in sufficient detail to allow prediction of impact. I think it is important to make this distinction because several intervenors had indicated that the type and the amount of information collected during the baseline studies were inappropriate for monitoring purposes, so I, in fact, agree with them.

The baseline studies were used to undertake a proper impact assessment for the project. They were not designed to collect predevelopment information for monitoring. I certainly agree that that type of information is required, and it will be collected.

The components of the baseline studies included limnology, periphyton, phytoplankton, zooplankton, benthic invertebrates, fish and fish habitat. These are components that you need to examine to assess project impacts.

The amount of effort expended for the aquatic studies was extensive. We sampled lakes and streams during multiple years between 1995 and 2000, five years, and during three seasons during the open water period, the spring, summer and fall.

Just to give you an example of the components examined and the years of study, as you can see, there were several years and multiple components

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examined. On the left of the table there is a column called the "type" of study component. During, the initial phases in 1995 and 1996 when the project description wasn't finalized, the

baseline studies were more general in nature. Once the project was better defined in 1999 and 2000, in particular, we were more focused and undertook detailed studies of particular water bodies to quantify what the impacts would be.

Again, here is an example of the sampling effort. I won't belabor the point. As you can see, we have looked at an extensive number of lakes and streams.

This map just gives you an overview of the sample of water bodies. Again, if you -- the water bodies in blue, streams and lakes areas that were sampled. The clear water bodies were not sampled. As you can see, the majority of the area did have sampling completed. Just as an overview, this is what we referred to as a control lake, this is Lake C3, the water continues to flow through to Carat and up through to Jericho Lake and then down into the Jericho River, and Contwoyto is to the east here.

So what were the results of the baseline studies? In a nutshell, lakes and streams in the

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project area are typical of most water bodies in Nunavut, they are cold, clear, and they have few nutrients. The aquatic communities are simple. Typically there is few species, and they exhibit low productivity, and a good example of that would be few fish and slow growth of those fish.

The fish populations in the area are residence or landlocked. I say that because there is a cascade located just downstream of the outlet of Jericho Lake on the Jericho River, it is 15 metres high, and the fish can get through if they really tried hard, but it is virtually impossible for them to get through, and we actually looked at that question during several years of study and didn't identify any accumulations the fish at the bottom of the cascade, which is a clear indication to me that fish weren't moving through the system. So fish in the project area are resident, they are not migratory. The most frequently encountered fish are lake trout, round white fish, arctic char and slimy sculpin.

Most lakes in the project area can support fish year round. Most streams in the project area are small, and they are only used by fish during the flowing water period. That is because they freeze to the bottom.

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Again, this is an illustration of where we found fish in lakes and streams. Water bodies in red contained fish. Those in blue that were sampled did not contain fish. The white dots represent the outlet areas of streams where fish

were found, but further up in the stream no fish were found. The only exceptions of the fish -- of the water bodies that were samples where no fish were found were a small water body here called Lake C2 at the headwaters of Stream C1 and another small water body here called Lake C4 which drains into Carat Lake, all the others contained fish.

If we go on to the Environmental Impact Statement, the approach -- basically, we followed the requirements of the Nunavut Impact Review Board environmental impact assessment guidelines. Fish were used as a valued ecosystem component. We chose fish because they are socially important and they are good indicators of impact.

Impacts on other aquatic biota such as phytoplankton and zooplankton were examined indirectly through project effects on fish, and, for example, if reduced water quality would affect zooplankton abundance, that would affect food for fish, so that's how we looked at that aquatic component.

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We used a conservative definition for significance of impact, and that definition was a project effect that causes a permanent change in the fish community. Again, I say this is concerted because we could have chosen arctic char, for example, which is one species. So if there was a project effect that didn't affect arctic char, then there would be no impact, but because we chose fish community, any fish population that would be affected by the project would be significant.

The potential impacts caused by the project can be based or categorized into three groups, direct mortality of fish, loss of fish habitat or reduced water quality.

Now, reduced water quality was examined in terms of whether it was toxic to fish or whether it excluded fish from a particular habitat.

The impact assessment looked at many different types of potential impacts. I'm just going to present six which caused residual impacts after mitigation and something we had to look at in more detail. The six are use of explosives at the mine site, Stream C1 diversion around the mine pit, the water intake causeway used to provide water for the mine site, which is the causeway is located in Carat Lake, discharge from the PKCA which flows

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into Lake C3 through Stream C3, mine site discharge from the -- sorry, mine site discharge during postclosure, and finally the processed kimberlite containment area footprint.

The first potential impact was use of explosives. This slide shows you the mine pit and

the potential zone of impact where explosives used can affect fish. This circle is not to scale, it just illustrates what the potential problem is. Obviously when they are using explosives in the mine pit, the blast effects could extend through Stream C1 and into Carat Lake, or if it was large enough, it would go as high as Lake C1.

The fish species that could potentially be affected by the blast zone are those that live in Carat Lake and those that use the lower section of Stream C1. There is also fish population, lake trout and slimy sculpin in Lake C1.

So what are the -- what's the outcome of the impact assessment? Well, first, the amount of explosives used and the detonation frequency were reduced as far as possible to minimize the blast zone or the area of impact. So once that was done, the impact zone was restricted to Stream C1 because it is right next to the blast zone and a small portion of Carat Lake at the stream outlet. The

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impact zone didn't extend to Lake C1. The impact zone based on DFO guidelines or the impact would only affect fish eggs and not fish, and this is based on DFO criteria.

So the impact is on fish eggs, and finally, the only fish eggs that are present, potentially present would be those of slimy sculpin. There are no arctic grayling in Stream C1 or no arctic grayling eggs or eggs of other species in Stream C1.

So based on this information, the conclusion was there would be no significant impacts because the sculpin eggs at the mouth or in Stream C1 weren't essential for the long-term health of the slimy sculpin population in the lake, so we concluded no significant impacts.

The second potential impact is the Stream C1 diversion. This is represented by the dotted line beside the mine pit. It is required to divert outlet flow from Lake C1 around the mine pit, obviously for safety reasons and others, and down back into Stream C1. The diversion will cause dewatering of a certain portion of Stream C1, so there is certainly a potential impact. Construction of the diversion and maintenance may cause infrequent suspended sediments to enter

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Stream C1 further downstream. So those are the two potential impacts associated with diversion.

So what's the results of the assessment? As far as mitigation goes, the diversion will be designed to ensure structural stability and accommodate peak water flow, therefore, a series of erosion problems are not expected.

The dewatered section of the Stream C1 affected by the diversion is not used by fish. During five years of study, fish were never found more than 100 metres upstream at the lake. The diversion is located 175 metres upstream from the lake. We acknowledge that some food production may be reduced by the diversion, but it is not enough to cause serious consequences to the fish.

Sediments would be introduced but only during the initial infilling of the diversion and during any required maintenance. There is no maintenance schedule established for the Stream C1 diversion, that can't be established until it is operational. But maintenance is expected to be very infrequent. So the impacts of sediments introduction would be restricted to the lower section of Stream C1 and a small portion of Carat Lake at the stream outlet, and the impact would occur infrequently, probably just once during the initial infilling. Based on

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that assessment, we concluded there would be no significant impacts from that.

Another potential effect is the water intake causeway, it is located in this area. It is required to protect the water intake pipe from ice scour, it is approximately -- well, it is 90 metres in length. As you can see, it is located adjacent to stream C1 . The potential effects would be the footprint of the causeway covering fish habitat and potential consequences to water circulation. And a third impact would be sediment introduction into Carat Lake during construction.

As far as mitigation, the sediment introduction can be maintained using proper management during construction. The causeway is small, 90 metres long. The causeway is not located in important fish habitat, i.e., spawning sites. The area where the causeway is going to be located is used for feeding and rearing, but no spawning areas were identified where the causeway is to be located.

Altered water circulation is measurable, but we feel that there would be minimal effects on adjacent fish habitats. So the conclusion of the assessment, there won't be any significant impacts caused by the causeway on fish.

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Another potential impact obviously is the PKCA discharge. The system is going to drain through Stream C3 into Lake C3. Stream C3 is used by fish for rearing purposes by several species. Operation of the PKCA may cause contaminated water to flow downstream if unmitigated, and the water management strategy is for basically all discharge into Stream C3 to be terminated for two years, so

that's an obvious impact.
The mitigation will include water treatment if required, so potential water quality impacts would not occur, so that was excluded from the assessment. As I mentioned, discharge would be altered in Stream C3. The impact stream habitat is of marginal value to fish based on DFO's criteria. Fish do use the stream, but it is very small, and it is not important to fish.
Also, there is low numbers of fish that use the lower section of Stream C3. Based on that information we again concluded that there would be no impacts to fish, or no significant impacts to fish.
Mine site discharge postclosure: This assessment was undertaken in the event that a diffuser and pipe system would be required during postclosure. As was described earlier, mine site

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flow would be diverted to the mine pit, if necessary, then to Pond A, and then if necessary, through a pipe and diffuser into Carat Lake. So we undertook an impact assessment for this scenario. There is a small red dot at the end of the pipe, and that essentially is the impact zone if this scenario was undertaken. Within seven metres of the diffuser, water quality would not exceed CCME criteria for the majority the potential contaminants.
There is no important fish habitat out there, although I'm sure fish frequent the area. So the potential impact is the water quality discharge may result in loss of fish habitat and reduced fish health in Carat lake. The impact would be mitigated by diluting the concentrations using a diffuser. The impact would be restricted to the mixing zone, which is approximately a seven metre radius, and the impacted area is not important to fish and is not used by large numbers of fish. Based on that information, we concluded there was no significant impacts on fish.
The final potential impact for the project is the footprint to the PKCA. The PKCA will be located in what I call the Long Lake system. There is Long Lake, there is a small pond here and

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another one here. Each of these water bodies contain fish. Slimy sculpin and burbot are found in Long Lake, in this water body, slimy sculpin are located there. So obviously that habitat would be destroyed by creation of PKCA and those fish populations will be lost.
So there will be a permanent loss of fish habitat in the Long Lake systems, and the two species populations that would be impacted would be

slimy sculpin and burbot. There will be a fish salvage program undertaken to save as many fish as possible, but because we are dealing with very small fish, slimy sculpin don't grow very large, it will be very difficult to collect all the fish.

So the outcome of that effects assessment is, yes, there will be a significant adverse impact on fish that reside in the Long Lake system. I wanted to discuss a little bit about the importance of that impact. The first is the system provides marginal fish habitat compared to other fish-bearing lakes in the immediate vicinity.

The water bodies that are affected are quite about, about 10 hectares in total, and there is just enough depth for fish to survive the winter with a maximum depth as in Long Lake, and that's eight metres, and that's pretty well the cutoff of

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where you would find fish. So the fish are just good enough for -- or the lakes are just good enough for fish to survive.

The lakes support low numbers of only two species; virtually other lakes in the study area have four or five species present. From an ecological perspective, Long Lake is not as important as other fish-bearing lakes in the area. And finally, if a lake must be impacted, Long Lake is probably your best choice.

So in summary, are the impacts on aquatic biota significant for the use of explosive? The answer is no. Stream C1 diversion? No. The water intake causeway? Again, no. The same for the discharge from the PKCA and the mine site discharge during postclosure. So the only significant impact on aquatic biota based on our assessment is the footprint from the PKCA.

I'll go very briefly into our fish habitat compensation plan which has been presented to DFO, it is a plan that's currently being discussed and has not been finalized. The approach we used for the compensation plan was to use methods that provide the greatest benefit to fish and will last after the mine is closed, and it is based on proven methods that meet DFO fish habitat compensation

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requirements.

The two broad compensation options that we presented to DFO included physical enhancement of fish habitat, and improvement of fish access to critical habitats.

DFO has asked Tahera to look at mine pit enhancement postclosure, and that is something that Tahera is currently looking at.

I don't want you to concentrate on the fish numbers, just basically it gives you an overview of

the type of habitats that are affected, streams, lake shore of Carat Lake and lakes, the Long Lake system, the affected square metres of habitat, the amount of compensation that would be created if methods proposed by Tahera were implemented and the ratio of how much habitat you would gain by compensation.

Finally, I will give you a brief overview of our aquatic effects monitoring program. The approach is to collect reliable information that would allow detection of change caused by the project and to test predictions of project impacts, that's the primary objectives of any monitoring program.

We will focus on components that are good indicators of change. We will use accepted sample

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design and methods that are typically used at other mine sites, and we will invest sufficient effort in order to detect change associated with the project if one exists.

These are all essential components if the monitoring program is to work. And, finally, the components that will be examined, first the potential impacts that will be monitored are nutrient loading, sedimentation and potential contaminants from the mine. The monitoring components will be rate of sedimentation, the effects on periphyton, we will also look at phytoplankton, zooplankton, and benthic invertebrates, and finally metal contaminants in fish will be monitored.

That's the end of my presentation. Thank you very much, Madam Chair.

CHAIRPERSON: Thank you. Greg?

MR. MISSAL: Thank you, Madam Chair. I think for us it is an appropriate time to break for lunch if that suits you and the Board.

CHAIRPERSON: Okay. Yes, we will break for lunch. The following people have arranged lunch and will have lunch here at the hall, there is NTI, three people for NTI, KIA, Fisheries and Oceans, Tahera, the Impact Review Board, INAC, and

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-NRCan, I believe you have arranged lunch for here. Stephanie?

MS. BRISCOE: Madam Chair, we did prepare some extra lunches, so there is enough to feed everyone in the room if you want to stay for a bagged lunch. The original plan was in Kugluktuk there were no restaurants and we were brown bagging them to take them with us. So obviously the plans have changed, we now have the brown bags already prepared, so we have set it up at the back of the room. Gladys and Jorgen, the brown bags with the

dry goods are on one end, your sandwiches will be separate. There is a macaroni salad and some fruit, so just work your way down the conveyor belt and enjoy the hard work and effort that was put into that.

CHAIRPERSON: Thank you. We will resume again at about 5 after 1. And if you -- just a reminder, if you haven't signed in yet, you are to sign in at the front, thank you.

(RECESSED AT 12:21 P.M.)

(RECONVENED AT 1:09 P.M.)

CHAIRPERSON: Okay. Why don't we start again? We will continue with Tahera. Greg, go ahead.

MR. MISSAL: I would like to thank the

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NIRB and Staff for a great lunch, that was most enjoyable.

This afternoon we are going to start off with Dr. Robert Humphries going over an air quality presentation. And Robert is a manager of Air Quality Modelling and Assessment Group for Levelton Engineering. It provides services in dispersion modelling and meteorological monitoring, remote sensing, meteorological analysis and air quality assessment. He received his doctorate in meteorology in 1974 and has over 25 years of experience in air quality modelling and assessment.

The projects have been located in Canada, United States and overseas. So with that, I will leave it to Robert to go into his presentation.

MR. HUMPHRIES: Thank you, Greg, Madam Chair and members of the Board. On the air quality modelling and assessment, I'll basically be going over the methodology, the emission sources, results and assessment, mitigation and monitoring and a brief summary of the conclusions.

Within the methodology, we looked at the climatology, the meteorology involved, model selection and modelling protocol. To do the air quality assessment, we have to rely on using computer models to estimate what the various

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emissions from the mine site will be and how they will impact the local ambient air quality. First thing we need is to have appropriate meteorological information. Unfortunately, it is somewhat limited. At that time the Lupin site, they have meteorological data, but one of the key components, which is cloud cover and ceiling, is only measured -- sorry, slow down, right. I'm getting pumped here. It is all the energy from the lunch going through me.

The cloud cover and ceiling height is key information that we need, and unfortunately at

Lupin it is only measured for part of the day. At Jericho, at the site there, they have a weather station, but it only measures wind speed, wind direction and temperature. So the problem is that the available data did not allow us to measure something called the atmospheric stability which the models need.

So we conferred with our colleagues in Environment Canada, the meteorologists there, and they agreed that we could use what is called a screening meteorological data set. Basically, it is an artifical data set which goes through every possible combination of weather condition, and then the model uses that to determine what the worst

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impacts could be.

Then to determine what the impacts will be, we have to simulate the dispersion of emissions from a variety of the point sources at the site, the area and the volume sources, and to do that, we selected what is called the industrial source complex model. This is a dispersion model that's regulatory, approved throughout Canada and many of the provinces and by the United States Environmental Protection agency. With this model, we can actually use the actual terrain of the area.

And we have a term we call a "receptor grid." It is really just all the locations that the computer can calculate the ambient concentrations. We use a finer resolution in close, 100 metre spacing out to about a kilometre and then 200 metre spacing out to two kilometres, it gets broader, 500 metre spacing out to five and then finally 1000 metres or one kilometre, and that should be to ten kilometres. Then we have to determine what is called the mixing height, in other words, that portion of the atmosphere where things are well mixed beyond which it is not, it is laminar flow, and so we use what is called a mechanical mixing height. This is just a method.

For the emission sources, we had a variety of

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them at the site to consider. The point sources would consist of the generators, the ore dryer and the incinerator and determine what the emissions will be from each of those point sources. We used what is called the AP-42 emission factors, which is put out again by the US Environmental Protection Agency, and we are available for some equipment if we had the manufacturer's values, we would use those. For the mobile sources such as the dozers, the ore trucks, loaders and trucks, again, we use the US Environmental Protection Agency emission factors for heavy-duty and non-road engines, and in some cases we did have manufacturer specifications.

Some of the mobile sources are mobile in that they are trucks going up and down the road, whereas others are in one general location, such as in the mine pit or perhaps at one of the stockpiles.

The other type of source, what we call fugitive emissions, these are typically driven by windblown dust, for example, or evaporation.

The fugitive sources consist of the storage piles, any material drops and when you are dropping something, some dust can be created, any blasting operations, and, of course, with vehicles travelling along the road, there is road dust to consider. Again, we use the AP-42 emission factors

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and also emission factors from the air pollution engineering manual.

All these sources now have to be characterized some way so that the model can handle them. For the stockpiles, we treated those as what are called area sources, that is, the emissions are coming off uniformly over a broad area. Blasting and material drops are considered to be volume sources because the emissions can occur over a volume. Mobile and road sources, we treat it as line sources, and those were emulated by taking a series of volume sources and sticking them end to end, and then finally the stationary sources which are fairly easy, and they are treated as a point source.

Now, first of all, to put things in perspective, we would like to understand a little about the background air quality in the region. Now, there was not any ambient air quality monitoring that was done, so what we did is we looked at -- found that their -- Environment Canada has published the monitoring of ambient air quality at other locations, so we looked at Whitehorse and Yellowknife, which are presumably going to be not as pristine as at the mine site.

The first table, just to put things in

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perspective, shows the Canadian ambient guidelines for the two types of pollutants that were monitored, oxide and nitrogen, nitrogen dioxide and sulphur dioxide. You can see that the -- for example, for nitrogen dioxide, the maximum acceptable guideline level is 400 micrograms per cubic metre, that's just how much pollutants you can have in a cubic metre.

When you look at what was actually measured in the two locations, you can see that the background values are extremely low, and you look even at the maximum one hour case is only a percentage or so of the ambient guideline. And if you look at the annual average, it is very, very

low.

If we look at a thing called the 90th percentile, that's the number which is handy because a maximum value can sometimes be a one event extreme. The 90th percentile says that 90 percent of the time these concentrations will be no greater than, for example for NO2, two micrograms per cubic metre.

The summary, therefore, is that the air quality in the region is very good and the background concentration is expected to be quite low. Now, we look at what's potentially coming off

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the mine site. Exhaust gases, one of the first things we look at is greenhouse gases.

Greenhouse gases are not looked at as an ambient contaminant, but they are more of an interest because they contribute to the whole concern of global warming. To put it in perspective, the greenhouse gases, at a maximum, would contribute only .0067 percent of the Canadian total. We look at nitrogen dioxide, which now we are talking about contaminants, 537 tonnes per year is the emission inventory estimate. We looked at NO2, concentrations are expected to be below the ambient guidelines beyond the property, except in a few cases.

We look at sulphur dioxide, 216 tonnes per year is expected. And the SO2 concentrations are generally below the maximum desirable guidelines beyond the mine property. They do not exceed the maximum acceptable guidelines once you get about 500 metres from the pit.

Particulate matter, primarily cause is from fugitive dust, that's the majority of the source for particulate matter. The exhausts, of course, will put out some particulate matter too, but it is small compared to the fugitive.

So the model concentrations are high because

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of the fugitive dust, and it is based on conservative assumptions; that is, all sections of the road are constantly creating dust and all parts of the stockpile are constantly creating dust, which is not going to be the case, but it was a conservative assumption.

Finally, looking at concentrations in the mine pit itself, because as you get down into the mine pit, there is possibility when it is stable, low level inversions, you could, at times, cause a buildup of emissions in that pit which could exceed the ambient guidelines, but they are not likely to exceed Workmens' Compensation Board levels.

The concentrations in the pit can be monitored, there is many ways to do this. One

simple way would be to give workers a CO, carbon monoxide, badge, because carbon monoxide is a good surrogate for combustion gases. So if you are starting to get high CO levels, then you know some of the other exhaust parameters are getting high.

So basically only the particulate emissions show any real indication of potentially high ambient concentrations, but mitigation and monitoring for those could include watering of the roads and the stockpiles, controlling of vehicle speeds, since the emissions from -- the dust

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emissions from the road are a function of vehicle speed. To monitor what's going on we could install dust fall monitors to see whether or not fugitive dust really is a serious issue or -- and you could install PM10 or PM2.5 monitors. Now, PM10 refers to particulate matter that is 10 microns or smaller. PM2.5 is 2.5 microns or smaller, and this, of course, is of interest because those small particulars can lodge within the bronchial passages.

To minimize equipment and vehicle emissions various measures can be taken such as making sure the equipment is operated at rated loads, following routine maintenance procedures, and where practical, which wouldn't be the case in the wintertime but certainly in the warmer weather, if a piece of equipment isn't going to be used for a few hours, you could turn it off when not needed.

Potential ambient concentrations of nitrogen dioxide and sulphur dioxide are generally then within the guidelines, and the highest concentrations are isolated within the project site. Fugitive dust may be an issue, likely in the summertime, but it can be mitigated. Looking at the cumulative impacts, say with Lupin, we predict that this cumulative impact would be minimal.

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Finally, just a brief summary of it all, the impact of the Jericho emissions are expected to be negative in direction; that is, there will be a negative impact at a local or subregional extent, basically around the mine area or the property area, low in magnitude, medium term in duration. It will happen occasionally, it depends upon the weather conditions. The impacts can be reversed after the duration of the project; when the project goes away, there is no more emissions. So the overall consequence is low to moderate, and the likelihood of adverse effects is unlikely. Thank you.

MR. MISSAL: So that ends our air quality presentation. The next presentation will be the wildlife presentation, and I would like to

call on Ben Hubert to do that for us.
While I'm waiting for that to load up, I would just like to state that Ben has worked extensively in the north over a 30-year career. He did live in the north for quite some time, and now he resides in Calgary working at his own consulting company in Calgary.
And I'll turn it over the Ben.
MR. HUBERT: Thank you, Greg. Thank you, Madam Chair, for this opportunity. I'll go

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over the wildlife situation quickly, focussing on those aspects of wildlife within the project area that really stand out as significant and different from the area around the project area.
And so baseline studies began in 1995, and we will summarize what and when the studies were done, an overview of the results, potential interactions between wildlife and the project, cumulative effects, and we will also touch on monitoring.
In 1995, den sites and raptors were looked at. Again, in '96 and '97 birds were added to the list. In '99, small mammal sampling was added with caribou and muskox, as well as caribou trail mapping. 2000, more small mammals were sampled, along with more nesting bird work. 2001, small mammals and raptors.
For that entire period, we had the benefit of the telemetry data from the GNWT that they started in 19 -- late 1996. We will present the telemetry data from the 1996 to 2000 period. And very important, but often not given very much time, is the fact that the camp was occupied either by exploration workers or by camp personnel pretty much the whole time. And they have kept a very good log, and that log describes and records significant wildlife events in the project area.

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I should also say that field studies on wildlife were done by several different investigators under the management of several project managers. We tried to pull all the various bits and pieces of data together and present it in the context of the project description that we are reviewing now and looking at the significant interactions between the project and wildlife, and that's what we have presented in the EIS.
On birds, the most common birds in the area are the small ground nesting birds. Longspurs and horned larks and pipits are the most common nesters. The larger birds, jaegers, arctic terns, and waterfowl, are relatively uncommon, they are present but not abundant. Ptarmigan, of course, and then the raptors are the real standout in the bird community. No threatened or endangered

species in the project area were recorded.
The studies, and I'm here commenting on the points raised by the Canadian Wildlife Service of Environment Canada in response to the draft EIS. Studies, perhaps, were not done the way Environment Canada would have done the studies, but the results of the studies that we did are very similar to results of similar studies at the Ulu (phonetic) project, for example, and at Izok project west of

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there. And so while the Canadian Wildlife Service has some issues with the way we did the studies, I am confident that we and the people monitoring the wildlife from camp, we have not missed anything significant.
We have presented what would be expected. The bird community there is a normal tundra bird community, and I think the EIS and the baseline studies capture a fair and representative description of the bird community for the project area.
Mammals, again, like birds, the mammals in the area are what we expected to find. Lemmings and voles, of course, are cyclic. Ground squirrels are everywhere on dry sites. Arctic hare are spread relatively evenly through the area. There are a few fox and wolf dens in the project area, are north and east of the strip. Grizzly bear wander through the area, but the project has had a very effective mitigation plan to date with no ongoing bear problems.
Muskox are not abundant but in the area in the higher ground, and of course the standout is our caribou, and they are of the Bathurst herd. Again, no threatened or endangered mammal species were encountered.

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The highlights are raptors and caribou. Raptors include rough legged hawks which prey primarily on cyclic lemmings and voles, and so the rough legged hawk numbers fluctuate in response to the abundance of lemmings and voles.
Peregrine falcons, golden eagle and gyrfalcon are also present but less abundant than rough legged hawks in a high lemming year.
That caribou shot is a shot of animals that were coming through from south to north, past the portal site and streaming through the area one late August afternoon and came through the area in a steady stream for about -- at least six hours.
Surveys on raptors were done in six years since 1995. There are 22 known raptor territories in the project area, but only a maximum of 11 of those territories have observed to be occupied in any given year, that was in 2000. There are two

sites located within a kilometre or two of the project that may be at risk of disturbance, but I'll point out later that we believe that they will be displaced rather than lost.

This is the distribution of raptor nest clusters, they range from the one seven or eight kilometres northeast to the ones close, close in. These around here are at the edge of the Willingham

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Hills, and I believe it is these two that are at risk of disturbance of the -- by project activities, and I think that they will probably -- if they are disturbed too much, they will move to an unoccupied territory rather than leave the area. That cluster there is usually occupied by a rough legged hawk. It is, as you can see, immediately over the winter road, but road activities will have been finished by the time the hawks return in late May, and so I don't think that site will -- is at risk of disturbance.

Here is a shot of animals that came right past, actually. They are covering the road between camp and the airstrip. They were moving through the area from north to south in early July 2000, and the next series of slides will show the distribution of telemetry data showing the Bathurst herd between late 1996 and I think it is September 2000 where the data was cut off.

The different colours are representative of the different years and the data set. We are dealing with spring migration data here, and you can see that the wave of migration, the Jericho project is on the margins of the migration to the calving ground, and the calving ground in this period has been primarily in there.

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Now, the data that was recorded by the camp personnel in the wildlife log reflect this distribution very well. And in April, animals started moving through the caribou Carat camp area in small numbers in early May. The groups were in the 10s to 20s or greater, falling off very rapidly in -- after mid-May when virtually no animals were coming through during the spring migration period.

The calving period, there is virtually no animals around the Jericho project, but they show up just north of there, perhaps, at Cathawichaga Lake and just west of Cathawichaga Lake, and that shows the distribution of the herd through most of June in the '96 to 2000 period.

The postcalving period lasts from late June through late July, and we start seeing a maximum distribution of the summer herd again, and it is in this period that we can see dramatic movements of caribou through the project area, and these mass

movements of caribou last a very short time, a matter of hours to perhaps a half a day, and they can come from south to north or from north to south and then they are gone again. But the EIS does make the point that caribou have to be expected at any time during this period.

Late summer would include August and most of

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September. Again, I believe in early August, as the shot of the animals earlier showed, we have to expect animals in the project area. But as the next slide shows, fall migration and rut, all of the animals in the herd are well -- have moved through and, in fact, most of them are in the Northwest Territories across the border with no animals lingering in the project area, and I -- it is highly unlikely that the project would encounter animals during fall migration and rut.

And early winter, November and December, we are starting to see the distribution that will not change very much until spring migration.

All of the data that provided the previous maps were boiled down to calculate what is the average annual daily movement of caribou in the Bathurst herd during the seasons of the year. And the heavy red line shows the average daily movement of these collared female caribou over the course of the year.

The green triangles are the maximum individual movement that was provided by telemetry data, and the black diamond is the minimum individual movement by any individual caribou.

The reason I put this up, and the reason why it is important is it shows that in the periods

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that the animals are likely to be in the -- encountered by the project, the spring migration when everything is frozen up and they are moving more or less in a straight line following each other to the calving grounds and postcalving period and late summer, these animals are moving in the order of 10 to 15 kilometres per day.

So while an animal may be past the project, there won't be very much opportunity for a significant negative interaction because the animal is there for a very, very short period of time, ten minutes, and then the animal might have passed from one extreme edge of the project through to the other extreme.

In 1996, it happened that on the -- I think it was the 30th of June, the airstrip was under construction, and a large group of animals came in and they decided to stay for a while. They fed for a while, they bedded down, and everything shut down because it was impossible to move, construction had

to stop. The caribou were in control, and mid-morning the following day they were all gone like ghosts on the tundra, the herd of tens of thousands of animals had vanished.

And so these are the interactions that the project must be prepared for, but as I said, I

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think the opportunity for significant interactions are very -- are very brief. And so the opportunity for dislocating the caribou are minimal, and the opportunity for dislocating the project on an ongoing basis is minimal as well.

So when caribou are coming through an area in these numbers during the snow-free period, they leave trails, and here is a picture of an area just north and -- sorry, east of camp, in the highlands east of camp of caribou trails that have been used over and over and over again by animals passing around that part of Contwoyto Lake. To see how these caribou trails fit in relation to the project, we mapped trail densities, and areas like that and that and that where we have red -- encountered red trails, we have got more than one trail for every two metres. So every time you take a step across the land, you are crossing -- every time you take two steps you are crossing a caribou trail. The density is very, very high.

The mid-green shade is lesser density, and the -- or the dark-green shade is medium density and the mid-green shade is lighter density with these areas in white having very, very few trails. And so the pattern of trail density shows us the pattern of movement that we should expect coming --

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of caribou coming through the area, and these really are a reflection of the topography.

Animals coming from the west and the south would probably be crossing just above Carat Lake there which reflects this trail and follow through the project area and move up there or move into the gap towards Contwoyto Lake.

Animals moving from the north past the airstrip would be deflected by Carat Lake and go through that area, and so we see this lake shore trail complex and the complex that would come just east of the airstrip. And so when we superimpose the trails on the infrastructure plan, we show that there is going opportunity for being -- moving through the area around the project facilities and that there really is limited opportunity in the project for a barrier to migration.

The interactions of a more permanent nature, site development and waste rock cover, will take up 220 hectares of land. This cover will be placed in winter so the nesting birds will not be affected,

but up to the area required for 400 breeding territories of small ground nesting birds will be displaced. Similarly, the same area will be displaced in terms of small mammal habitat, particularly lemmings and voles.

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As I mentioned earlier too, raptor territories are at risk of disturbance and may be displaced to vacant territories in the area. And caribou are expected to migrate through the project area in spring and in late June through early August.

Here I have got some shots of interactions of caribou. This was taken in late June, early July at Lupin. There is a herd of primarily bulls and yearlings still on migration north, and here they are crossing with water line and the road parallel to the water line at Lupin.

Here is the shot at Carat camp, it is the same herd you saw earlier. Here they are, I don't know if they are going to overtake the pickup truck or stall it out or pass it, but they didn't seem to be bothered by the pickup truck on the road between camp and the portal.

And you can see when something, caribou like that move into an area that there is no point fighting it, the caribou are here, they are going to do what they want, and you may as well park your truck and enjoy the sight.

Here is another shot of caribou between Lupin and the Contwoyto Lake close to the marina there. On this particular occasion, there were perhaps

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2500 caribou that were feeding and resting there for much of the afternoon, and the next morning they were all gone and moved on. This was June, July, 1999.

We have examined the opportunity for cumulative effects, and we don't think that there are any affects that are likely from other projects on wildlife in the project area. Similarly, we don't think there are projects, cumulative effects on other projects from nonmigratory wildlife. So the project area is not in an area that is affected by the activities of other projects in Nunavut or the Northwest Territories.

Potential cumulative effects on the local animals: There is, however, potential for cumulative effect on the Bathurst caribou herd, and this pertains primarily to hunting, as is shown on the next -- on this slide. This shows the lands that are primarily taken up by the range of the Bathurst caribou herd. The mining projects, that's the Jericho project, this is the former Lupin mine, it has been closed now for a while. This is the

location for a prospective mine at Izok Lake. The whole project is on hold at the moment. This is Ekati mine and Diavik Mine and Snap Lake, a proposed future mine.

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All of the red caribou symbols are locations for outfitting camps, and each one of them is located in an area that is optimum for that operation to hunt caribou primarily in August and September. And so the combination of interactions with mining activities, while not intended or directly -- intended to directly cause mortality, we know that hunting camps are intended to cause mortality, and so I think it is prudent for all the parties on the Bathurst caribou range to monitor their activities and the effect of their activities in relation to the welfare of the herd.

Potential wildlife interactions and related mitigation: Wolverines and grizzly bears are potential scavengers at the site. I think the -- Tahera has demonstrated that they can have an effective mitigation plan for scavenging by incineration as well as electric fence. There has been an electric fence at the site. And with a project with numerous people on site, we are recommending an effective bear alert system that everyone knows through radios and communications that there is a bear in camp.

Disturbing raptor sites, I think it is important to have staff aware of where raptor sites are and restrict access to them.

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Road and airstrip traffic, we have seen that caribou must be expected through the area and that they will take the right-of-way. Traffic needs to be suspended in certain cases, and roads will have grated ramps to ease crossing by caribou at the strategic locations.

A concern was raised over access by caribou to the pit, and I think it may be prudent to establish barriers, although as the graph showed, caribou moving through the area can get around the project facilities easily without being forced near the pit.

Long Lake access, concern has been raised over access to contaminated water. Again, the same principle applies, while there may be a risk of caribou coming in contact and perhaps ingesting contaminated water, the opportunity for that will be very brief because caribou are not expected to hang around the area for any prolonged period of time. The business of hunting, the project will not facilitate hunting, and no hunting by project personnel will be permitted, and I believe there will be a no-firearms-by-staff policy in effect.

The monitoring program, all wildlife encounters and responses by project staff should be reported and recorded, and the project should

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collaborate with other stakeholders, both industry, community and government in a caribou telemetry program. That has been a standing offer, I believe, with -- between Tahera and the Nunavut government, and we hope that with collaboration of other stakeholders in the region that it will happen.

In summary, 220 hectares of ground nesting and small habitat, mammal habitat will be lost. Raptor nesting may be displaced, but we don't believe raptor nesting will be lost. And the Bathurst caribou herd will migrate through the project area, and we have to be prepared for that. Thank you very much.

MR. MISSAL: Madam Chair, next I would like to move on to abandonment and reclamation presentation which will be even by Court Smith of Nuna Logistics.

And I would just like to mention briefly that Nuna Logistics is considered the preferred mining contractor for the project. Nuna has been working very closely with Tahera in developing many of the reports and studies that have been submitted to NIRB, and also our feasibility study. They are the ones who prepared our abandonment and restoration estimate. And Court is going to briefly talk about

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some the Nuna's experience with the work they do.

But just a couple words about Court, he is a vice-president with Nuna Logistics, he is a professional engineer. He has 20 years' experience in the mining industry related to projects in Canada, the USA and Chili. He worked at Lupin for eight years beginning at start-up and in a number of other roles, and he is presently responsible for Nuna's business development and in-house engineering and project costing. So with that, I will let Court start his presentation once I get it pulled up.

MR. SMITH: Thank you, Madam Chair and Board members for the opportunity to speak today.

I will very briefly give an introduction to Nuna Logistics. Nuna Logistics is a federally registered company. It started in 1993, it is 51 percent owned by Kitikmeot Corporation and Nunasi Corporation, with the remainder owned by the management group. We specialize in northern Canadian operations north of Yellowknife in Nunavut and the Northwest Territories. We focus on contract mining, earthworks construction, all relating to the mining industry, dam and dike

construction, we do all that type of work. Winter and all-weather roads, site services, crushing and

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logistics support.

We have experience with most of the mining operations that have operated in the north right from the early days at Ekati and Diavik. We prepare the winter road that runs to Lupin each year. We have done some small site service work at Lupin, and we did some work developing the site at Snap Lake.

In terms of our work with Tahera, we assisted in the field in the early stages of exploration, and we provided site development and open-pit mining cost estimates at various stages through the study work, and we prepared the reclamation cost estimate.

I would like to point out a site that -- the Misery site at Ekati, and the reason I am pointing it out is it is very similar to what Jericho might look like in size, and it is part of BHP Billiton's Ekati mine, and it is a satellite location about 30 kilometres from the Ekati site, so it is not an integral part of that site. Nuna Logistics developed and operates the Misery site.

This gives a picture of what it looks like, and I think the point that I am making here is that the scale is quite a bit smaller than a lot of the mine sites that people are familiar with nowadays

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in the north.

The Misery site has about a 160-person camp, a shop facility, a very basic shop facility and a laydown area, and you can see the staged waste dump in the background there that shows sort of a new approach. Okay, that might work -- that shows a relatively new approach to building the waste dump with reclamation in mind. In other words, if you build it with the steps, then when it comes time to doze it, you are actually creating less work during your reclamation program.

This is the same site from a different angle in the wintertime. This is the Misery pit. In comparison to what Jericho would look like, this pit is quite a bit larger in diameter and slightly not quite as deep as Jericho will be, so the footprint that you are seeing here is quite a bit larger that what is anticipated at Jericho in terms of the pit size.

This is another view that shows the entire disturbance area, actually, including the site in the background and the pit. And as you can imagine, it would be about this size relating to the Jericho one and then the waste dumps, and then these are some dams that we have built as well.

And this is the typical mining operation as it

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would go forward.

In terms of abandonment and reclamation, the estimate was prepared by Nuna Logistics, and it was based on, of course, Nuna Logistics being the contractor doing the work. We based the estimate on Tahera's quantities and scope of work. However, what we normally do is we check for reasonableness that the quantities has a double check, and then we also take a look at the scope and make sure that it includes all the bits and pieces that are needed to do the work.

The assumptions are that the surface facilities such as the camp and the office complex and the dry and the shop are Nuna owned and operated.

The waste dumps would be reclaimed before closure, but the costs are included when we made up the estimate, so the idea is that once it reverted to underground mining, the waste dumps would be completed and, therefore, they could be reclaimed. The assumptions were as follows, on the waste dumps, they would be -- the edges would be sloped, and there would be -- some of the overburden that was stripped off would be reclaimed and placed on the upper bench.

In the processed kimberlite containment area,

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there is a liner contingency included, the east cell was reclaimed just before closure, so at the very final end of operations, and the west cell would be reclaimed after processing was completed. The coarse processed kimberlite cover would be overlain with overburden. In terms of pads, the edges would be dozed and the surface scarified to bring it to a more natural state.

The roads, the edges would be dozed and the surface scarified. The rejects dump similar, the upper bench would be covered with overburden as well. The low-grade stockpile, the edges would be dozed and the upper bench covered. And the facilities, almost all of the facilities would actually be disassembled and removed to another location, so they wouldn't be -- it is not like they would be cut up and disposed of on site, most of those facilities would be useful for other projects down the road.

The equipment that would be used in reclamation would be a fleet similar to what we use in the mining work, which would be 100-tonne trucks with matching loaders and dozers and a crane and a grader. And we would need to use the facilities that would be on site, the camp and the shop and the fuel tanks and the generators, during the

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reclamation effort.

The estimate that we calculated was split into the amounts that is on Crown lands and the amount that is on Inuit-owned lands, and the total is about $7.2 million as far as the estimate goes. This is a bit of a breakdown of the estimate. Of course, it was developed with quite a bit more detail than this. Mob. and demob. is 300,000, and then it goes down the list, the big items being the facilities and getting them torn down.

We have also -- a big number is the processed kimberlite containment and those types of areas.

Transport, like I said, we are moving the facilities and the equipment south, and that is a fairly big number, and we have included overheads relating to Nuna Logistics and then also a contingency for a total.

That concludes my presentation, thank you.

MR. MISSAL: Thanks very much, Court. Madam Chair, next I would like to call on Bruce Ott to speak briefly about some of the revegetation efforts that we will be conducting at the site.

MR. OTT: Thank you, Greg. Madam Chair and Board members, I am going to speak briefly about what we are proposing for revegetation at the site. The key really is that a

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lot of experimentation will be required at the site, but efforts will be solidly based on existing information. Revegetation and experience will be shared with NWT diamond mines, specifically Ekati which has been at the process for several years, and we would expect to draw on their experience.

Ekati has been very forthcoming with all of the mine operators and the potential mine operators in NWT and us with respect to what their -- what their experience has been.

The key points are that reclamation trials will be conducted during operation, and the plan is to concentrate on flat areas with mesic soils. Mesic soils are those that are not super wet and not super dry. And most effort will be put on the PKCA. Based on Ekati's experience, Ekati has had very limited success in establishing vegetation anywhere except on their processed kimberlite containment.

There are significant areas of rocky tundra at Jericho naturally. This is the end of Long Lake, and we have one other shot, I think, that's in there. You can get a fairly good idea from these pictures that there is a lot of rock. And in the last 10,000 years, not much has grown on the rock except lichen. So we wouldn't want to try to

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improve upon what God has been doing up there.
The EIS was based on 30 years of published research, and in the supplemental work, we have added more details from Ekati's experience.
The conclusions after review of the recent Ekati information remained essentially unchanged. It is difficult or impossible to establish vegetation in the tundra, and in the absence of guidance from landowners regarding the use of agronomics, which are a cult of ours, rip rap is about the only alternative for short-term erosion control.
Arctic plants generally don't grow very fast. In a summary, obstacles to revegetating mine sites in the arctic are very large. As a matter of fact, I believe that from my information, before Ekati started their pioneering work, nobody tried to -- or had been very successful at all in growing vegetation at a mine site.
Finally, Tahera is committed to explore practical approaches to achieve long-term revegetation success at the mine site.
Thank you, that's all I had on that presentation.
MR. MISSAL: Thanks very much, Bruce. Our next presentation is going to be from Robert

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Hornal, and it will be regarding socioeconomics for the project.
I just have a few very short words to say about Robert. Robert is the principal of Robert Hornal & Associates Limited. He has 45 years of experience in resource management, environmental and socioeconomic assessment, land claim administration, land use planning and government and regulatory affairs. He is no stranger to the Kitikmeot region having visited first in 1960, and since that time, he has conducted a great deal of ground work in the area over the west Kitikmeot. He has visited most of the Kitikmeot communities, if not all of them, to discuss resource developments and has served on the original west Kitikmeot land use planning team. So with that, I will let Robert tell us about his presentation.
CHAIRPERSON: Before you talk, I would like to welcome the Cambridge Bay high school students sitting in the back, and the elders that have come in. If you have any questions at any time, feel free to come up and ask questions. Thank you.
MR. HORNAL: Thank you, Madam Chairman and members of the panel. I am going to talk to you about the socioeconomic impact assessment and

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the -- a few words about the Inuit Impact and Benefits Agreement that has been recently negotiated between Tahera and the KIA.

For the socioeconomic impact assessment itself, we can collect statistical data from all the Kitikmeot communities using studies done by Census Canada, Statistics Canada, the territorial government, and data collected by Helen Tolganik of Cambridge Bay for our work. We reviewed all of the notes of the visits made by Tahera and its predecessors to the Kitikmeot communities from 1996 to the present.

We reviewed Tahera's project description, and we attempted to assess the economic consequences of this development using a model that was developed for the Diavik assessment process.

We must all remember this -- the Jericho project is a small mining project. It will generate an average of 97 person years of employment for nine years. The total work force will vary from 179 to 57 in any one year.

Here is the work force by year from year one to year nine. The first four years you will recall there is open-pit mining, the next two years there is underground mining, and in the last two years there will only be work at the processing plant.

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The first year in this slide represents the year of construction.

The modelling we did suggested that 36 percent of the construction costs will be spent in the north and 43 percent of the operating costs will be spent in the north; however, 65 percent of the salary dollars will probably go to Northerners.

Here is a slide of the construction costs. It shows that about 20 million dollars will be spent in the north, about 8 million in South Africa where the processing plant is to be built, and the rest, 27 million or so, in the rest of Canada.

The next slide slows the operating costs for the third year of operation, which is probably going to be the busiest, and it is split roughly half and half between the northern -- the north and the rest of Canada with a few dollars going to, again, South Africa.

Why is it important that we do a socioeconomic analysis? Well, what we have heard over the years that we have been analyzing this problem is that Kitikmeot residents want improvements to the quality of life, to the creation of jobs, long-term employment, training and educational opportunities, business opportunities and improved community well-being.

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However, these improvements must come with no loss

to the land and resources that have sustained the communities over time.

When we looked at our analysis, we could easily identify certain benefits to the Kitikmeot region. There will be jobs for Kitikmeot residents, there is will be training opportunities and educational opportunities. There will be contracts for Kitikmeot firms, and there will be other matters to be decided by the Inuit Impact Benefits Agreement.

In our assessment of the impacts of this project, we determined that the impacts of employment would be moderately positive on the region. The impacts of training would be moderately positive, similarly with business opportunities, the impacts will be moderately positive, and all of those we have great certainty in.

We looked at the community health, the issue of community health. In that phrase I include things like family stress, personal health, individual security, things of this nature, and we concluded that there would be impacts on the community, on community health by this project which had the potential to be moderately positive

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or moderately negative, and I think it depends on the monitoring program that's put in place, which we will talk about in a next few minutes, whether it is positive or negative.

The project will have a moderately negative impact on crime, i.e., there will be more crime, I suspect, as a result of cash that is added to the community as a result of this project. But we predicted no impact at all on the demographics of the community as a result of this project.

There is some suggestion made that there might be inmigration, but it is our belief that that is unlikely due to the short nature -- short-term nature of the jobs that are being created, six to eight or nine years, and due to the fact that I don't think anyone from the south will move north for that -- for this project, and I suspect there will be enough people within the Kitikmeot to fill the jobs that are available without importing people from the Baffin or Kivalliq regions.

When considering socioeconomic matters, Tahera has made a number of commitments. It will strive to reach a goal of 60 percent Inuit employment within five years at the project; it will encourage its contractors to meet the same

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Inuit employment goals; it will transport Inuit employees directly from their home communities to

the mine site; and most important, it will set up a monitoring committee to work with the communities to mitigate negative impacts and maximize positive impacts.

I'm just going to say a couple of words about the Inuit Impact Benefit Agreement. As you know, it is required under the Nunavut Land Claim Agreement. And negotiations have been conducted between Tahera and the KIA-appointed negotiating committee. They announced the agreement in principle for the IIBA in early December. The agreement in principle has apparently been approved by the KIA board of directors, and the KIA will be presenting the IIBA to Kitikmeot communities over the next few weeks.

There is some general provisions that are known about the IIBA as a result of the press announcements that have been made. The IIBA commits Tahera to training, education, employment and business opportunities. It provides compensation for implementation of the agreement for land access and for the potential impact on Inuit water rights. And it establishes an implementation committee to make certain that the

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provisions of the IIBA are carried out.

In summary then, the Jericho Diamond Project will impact the Kitikmeot communities, but with the proposed mitigative measures and the IIBA, these impacts will likely to be positive and there will be in place mechanisms to monitor and adjust to these impacts. Thank you.

MR. MISSAL: Thank you, Robert. Madam Chair, I would now like to call on Bruce Ott once more for the last time to give us a summary presentation on the monitoring.

MR. OTT: Thanks, Greg, Madam Chair, Board members. We have heard quite a bit about monitoring that's going to be carried on throughout the life of the project and after closure, and we felt it would be useful for the Board and the audience to have a brief summary. So I am going to go fairy quickly through these slides, because it is all review.

First off, Tahera would plan to use traditional knowledge in monitoring and cooperate with communities. Because the traditional knowledge as you have probably -- most people are probably aware is owned by the communities, and so that their permission to use the traditional knowledge would have to be given, so they will

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likely also want to supervise any use of the traditional knowledge to make sure that it is used in the way intended.

The operators will collect reliable information that will allow detection of the change in aquatic biota and terrestrial biota caused by the project and test their predictions of project impacts that closes the loop on the impact assessment.

The focus will be on components that are good indicators. Accepted sample design and methods will be used and sufficient effort will be invested to detect change.

For geotech, dam stability needs to be done on an annual basis. C1 diversion, and C4 refers to the clean water ditches, and the waste dumps and the stockpiles will all have a professional geotech engineering consultant independent of the company or the mine operators to perform that assessment. A report is provided to the lease -- to INAC and to KIA who will provide leases, land leases to the operator.

Mine waste discharge, the monitor all mine waste management facilities, which Kelly and Cam talked about this morning, that would include seeps, groundwater and the effluent.

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In response to comments from reviewers, water quality program will be expanded, there will be a water quality site or sites downstream of -- on the Jericho River on Inuit-owned lands. A second control site in an adjacent drainage basin will be added, and C3 and Carat Lake oxygen will be monitored prior to mine discharges as requested by Environment Canada.

This map just provides an overview of where the sites are. If somebody is particularly interested, we can go over that later. I don't want to spend a lot of time on this right now other than to indicate that the upstream second control site is there, the first control site is there, outlet from the PKCA, Lake C3, Carat Lake, Jericho Lake and then downstream on IOL lands.

Aquatic effects monitoring, Rick Pattenden talked about that this morning and indicated they would -- we would be monitoring nutrient loading, sediment and contaminants, and the components are called sedimentation, periphyton, phytoplankton, zooplankton, benthic invertebrates and fish.

For air quality, there would be active monitoring of PM10 and 2.5 at the mine site. Sites to be established in consultation with regulators and indirect assessment of metals loading and

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effects of dust through sampling of lichen and transects at right angles of dust sources.

Wildlife, Ben has just finished talking about this. We would work cooperatively on any

monitoring programs specifically with respect to cumulative effects on the Bathurst caribou herd. Likely raptors, raptor nesting success since there is some potential for interaction with the project, and of course there would be a record and report of wildlife events and responses.

Turning now to postclosure monitoring, the performance of the PKCA and other waste structures would be monitored, water quality would be monitored and reclamation success would also be monitored.

That, in summary, is an overview of the monitoring that is proposed for the Jericho project. Thank you.

MR. MISSAL: Madam Clair, this brings us to the point I'm sure everybody is looking forward to is the conclusion to our presentation. As I had said earlier, it is quite long, but, I think, full of information that will hopefully be useful to everyone.

In terms of a conclusion and summary, I had mentioned earlier this morning that our focus was

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on meeting the requirements of 12.5.5 of the Nunavut Land Claim Agreement, and I just briefly want to touch on those items again and make reference to areas in the documentation where we feel we have addressed those points in terms of (a), we feel we have fulfilled that and with information contained in the final EIS and the socioeconomic section, in the similar section in the supplemental as well as through the public hearing presentation and through the development of an IIBA.

In terms of 12.5.5(b), we do not feel that the project would unduly prejudice the ecosystemic integrity of the Nunavut settlement area. There is a very long list of areas where we feel we have addressed that in the final EIS, in the supplemental reports and, again, through the final hearing.

Point (c), whether the proposal reflects the priorities and values of the residents of the Nunavut settlement area, we feel we have fulfilled this through the final EIS, through the prehearings which were conducted, subsequent community meetings as well as the public hearing process through the socioeconomic section.

Part (d), steps which the proponent proposes

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to take to avoid mitigated adverse impacts. Again, a very long list of how we intend to do that. That information has been supplied in detail in the final EIS and supplemental reports as well as information received here today.

Point (e), steps the proponent proposes to take or that should be taken to compensate interests adversely affected by the project. Again, the socioeconomic effects report in the final EIS outlines that, as well as the information in supplemental, and a great deal through the public hearings this week and through the IIBA which will be disclosed more fully in the near future.

The posting of performance bonds. Obviously, bonding is a very important issue in any mining-related project, and we will work with Indian and Northern Affairs, the Nunavut Water Board and the KIA in establishing those bonds.

Point (g), the monitoring program that the proponent proposes to establish or that should be established for ecosystemic and socioeconomic impacts. We believe that we have strong monitoring programs that we have proposed which have been presented in the final EIS and supplemental information and through the process of the hearings

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this week.

And finally (h), steps which the proponent proposes to take that should be taken to restore the ecosystemic integrity following the project abandonment and, again, through our abandonment reclamation plan in the management section of the final EIS and the reclamation plan section as well as additional information supplied in the supplemental report and the information you have heard here today.

I thought it would be useful if we could very quickly have a look at what Tahera's proposed schedule is right now. As it stands today, obviously we submitted the final EIS in January of 2003, the date, I apologize didn't get changed from the December date there, but obviously we are in January 2004 now. A NIRB decision -- we are hopeful that a NIRB decision would come as quickly as possible so that that could be forwarded to the Minister for Indian and Northern Affairs.

We are hopeful, based on the amount of time that the Minister took to approve the Snap Lake project, that we would be getting some word from that office perhaps by April of this year. And then following that, of course, we would move into the permitting process, both land and water

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permitting.

In order for us to utilize the 2005 winter road, which is the road a year from now which is the winter road built annually from Yellowknife north, we need to start ordering some of our equipment and supplies probably by July or August

of 2004, and the main component in that is the processing plant, which as Robert Hornal referred to, is a piece of equipment which we are going to be purchasing most likely from a company in South Africa that specializes in diamond mine processing plants. And in order for us to order that piece of equipment, have it built, have it shipped here and have it ready and sitting in Yellowknife to go on that 2005 winter road, we would need to order that obviously here in July or August of 2004. Do they have it ordered?

If we can achieve that, as I mentioned, we would be utilizing the winter road in 2005, which begins sometime late January and carries on generally for about 60 or 70 days. We don't need a lot of time to mobilize the number of loads that we need to send up. We have approximately 400 loads that would have to go up in that first year. Those 400 loads could be sent in about a two-week time period. The people who organize the winter road have become very efficient at moving loads up that

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road annually, and so those 400 loads could be sent to the Jericho site very quickly.

Construction for the project that we are proposing to you here today would take approximately one year. We would begin putting kimberlite ore through that processing plant sometime late in 2005, and we would be into full production in early 2006.

I couldn't give this presentation without showing a picture of some of the diamonds that have been extracted from the Jericho kimberlite in our bulk sample. As you can see here, these are top notch, top quality diamonds, Nunavut diamonds. These diamonds are six diamonds that were a part of a package of 43 stones that we had cut to see how these stones would turn out once they were cut and polished, and as you can see by this picture here, they turned out extremely well.

The top diamond is worth mentioning, the top diamond in the triangle there. That's the diamond that the company gave to the people of Nunavut, which, in fact, is in place today in the mace that sits in the legislative building in Iqaluit. I believe that us giving that gesture shows our commitment to not only Nunavut but to this region and to the people of Nunavut and to the Kitikmeot.

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So I would like to leave it there. I would like to thank everyone for their attention during our presentation. It was long, but as I say, I think it was information filled. I would certainly invite any and all questions from the Board.

We have everyone here today that have their

respective areas to answer questions, and we look forward to working with you as we move through this week. Thank you very much.

CHAIRPERSON: Thank you, Greg. We will take a 15-minute coffee break and go on to questions from parties starting with NTI and so on, so we will take a 15-minute break. Thank you.

(RECESSED AT 2:36 P.M.)

(RECONVENED AT 3:00 P.M.)

CHAIRPERSON: Okay. Shall we start again? Before we continue, Bill, you have got a few things to say?

MR. TILLEMAN: Thank you, Madam Chair. As we begin or continue with the afternoon, there are just a couple of things that I could like to point out that would help the Board and the court reporter for the next phase of the hearing.

We now begin the part of the hearing where the parties actually ask questions the Tahera, so this is not a chance for the parties to give their

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evidence, because that will happen tomorrow, but it is a chance for the parties to basically test the truth of what Tahera has just done. So in the order that the Chairperson had indicated earlier beginning with NTI, we will shortly have an opportunity for them to ask questions of the whole panel of Tahera. To do that, the parties have the option of using either microphone, either the one that's in the middle of the floor or the one that's up at the intervenor's table.

I would suggest that the person whose evidence was given and is being questioned is the one who would answer the question, and probably through Mr. Missal, he can direct who that should go to and who is most appropriate to answer the particular question.

Also, as a matter of just procedure, if you do come up, and we hope there are a lot of questions, if you could just state your name before you ask the question so the transcript later reads very clearly in terms of who is asking questions and who the question is asked of.

And then finally, if the presenters, the Tahera people answering the question are referring to charts or overheads, which they no doubt will, if you could give a reference point for the court

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reporter in terms of where you are pointing. So instead of just saying that the Jericho River from top to bottom, at least identify the river and that you are pointing north or south. And if you point to specific portions the a map, indicate the reference point so that when we later get the transcript, it is easier for the Board to follow

what you are indicating on the wall, because the written record can't reflect what you point to with your red pointer on the wall.

And, Madam Chair, those are my only thoughts in terms of clarification.

CHAIRPERSON: Thank you, Bill. Shall we start with questions from NTI?

MR. TILLEMAN: Madam Chair, as they are coming up -- I am sorry, Tahera had a question, but they are fine.

MR. HAKONGAK: Thank you, Madam Chair. I'm George Hakongak, environmental coordinator for the NTI lands here in Cambridge Bay. And at this point NTI has no questions, thank you.

CHAIRPERSON: Okay. GN, government of Nunavut? Anybody from government of Nunavut? No. Bill?

MR. TILLEMAN: No, I was just saying if no one comes up, maybe we should pay money to people

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who ask questions. That was just a joke. Okay. Diamonds. That wasn't my joke, so --

CHAIRPERSON: Department of Fisheries and Oceans?

DEPARTMENT OF FISHERIES AND OCEANS QUESTIONS TAHERA CORPORATION:

MS. CRITCH: Hi, Madam Chair. I just had a couple of questions. My name is Stephanie Critch, and I am with Fisheries and Oceans Canada.

First, I wanted to ask for clarification on why Jericho -- sorry, why Tahera feels that the intake pipe requires a causeway but one is not required for the diffuser? I'm not sure who exactly to address that question to. QUESTION

MR. MISSAL: It is Greg Missal with Tahera. Rick, can I ask you to address that?

MR. PATTENDEN: Madam Chair, the causeway is being proposed by Tahera, (1) for protection of ice, but (2) for immediate access to the intake pipe in the event the a break during mine operation. The diffuser pipe, although it would need some protection from ice scour, doesn't need access postclosure, it will be a permanent structure, so I believe that's the rationale why there isn't a causeway over the diffuser pipe.

Excuse me, the causeway is basically there to

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ensure immediate access in the case of an emergency repair requirement. Does that answer your question? ANSWER

Q Well, is there not a chance that the diffuser will need emergency repair as well?

MR. SCOTT: Cam Scott, SRK. I think one thing that needs to be clear is the diffuser is a contingency, that's the first thing. The second

thing is I don't know, have we shown the location exactly as to exactly where the diffuser will go? It is a general location. I think at this point it is a concept and details have to be identified as part of final design. I don't know if that answers the question, Madam Chair, but that's basically -- it is still a concept.

Q So does that mean a causeway might be required as well for the diffuser?

CHAIRPERSON: Does somebody have an answer?

MR. MISSAL: It is Greg Missal with Tahera. I think, Stephanie, I think a causeway could be one thing that would be looked at for that; however, I think with the knowledge that we have here today, we don't feel that that probably would be required. I think working out the details of how that diffuser might be handled, if it were

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used, would be more of a detailed engineering issue, which, of course, we are not quite to that stage yet. But, of course, whatever we do with that, we would certainly involve DFO and make sure you are aware of that.

Q Okay. I have another question related to the diffuser. I am just curious as to whether the diffuser is proposed as an active or a gravity flow? Gravity?

A Again, it's Greg with Tahera. I am understanding it would be a gravity flow.

Q Okay. And I am wondering if you have a plan for storage of additional kimberlite finds if other identified kimberlite pipes in the area are developed?

A Greg Missal with Tahera. That concept is not part of this mine plan. If there were other economic kimberlites that were discovered and we came up with a method of somehow processing them at this site, that would be part of a totally different mine plan or a review process that we would have to go through, so that's not considered as part of this mine plan.

Q Okay. I was just thinking that that might be part of the cumulative effects assessment.

A I think if we reached that type of scenario, we

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would then have to consider that cumulative effect at that time, but, of course, that's purely speculative, so it is not part of this mine plan.

MS. CRITCH: Okay. Madam Chair, those are all my questions. Julie Dahl of Fisheries and Oceans has some additional questions as well.

MS. DAHL: Madam Chair, Board, my name is Julie Dahl. I'm with DFO in Yellowknife. I just have a couple more points of clarification I

was interested in seeking here.

There was -- in one of the presentations, there was a discussion of the water management approach, there was a bit of a flow diagram that showed where the water flowed in various components on the site. I noticed in one location it noted that the spray irrigation source would be from the PKCA, and I was just wondering if that was intended to be the source or would the source be the settling pond?

I guess the reason is that I would assume that the settling pond would be the -- as close to the discharge water quality as possible, and so that -- is there a possibility that that would be the source of your spray irrigation versus the PKCA water?

MR. MISSAL: Madam Chair, I will let

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Pete McCreath respond to that question.

MR. McCREATH: Pete McCreath, Clearwater Consultants. The thinking at the moment is that water going to a spray irrigation system would probably come from the PKCA, although it could also come from a settling pond, and it is going to be a function probably of suspended solids, total suspended solids.

Q Does that mean that high suspended solids which would mean that it would be or would not be the choice of water?

A One of the concepts for mitigation would be that if suspended solids is a problem within the PKCA, flocculents could be added there, and then the settling pond would be used to allow the flocculents to take effect and the suspended solids to settle out.

If further treatment for metals or ammonia removal, for example, is required beyond that point, then the settling pond would become the source for the spray irrigation system.

Q Okay. Thank you. Further to that, along the same line of thinking that I would assume that the settling pond water would be that water that would achieve a discharge water quality, you had talked about adding flocculents to the settling pond or to

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the PKCA, have you considered the optimum location to add the flocculents to ensure that your sediments or that your particulates are being reached as desired in the PKCA? Therefore, are you preferentially thinking of adding it to the PKCA and avoiding any further manipulation of water in the settling pond?

A Flocculents would initially be added in the processing plant to encourage proper settling within the PKCA. If, in the freewater pond of the

PKCA, there remains a residual problem, settling has not been accomplished appropriately, additional flocculents could be added at the outlet to the PKCA to the settling pond, and then the settling pond would be operated as a polishing pond, if you like, to let that second round of flocculents take effect before final release to the stream.

Q Okay. Thank you for the clarification. With respect to the spray irrigation, there was -- the point was made that chlorides were not expected to accumulate in the soils in the location of where the water would be sprayed. Will a monitoring program include monitoring for chlorides at the perimeter of Lake C3 where their overland flow is expected to enter the lake?

MR. MISSAL: It is Greg Missal with

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Tahera Corporation. I think I would like to ask Andre Sobolewski to come forward and answer that question, please.

MR. SOBOLEWSKI: Andre Sobolewski. A monitoring plan for water quality would monitor as water enters Lake C3. I don't know that chloride had been identified, but I see no reason why not as one of the constituents to monitor. The concern about chloride certainly does not impinge on any effects on aquatic organisms.

Q Just to understand you correctly, do you mean that you are not anticipating chloride concentrations to be of a level to be of concern to aquatic organisms in Lake C3?

MR. SOBOLEWSKI: That's correct.

Q Okay. Thank you. In the discussion of the aquatics, there was a description of potential impacts due to the use of explosives. It was described that impacts were expected only in Stream C1 and in the near shore area of Carat Lake where Stream C1 enters into the lake. It was also concluded that only eggs would be impacted, and further only eggs of slimy sculpin would be impacted; however, I recall seeing in one document that showed Carat Lake, it had an identified known arctic char spawning area at the outlet of Stream

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C1 right in Carat Lake within the zone of where the -- that blasting zone would overlap. So I was just wondering why the conclusion that there would be no impact on arctic char eggs when there is a known arctic char spawning area in the vicinity?

MR. MISSAL: Madam Chair, I would like to ask Rick Pattenden to address that question, please.

MR. PATTENDEN: Rick Pattenden, Mainstream Aquatics. That's a very good question. In our assessment, we did identify arctic char fry in the

immediate vicinity that were potentially in the blast zone. But, as you know, arctic char spawn in the fall and over the winter, their eggs therefore -- the egg deposition has to be at such a depth to avoid ice scour and freezing. That ice formation zone is at about 1.5 metres which is -- I don't know the exact distance from shore, 10 to 20, 30 metres offshore. That is outside the blast zone impact, so that's why we did not include the arctic char spawning site within the blast zone, because it would have to be outside that extend.

Q Okay. Thank you. Further to that, could you just explain to me what the timing of your spring fish assessments were? In particular, for Stream C1 and the outlet of Carat Lake?

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A Rick Pattenden, Mainstream Aquatics. You are referring to when we were doing our sampling?

Q Yes. The timing of the spring fish assessment in the spring.

A Sampling occurred each spring during five years. The exact timing varied slightly each year, but basically it was very close to freshet conditions when the snow melt began and would continue on through to what you would refer to as early summer. So I think early to mid-spring basically.

Q So the assessment was timed with the early onset of freshet?

A Basically, yeah. That's not an absolute rule, but generally that's when it occurred. And it would continue on through the spring into early summer.

Q Okay. Thank you. It is anticipated that the diversion for Stream C1 will go through a zone that's described as a rock area and then another zone described as a soil area. I noted in one of the presentations that the soil section of the diversion is expected to be lined with geotextile and then overlaid with rip rap in order to control erosion.

Is there any other mitigation that is being proposed to control the sediment that is expected during -- essentially during the initial flushing

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of the diversion and that sediment entering Carat Lake, is there any mitigation proposed for that initial flushing?

MR. MISSAL: Madam Chair, it is Greg Missal with Tahera. I would ask Cam Scott of SRK to address that question.

MR. SCOTT: Cam Scott, SRK. Madam Chairman, the only other element of mitigation would be selection of relatively clean rip rap for the rip-rap component of the diversion. So outside of the fabric which is designed to deal with -- designed to deal with the finds and outside of rip

rap which is selected to be as clean as practically possible, no other mitigation methods or means are proposed.

Q Okay. Thank you. Again, on the presentation of the aquatics, there was reference to Stream C3, which is the stream that will receive the discharge from the PKCA. There was a statement made that this stream was not considered important to fish based on low numbers of fish found there, and, therefore, there was a conclusion that there would be no significant impacts to fish.

I was just wondering if I could get an idea of what the relative importance of Stream C3 was to Lake C3 in terms of relative to other streams that

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feed the lake, is it one of several, one of few? How does it compare to the other streams that feed that lake? Generally, it is relative in absolute importance?

MR. PATTENDEN: Rick Pattenden, Mainstream Aquatics. Stream C3 is one of a few number of small ephemeral systems that entered Lake C3. There are two larger stream systems, one in the main inlet to Lake C3 and one to the west.

In terms of relative importance to the fish populations in Lake C3 compared to other streams entering Lake C3, it still is at the very low end of the scale, and I say that because Stream C3 is extremely small, a child can step across it, and it regularly dries up very soon after freshet. So fish do use Stream C3, but they use it opportunistically and very low numbers use the stream. So in a relative term, I still would feel it is marginal even though there aren't that many small ephemeral streams entering Lake C3.

Q Thank you. Are the other streams -- you mentioned two larger streams, are they used more than opportunistically and in greater numbers than Stream C3?

A I can't answer that accurately because those systems didn't receive as much sampling intensity

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as Stream C3, but based on my experience with arctic systems, they would be used more often by fish species residing in Lake C3.

Q Okay. Thank you. I just wanted clarification of another comment that you had made. You made a statement that eight-metre depth appears to be the cutoff of where you find fish. In that map that you showed where you had coloured the lakes in the Jericho area, they were all coloured red, I believe, if fish were found there. Were all of those lakes at or greater than eight-metre depth?

A Rick Pattenden, Mainstream Aquatics. The only lakes that approached the eight-metre depth and

that still contained fish were the three water bodies that are affected by the Long Lake system. All other water bodies had a maximum depth greater than 12 metres to my memory. So no other lakes, aside from the Long Lake system, were as shallow as eight-metres and still had fish.

Q So is that eight-metre number, that applies to the Jericho site only? You are not saying that as a general statement for northern lakes?

A For mid and high arctic lakes, I would say eight metres is about right. There is always exceptions, but if you want to pick a number, eight metres is pretty good.

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Q Okay. I guess just for clarification, we use approximately 3.7 metres as a potential for wintering habitat in northern lakes.

There was a statement made about the adequacy of baseline data. The statement was, I guess, in the bulleted points said that the baseline studies were not designed -- the baseline data was collected to be able to predict project impacts, not in order to conduct monitoring. Could you explain to me what the difference is between those two, and how would the baseline data collection be different if its purpose was for monitoring, not just to predict project impacts?

A Madam Chair, Rick Pattenden, Mainstream Aquatics. Several intervenors have made this comment about the inadequacy about the baseline studies data for use as monitoring.

The primary requirement for baseline studies is to characterize the system to adequately allow impact prediction, that's the primary purpose. Monitoring, on the other hand, has a very different objective, the objective being the ability to detect change if one occurs.

Because there is a fundamental difference in those two objective, the type amount, statistical quality of the two data sets are very different.

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You don't need very precise data to assess project impacts, you do need fairly precise data to monitor change, so that's the fundamental difference between those two data sets.

Q So just to clarify, you do not see a change in the environment as being the same as a project impact?

A No, that's not what I am getting at. It is the ability to predict a change if it were to occur as an assessment versus quantifying the change, they are two very different changes.

MS. DAHL: Okay. Thank you. That's all my questions. Thank you.

CHAIRPERSON: Okay. Health Canada? Anybody from Health Canada?

Bill, did you have something to say?
BOARD STAFF QUESTIONS Tahera Corporation:
MR. TILLEMAN: Thank you, Madam Chair. While we are waiting for Health Canada, I was contemplating the answer by Mr. Pattenden on the last question, and I think it would be helpful for the Board, certainly for me, to understand who should have the confidence in the predictions, should it be the Impact Review Board, or should it be the regulatory agencies that would have to use the data for their enforcement or monitoring?
So if you could maybe give it one more try of

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explaining. I think your answer was along the lines that we did need precise data to predict project impacts, it was fairly close to that. So I guess at the end of the day for this Board, do they -- are you confident enough in the baseline information that you have that this Board can, with comfort, take data and rely on it in accepting, for example, the mitigations of impacts that would occur?
MR. PATTENDEN: Madam Chair, Rick Pattenden, Mainstream Aquatics. Yes, I am very confident in the data that was collected and that it will allow us to predict whether there was an impact or not. I'm quite confident with that.
I have to stress that the data was used to characterize the aquatic communities that were out there and what the -- and then the project was put on top of that, and with that information, we were able to say, well, is the fish community going to be impacted or not? The data that we collected is not good enough to monitor, so we were able to predict with confidence that if you have these fish here and you do this to the fish, the impact will be significant or not.
That's not the same thing as saying if we have the fish here and we put this volume of water

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in the lake with this concentration of total suspended sediments, this will happen to the fish. That's a monitoring question, and for a monitoring question, you need quantitative data, x-number of fish with very good confidence that that's the number of fish you are dealing with.
So, again, I would stress, the information used for the impact assessment is quite adequate for our purposes, but it was not designed for monitoring purposes. Tahera has committed to go out and collect data for monitoring purposes. I hope that clarifies it.
CHAIRPERSON: Bill, you need to shut of your --
MR. TILLEMAN: To some extent there

appears to be a pretty fine line, and I don't know if DFO have related questions. Among other things, there appear to be a difference between -- just over two metres in the winter habitat depth of the lake, and that may be relevant, I don't know. And perhaps DFO will explain that to the Board tomorrow.

Fish, like other wildlife, are quite relevant and significant to the Board, and their assessment on impacts of fish not only affect compensation, but mitigation and the Board's ultimate decision or

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a recommendation to the Minister on whether or not it is acceptable. So perhaps DFO can maybe clarify and help the Board with a statement that seems to the Staff to be a relevant point of difference, at least it does to me. Those are my -- you can certainly comment if you have any further thoughts. Thank you, Madam Chair.

A Madam Chair, Rick Pattenden, Mainstream Aquatics. I would go and provide examples for work that had been done for existing diamond mines, for example, Ekati, Diavik. The level and type of information collected during the baseline studies to characterize the aquatic community wasn't sufficient for monitoring purposes in my knowledge of what was collected.

It is the same situation as we have for Jericho. Although the data may have been collected as part of the predevelopment monitoring program, it was still not sufficient to detect change, which is a fundamental part for monitoring. So I think that's the difference of opinion between myself and DFO.

They feel that very detailed information needs to be collected, and they define that as the monitoring program, whereas you don't need that detailed information to predict impacts. It is

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very different. You have to be able to -- the monitoring program has to be able to tell you if your project is causing you reduction in fish numbers over time. So you have to be able to count those fish, you know, once every two years or whatever. But for an impact assessment, you just have to know what species are there, how abundant they are and what you think the project is going to do to those species. Two different types of information, one for impact assessment and one for monitoring.

In a perfect world, you would collect detailed information for monitoring and use it for your impact assessment, in a perfect world, but that isn't the case.

CHAIRPERSON: Thank you. Nobody from

Health Canada? Department of Indian and Northern Affairs?
DIAND QUESTIONS TAHERA CORPORATION:
MR. TRAYNOR: Stephen Traynor, Indian and Northern Affairs, Nunavut regional office. Thank you, Madam Chair and the Board for the opportunity to cross-examine Tahera's presentation, quite extensive one this morning, and my compliments to them for providing it in a user-friendly manner for everybody as best they can.

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By way of background, to let you know, we have held discussions with Tahera, the Board and other people were a party to them, earlier in the fall based on draft EIS discussions to clarify some issues we had.

We have provided them some comments in our entire submission, and we do ask that you look at our entire submission in the response to the EIS, and we also appreciate Tahera, this morning, provided some further clarification the some of the issues we raised in their presentation, so once again, we appreciate that.

However, in the end, we do have some points for discussion that we will bring forth tomorrow in our presentation. As noted by legal counsel to the Board, our focus at this time for the cross-examination will be matters of clarification just on your presentation and your submission as a whole.

And I beg your patience for a little bit as we have cycled through the group of folks we have with us today, they will likely be at the mic behind me, and they will come up and ask questions. So with that, Madam Chair, I will first of all ask the people to come up and state their name, but also their response bullets, so we will start off

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with Carl McLean.
MR. McLean: Thank you, Madam Chair. Just a clarification question. I am the manager of land administration, Carl McLean with INAC in Iqaluit.

Cam Scott in his mine waste management presentation mentioned that they are going to put a liner under their recovery reject stockpile site, and just for clarification, would like to know what the purpose of that liner is.
MS. SEXSMITH: Hello, this is Kelly Sexsmith. The recovery plant tailings were a relatively small volume of material that would be produced during mining, and during the characterization programs, that material was not tested and there were no longer any samples available when this was realized last spring. So

as a precaution, in the unlikely event that that material would contain any minerals that could lead to deleterious water quality, we had planned to put a liner under that material to ensure that any water could be collected and dealt with appropriately.

MR. McLEAN: Thank you.

MR. TRAYNOR: Next I would ask Holger Hartmaier to come up and identify himself and ask

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questions.

MR. HARTMAIER: Thank you, Madam Chair. I an Holger Hartmaier, senior technical engineer with BGC Engineering. I just had a few questions on the, sort of, geotechnical permafrost issues. The questions I have are, sort of, outstanding clarifications that were raised partly in review of the supplemental information that was provided and the information presented today.

I realize that there is a lot of detailed engineering still to be done, but basically what I am asking for is clarification on some of these issues now so that we get, maybe, a level of comfort that some of these things are going to be addressed. And also the Nunavut Water Board is present and taking notes, and some of these issues will likely have to be dealt with later in the, sort of, water licensing stage. So basically I have a few questions here.

First one was regarding that spray irrigation area, recognizing the location of it, is there any potential for soil slides to be initiated due to the oversaturation of the active zone as a result of the spraying? I noted that in the supplemental information that was provided, some of the test pits that were done in that reported squeezing sand

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conditions, so if you could comment on that?

MR. MISSAL: Madam Chair, I would like to ask Andre Sobolewski to respond to that.

MR. SOBOLEWSKI: Andre Sobolewski. I suppose the first part of the answer is to say that spray irrigation is a contingency, in fact. It is not at all clear at this point whether it will be necessary or not. However, the site that was chosen for spray irrigation is very gently sloping, and from the test pits, the active layer is quite deep. And to my understanding, there is no expectation, in fact, that that should occur.

However, before any such dramatic development, if you like, develops, there should be warning signs that there is deterioration of the active layer that would proceed any such sloughing of soil. And it is precisely the purpose of the monitoring program to, for one, if such

developments to occur and to mitigate any such impact.

Q The next question I had, I think this was partially answered before by Cam Scott, but sort of as a general question with regard to the diversion ditches, specifically the C1 diversion ditch and other diversion ditches, how have you accounted for or what mitigation is being considered for any

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long-term degradation of permafrost around the ditch and, sort of, long-term sedimentation? That's over and above the sedimentation you are going to get after the first construction season, but, you know, long-term permafrost degradation related to sedimentation?

MR. SCOTT: Cam Scott. Holger, I think the first point is that, yeah, there is a possibility of ice lenses and some degradation. We think that that degradation would occur, if it does occur, at below the base of the C1 diversion, primarily because the preliminary sizing and preliminary engineering suggests that the cut will be exclusively within the active layer within the soil zone. So that we anticipate that. As I say, it wouldn't be from the sides, it would be more from the base.

That is a possibility, and what we anticipate in terms of mitigation is regular inspections and the possibility of periodically modifying or remediating, repairing, if you will, zones of settlement so that if you hit the ditch with incremental placement of rock, presumably, clean waste rock and rip rap, so that the general grade and configuration of the diversion ditch is maintained.

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Q Thanks. The other question may be a bit out of my league, but it is a question regarding the pit, and it had to do with this diffuser that was, as I understand it, is a contingency, but I also understand that it is going to take about several decades for the pit to fill with water, so it would be some time before that diffuser actually gets used, so what would be the plan? Is that something that's going to be built and sort of maintained for 20 years until it becomes used or just some clarification on whether that is going to be something that gets built down the road or something will be built now?

A Cam Scott again. I think your point is right. The way the water management at closure has been configured is the assumption that all the water would report to the open pit from the waste dumps and so on, and it would take approximately 17 to 20 years to fill the open pit. Having said that, that

gives us a chance to monitor water quality, and so there would be no need, in our opinion, to construct the diffuser until the pit is approaching its limit and the water qualify suggests that a diffuser is appropriate.

Q Okay. Thanks. Okay. I guess the other main question I had was with regard to the open-pit

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design. I guess the initial presentation showed the pit outline and the mining method. I just had a couple concerns about pit wall stability, several areas which I would like some clarification on, one is the pit slope adjacent to Carat Lake. I think there is maybe about a 250-metre buffer distance between the edge of the lake and the edge of the pit. And there is, I think, 10 to 15 metres of overburden cover on top of bedrock between the pit and the lake. I'm just wondering what sort of contingencies there are with regard to the stability of the pit wall bearing in mind that the permafrost temperature I think is fairly warm, it is maybe less than 5 degrees Celsius.

I think one of the thermistors shows fairly warm permafrost in the pit area, so there is a potential for zones of groundwater coming through that buffer zone from the pit wall. So there is a stability issue there. I'm just wondering what considerations there has been given with regard to the actual outline of the pit and the geometry of the pit wall?

A Cam Scott. I think at this point the geometry of the pit wall has really been governed by the assumption that given the existence of permafrost, that there would be no undue movement of water to

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the open pit, so it has been exclusively on the context of the properties of the permafrost in the soil and likewise of the rock. Obviously, that is something that would have to be monitored early on.

Specifically to your question as regards -- or comments as regards the warm permafrost, I haven't looked at that data presently, but it is my understanding that in general, most of those thermistors are indicating minus 4, minus 5 degree Celsius is essentially what I recall.

Q That's true, yes.

A Yes.

Q Okay. The other question regarding the pit wall stability is on the east side of your pit you have got two waste dumps which are located close to the pit perimeter. What would be a contingency if, for some reason, you had to push back your pit wall limits to improve stability and you now have waste dumps there? Is there any possibility of having to shift things around in terms of the overall

footprint of the waste dumps?
A Cam Scott. Essentially the foundations under both the overburdened stockpile and waste dump number 1 are situated in rock, so that thickness of soil, at least as far as that aspect of stability is pretty much confined to the pit area and I think not too

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much further to those. But your point is well taken to the extent that you do have a nominal buffer, and I think that's one of the elements that will be looked at as part of final design.
Q Fine. Okay. The final question I had was regarding the monitoring program that Bruce Ott mentioned regarding the geotechnical monitoring. I noted there was no pit slope stability monitoring included in that geotechnical program. I am just wondering if there is going to be any -- what kind of monitoring you are planning to do there?
A Cam Scott. Point taken. And I think for operational perspectives, there will be monitoring undertaken on pit slopes. I think for purposes of the discussion today, it was assumed it wasn't really an environmental impact and, therefore, not fundamentally germane to these discussions today.
Q Just a clarification that it would be included, I guess, eventuallY?
A Cam Scott. Yes, it will be included. There will be a pit slope monitoring program.
MR. HARTMAIER: Okay. That concludes my questions, Madam Chairman.
MR. TRAYNOR: Thank you. Next I will call upon Eric Denholm.
MR. DENHOLM: Yeah, it is Eric Denholm

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with Gartner Lee, Madam Chair. I have one question regarding possibility of phosphate addition into the processed kimberlite containment areas and mitigation against elevated ammonia or metals, and the clarification is, is this being considered as a potential mitigation measure alongside with land -- spray irrigation on land, treatment facility and cessation of discharge? And if so, has Tahera developed any conceptual plans as to how that might be undertaken?
MS. SEXSMITH: Hi, this is Kelly Sexsmith. I think it is supporting document J of the supplemental material discusses that plan. It is a contingency on a contingency that is already in place, which is the land application system, and we would only be considering the addition of phosphorus if the land application is found during the testing period not to be successful, and we would also be monitoring phosphorus that would be in the system anyway from the sewage and seeing if it would be sufficient to lead to those removal

levels that we expect might occur without any assistance at all.
MR. DENHOLM: Okay. Thank you.
MR. TRAYNOR: Thank you. Next I will call upon Dave Osmond.

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MR. OSMOND: It is Dave Osmond here with Gartner Lee, principal biologist with Gartner Lee representing INAC.

Madam Chair, I have a few points of clarification that I require, and they all relate to aquatics and water quality. And the first one relates to total dissolved solids, and I think this relates to the source discussion that Kelly Sexsmith gave, and I just noted that there was no discussion of total dissolved solids in your presentation, although the TDS levels that are found in the tables and so on are up over a thousand milligrams per litre, and there wasn't much discussion of it both from the PKCA and also after closure from the pit.

I just wanted to know what the source of the high TDS levels are, and also if you could just pick out the two major components that make up the TDS and what their rough concentrations are. I'm not looking for accuracy, Greg, so just a general idea.

MS. SEXSMITH: Yes, this is Kelly Sexsmith. Those concentrations are all in supporting document I of the supplemental material, and I didn't present them because total dissolved solid concentrations are not part of the CCME

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guidelines, so that's why I didn't show them, but they are all in the documentation.

The major components of that total dissolved solids will be alkalinity bicarbonate and calcium and magnesium.

Q So chlorides -- so if I can just ask on top of that, I noticed that Andre mentioned his concern about chlorides and that he did write them off as a nonissue. Chlorides weren't -- didn't make a major component of that, of the TDS levels?

A Yeah, in the test where chloride was a relatively significant portion of the total dissolved solids but not the dominant three or so anions, the chloride maybe an artifact of the way that samples are collected in northern field settings, and that is that they use calcium chloride in the drilling programs, and that contaminates all the samples that you collect from the site. So I expect that chloride samples -- chloride levels will actually be lower than any of our predictive work is showing because of that potential artifact. But because that is in the rock, it is not possible to see if

there is any natural background chloride in the samples.

Q Thanks for that clarification, that is very helpful. I have a question that relates to the

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control of discharges, and I noticed, Pete, in your discussion a point about the discharge from each of the three ponds A, B and C. I thought you said they would be pumped, or will this be a controlled discharge, or will there be all continuous discharge from each of these three ponds? I would just like some clarification on that.

MR. McCREATH: Pete McCreath, Clearwater consultants. Dave, the ponds will be designed, the concept behind the design is that there is going to be a combination of the storage and the pumping. Because so much of the runoff each year comes in a relatively short period and the snow-melt period, it is not practical design. Peak flow pumping capacity. So the pumping will be going on for some period of time, transferring the water from the individual ponds back to the PKCA.

I would expect that the design would include suitable pump-on, pump-off limits such that during the summer period, for example, if there is no rainfall, obviously pumping would stop. If you get some runoff, you would accumulate a bit of water before the pumps would come on again. So in summary, there would probably be fairly constant pumping in the spring snow melt period until that volume of water is reviewed, and then after that it

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would be on an as-required basis.

Q So they would be totally contained then, and you would have direct control. If you had problems in any one of those ponds, there wouldn't be a consistent continuous flow going over the berm or in any other way, it is something you would control by pumping?

A Yes, the control would be pumping, yes.

Q Thank you. Bruce, in your presentation, you mentioned that the dilution models had been rerun to reflect the higher annual discharge volume that increased from 380,000 to a million cubic metres per year, and I don't remember seeing that in any supplemental information that I got, but it could well have been there and I missed it.

And you indicated also that the model results were almost the same as those run in the September 2003 modelling contained in the supplementary information package that I reviewed. With regard to the scenario that's in maximum source concentration, low inflow or low streamflow year or rainfall year, the original results showed chronic toxicity to Carat Lake intake for ammonia, but

under the increased discharge regime, you stated that the concentrations would only be chronic to Lake C3.

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Could you just give me clarification on this, and could you provide to us at some point the updated results of modelling for the one million cubic metres for year that, I'm sorry, I didn't see. I should get it from you if you have already got it or been provided to us.

MR. OTT: Thanks, Dave. Bruce Ott, AMEC. No, you don't have those results, they are last-minute things that were run just before and over Christmas, and we will certainly make them available to you. The general conclusions are that the dilutions are approximately the same as the information that was provided in the initial -- in my initial supplemental assessment. Chronic -- I will have to go back and look at the information we provided.

I would be surprised if the conclusion was that there would be chronic toxicity for ammonia at the Carat Lake intake given that total ammonia from the -- at the discharge point is predicted to be around 2.1 milligrams per litre, which if you translate that to unionized ammonia at pH 6 and a half and 10 degrees Celsius, it is within the limit that is set by CCME for protection of aquatic life, so I'm going to have to go back and take a look at that.

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As I say, I would be surprised if their prediction was for chronic toxicity all the way over at Carat Lake where we would expect a dilution of about 120 to 1.

Q I agree. I was surprised too, but indeed, your tables in the back showed that, and I have got them handy here, and maybe we can go over that afterwards?

A Certainly we can do that, and that appears to be in error.

Q Okay.

MR. McCREATH: Sorry. If I can just ask some points of clarification on this additional dilution modelling, that couple things there, some points of clarification modelling that was carried out. The million cubic metres release volume that you haven't seen in the new modelling, that relates to -- it is a combination of conservative assumptions given that we are planning on storing everything for the first two years, and then we are saying let's assume that we can get rid of that excess water that's been stored in the system over the next three years, and the requires a release of about a million cubic metres per year.

The dilution modeling then assumed also that for one of those three years, and probably year

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three, just one of the years, that the flow in the receiving waters would correspond to a ten-year dry year event in the inflows to Lake C3 and to Carat Lake. So it is a combination of things that is just aimed really just at that one year.

Q That's great. Thanks. Again, Pete, in your presentation you regarded the discharge from the PKCA as the end-of-pipe discharge point, in your presentation today you indicated that. Could you tell me if you have assigned a mixing zone and what its boundaries are? Is there such a thing as a mixing zone here and where are the boundaries?

A In fact, I guess what I am really calling the end of pipe is the settling pond release rather than the PKCA, I apologize for that confusion. From that point within the stream itself, no, there wouldn't be any mixing zone. As mentioned, it is a very small stream, by Rick, and so the flow is being released from the settling pond, would constitute the entire flow in the stream for all intents and purposes.

There is a small incremental catchment area of about half a square kilometre before the lake itself is reached, and then within the lake there would be a mixing zone. And I believe the dilution modelling, I don't know off the top of my head what

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those numbers are, but there is mixing that goes on within the lake itself after C3.

Q Okay. Now, I just want to get this straight then. The end of pipe is the clarification pond or sedimentation pond, the creek is a conduit, and then there is a mixing zone in the lake, I think it was 100 metres, and that's why I am confused. In the supplemental information, there was a 100 metre -- it was creek plus 100 metres as one of the points at which concentrations were calculated, and with that, I'm assuming that is a mixing zone, and if so, all I'm trying to do is get clarification on that point, so --

MR. OTT: Bruce Ott, AMEC. In actual fact, that's the way the model that Princeton oceanographic model was set up, it is a multilayer model as you are probably aware. It divided the lake into 27 vertical zones, which I suppose is overkill, but that's the way the model works. The cells were 40 metre squares, and we were just looking at the results and saying that within 100 metres we would meet CCME or we wouldn't meet CCME depending on the situation.

100 metres is arbitrarily chosen on our part, so dilution sometimes will occur -- adequate

dilution may occur before that, or under the most

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severe conditions that we were predicting that there would not be adequate dilution to meet CCME within 100 metres so you could end up with some chronic toxicity. So the 100 metres is really just numbers that is based on the model result.

I would think that, and correct me if I am wrong, that the actual dilution zone that will end up being allowed will be determined on a site-specific basis and will be up to Environment Canada principally, I should think.

Q I expected that you would have worked that out with them and got it clarified, and I don't think they are here today, but I think they will be here at later times. I shouldn't speak for them, but maybe they can shed some light on this then.

Rick, in your residual impact assessment you assumed that a diffuser would be used, and to deal with pit discharges -- pit discharges postclosure. I'm a little bit confused by that assumption since Dr. Ott indicated that a discharge will be exfiltrated from Pond A today, and I assumed that -- I guess that's by overland flow to Carat Lake shoreline.

I just wanted to get clarification here if you could explain why you made this assumption, and if you hadn't made that assumption, would your

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conclusions of no impact still stand considering that the only known lake trout spawning area in Carat Lake is close to that particular area?

MR. PATTENDEN: Rick Pattenden. My assumption was that the use of the exfiltrate option from Pond A would only be accepted if the exfiltrate from Pond A met CCME guidelines, so the use of the diffuser is the worst-case scenario. If exfiltrate was not an option because it did not make CCME guidelines, then a diffuser would not be needed, and that was the premise for undertaking that effects assessment.

Q And what if there isn't a CCME guideline for such a parameter as total dissolved solids that perhaps could have some chronic effect in a very sensitive area, and in that obviously would have to be looked at?

A You are correct in stating there is no CCME guideline, but there are values that are being examined right now for other diamond mines, and we would likely, or Tahera would likely use those criteria when they make their decision.

Q That's good. Okay. I would like it on the record, that's all.

A Sorry, Madam Chair, if I could also add there would also be monitoring also to assess whether it is a

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problem or not.
Q I accept that. I'm an aquatic biologist and I shouldn't be asking this question, but, Ben, I couldn't help asking this question, it has been bothering me a lot about the spray irrigation area. It is water-related, so I just wanted to know whether you looked at the wildlife use and potential wildlife impacts of using the area targeted for spray irrigation if further source testing proves such mitigation option is required?
MR. HUBERT: Ben Hubert, Hubert & Associates. I did not look specifically at those areas that were slated for spray irrigation, but they are typical of similar habitat types elsewhere around Carat Lake, so they are not unique habitats, and I would expect that the effects there would be similar to effects anywhere else in that habitat type, in the project area.
Q So you, if I can put words in your mouth, don't regard that as an issue from a wildlife perspective?
A If it is an issue, I think it is an issue of enhancement rather than impact.
MR. OSMOND: That's good advice, thank you. Madam Chairman, that's the end of my questions.

0191

CHAIRPERSON: Thank you, before you go on, can we take a five-minute break? Be back in five minutes.
(RECESSED AT 4:06 P.M.)
(RECONVENED AT 4:14 P.M.)
CHAIRPERSON: We are going over our five-minute limit again. DIAND, you can continue with your questions.
MR. TRAYNOR: Thank you, Madam Chair. I will ask Paul Partridge to come up to the microphone to ask a few questions in the area of socioec.
MR. PARTRIDGE: Madam Chair, Board, my name is Paul Partridge, and I am with DIAND's economic development division. I just have a few questions here for Tahera. The first one is a point of clarification, and it revolves around the last portion of the presentation, so I don't know if Bruce is probably the best person to address it.
When you referred to the monitoring program for socioeconomic impacts, were you referring to the community advisory committee and the ten indicators in the supplementary documents?
MR. MISSAL: Madam Chair, we couldn't quite hear that, Paul.
MR. PARTRIDGE: Sorry, I apologize. When

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you are referring to the monitoring program for socioeconomic impacts, were you referring to the community advisory committee and the ten indicators identified in the supplementary documents, or was there something else?

MR. HORNAL: Yes,that was the committee. Sorry, Robert Hornal.

Q During the presentation for the socioeconomic assessment, you mentioned that 43 percent of operating costs would be spent in the north, including 65 percent of the salary dollars. I'm interested in how the 65 percent was identified or derived.

A I think it is in the socioeconomic report, but essentially it is based on, as I say, taking the Diavik model and applying those percentages to the figures provided by Tahera for their operations and construction.

Q With the use of Diavik model in that portion of the assessment, I believe that you have integrated both the NWT and Nunavut; is that correct?

A Robert Hornal again. Yes, it is.

Q Did you adjust the multiplier at all to take into account the potential difference for the rate of leakage in Nunavut as opposed to the NWT?

A Robert Hornal again, no, I didn't.

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Q All right. I guess the last question, in addition to the monitoring, what mitigation would be employed to address potential adverse impacts?

MR. MISSAL: Madam Chair, Greg Missal with Tahera. I think if we understood that correctly, Paul, it was what mitigations would we use to cover off any impacts; is that correct?

MR. PARTRIDGE: Correct.

MR. MISSAL: Well, I think in addition to what Robert mentioned, obviously there is going to be a need for Tahera to continue with ongoing community consultation meetings. I think it is always a useful forum to get feedback through community consultation meetings, and, of course, once the IIBA is up and running, that is going to be a very good mechanism for community input to be fed back in through the KIA and into the implementation committee, and so that information can then come back to Tahera via that route as well.

So I think there is a few different ways that we can try and get as much feedback as possible.

MR. PARTRIDGE: Okay. Thank you very much for your time, Madam Chair.

CHAIRPERSON: Steve, before DIAND continues, Bill Tilleman had come comments.

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MR. TILLEMAN: Thank you, Madam Chair, and it was basically to make sure that the Board understood the discussion that happened with Dave just before the break, and that we have all of the information that we need, that this Board needs to make its recommendation to the Minister.

So with that in mind, what I would suggest and ask of the proponent would be this, that they get together with DIAND or whatever other witness tonight and then provide to the Board the information that was the subject of the cross-examination just before the break and that just happened right now. So before the break then for Dr. Ott, it would include any data that was lacking in the chronic toxicity testing for, I think, it was ammonia, but you can clarify that with Dave. Was it ammonia? So anything that we don't have yet that we need to have, if you could provide that by tomorrow morning.

Also, I think the essence of his question was whether or not at the end of the day we would end up with chronic toxicity in any of those relevant areas, so if you can give us that answer tomorrow. You can do it right now if you wish, but I think there was a question hanging on whether or not chronic toxicity would exist.

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MR. OTT: Yes.

MR. TILLEMAN: The third one was also with Dave's questions, I thought I heard Rick -- in fact, I did hear Rick suggest that Tahera would meet the TDS standard for other diamond mines in Canada, so I would suggest the most recent example would be Snap Lake that was submitted to the Minister and accepted. That being the case, and I don't know what the recommendations are, but I know there are people in the room who know that quickly, and so my question then of the company would be is Tahera prepared to meet the TDS standard which was recommended in that decision and accepted by Minister Nault? Again, consider this overnight or however much time you need to take.

And related to that was whether Tahera will meet monitoring standards for other mines in Canada? Again, let's just pick Snap Lake since, first of all, it is relatively close, and second it is quite new. So TDS and monitoring commitments.

And then we -- finally we just heard questions raised by Mr. Partridge about the socioeconomic, the nature of the monitoring committee set up to gather socioeconomic data. The Board would have several questions about who sits on the committee, what information is gathered, who

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will receive the information and how often it will

be released? And perhaps overnight if KIA and Tahera can discuss what parts of that committees information or setup might be able to be released to the Board, that would be helpful as well.

So some of these things, Madam Chair, might take over the evening, and to the extent that they do, then tomorrow morning we would need to allow questions on this new information that Tahera would present tomorrow morning, and those are my notes, thank you.

CHAIRPERSON: Thank you. Mr. Traynor, you may continue.

MR. TRAYNOR: Thank you, Madam Chair. I have just got a few last questions from myself to Tahera. I guess the first one is a fairly basic one, and we were just wondering with all the discussions of spray irrigation and proposed spray irrigation, whether Tahera was considering applying for land tenure for that area in anticipation of the use of spray irrigation and size of the area that you would need?

MR. MISSAL: Madam Chair, it is Greg Missal with Tahera Corporation. We certainly would amend the closest land lease application if we wanted to incorporate spray irrigation. I believe

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Carl McLean and I spoke briefly about that in the past, and I think that would be the most appropriate route to handle that, would be an amendment to one particular lease area that may be the closest to that area.

Q Thank you. One of the things we have often becomes difficult, you did a lengthy presentation, and I'm sure you can't put all the slides up and there is things you miss or others, one thing I would like to get a sense of you, and it is a few questions related to it, but you talked a little bit about environmental monitoring commitments.

One thing I didn't notice in the slides, and I'm sure perhaps you have it and it just wasn't displayed, but can you give us a sense of the suite of environmental or just management plans that you foresee to be used in managing the mine as a whole?

A Madam Chair, Greg Missal with Tahera. If I understand the question correctly, Stephen, just what the overall plan is for managing the mine site; is that correct?

Q Essentially a sense of the suite of management plans that you will use.

A Right.

Q That looks after the complete management of the mine, you know, what the various components may be,

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and is there an overlying umbrella type of plan.

A Right.

MR. OTT: Bruce Ott with AMEC. Steve, I take it you want information supplemental to what was provided in the final EIS?

Q I guess in the presentation and in the supplemental there didn't seem to be a management structure, if you will, or an overall sense of what the suite of management plans would be. For example, for Ekati or Diavik, they have the spills management plan, you end up having a hazardous waste plan, there is a whole suite of them, as, I guess in your sense you have given things you are going to monitor. The plans allow for not only what will be monitored but what will be contingencies and what will be the triggers that will engage you in that contingency. Because we have heard this morning a lot about, well, if this happens, we will go to spray irrigation, if this happens, we will do this. What is the management plans so that people are aware of when you will trigger these contingencies and what are they?

A All right. There is an overall -- there will be an overall environmental management plan developed. There was a very conceptual one put together for the final EIS. From the final EIS, one can

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determine that we have put together a conceptual hazardous materials management plan, a spill contingency plan, an emergency response plan. There is an occupational health and safety plan, and DIAND has indicated that in addition to that, they will require a -- oh, there is a reclamation plan, sorry, and DIAND has indicated in their supplemental that they would require a granular materials management plan, that is for development of the eskers, and that would also be -- that would also be put together.

The overall management plan will -- would knit all these various plans together. They all are components of an overall management plan. The idea, conceptually at any rate, is to make these plans conform to the ISO standard, which is something that a lot of companies are doing these days, and that provides you with a very sound management structure and provision for continual improvement in provision for internal and external auditing, et cetera, et cetera.

In terms of specific triggers, I think we -- the first trigger, of course, is if there is any indication of a negative impact or degradation of the environment, the principal tools there would end up being the aquatic effects monitoring program

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for aquatics and the indirect monitoring that would be done for, say, metals contamination or effects of dust. There are CCME guidelines for metals in

plants, and one could use those, or CCME guidelines for air quality. There is CCME guidelines for water quality.

Those would be the things that if we see degradation below those levels where we see a trend that can be identified as being caused by the mine or it reasonably can be assumed to be caused by mining activity, that calls for a modification of the management plans. I don't know if that answers your question or not. That's conceptual at this point. This whole thing needs to be knit together in a formal written plan.

Some of the things, plans haven't been taken beyond a concept due to the fact that they need an integral discussion with the principal contractors at the site, specifically the mining contractor with respect to a number of these items.

Q Thank you, yeah, we just wanted to get a sense that there will be a suite of management plans that you are contemplating, and that did answer to a reasonable extent, and two additional questions came to mind that you touched upon. One, I guess, is I can't recall whether I noticed in Ben's

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presentation whether there is a wildlife management plan.

MR. HUBERT: Madam Chair, Ben Hubert. The EIS made several specific points of elements that should be included in a wildlife management plan, so to the -- that extent, it is in place conceptually. Formally and systemically, no.

Q Okay. Bruce, you did make reference to SO 14000, so since you cracked open that door, I will ask you whether the company will be seeking ISO 14001 compliancy?

MR. OTT: I don't know if I am the person to answer that. As a consultant, I say yeah, let's go for it. But in actual fact, I guess that's a decision the company has to make.

I understand that some other mining companies are looking at ISO certification. I think if you read the literature, ISO certification seems to be the lowest common denominator, so whether that's actually going to be a procedure that's followed or not, I don't know. A lot of the good things about ISO that require formalization, that require reporting, that require tracking, et cetera, are things that obviously need to be in place for any management system that you have in place. Whether ISO certification or not will be sought, I guess it

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is something -- a decision that will be made at a later date. Certainly Greg could confirm or refute that.

CHAIRPERSON: Please slow down a bit, the

interpreters/translators are not keeping up. Thank you.

MR. MISSAL: Madam Chair, I will just add to Bruce Ott's comments there. I think, Steve, we are starting to see in the mining industry that there are some of the these larger scale what you might call word class mining companies that are getting into ISO 14001. It is probably something that's a little bit beyond Tahera, but I agree with Bruce, that the concept, I think, gives you some really good parameters to follow, and it is something that we would probably look at, but we certainly wouldn't commit here today to following those standards.

Q I can certainly appreciate that. There is a large financial commitment to that, but it is nice to at least hear that you are aware of what's going on in the mining industry and recognizing that there does seem to be some common denominators out there. You may not necessarily have it, but if you are aware of it and try to meet in principle some of the standards, that would be appreciated, and we can

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certainly live, you know, with a discussion at a later date whether it is appropriate for you or not, although we do appreciate the commitment to understanding it and moving forward to some degree.

I will switch gears here a little bit, and I will ask a comment on the reclamation stuff of Court in particular. There was in the presentation some discussion of the use of overburden, and I won't go into too much detail, but just if you can clarify this, what your expectations were for the depth of that overburden that you used to estimate your numbers, was it a metre and a half, two metres?

CHAIRPERSON: Before he answers, Josie, I want to make sure one of our Board members catches up and understands what is going on, so please slow down a little bit. Thank you.

MR. SMITH: Thank you, Madam Chairperson. We used the number .3 metres of cover to be placed over the places where we were going to be placing overburden. It would come from a overburden stockpile which would be created during the construction phase.

In a lot of the areas where we have worked in -- I'm not saying they are similar areas, but getting that overburden is quite a difficult

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matter, it isn't usually very thick, and there is usually a lot of rock outcroppings and things like that. Now, at Jericho, there might be places in the construction area where it is easier to obtain the overburden, but we are not expecting that the

pile will be huge by any means, and we will distribute the overburden as best we can. In the calculations we used .3 metres, which is roughly a foot.

Q I guess in rebuttal to that, if I can just note that in the Water Board discussions with regard to Echo Bay Mines, the value that Nuna used, as I recall, we had extensive arguments, was down to one metre, and we have heard today in some of the discussions the active layer is at least one metre or more. So if you can somehow give us some rationale as to why .3 was considered if the criteria is to ensure permafrost comes up and adequately manages it, why was .3 considered to be adequate?

A In the Lupin work, the intent was to cover the tailings and to keep the tailings material below freezing, in other words, to insulate and protect the tailings such that it would not create reactions and create, you know, acid rock drainage or any of those types of things.

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In this case, we are talking about piles of rock, not -- the tailings, and we are talking about an inert type of rock. The cover, in this case, is intended to promote vegetation and growth, whereas the purpose of the covering -- the esker covering, not overburden, but esker covering at Lupin was intended to protect the -- to keep the tailings frozen.

Q I guess that's maybe for the Water Board discussions and further discussions, but you will be providing, as I am aware of, some cover for the PKCA also, which I would imagine which also has some ice lenses, and you want to ensure the integrity of that, which is essentially a tailings area as well, so I guess we will have further discussions at a later date on some of that.

A It is Court Smith again. May I make a brief comment on that? There is a provision for a liner at the Jericho project as well, and again, the tailing or the -- they are not tailings, they are processed kimberlite, it is an inert type of substance. I believe it is quite a different -- you know, I don't want to venture too far out of my area, you know, I'm not an expert on chemistry and all of that kind of stuff, but I believe the tailings or this material is completely different

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from a Lupin-type material.

Q I guess that brings us to the point in the regulatory process whether the company will commit to providing us with all your modelling and report information beyond what was provided in the -- well, the rudimentary information provided in

there, will you make it to the regulators, the Water Board, KIA and ourself for those further discussions at a later date?

MR. MISSAL: Greg Missal with Tahera Corporation. Steve, we would certainly provide all the information we have when we reach that point with, of course, yourselves and KIA and the Water Board.

Q Okay. Thank you. The last set of questions here, Madam Chair. You mentioned the use of the winter road, and someone else mentioned the fact that Lupin has not been operating. Does the company foresee any problems with the use of the winter road should Lupin not resume operations?

A Madam Chair, I will start off answering that. It is Greg Missal with Tahera, but I would ask Court to add anything when I am finished if he had any other thoughts.

Obviously with Lupin closing, it is unfortunate for a lot of people, but I suppose

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fortunately for us and for our project, we are very closely situated to Contwoyto Lake, and it is a very long lake, and it just so happens that the majority of the winter road that needs to be built between Diavik and the Jericho site is on Contwoyto Lake, so it is relatively easy to build a winter road on the lake versus over the land and having to build portages.

We have talked to Nuna about this point, we have also talked to the partners of the winter road. And given the small number of loads that we need to transport up the winter road typically during construction, that's when the number of loads is the greatest, at about 400, we only need use of that winter road, the stretch between Diavik and Jericho, for about two weeks, so it would be a matter of building the road to the sufficient state that we need, having it open for the two weeks, getting the loads in that are needed and then letting the road blow in after that.

So as a result of that, we don't see Lupin closing having a great effect on Jericho. There would be some additional cost to Tahera for what needs to be done, but it wouldn't be significant. And I would ask Court to add anything to that if he does have anything.

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MR. SMITH: It is Court Smith again. There is a winter road committee which initially was comprised of Echo Bay Mines when there was nobody else, and they obtained an act of parliament, if you will, that said that they would be allowed to use that corridor and be able to build a winter road on that corridor provided that

they would also allow anybody else who needed to use that road access to that road and at a cost that reflected the actual costs, not a marked-up amount or anything like that, and that was the basis of agreeing that that road would be built.

Since then, there are now three members of the winter road committee, being BHP and Diavik and Kinross through Echo Bay Mines. The understanding that I have or at least the past example has been that whenever a new user is added, they become a member of this committee, which means that De Beers would become a member probably if the past tells anything, and so would Tahera, and it seems -- it would seem odd that anything would change in the manner in which it is agreed that that road exists, otherwise it would be a change of the intent of the road. So I don't personally think there is any real problem with doing it.

One of the things that Greg mentioned is that

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the road would be perhaps smaller on the north end and shorter in duration. Don't forget that the loads that Tahera would send up the road would also travel over the lower part of the road and, in fact, help pay for that lower part of the road as well, so it -- the formula seems to work for adding partners and those sorts of things and users, and it seems to have worked very well in the past.

MR. MISSAL: Just in addition to that as well, Tahera has been included in discussions with the winter road committee, and we do expect to become a partner in that once we are hopefully approved to commence production.

One other point I do want to add is that it seems likely that there will be some usage of the Lupin site either by Kinross or maybe another third party. That's a little bit of an unknown, but I think it is possible to say that that road could go to Lupin for the next few years regardless.

Q Thank you. That was good to hear. That was my next question, whether you were considering to be part of the joint venture, because it is not only users of the road, but there is all the management plans that go with it to ensure it.

But just for a point of clarification, I don't have a map in front of me, but my

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understanding is the winter road joint venture goes up to Lupin, and then you would seek to have that extended from Lupin across Contwoyto Lake to yours, so that would be a new area that would be required to open up in the joint venture added on to that package in terms of right-of-way easement?

MR. SMITH: It is Court Smith here. The -- there is two ways that could be done, either

it could be an extension to the existing road, and it would be part of that concept, or it could be that it would be a separate application, if you will, by Tahera, and it would be a spur road. So those are two options, and I think there is a lot of things that we don't know right now that would determine which way it would go.

Q I guess I'm assuming then, not to belabor this point, that depending on whether it is part of the joint venture or it is a spur road, if it is a spur road, you would still maintain the spirit and intent of the joint venture in terms of providing management reports and spill contingency plans and all the rest of the environmental conditions?

A It is Court Smith speaking. When I say a spur, I'm talking from Lupin onwards. In other words, that's 30 kilometres out of 600 roughly. And, you know, you were talking about ISO 14001 and those sorts of

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things, well, we are -- as Nuna Logistics, we would -- we don't know whether we, as a company, would consider ISO 14001 certification or not because we need to understand the costs and whether our clients wish that sort of thing, you know, on the whole.

But one thing that has happened is because some of our clients choose to be certified with ISO 14001, we adhere to various paperwork and policies and the procedures, and we act as if we were certified on those sites. And that's important because we have it in our blood, if you will, our people have these processes.

Before any of this ISO 14001 was in, our operations on the winter road, we had spill contingency plans, we have got all kind of procedures, emergency procedures. It is necessary not because of ISO 14001, but because of safety of our people and the environment where we are.

The north would require that sort of actions more than some other place, I think, so it is a matter of life and death, you know, on winter roads and that sort of thing. So we are adhering in a lot of ways, whether we are certified or not, I don't know if that matters so much.

Q It wasn't so much a matter of being ISO 14000

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certified for that spur, just that, I guess, you may speak for Nuna, but Tahera will commit to making sure that the similar plans that are prepared for the winter road in general, like spill contingencies and wildlife monitoring will continue right up through onto their site and not sort of end at Lupin, that they would continue on with those scenarios.

MR. MISSAL: It is Greg Missal with

Tahera. I think, Steve, depending on whether it was part of the winter road joint venture or otherwise might determine how that works out, but either way, I would agree with you that there would have to be those -- that monitoring done of that portion of the road, whether it was done individually by Tahera or whether it was part of the joint venture.

MR. TRAYNOR: Okay. Thanks very much. Thank you, Madam Chair, that concludes our cross-examination from DIAND.

CHAIRPERSON: Thank you. Bill Tilleman?

MR. TILLEMAN: Just, I guess, a couple of things that come out of there that's left hanging, I can be very quick. One is which Tahera -- I heard Tahera wants, through Bruce Ott, to be ISO 14001 certified or they want to, but they don't

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know, and DIAND would like them to be, but they don't know, so maybe if over the night's research that Dr. Ott is doing, if he could let us know which mines in Canada are ISO 14001 certified. I would expect Dr. Ott knows that quite quickly.

The second thing related to the last discussion was that if there was an additional 30 kilometres required on the ice road, that it would be a matter of no big deal because there is an agreement in place in any event. I suspect that that agreement is a license of occupation that you referred to, but I could be wrong. So might be if there is an agreement that you could file as an exhibit tomorrow, that you could let us know or that we could take comfort from some document, that would be helpful.

MR. MISSAL: Madam Chair, if I can just comment on Bill's second point. We are not party to that license of occupation, so therefore we don't have access to it. It is only the existing joint venture partners that are party to that, so I don't think it is possible for us to provide that to you particularly by tomorrow; perhaps if we worked through the channels and got permission, but I can't say for sure.

MR. TILLEMAN: Well, then I think we

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probably don't need it. We will just drop the request, if that's the case, Madam Chair. I thought they were going to be relying on an agreement that was already in place that through some nominal procedure that could add Tahera, but if that's not the case, then we don't need any further information. Thanks.

CHAIRPERSON: Okay. Environment Canada? Natural Resources Canada?

NATURAL RESOURCES CANADA QUESTIONS Tahera

Corporation:
MR. DYKE: Madam Chair, I'm Larry Dyke with Natural Resources Canada. I just had one question. I wanted to return to the processed kimberlite containment area. And it was mentioned during the Tahera presentation that some ice is expected to be contained within the material that will be left in the PKCA, and I was wondering if there is any expectation that that ice may compromise or cause trouble with the eventual abandonment of that area, I'm thinking due to thaw and formation of depressions and possibly ponding of water in those depressions.
MR. SCOTT: Cam Scott SRK. The amount of ice, as we mentioned briefly, was -- is going to depend on exactly how it is operated and how much

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water reports to the pond. We would expect some ice to be entrained, but specific to your question, how much of an impact would we expect?
We haven't made any major predictions. It would be reasonable to get some settlement depending on -- and depending on the depth of that ice will influence the shape of the settlement, its surface. It is likely that it will be an imperfect surface to the extent that all of the water will not shed perfectly off that surface and that the best circumstances is we would hope to practically develop it.
So inevitably there will be some depressions, and we anticipate that some water, we hope small amounts, would likely form on that surface during the spring and then be evaporated off over the course of the summer.
MR. DYKE: Thank you very much.
CHAIRPERSON: You were talking too close to the mic, so the interpreters didn't really get what you said. Can you repeat that a little further away from the mic and slower. Thank you.
MR. SCOTT: Essentially -- Cam Scott again. Essentially what I said was that we would expect some depressions to be formed on the surface of the PKCA pit with closure, but that we expect

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that the amount of water will be small and that the water that does collect on that surface due to these irregularities will evaporate off each spring, each summer rather.
CHAIRPERSON: Thank you. Nobody came in from the Yellowknife Dene First Nations? Hamlet council of Cambridge Bay? And did you say that the Kitikmeot KIA were talking in Kugluktuk tonight?
MR. TILLEMAN: Well, my advice, Madam Chair, would be to let KIA do whatever they can do tonight, and then for tomorrow there would be a bit

of new information filed and also other intervenors who couldn't be here, other parties who couldn't be here. Like DOE would need to ask questions tomorrow or whatever. So my thought is that we turn the mic over to KIA's counsel, and then he can suggest his extent of participation today and tomorrow.
CHAIRPERSON: Okay. KIA?
MR. DONIHEE: Thank you, Madam Chairman. John Donihee, counsel for the KIA. Mr. Kaniak and Mr. Clark came in the mid-afternoon break, and I haven't really had more than five minutes to talk to them. But I have some questions myself, and I guess what I would like to suggest, if you approve it, is that I will ask my questions right now and

0217

have them done, and if we could reserve the opportunity to ask a couple more in the morning after we talk, we might have some, we might not, but we certainly won't take too long in the morning if that's all right.
CHAIRPERSON: That's okay. Okay. Yes, you can start or ask your questions in the morning. You had a few tonight, right now?
MR. DONIHEE: Yes, I do.
CHAIRPERSON: Okay. Go ahead.
KITIKMEOT INUIT ASSOCIATION QUESTIONS Tahera Corporation:
MR. DONIHEE: Thank you very much. The first question relates to reclamation, abandonment and reclamation costs, and I note from the material that was in the overhead slides today that there were a number of assumptions made with respect to the cost estimate that was provided. In particular, it was suggested that the cost estimate was based on Nuna Logistic's essentially doing all of the work and that, in fact, the surface facilities such as camp and other facilities at the site would be owned and operated by Nuna.
I guess my question is simply in the context of the DIAND policy for abandonment and reclamation of mine sites they suggest that an estimate should

0218

be prepared based on the cost of a third party doing it, and in this case it sounds to me like Nuna is right involved. So my question is simply you have given us an estimate of $7,195,000 and change based on Nuna doing it, what would it cost if someone else did it?
MR. MISSAL: Madam Chair, it is Greg Missal with Tahera Corporation. I think to try and address that question I would say that we certainly view Nuna Logistics as a third-party contractor. You know, obviously they have done this work in the north in different capacities. We believe that

they have the experience and the expertise to attach third-party costs to that estimate, and I believe Court Smith referred to that earlier. We haven't gotten another estimate from another third party because we do consider Nuna to be a third-party contractor.

Q John Donihee again. Just to follow up then, if I could ask Mr. Smith to confirm that there are no costs savings achieved by having Nuna do it. In other words, are we really getting a third-party estimate here or are there some savings achieved by having Nuna do it?

MR. SMITH: It is Court Smith from Nuna. We are a mining contractor, and as a result,

0219

we put profit, we put overhead, we make sure our costs are covered. We are not particularly -- although the Tahera people are very nice people, we are not going to not make money because they are nice people. We intend to make our profit, we intend to cover our overheads, and we intend to be happy that we did the work, and hopefully our client is also happy with the result.

Q I'm not really sure if you answered my question. You know, I'm trying to find out whether or not the estimate -- let me ask it this way then, if you used the reclaim model, would you come up -- which is based on a third party doing it, would you come up with a number like $7.1 million?

A It is Court Smith from Nuna. We don't use the reclaim model, we haven't been party to the reclaim model. What we do is we do a lot of estimating, and we prepare bids, and we operate as contractors. When we put a price out, we are expecting that we will get -- first off, it is an estimate, so we take the view that we are on the 50 percentile; in other words, that there is an equal chance that it will cost more than that and an equal chance that it will cost less. Sometimes we are under and sometimes we are over in those instances. You know, how can I comment on the reclaim model if we

0220

don't use it?

I'm aware that this model exists. And I'm aware that it has been used as a check against what companies use as an estimate. To -- you know, we prepared our estimate in the same way we prepare estimates for other jobs in the north, and when we do that, we get numbers that we believe we can live with to do the work. That's our -- our purpose is not to come up with estimates, our purpose is to get work and to go forward. So we are very much a third party, we are in the business of helping our clients and doing the work.

Q Thank you very much. The next question I have

comes back to the issue that Mr. Osmond raised about spray irrigation, and unfortunately I went over at the break and had a look at the map, and I apologize because I didn't note the number, but it is the one that shows the caribou trails on it, the high-use caribou areas. And it was clarified for me at the break that the area that's proposed for spray irrigation is closer to Lake C3 than it is to Carat Lake. But I note that in answer to Mr. Osmond's question, Mr. Hubert indicated that, in fact, the spray irrigation might actually enhance the habitat.

I guess my question is whether or not, you

0221

know -- my first concern was whether or not spraying this salt over there was going to create a giant salt lick that might be attracting the caribou, and I don't know whether that is a proper conclusion. I am certainly not a technical person, but then Mr. Hubert mentioned that, in fact, the habitat might be improved again.

And I guess what I am concerned about is where or not that activity has any potential to attract caribou into the, sort of the, operational area of the mine with the consequent result that there might be problems, you know, caribou on roads that get hit or things like that. So I guess what I am trying to come to is your -- perhaps your assessment of whether that spray irrigation creates any additional risk of wildlife impacts.

MR. MISSAL: Madam Chair, it is Greg Missal with Tahera. I would ask Ben Hubert to address that question.

MR. HUBERT: Thank you, Greg. That's a very insightful observation, John. And I think the question might, perhaps, be more relevant to nonmigratory species like muskox rather than caribou.

I think caribou passing through this area are really driven by migration, and if, as was the case

0222

in 1996, caribou were to take residence for several hours, they might key on that area because of enhanced productivity and perhaps enhanced forage quality, but I think it is probably -- if it acts as an attractant at all, it would attract local nonmigratory wildlife. Thanks.

Q John Donihee again. I guess my follow-up would be to simply ask whether you feel that the proposed mitigation measures to prevent wildlife impacts that are already on the record from Tahera are adequate to manage that problem if it happens?

A Yes, I think so because, first of all, spray irrigation is in the first instance contingency, and the second instance, the volumes of nutrients

to be added on a per-hectare basis are modest, and thirdly, this is -- this area is well away from the active use area of the project, and so the only activity that there would be in the area is the application of the water itself and the surveillance required to do that. We don't have a lot of traffic in here, we don't have loaders and trucks and explosives and all that stuff and staff active in here on a 24 by 7 basis. So I think the mitigations planned are adequate to handle any attractant that spray irrigation might have in this area close to C3.

0223

Q Thank you. It's John Donihee for KIA again. Mr. Hubert, I just have one -- a question about the way that you expressed on your slide today, the way that you expressed the cumulative effects conclusions that had been drawn, and it may just be the way that you wrote it, but I just want to be sure that I understand.

So I'm -- your slides weren't numbered, but it is on page 12 of your -- the deck from the wildlife presentation, the one that deals with cumulative effects. And what it says is that there will be no cumulative effects from other projects on local wildlife habitats, no cumulative effects from other projects on local bird populations and no cumulative effects from other projects on nonmigratory wildlife populations, and I guess that sounds backwards to me.

I mean, I thought the process here was to find out what the cumulative effects of this project on the populations would be, not the cumulative effects of the other projects on these populations, and it is just the way that you have expressed it, but could you elaborate a little bit and make me feel less confused?

A Thank you, John. I recall from my presentation I didn't cover that very well when I was on deck

0224

either.

The assumption or the notion of cumulative effects, to my mind, is are there effects from other projects that, in combination with the effects of this project, exacerbate impacts. And we looked at the other projects, the projects referred to us by way of guidelines, and saw that there are no interactions with local wildlife populations from these other projects, so in the first instance then there would not be cumulative effects on the local wildlife populations. And then I went on to look at the cumulative effects of all the projects in the range of the Bathurst caribou, and so -- except caribou from the first three points on that slide. Thank you.

Q Thank you for the clarification. I have a question about your next slide as well, and it has to do with -- the slide is on page 13, it is entitled "Potential Wildlife Interactions and Related Mitigation." And on the left column you have the interactions, on the right column you have a list of mitigation, and I guess what struck me was that in the summary that was provided by Dr. Ott, I believe, on Tahera's environmental monitoring commitments, in the wildlife context there was just a couple, cooperative monitoring of the Bathurst

0225

caribou herd, you know, spend some time on raptors and record and report wildlife presence.

So the monitoring commitments are something that I have a question about in a minute, but on the mitigation side, I just want to be clear that all of the things listed on that slide on page 13, which starts off with things like incinerate garbage, bear alert system, and barriers, was the one that caught me with respect to caribou and that sort of thing. These are firm commitments from the company, or are these simply suggestions of ways that a problem might be managed?

A I -- it is Ben Hubert again. I proposed barriers reluctantly. I mean, another way -- another term for barriers is fences, and fences, if they are effective, they are effective in keeping things out, but if they fail just a little bit, they are also effective in keeping things in. And so while barriers are an available mechanism to mitigate potential problems, I think they should be investigated under -- and deployed under site-specific conditions. And so I propose those as available measures, if required, not an A priority commitment, because they introduce challenges that without them, wouldn't be there.

Q Thank you. John Donihee again. May I just ask

0226

then in coming back to a question Mr. Traynor asked a few moments ago whether the triggers, if you will, and the mitigation mechanisms which might be appropriate to resolve potential wildlife interactions are something that should be included in an environmental -- pardon me, in a wildlife management plan if one is developed?

A And will be, and formally presented that way.

Q I take it then we are getting a commitment from the company on the wildlife management plan idea that Mr. Traynor raised?

MR. MISSAL: Greg Missal with Tahera. That's correct, we would commit to that monitoring plan.

Q Management plan?

A That's correct, sorry.

Q Thank you. John Donihee again. On your monitoring -- on the monitoring front, you know, with respect to caribou, I do have one concern, I guess, and that is we don't have anybody from the GN here, perhaps I will have a chance to ask them a question before the week is out, but I guess my concern is that, you know, the suggestion has been made that the company is willing -- and it is not a suggestion, it is a commitment, that the company is willing to participate in something that is

0227

organized with other stakeholders with respect to caribou. I guess my concern is, you know, what happens if the other stakeholders don't do anything?

MR. HUBERT: Ben Hubert again. Before I embark on that one, John, could I go back to the earlier one, that business about a wildlife management plan? A gentleman that is well known in this community and does a lot of work in this area, Andy McMullen, who does this kind of work, he says we really shouldn't be talking about a wildlife management plan, because it is really people we are managing in the presence of wildlife. So when it comes along, it will probably have a stronger dose of people management than wildlife management.

The business of a stakeholder group working on monitoring caribou is a difficult one for an individual proponent such as Tahera, or in my case, a biologist working for Tahera, to address, because the issue is so much larger and the stakes are so much higher than those facing a company in a relatively small project on a small footprint, and personally, I cannot discharge the activities required for an effective monitoring program because it involves deploying collars. These are the most cost-effective and reliable means of

0228

monitoring the distribution of the herd and the seasonal land use of the herd, without a lot of -- a lot of technical back up.

And so while I keep repeating that it is in the best interests of all the parties to embark on a cooperative long-term telemetry program similar as was started for the Bathurst herd in the west Kitikmeot study and have it continue, I can only talk about it. And even if I had the 25 or $50,000 a year required to deploy and monitor a half a dozen or so collars, I still don't have the technical expertise, and there is very, very few people that do, to embark on a telemetry program.

So in the absence of the agencies that have got access to the satellite and to space on the satellite and the agencies that have got the financial wherewithal to make a longer-term

commitment, all of this really is a good idea.
But I think the benefits of deploying the idea were plain and simple to see on the distribution maps, and all the other mines in the region benefit from it, and our understanding of the caribou and our ability to do site-specific studies of caribou are really enhanced by the availability of that data. Any assistance would be appreciated.

0229

Q It is John Donihee again. I was about to think of some for you. Suffice to say that I do understand it is not Tahera's responsibility or jurisdiction to, you know, to deal with caribou management, but clearly, you know, as I was involved with the Snap Lake hearings recently, you know, and there was discussion there. I'm not repeating it for more than just to mention that the idea is now achieving some currency.
There was some discussion there of a wall of development. I'm not sure that four or five mine sites spread over hundreds of kilometres constitutes a wall, but when we look at the map that you showed us, you know, with the hunting camps on it, that's more like a wall, yes.
So, I mean, there is concern, I guess, on behalf of KIA that, you know, we need to get -- as development starts to take place in Kitikmeot as well, we need to get some work done on the caribou issue and the monitoring issue, and I guess -- let me just ask it this way: Assuming that GN will step up to the plate and assuming that it may also be in a jurisdiction effort because the GN would be Team A, they may have a role in this as well, if -- would Tahera make an appropriate contribution to something like that if, you know, there were to be

0230

costs shared between government and industry?
MR. MISSAL: Greg Missal with Tahera Corporation. I think, John, what we would want to do is we would want to see what was being proposed, of course, before we could formally commit to what we could contribute or couldn't contribute. You know, I think if there was a plan being contemplated that was a good plan, that you could -- that Tahera could see was going to benefit us, not only us, but the territory and perhaps both territories, Nunavut and NWT and other companies, you know, I am sure that we would want to play a role in a properly developed and managed program.
I can't see us not being part of that. But, of course, we would have to see the plan and see how it was set up before we could, you know, commit to participating in something like that.
MR. DONIHEE: John Donihee. Thank you

very much. Perhaps if GN shows up we can revisit this a little later in the week. But for the moment, Madam Chair, those are my questions.
CHAIRPERSON: Thank you. Bill Tilleman?
BOARD STAFF QUESTIONS Tahera Corporation:
MR. TILLEMAN: I just have one question for Mr. Hubert arising out of Mr. Donihee's questions and that is this, that the Board has

0231

defined cumulative effects to look at past, present and reasonably foreseeable projects. And so given your understanding of the caribou numbers in 2003, that is to see as you as a scientist currently understand them to be, does that change your answer in terms of whether or not Tahera's project standing alone would significantly impact the caribou numbers and whether or not there is a cumulative impact on the caribou, given the current numbers of caribou?
MR. HUBERT: In the context -- it is Ben Hubert. In the context of the likely interactions between the Bathurst caribou herd and the project as it has been presented, I see no risk to the status of the caribou herd from direct interactions between the Bathurst herd and the project.
Going forward in the context of potential additional kimberlites processed at the site, I see the interactions being similar, and so the effects similar and negligible. And so the interactions between a small footprint diamond mine and a migratory caribou herd just do not raise red flags for me.
Q And so your answer stays the same given the current -- your understanding of current populations of caribou and also in the cumulative

0232

effects assessment taking into account, for example, Dorus, the Porton Road and Inmet as one could argue would be reasonably foreseeable projects?
A Yes, it is the same because the interactions are similar, the interactions are dispersed over a very large area, no project on its own will be interacting on a continuous basis with a large segment of the herd, and so the opportunity for risk is very low.
MR. TILLEMAN: Thank you, Madam Chair.
CHAIRPERSON: Anything else from Staff? Bill?
MR. TILLEMAN: No, ma'am.
CHAIRPERSON: Okay, it is now 5:20. We will recess for tonight and continue with questions from KIA and maybe from elders tomorrow morning.
This hearing will reconvene tomorrow morning being January 6th at 9 o'clock. Thank you. Good

night.

(ADJOURNED AT 5:21 P.M.)

0233

I, Tara Lutz, Court Reporter, hereby certify that I attended the above Hearing and took faithful and accurate shorthand notes and the foregoing is a true and accurate transcript of my shorthand notes to the best of my skill and ability.

Dated at the City of Calgary, Province of Alberta, this 17th day of January 2004.

Tara Lutz
Court Reporter